

**INSTITUTIONAL FACTORS INFLUENCING DROUGHT
MITIGATION PROCESS IN DROUGHT MANAGEMENT
PROGRAMME IN KENYA, A CASE OF MAKUENI COUNTY, KENYA**

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DECLARATION

I declare that this Research project is my original work and has not been submitted for a degree in any other university or college for examination or academic purposes.

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

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DEDICATION

This proposal is dedicated to my wife, Caroline Achieng Ochieng and children Velma Anyango, Griffins Otieno, Becky Awuor and Dixon Owino for giving me their precious time during my studies. I extend my gratitude to my Lovely Mother's Seline Anyango and Sister Alice oloo, Siblings (Martin, Rehema, Asenath, and Daniel) who have inspired me to complete this research report.

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ABBREVIATIONS AND ACRONYMS

ALRMP: Arid Lands Resource Management Project

ASALs: Arid and Semi-Arid Lands

CEE: Central and Eastern Europe

DMI: Drought Management Initiative

DMP: Data Management Platform

DSG's: Developmental Support Groups

EWS: Early Warning System

GDP: Global Water Partnership

GoI: Government of India

GoK: Government of Kenya

HFA: High-functioning autism

IDMP: Integrated Drought Management Programme

ILRI: International Livestock Research Institute

ISDR: International Strategy for Disaster Reduction

KFSSG: Kenya Food Security Steering Group

NAPs: National Action Programmes

NATMO: National Atlas and Thematic Mapping Organisation

NDMA: National Drought Management Authority

PDNA: Post Disaster Needs Assessment

UNCCD: United Nations Convention to Combat Desertification

UK: United Kingdom

USD: United Nations Children's Fund is a United Nations

WMO: World Meteorological Organization

ABSTRACT

The purpose of the study was to establish the institutional factors influencing drought mitigation process in Makueni County, Kenya. The study was guided by the following objectives; to examine the influence of drought management planning, budget allocation, management skills and modern technologies on drought mitigation process in Drought Management Programme in Makueni County, Kenya. Drought mitigation process intervention strategies are used to avoid or reduce drought severity. However, these processes are poorly managed and unreliable. Drought mitigation process in Makueni County has been inconsistent and poorly carried out. The fight on drought has been challenged by lack of proper institutional mechanisms that ensure well-coordinated systems to counteract the challenge. Most droughts strike unawares leading to a multiple challenge because we lack institutional mechanisms to deal with such challenges. The study was grounded on the community empowerment model and adaptation theory. The study adopted a descriptive research design. The population under consideration which is the unit of analysis comprised of 269 respondents from National drought management Authority, Kenya Red Cross, German Agro Action, Utooni Development services, Anglican development services, County Government (Agriculture, water, Health and livestock) as well as Community religious and administrative leaders. A sample population of 94 was arrived at by calculating the target population of 269 with a 95% confidence level and an error of 0.05 using the Nassiuma (2000) formula. The study selected the respondents using stratified proportionate random sampling technique. Primary data was obtained using self-administered questionnaires. The questionnaires were self-administered through drop and pick later method. Data was analyzed using Statistical Package for Social Sciences (SPSS Version 25.0). All the questionnaires received were referenced and items in the questionnaire were coded to facilitate data entry. After data cleaning which entailed checking for errors in entry, descriptive statistics such as frequencies, percentages, mean score and standard deviation were estimated for all the quantitative variables. Multiple regression analysis was used to establish the relations between the independent and dependent variables. The information was presented in form of frequency tables. The study found out that existing local needs influence drought mitigation process in a great extent. In addition, the study also found out that networks available and political commitment influence drought mitigation process in a moderate extent. The study found that amount of funds in a great extent influence drought mitigation process. The study found that leadership style influences the drought mitigation process in a great extent. In addition, the study found that professional skills, technical expertise and experience influence the drought mitigation process in a moderate extent. The study found that statistical control and control technological capabilities influence the drought mitigation process in a great extent. Finally, the study concluded that management skills had the greatest influence on drought mitigation process followed by drought management planning in Makueni County, Kenya, followed by modern technologies then budget allocation had the least influence on drought mitigation process. The study recommends that there is need for policy change to increase community's participation and decision making in resource conservation and protection. The current national policies relevant to community development are top-down. Some of these policies are ASAL development Policy (2010) and National Disaster Policy (2010). Community and their representatives have to be consulted and involved in the planning, formulation and implementation of programmes that affect their life and livelihood. The study found that inadequate financial and logistical support to different government departments in the county has curtailed implementation of different mitigation measures. The government should increase financial support and provide adequate logistical support to various departments relevant for drought management in the County.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Drought remains a major disaster causing huge damages to humanity, the environment and the economy, despite making considerable progress on monitoring, forecasting and mitigation of droughts across the world. The lack of desired level of success could be attributed to many reasons. Drought is a complex phenomenon, which varies every time in terms of its onset, intensity, duration and geographical coverage. A recent global review on droughts and aridity indicated that large-scale droughts have frequently occurred during the past 1000 years across the globe (Dai, 2011). The available estimates on drought impacts suggest that, during the period 1900–2013, there were 642 drought events reported across the world resulting in a huge toll to humanity, killing about 12 million people and influencing over 2 billion (EM-DAT, 2014). The total economic damages are estimated at USD135 billion.

Drought is characterized by three main aspects: intensity, duration, and spatial coverage. Intensity is the degree of the precipitation, soil moisture, or water storage deficit; it may include consideration of the severity of the associated impacts. Drought typically lasts for several months to a few years, but extreme drought can persist for several years, or even decades for so called mega-drought. Drought is often one of the most devastating but least understood weather phenomena, largely because of its slow onset and its accumulating impacts over time. Although definitions vary depending on the context, drought is generally an extended period of months or years in which precipitation is less than the annual average and results in severe water scarcity. Drought is expected to have significant impacts in most of the climate sensitive sectors. In the ASALs, for example, frequent droughts are associated with the deterioration of livestock condition, increased incidences of certain diseases and livestock deaths, altered herd structure, and a collapse of livestock markets (Speranza, 2010).

The spiraling impact of drought on a growing number of sectors is cause for significant concern. No longer is drought primarily associated with the loss or reduction of agricultural production. Today, the occurrence of drought is also associated with significant impacts in the energy, transportation, health, recreation/tourism and other sectors. Equally important is the direct impact of water shortages on water, energy and food security. With the current and projected increases in the incidence of drought frequency, severity and duration as a result of climate change, the time to move forward with a paradigm shift from crisis to risk management is now (Leigh & Blakely, 2016).

Makueni is a food insecure county with a history of low food production and a marked fluctuation due to unreliable rainfall. The county food security situation has been severely compromised by five consecutive partial to total crop failures. In 2005, Makueni produced only 9% of its estimated annual cereal demand of 127,720 metric tons (MOA, 2005). This has been disastrous for the largely peasant households due to loss of their livelihood. In general, food insecurity in the county is linked to inadequate rainfall, use of poor agricultural technologies, low purchasing power, poor infrastructure and environmental degradation (MOA, 2010). The county has relied on food and non-food aid continuously for several years because of vulnerable livelihood systems which are not resilient to adverse influences of weather (World Vision, 2006). This has created dependency syndrome within the community, hindering innovativeness and participation in development initiatives (World Vision, 2006). The poor and women are the most vulnerable, with over 64% of households being female headed.

Diversification by local farmers in Makueni provides a buffer against environmental variability and change. To be able to bounce back during these shocks, communities adopt and build various strategies and resilience to cushion themselves from shocks. According to Lekapana (2013), drought is considered the most complex but least understood kind of natural hazards, influencing a huge number of people than any other form of disaster. This is mainly because it has a tendency of being slow in onset. Once conceptualized, designed and implemented, these drought mitigation processes show a brighter future in achieving their goals. But soon after the implementing agency pulls out, their sustainability proves to be a challenge leading to their collapse, as happened to KIP, Wololo Wathange (Ministry of Agriculture, Kibwezi Sub County, 2014). Faced with climate uncertainty and fragility of ecosystems that characterize Kibwezi sub-county, irrigation and crop improvement through the use of rainwater collection techniques appear to be the most important factors to lay the groundwork for an economic and social development. Mobilization and control of water to meet the needs of irrigation becomes an imperative to be tackled in order to enhance food security and improve the cash income to the population. The Government recognizes that the development of the country depends largely on its ability to better manage all its natural resources, by promoting a more holistic approach, more oriented towards the stakeholders, particularly rural communities.

Makueni County is faced with adverse influences of climate and weather; therefore, farmers are faced with shocks year in and year out and continue to receive donations as relief from the

government and other international bodies such as Kenya RedCross, Catholic relief services and World Food Program. The key strides are for specific households to generate sustainable livelihood strategies in order to build sustainable resilience to ensure households bounce back after times of shock. But regardless of these envisioned strategies, households' have continued to face challenges and the situation is more pronounced in ASALs where, they have continued to rely on relief for survival (Waswa, 2014).

The Arid and Semi-Arid Lands (ASALs) of the world make up over 40% of the earth's surface on which over one billion people depend for their livelihoods. Worldwide, most drought mitigation process fail to achieve their mission within cost and time constraints. United Kingdom (UK) in 2010 statistics showed that 52% of drought mitigation process had cost overruns in excess of 10% while 45% of drought mitigation process had time overruns of over 25% (Burrow, 2011). Similarly, in India showed, 56% of drought mitigation process had cost overruns in excess of 20% while 49% had time overruns in excess of between 1 and 160 months. However, causes of delays have been identified in various parts of the world recently such as Malaysia, Saudi Arabia, Jordan, Kuwait, Hong Kong and Thailand (Flanagan & Norman, 2013). The results reveal that there are differences and similarities as to the causes of delays. Thus, the consultants work out a project to fit within the said amount, and not beyond. This limits creativity and innovation, unlike in the past as stated (The Quantity Surveyor, 2011).

In Africa, rural livelihoods are largely derived from rain-fed agriculture with about 70% of the continent's population depending on agriculture for their livelihood (Muthui, 2009). Drought is one of the most detrimental disasters distressing African countries. Droughts are known to have short-term and long-term influence s. The short-term influence s are the shocks caused by the heavy losses of animals due to a drastic and abrupt decline of grazing resources, thereby exposing the people to severe transient food insecurity. The influence of the drought of 1999/2000 provides a good example of how obvious the lack of appropriate advice to communities led not only to the loss of property in animals but also to the rise in political tensions due to the movement in search of pasture into inappropriate private lands. The long-term influence of droughts is through decreased food security. In addition to loss of livestock, distress sales of livestock cause an abrupt decline in livestock prices, making it increasingly difficult for pastoralists to recover from such shocks, therefore rendering them more vulnerable to future disasters, and ultimately promoting poverty and hindering development.

In most African countries causes and influences of institutional factors to drought mitigation process time and cost overruns to project completion by various causes of delays and disruptions as; design changes, delays in payment to contractors, information delays, funding problems, poor project management, compensation issues and disagreement on the valuation of work done. Conversely, time overrun, cost overrun, negative social impact, idling of resources and disputes are the main influences of delays and disruptions. Kikwasi (2012) suggested that there still exists a number of causes of delays and disruptions and their influences put drought mitigation process at great risk that have an influence on their performance. Public Procurement Oversight Authority's (PPOA, 2015).

Droughts in Kenya, according to the African Union (2010) affect adversely all sectors of the economy and the population as a whole. Speranza (2010) and African Union (2010) provide some of the impacts of this drought to nomads to include a scarcity of water and pasture for herds, starvation and malnutrition, livestock deaths, altered herd structure, the deterioration of herds condition and a collapse of livestock markets. The drought management system that has been practiced in Kenya since its independence is largely a continuation of the systems and schemes instituted during the colonial period. It emphasizes a relief-based approach and provides certain other small concessions, which do little to alleviate the distress caused by wide spread crop failure. It functions on the basis of a conclusive evidence of drought as derived from the crop production in a particular year, which takes a lot of time as well as prevents early and timely help to farmers. Rainfall is the most important indicator of drought. A departure in rainfall from its long-term averages should be taken as the basis for drought declaration (Cunguara et al, 2016).

Drought is the prime recurrent natural disaster in Kenya. It affects the 10 million mostly livestock owners people in the ASAL counties. Consequently, the National Drought Management System, a dedicated disaster risk management system addressing drought, was established almost twenty years ago. The Government of Kenya (GoK), aware of the need for influence iver response, focuses resources to reduce the negative impacts of droughts. Since 1996 the Office of the President, supported by the World Bank (WB), has been implementing the Arid Lands Resource Management Project (ALRMP1) with the objective of enhancing food security and reducing livelihood vulnerability in drought-prone and marginalized communities. The ALRMP, further supported by the European Union (EU) funded Drought Management Initiative (DMI), consolidated a national drought management system, with

drought management structures at the national (KFSM2, KFSSG3), county (DSG's4) and community levels (RoK, 2017).

1.2 Statement of the Problem

Drought mitigation process intervention strategies are used to avoid or reduce drought severity. However, these processes are poorly managed and unreliable. Lekapana (2013) expounds that drought is considered the most complex but have poor drought mitigation process, influencing a huge number of people than any other form of disaster. This is mainly because it has a tendency of being slow in onset. According to the Kenya Post Disaster Needs Assessment (PDNA, 2012) report the overall influence s of the 2008-2011 drought in Kenya was estimated at K.Shs 968.6 billion (US\$12.1 billion) this includes destroyed physical and durable assets worth K.Shs 64.4 billion (US\$ 805.6 million) and another K.Shs 904.1 billion (US\$ 11.3 billion) of losses in income across all sectors of the economy. The government also plays a key role in establishing drought mitigation policies that support communities to deal with drought.

Drought mitigation process in Makueni County has been inconsistent and poorly carried out. It has been a priority for the Makueni County Government to initiate and strengthen drought management structures and programmes. The fight on drought has been challenged by lack of proper institutional mechanisms that ensure well-coordinated systems to counteract the challenge. Most droughts strike unawares leading to a multiple challenge because we lack institutional mechanisms to deal with such challenges. Drought remains a major disaster causing huge damages to humanity, the environment and the economy, despite making considerable progress on monitoring, forecasting and mitigation of droughts. The lack of desired level of success could be attributed to many reasons specifically the ininfluence iveness of the institutional framework in place to strongly deal with the challenge of this natural phenomenon (Aluda, 2017).

Several studies have been carried out such as Guyo (2013) who established the influence s of selected drought management strategies on livestock production in Isiolo County, Kenya. Kitumu (2016) did a study on institutional factors influencing implementation of county integrated development plans in county governments in Kenya; a case of Makueni County, Muhua and Waweru (2017) assessed the influence of drought mitigation strategies on food security: A Case of Laikipia East, Laikipia County, Kenya. Mahmoud and Maarten (2014) examined drought preparedness and drought mitigation in the developing world's drylands, Opiyo, Wasonga, Nyangito, Schilling & Munang (2015) established drought

adaptation and coping strategies among the Turkana pastoralists of Northern Kenya, Ouma et al. (2012) assessed post-drought strategies in Northern Turkana among the Turkana. While so much has been done on drought response and how households become aware, adopt and implement drought mitigation strategies and their influence on food insecurity there still remains a gap on institutional factors influencing drought mitigation process in Makueni County, Kenya.

1.3 Purpose of the Study

The study sought to establish the institutional factors influencing drought mitigation process in Drought Management Programme in Kenya. a case of Makueni County, Kenya.

1.4 Objectives of the Study

The study was guided by the following objectives;

- i. To examine the influence of drought management planning on drought mitigation process in Drought Management Programme in Makueni County, Kenya.
- ii. To determine the influence of budget allocation on drought mitigation process in Drought Management Programme in Makueni County, Kenya.
- iii. To assess the influence of management skills on drought mitigation process in Drought Management Programme in Makueni County, Kenya.
- iv. To establish the influence of modern technologies on drought mitigation process in Drought Management Programme in Makueni County, Kenya.

1.5 Research Questions

The study sought to answer to the following research questions:

- i. What is the influence of drought management planning on the drought mitigation process in Drought Management Programme in Makueni County, Kenya?
- ii. To what extent does budget allocation influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya?
- iii. How does a management skill influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya?
- iv. What is the influence of modern technologies on the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1.6 Significance of the Study

Makueni County Government

The study findings were used by the Makueni County Government. The findings of this study enriched existing knowledge in the county in institutional factors influencing drought mitigation process. The findings of this study were of value in the sense that there was an increasing need to provide better services to the citizens through the drought mitigation process in the county. The study therefore provided information on the strategies that the players need to adopt to improve service delivery in drought mitigation process.

Policy Makers

Policy makers, planners and program implementers benefited from the finding to formulate policies and strategies on the institutional factors influencing drought mitigation process. The findings from the study provided insights into what should be done by various stakeholders to enhance institutional mechanisms for curbing drought. This was of value to the government as it assisted it in coming up with policies and laws that would help reduce the severity of droughts.

Researchers and Academicians

The research findings laid some foundations for further research on the institutional factors influencing drought mitigation process. It also contributed to the available literature in project management. The study helped analysts and academicians to grow their examination into the institutional factors influencing drought mitigation process.

General Public

The locals in Makueni County and general public are bound to benefit as the study highlighted key areas of understanding the institutional factors influencing drought mitigation process in Makueni County, Kenya. The study expounded on public responsibility and both county and national government expectation on drought mitigation process.

1.7 Delimitation of the Study

The study established the institutional factors influencing drought mitigation process in Makueni County, Kenya. The study focused on the influence of drought management planning, budget allocation, management skills and modern technologies on drought mitigation process in Drought Management Programme in Makueni County, Kenya. The population under consideration which is the unit of analysis comprises of staff from National

drought management Authority, Kenya Red Cross, German Agro Action, Utooni Development services, Anglican development services, County Government (Agriculture, water, Health and livestock) as well as Community religious and administrative leaders. The study was carried out in a period of three months.

1.8 Limitations of the Study

The researcher anticipated that getting access and appointments to the respondents posed some difficulties since they did not have time to fill in the questionnaires due to their busy office schedules. The researcher overcame this by booking appointments with the respondents in advance before distributing the questionnaires as well as agreeing with them on the best time to get back the questionnaire. Also, the respondents targeted in this study might be reluctant in giving information fearing that the information being sought might be used to intimidate them or print a negative image about them. The researcher hoped to handle this by carrying an introduction letter from the University to assure them that the information they give was treated with confidentiality and was used purely for academic purposes. Financial resources required to conduct this study were limited as well as shortage of the time to conduct the study. This study might therefore suffer from generalizability of the results if the nature of drought mitigation process undertaken is significantly different from those in Makueni County.

1.9 Basic Assumptions of the Study

The researcher assumed that the respondents provided information that was accurate and reliable in conducting research. The researcher assumed that there were no serious changes in the composition of the target population that might affect the influence evenness of the study sample. This study also assumed that the respondents were cooperative and objective in the response to the research instruments and were available to respond to the research instruments in time. Finally, the study assumed that the authorities in the relevant authorities granted the required permission to collect data.

1.10 Definition of Significant Terms Used in the Study

The following were the definitions of terms that were used throughout this study:

Availability of resources: Refers to sufficiency of an economic or productive factor required accomplishing an activity, or as means to undertake an enterprise and achieve desired outcome.

Drought - A drought is an extended period where water availability falls below the requirements for a region. This is mostly as a result of lack of /inadequate rainfall.

Drought management – This refers to the plans taken to minimize the influence s of drought being implemented in a way that reduces the impact that the drought would otherwise have if no preparation was in place.

Drought management plan – This means the influence ive precautionary actions to ensure the timely, appropriate and influence ive organizations and delivery of relief and assistance following a drought.

Early warning system: The set of capacities needed to generate and disseminate timely and meaningful warning information to enable individuals, communities and organizations threatened by a hazard to prepare and to act appropriately and in sufficient time to reduce the possibility of harm or loss.

Institutional factors: established structures for management, knowledge base, and technical know-how, incentives, awareness, and strategy for capacity building.

1.11 Organization of the Study

This study was organized into five chapters.

Chapter one contained the introduction to the study. It presented background of the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the Study, delimitations of the study, limitations of the Study and the definition of significant terms.

Chapter two reviewed the literature based on the objectives of the study. It further looked at the conceptual framework and finally the summary.

Chapter three covered the research methodology of the study. The chapter described the research design, target population, sampling procedure, tools and techniques of data collection, pre-testing, data analysis, ethical considerations and finally the operational definition of variables.

Chapter four presented analysis and findings of the study as set out in the research methodology.

The study closed with chapter five which presented the discussion, conclusion, and recommendations for action and further research.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter provided an extensive literature and research related to institutional factors influencing drought mitigation process in drought management programme. The chapter was thus structured into theoretical, conceptual and empirical review. The study also presented the knowledge gap the chapter sought to fulfill.

2.2. Strategies of Drought Mitigation Process

The development of national and local strategies for reducing drought risk, together with the implementation of such a strategy, should be guided by the following principles: Drought risk reduction policies should establish a clear set of principles or operating guidelines to govern the management of drought and its impacts, including the development of a preparedness plan that lays out a strategy to achieve these objectives, Drought-related policies and plans should emphasize risk reduction (prevention, mitigation and preparedness) rather than relying solely on drought (often turned into famine) relief (Wilhite, 2014).

Preventive or strategic measures are developed and used under the normal status. They belong to the hydrological planning domain and their main objective is reinforcing the structural system to increase its response capacity (to meet supply guarantees and environmental requirements) towards droughts. These are measures to be taken in RBMP. Operational (tactical) measures are those that are typically applied when droughts occur (during pre-alert and alert status). These are mainly control and information measures in pre-alert and conservation resources measures. If the drought is prolonged excessively, the status of water resources can deteriorate to a point in which emergency operational measures might be needed, consisting essentially of applying water restrictions. Severe Water conservation measures and restrictions, to be adopted if drought worsens to extreme status, should be ranked according to parameters such as: priorities among different uses, environmental requirements, status of drought (Sharma, 2017).

Organizational measures, establish competent agents and an appropriate organization to develop and follow-up the DMP; create coordination protocols among administrations and public and private entities directly linked to the problem, in particular to those entities in charge of public supply. Follow-up measures serve in the process of watching out for the compliance and application of the DMP and its influence s. Finally, restoration or exit drought measures include the deactivation of adopted measures and the activation of

restoration ones over the water resources influences and the aquatic ecosystem (Nolte & Knai, 2015).

2.3 Drought management planning and Drought Mitigation Process

Preparedness plans will improve coordination within and between levels of government; procedures for monitoring, assessing, and responding to water shortages; information flow to primary users; and efficiency of resource allocation. The goals of these plans are to reduce water shortage impacts, personal hardships, and conflicts between water and other natural resource users. These plans should promote self-reliance by systematically addressing issues of principal concern to the region or nation in question. Contingency Planning to drought has a major positive impact to safeguarding the livelihood of the community and goes in line to the contribution of the UNICEF Poverty Reduction Strategy (PRS) for Food Security Strategy objectives (UNICEF, 2009).

Planning in drought management is vital for both mitigation and action taking. Lekapana (2013) suggests that, a drought plan has been developed containing emergency preparedness actions and different tasks of different groups and level to include the donor, government ministries, infrastructures involved and populations. The rationale behind planning is to ensure that lives are saved maximally and the damage is minimized by preparing to respond appropriately when drought is imminent. Moreover, planning according to ISDR (2007) do include the development of overall drought preparedness strategy and policy, institutional structures, forecasting capabilities and early warning framework and plans that express measures geared towards helping communities that are at vulnerable and get safeguard with their livelihoods by being alerted on the imminent hazards and assisted to take actions against the threat. However, Kenya does not have specific drought management planning planned and instead many are crosscutting that is scattered in various sector policies that do exist and manage drought-related emergencies. These drought policies according to Lekapana (2013) require regular review and adaptation according to the changing drought stresses in pastoral populations.

A continuous forecast of the expected water resources, evaluation of water demands and improving the influence liveness of water use and mitigation measures will be essential to develop the DMP. Monitoring mechanisms should be used to decide, if the drought response plan is having its intended influence, and to provide the required information needed to evaluate the performance of the drought management plan in alleviating the influences of drought. Drought management is an essential element of water resources policy and strategies

in EU but especially in drought prone areas, for instance in Mediterranean basins. Budget allocation (DMP) should be prepared in advance before they are needed, based on relevant country specific legislation and after careful studies are carried out concerning the characterization of the drought in the basin, its influence and the mitigation measures (Speranza, 2010).

There are three critical issues. The first is the need to ensure adequate capacity for sound people-centered planning at the county level, as well as the establishment of an accountability framework which ensures adherence to constitutional principles of public participation and rights-based development. Areas of support may include methodologies for ensuring strong citizen participation, particularly of conventionally excluded groups (such as the poor, women, young people, nomadic households and minority clans), the development of baselines, the use of statistics, the capacity to access and act on early warning information, and the coordinated use of complementary instruments for climate change adaptation, drought risk reduction and social protection. The NDMA and its partners in the UN system and civil society will provide leadership in the provision of this technical assistance to county governments (Leigh & Blakely, 2016).

The second is that formal planning systems need to be more flexible and attuned to local realities in drylands. This may be achieved by recognizing and integrating indigenous technical knowledge so that interventions at the local level reinforce community adaptive strategies or it may be by recognizing and responding to trans-boundary dynamics, whether between counties or across international borders. Landscape-level planning, such as watershed management, and the reinforcement of mobility across administrative boundaries, are both key drought mitigation strategies (The Quantity Surveyor, 2011).

Policies aim to develop a holistic, proactive, multi-disaster-oriented and technology driven strategy through a culture of prevention, mitigation, preparedness and response (GoI 2009). Some of the major government programmes help mitigate the adverse impacts of drought and build resilience of people by encouraging efficient water management practices, ensuring livelihoods, ensuring economic access to food and supplying fodder among other measures.

Leaders and other high-level authorities at the apex of political and economic power need to be fully aware of the danger that drought poses, aware of the hardship it creates for people whose livelihoods are vulnerable to drought and committed to disseminating information and implementing policies to help reduce human suffering and environmental

degradation. Often, people at all levels of government in both developed and developing countries are preoccupied with other faster-moving, seemingly more urgent problems, until drought strikes, at which point it is difficult to implement change. Building drought resilience thus needs to be part of long-term development considerations and an integral part of policies related to agriculture, water, food security and hazard risk management, ideally, in accord with community-based policies and practices, encouraging practices that reduce vulnerability to drought. All this requires sustainable policies and governance, which may necessitate capacity development to foster meaningful participation in policy and planning processes (Dai, 2011).

2.4 Budget allocation and Drought Mitigation Process

Devolved governments need access to finances to enable them to develop and implement their drought mitigation process. Historically devolved governments have been relying on a single source which revenue to the government as a source of funds to implement their drought mitigation process. However, over time their capacity to build up internal sources from revenue became eroded, partly by government policies and partly by poor performance resulting from declining margins (Muchemi, 2009).

County government increasingly relies on national government support for finances and from their limited revenues. Although given out for recurrent and development expenditure, these are very often not repaid. Devolved government becomes trapped in a dependency parasitic relationship with national government which seriously weakened their ability to develop sustainable activities. This dependency also weakened management strategies. Rebuilding's devolved governments as influence ive member-owned business requires a clear break from this unfortunate historical legacy. Viable devolved government today suffer from this legacy in a number of ways; many private organizations still view devolved governments as inherently not creditworthy. Many devolved governments are weighted down by the presence on their balance sheets of accumulated debts dating back many years from the previous municipal councils (Mwaura, 2013).

Sambu (2014) argues that Kenyan devolved governments have not catered for the needs of their members. However Devolved governments are compounded by governance and financial constraints which leads to delay in financing drought mitigation process.

Saunders (2009) argued that in Uganda there are cases where government obtains their finances free of interest from the bank. These practices put the government in greater financial strains as they incur large debts by way of interest on the loans. He concludes that it

would appear that the crucial factor in the financial difficulties of the government is mismanagement of funds available rather than the inability of the organization to raise money from elsewhere. The Swedish public sector faces a similar problem especially as the number of the organizations belonging to the government is diminishing, owing to the relative decline of the services from other sectors of the economy.

The financial problem of the Uganda government is tied up with the general low levels of per-capital income of their citizens. Although the government is severely handicapped in having ways of raising funds of their own to meet their needs such as drought mitigation process, they are in a privileged position in matters of government financial assistance. The government has started to see the need to diversify in order to survive in a liberalized environment. This is leading to interesting partnership (Mwaura, 2013).

2.5 Management skills and Drought Mitigation Process

Reaching a satisfactory level of drought mitigation process necessarily requires more than just securing funds from diversified sources. It requires as much strengthening government and operational capacities. There exists a causal relationship between drought mitigation process and certain factors associated with government public organization management, leadership, public image, service provision and community participation. These factors could contribute to or impede financial viability of given government public organization (Bray, 2010).

Human capacity development through specialized training of project managers, staff, community members and the whole project team has been noted to be important for project success and sustainability. Campo (2008), in an intervention model introduced in Peru for water supply considered community training as an important component in which the project used various methods of training such as audio-visuals, visual, argues that training on issues like operation and maintenance empower the communities to look after water supply systems thus aiding sustainability. Lack of community training is cited as one of the factors which could lead to breakdown and no sustainability of water supply drought mitigation process in developing countries (Barasa & Jelagat, 2013).

They further point out that even where full community participation or management is planned from the start, community-level committees and care takers may lose interest or trained individuals may move away. Without adequately trained personnel, even a well-financed and organized system with the most advanced technology and regular compliance visits will fail to reliably deliver safe drinking water to its customers with time. This agrees

with observations by (Campo 2008) who argued that training on issues like operation and maintenance empower communities to look after water supply systems thus aiding sustainability. Community members must be equipped with the necessary knowledge on how to operate, repair and maintain the water supply system as this will enhance sustainability of the project.

Capacity is the ability of individuals and organizations to perform functions influence ively, efficiently and in a sustainable manner. The ability to meet the capacity needs includes employing the right people especially those who are trained and experienced; ensuring that there is good quality of the output; having a training plan for stakeholders. Dobi (2012) while quoting Jones (2009) notes that lack of adequate monitoring and evaluation expertise or capacity among local NGOs is one area that has been highlighted by several scholars.

In the study of Mulory (2013) the government having a physical presence in the community as well as a consistent track record of service accountability to its residents the management employees should ensure that community benefits from the programs initiated. The government drought mitigation processneed, well versed management teams in order to establish partnering relationship which will help in developing implementation strategy that clearly defines the social mission of the project. It is important that management clearly and consistently communicates the mission and services provided by the organization specifically cater to the unique needs of the drought mitigation process.

It is noteworthy that according to Brar (2010), low capacity staff for government's drought mitigation process implementation at the sub-national level such as provincial and regional governments is one of the main challenges in the implementation of all government drought mitigation process in developing countries. This factor according to him is very pertinent to the South African context with its nine provinces and the consequent demand that the duplication of efforts creates for skills and knowledge, of which a shortage already exists. Farelo and Morris (2009) further contend that the personnel development issue within government needs prioritization in order to have management that will support development drought mitigation process of the government. He noted that the education system needs to be aligned with the project management demands of the country and scarce monitoring and evaluation skills need to be attracted and retained particularly within the government.

It is noted that the influence ive implementation of government drought mitigation processrequires personnel with the required knowledge and expertise. Diamond and Khemani (2010) posit that lack of capacity is regarded as one of the primary causes for the of

government drought mitigation process implementation process in Ghana. On the other hand, the emphasis on capacity building through training was one of the major contributing factors to the success of major government drought mitigation process in Tanzania. Chene (2009) adds that absence of staff with the requisite project management knowhow and experience cannot be mitigated with ease through training and hiring. The salary structure and terms of employment in the public sector are more often than not unable to compete at par with the private sector. Needless to say, candidates possessing skills are not incentivized to join the public sector. To aggravate the situation, many trained personnel leave the public service for better job opportunities elsewhere.

The technical capacity of the organization in conducting evaluations, the value and participation of its human resources in the policymaking process, and their motivation to impact decisions, can be huge determinants of how the evaluation's lessons are produced, communicated and perceived (Vanessa & Gala, 2011). Building an adequate supply of human resource capacity is critical for the sustainability of the implementation system and generally is an on-going issue. It needs to be recognized that growing evaluators requires far more technically oriented M&E training and development than can usually be obtained with one or two workshops. Both formal training and on-the-job experience are important in developing evaluators. Two key competencies for evaluators are cognitive capacity and communication skills (Katia, Lycia & Helena, 2010).

Program and senior managers are important audiences for less technical training on implementation. They need to have enough understanding to trust and use implementation information. This type of broad training/orientation is critically important in building a results culture within organizations. There are no quick fixes in building an implementation system investment in training and systems development is long term. Various options for training and development opportunities include the public sector, the private sector, universities, professional associations, job assignment, and mentoring programs (Gladys et.al., 2010).

In terms of implementation, the capacity to identify, design, plan, coordinate and implement timely livelihoods interventions is limited by a poor understanding of pastoral livelihood systems by some senior decision-makers and a lack of consensus on what constitutes sectoral mitigation, emergency and recovery activities. This results in a lack of capacity to prepare

proposals quickly at the national level, and implementation is further hampered by rigid planning systems and cumbersome financial procedures among key ministries and UN coordinating agencies, and – in some countys – a lack of implementation capacity, both in terms of coverage and technical expertise.

2.6 Modern technologies and Drought Mitigation Process

Organizations today are prolifically integrating new technologies to gain an edge over others in terms of productivity and services. With the help of technology there are remarkable changes in the processes like marketing, production, human development. Technology is useful in accurate decision making, time and money saving etc. and the same is based these days on scientific basis and analysis. Moreover, it has played a major role in conducting financial analysis and control. Although, there are several implications of technology, two implications have the most influence in organizations today. First one is the automation or new technology and the other one is information technology. New technology' or automation is not unanimous words rather they cover a wide range of tools, components and systems (Sheridan, 2002).

ICT refers to technology used to handle information and aid communication. It also refers to the amalgamation of computing and telecommunications technologies, including the Internet, which are the matrix within which information and digital media are created, distributed and accessed. Information and Communications Technology features comprise basically of: Information access and dissemination over the Internet and wireless computing. Communication features including landline and mobile telephones, wireless communication, voice over Internet communication or voice mail and facsimile. Computer hardware such as computers, printers, scanners, faxes, modems, networks and software which includes programs for accounting, spreadsheets, data processing enterprise resource planning systems (ERP) among others (D'Atri, Ferrara, George, & Spagnoletti, 2011).

Communication technology is one of the central elements of integrative project management. The project manager should select appropriate communication technology equipment that will help him coordinate the activities of the implementation team. The technology should be able to coordinate and monitor all the ongoing project activities in the team. One such technology that can be used for coordinated communication is the use of the intranet. This idea has been emphasized by Wilkinson (2005). The author states that there should be integration of the back office with the other systems of the project. All the project teams should be in a position to access the intranet regardless of their locations. With the

availability of the intranet, it is easy for the project manager and the implementation team to access information about the progress of the project.

Other communication tools can be established to support the functions of the intranet. These include the use of video conferencing facilities, the use of emails and the use of mobile phone communication. The project manager can give regular updates of the project progress to the team members. The use of these technologies is supported by Wilkinson (2005) who insists that emails can be used by the professionals to send drawings to other team members. In such an instance, the project manager will keep a track and trail of all the documents sent by the professionals. The tracking then makes it easy for the manager to come up with corrective measures for the project in case of any need.

The cost control can be carried out using the ICT tools integrated in the internet. The shared databases in the internet can be used by drought mitigation process team for improvement of the cost performance. Forbes & Ahmed (2010) reported that cost control was an area that could be improved with the improvement of ICT systems. The authors stated that Cost-Plus was one of the software that could be used to influence ively control the cost of drought mitigation process during project monitoring phases. As such, it is important to understand the ways through which ICT can be used to control cost during project monitoring and how this can affect the performance of the overall drought mitigation process.

A substantial body of research has revealed the positive link between innovation and performance for service industries. Innovation can reinforce competitive advantages for companies in markets where customer preferences change rapidly, where the differentiation is limited, and where the competition is intense (McAfee, 2012). As adopting technology in logistics service process can also be considered as technological innovation for the industry, it would be expected that there is a positive relation between technology adoption and supply chain performance for service providers. Moreover, based on the resource-based view, technology is a vital resource for a firm to obtain competitive advantages. A firm should develop a viable strategy to marshal resources to produce superior performance. Murphy and Poist (2010) argued that logistics services capabilities including efficient warehousing, transportation, and freight bill payment are drivers for superior supply chain performance. technology can help item level identification, which is useful for easily and efficiently identifying each item within the entire supply chain (Davis & Luehlhing, 2009). It is helpful to advance the capability of quick response. As service capabilities such as responsiveness and flexibility can enhance performance, companies with better service capabilities may

attain higher service performance (Zhao *et al.*, 2011). Therefore, it can be expected that technology would improve supply chain performance for the logistics industry.

2.7 Theoretical Orientation

This section discussed the theoretical foundation on which the study was anchored. The study was grounded on the community empowerment model and adaptation theory.

2.7.1 Community Empowerment Model

Empowerment is one of the important pillars in development and it has been used in many disciplines including health (Baum, 2008), education (Wallerstein and Edwards, 1988) and in political, gender, economic and community development (Laverack, 2009; Tesoriero, 2010). In the most general sense, empowerment refers to the ability of people to gain understanding and control over personal, social, economic, and political forces in order to take action to improve their life situations (Baum, 2008).

As a significant public health concept, Baum (2008) describes empowerment as the ability of people to gain understanding and control over personal, social, economic, and political forces in order to take action to improve the healthy living. As a methodology and the theory, community empowerment has developed significantly in the past three decades. It is described to comprise both processes and outcomes (Tesoriero, 2010) which themselves may lead to community development.

Empowerment has also been categorized as a multi-level construct and include individual level, organisational, and the community level empowerment. At the level of individual, psychological empowerment describes a concept that extends intrapsychic self-esteem to include people's perceived control in their lives, their critical awareness of their social context and their participation in changes. As Gershon (2006) argues, an empowering organisation incorporates the processes of organisation and provides avenues for the development of personal control, including competence to act and the development of interpersonal, social, and political skills (Leigh & Blakely, 2016).

It is also acknowledged that an empowering organisation is democratically managed, in which members share information and power, utilize cooperative decision-making processes, and are involved in the design, implementation, and control of efforts toward mutually defined goals. The above attributes reinforce the notion that organisations empower individuals as part of the organizational process. An empowering organization recognizes and incorporates necessary linkages among members, such as interest groups, status groups, and

formal subunits. Additionally, an empowered organization also has influence within the larger system of which it is a part.

At the community level, an empowered community makes it possible for individuals and organizations to apply their skills and resources in collective efforts to meet their respective needs. As such an empowered community has the ability to influence decisions and changes in the larger social system. Empowerment at the community level is connected with empowerment at the individual and organizational levels. In practical sense, and as McMurray (2007) states, empowerment brings back power to the people by improving people's participation, increasing individual and community control over various programs that impact their development and also improves a sense of local ownership and collaboration.

2.7.2 Adaptation Theory

A robust implementation, or an implementation with a strong fit, should be highly congruent. In the strategy process, the principle of congruence applies not only to the desirable alignment between expectations and results, but also to the alignment of theory and practice, and of function and structure. One should not forget that after all, the strategy process originates in part from the need to align systematically the function and structure of the organization with changes in the environment. In the overall context of congruence and fit, but particularly in the perspective of implementation, two activities are of great relevance: adaptation and search (Hrebiniak & Joyce, 2006).

The adaptation of organizations to changes in its environments has been the focus of extensive literature during the last decades. From the perspective of strategic management such research broadly focuses on the creation of strategies for efficient adaptation and the reasons why some organizations evolve to perform better than others do. Porter (2003) for example explains these issues from the point of view of advantageous positioning in markets (competition), while other views emphasize the role of developing specific capabilities (differentiation) as a more influence ive adaptation mechanism. In spite of such a debate, an additional and very important organizational activity regarding adaptation and change (although less studied) is the search for information (Flanagan & Norman, 2013). This implies the active search for information in order to understand the own and others' behavior, as well as to identify potential threats and opportunities. In general, an organization that is not efficient or able to search and use information whatsoever is likely to fail while responding to environmental changes. All the same, such an organization will be unable to formulate and

implement strategies. From the perspective of our view of the strategy process, search is an activity central –but not restricted – to the appraisal stage (Porter, 2003).

In the implementation stage, search refers to activities aimed at producing information useful to reach an efficient fit among strategies, the organizational capabilities, resources, and the ongoing and intended practices and procedures. In general terms, the search in organization is believed to be influenced or driven by few factors (Jofre, 2011). Literature suggests that commonly, a search will be focused on the areas of the organization with a relatively high competitive advantage or on those more competitive resources and capabilities. Conversely, resources that are keys for performance will drive the search towards the ways to enhance their influence over competitive advantage (Hrebiniak & Joyce, 2006).

2.8 Conceptual Framework

A conceptual framework is a model that presents and explains the relationship between various variables. In a conceptual framework there are two types of variables: dependent variable and independent variable. In this study, independent variables are; drought management planning, budget allocation, management skills and modern technologies while drought mitigation process is the dependent variable.

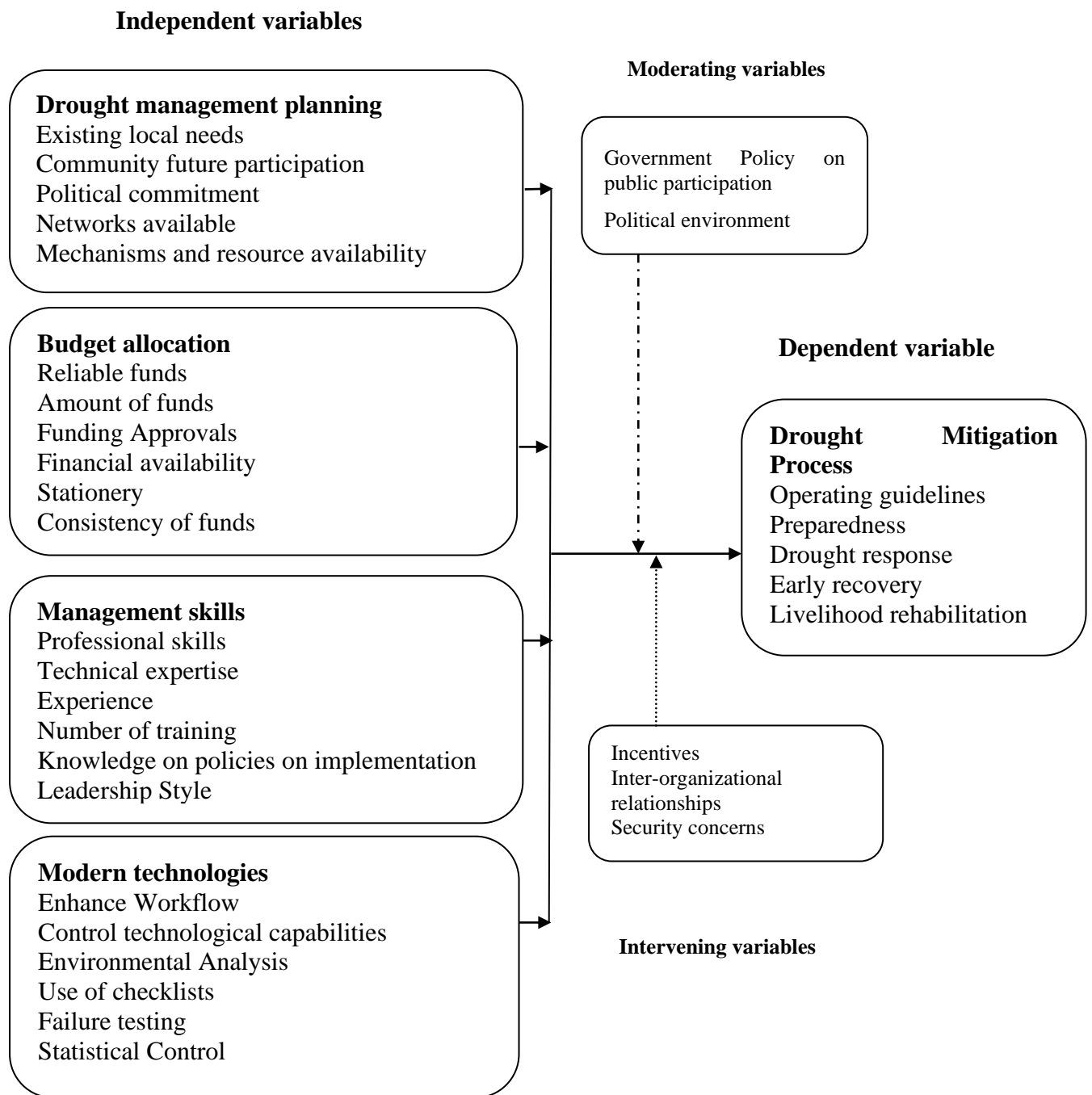


Figure 1: Conceptual Framework

2.9 Summary

From the literature reviewed, institutional factors influencing drought mitigation process poses a challenge to organizations to establish competent agents and an appropriate organization to develop and follow-up the DMP; create coordination protocols among administrations and public and private entities directly linked to drought management.

3.0 Research Gaps

Although literature has been reviewed on institutional factors influencing drought mitigation process such as Kariuki(2015),Njogu(2011), Munyoki(2014) and Wanjau (2015). The studies found that drought response and how households become aware adopt and implement drought mitigation strategies and their influence on food insecurity is inefficient and not influence ive. Moreover, none of the studies reviewed focused oninstitutional factors influencing drought mitigation process in Makueni County, Kenya. To bridge this research gap, this study established the factors influencing drought mitigation process in Drought Management Programme in Makueni County, Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

Research methodology is the approach by which the meaning of data is extracted and is a continuous process. The research methodology gives the direction to follow to get answers to issues that are of concern. This chapter describes the methods used to gather information on the area of the study. The chapter guided the research methodology to be used in carrying out the study. The chapter presented details of the research design, target population, sampling procedures, methods of data collection, validity and reliability of instruments, data collection process, methods of data analysis and ethical considerations while conducting the study.

3.2 Research Design

A research design is the overall strategy that you choose to integrate the different components of the study in a coherent and logical way, thereby, ensuring you influence ively address the research problem; it constitutes the blueprint for the collection, measurement, and analysis of data (Gorard, 2013). The study adopted a descriptive research design. A descriptive design is concerned with determining the frequency with which something occurs or the relationship between variables (Bryman & Bell, 2011). Descriptive research design was chosen because it enabled the researcher to generalize the findings to a larger population. This type of research design presents facts concerning the nature and status of a situation, as it exists at the time of the study (Creswell, 2014). It also brings out relationships and practices that exists, beliefs and processes that are ongoing, influence s that are being felt or trends that are developing. Thus, this approach was suitable for this study, since the study intends to collect comprehensive information through descriptions which was helpful for identifying variables. According to Avoke (2015), descriptive surveys are designed to portray accurately the characteristics of individuals, situations or groups. It is used as a needs assessment tool to provide information on which to base sound decisions and to prepare the background for more constructive programmed of educational research.

3.3 Target population

Rubin and Rubin (2005) emphasized that to ensure credibility of research, the researcher should interview people who understand and have deeper information about the issue. This is because the credibility of the interviews depends on the knowledgeableability of the interviewees or participants of the study. A Population is the entire group of persons or elements that have at least one thing in common. It is the mass of individuals, cases, events to which the

statements of the study would refer and which has to be delimited unambiguously beforehand with regard to the research question. According to Sekaran and Bougie (2010), a population is the total collection of elements about which we wish to make inferences. The population under consideration which is the unit of analysis comprised of 269 respondents from National drought management Authority, Kenya Red Cross, German Agro Action, Utooni Development services, Anglican development services, County Government (Agriculture, water, Health and livestock) as well as Community religious and administrative leaders as shown in table 3.1.

Table 3. 1: Target Population

| Implementing Agency | Target population | Percentage |
|--|--------------------------|-------------------|
| National drought management Authority | 6 | 2.2 |
| Kenya Red Cross | 7 | 2.6 |
| German Agro Action | 5 | 1.9 |
| Utooni Development services | 3 | 1.1 |
| Anglican development services | 6 | 2.2 |
| County Government (Agriculture, water, Health and livestock) | 29 | 10.8 |
| Community religious and administrative leaders | 213 | 79.2 |
| Total | 269 | 100.0 |

Source: (Department Records 2018)

3.4 Sample size and Sampling Procedures

Sampling is a deliberate choice of a number of people who are to provide the data from which a study drew conclusions about some larger group whom these people represent. The section focuses on the sampling size and sampling procedures.

3.4.1 Sampling Size

The sample size is a subset of the population that is taken to be representatives of the entire population (Kumar, 2011). A sample population of 94 is arrived at by calculating the target population of 269 with a 95% confidence level and an error of 0.05 using the Nassiuma (2000) formula as shown;

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

Where n = sample size

N = population (269)

Cv = coefficient of variation (take 0.6)

e = tolerance of desired level of confidence (take 0.05) at 95% confidence level)

$$n = \frac{269 (0.6^2)}{0.6^2 + (269-1) 0.05^2} = 121.02 \text{ (Rounded off to 121)}$$

For convenience, the researcher rounded the sample size ' n ' to 121 which was guided by Mugenda & Mugenda (2003) that 30% of the population can be used to determine a representative sample size of the whole population. To obtain the desired sample size from each stratum, stratified proportionate random sampling formula was used $i = n (N/P)$, (Kothari, 2009). Where: i are the number of respondents in the stratum to be sampled, n is the sample size, N is the population of the specific stratum, P is the population. The sample size of each stratum was calculated using the formula $i = n (N/P)$,

Table 3. 2: Sampling Frame

| Implementing Agency | Population | Sampling Ratio | Sample Size |
|--|-------------------|-----------------------|--------------------|
| National drought management Authority | 6 | 0.4498 | 3 |
| Kenya Red Cross | 7 | 0.4498 | 3 |
| German Agro Action | 5 | 0.4498 | 2 |
| Utooni Development services | 3 | 0.4498 | 1 |
| Anglican development services | 6 | 0.4498 | 3 |
| County Government (Agriculture, water, Health and livestock) | 29 | 0.4498 | 13 |
| Community religious and administrative leaders | 213 | 0.4498 | 96 |
| Total | 269 | | 121 |

3.4.2 Sampling Procedures

Sampling is the process of selecting a number of individuals or objectives from a population such that the selected group contains elements representative of the characteristics found in the entire group. The study selected the respondents using stratified proportionate random sampling technique. Stratified random sampling is unbiased sampling method of grouping heterogeneous population into homogenous subsets then making a selection within the individual subset to ensure representativeness. The goal of stratified random sampling is to achieve the desired representation from various sub-groups in the population. In stratified random sampling subjects are selected in such a way that the existing sub-groups in the population are more or less represented in the sample (Kothari, 2004). The study used simple random sampling to pick the respondents in each stratum.

3.5 Research Instruments

Data collection instrument is used in research to refer to a device that specifies and objectifies the data collecting process, instruments are usually written and may be given directly to the subject to collect data or may provide objective description of the collection of certain types of data. Primary data was obtained using self-administered questionnaires. The questionnaire was made up of both open ended and closed ended questions. The open-ended questions were used so as to encourage the respondent to give an in-depth and felt response without feeling held back in illuminating of any information and the closed ended questions allow respondent to respond from limited options that had been stated. According to Saunders (2011), the open ended or unstructured questions allow profound response from the respondents while the closed or structured questions are generally easier to evaluate. The questionnaires were used in an effort to conserve time and money as well as to facilitate an easier analysis as they are in immediate usable form.

3.6 Pilot Testing

Pilot study is the measurement of a dependent variable among subjects. Its purpose is to ensure that items in the instrument are stated clearly and have the same meaning to all respondents. The purpose of pre-testing the data instrument is to ensure that the items in the instrument are stated clearly and have the same meaning to all respondents. In this study this involved checking whether the questions are clear and revoking any positive or negative response (Kumar, 2011). Pilot testing of the research instruments was conducted where 18 questionnaires were administered to the pilot survey respondents who were chosen at random representing 10% of the sample size. After one day the same participants were requested to respond to the same questionnaires but without prior notification in order to ascertain any variation in responses of the first and the second test. This was very important in the research process because it assisted in identification and correction of vague questions and unclear instructions. It is also a great opportunity to capture the important comments and suggestions from the participants. This helped to improve on the efficiency of the instrument. This process was repeated until the researcher was satisfied that the instrument did not have variations or vagueness.

3.7 Validity of Research Instruments

According to Golafshani (2012), validity is the accuracy and meaningfulness of inferences, based on the research results. Validity is the degree by which the sample of test items represents the content the test is designed to measure. Content validity which was employed

by this study is a measure of the degree to which data collected using a particular instrument represents a specific domain or content of a particular concept. One of the main reasons for conducting the pilot study is to ascertain the validity of the questionnaire. The study used content validity which draws an inference from test scores to a large domain of items similar to those on the test. Content validity is concerned with sample-population representativeness. Gillham (2011) stated that the knowledge and skills covered by the test items should be representative to the larger domain of knowledge and skills. Expert opinion was requested to comment on the representativeness and suitability of questions and give suggestions of corrections to be made to the structure of the research tools. This helped to improve the content validity of the data that was collected. Content validity was obtained by asking for the opinion of the supervisor, lecturers and other professionals on whether the questionnaire was adequate.

3.8 Reliability of Research Instruments

Reliability of a measure indicates the extent to which it is without bias (error free) and hence ensures consistent measurement across time and across the various items in the instrument. It is an indication of the stability and consistency with which the instrument measures the concept and helps to assess the “goodness” of measure (Bell, 2010). Reliability is concerned with the question of whether the results of a study are repeatable. The questionnaire was administered to a pilot group of 16 randomly selected respondents from the target population and their responses used to check the reliability of the tool. Reliability of the data collection instrument was done using the split half method (Gay, 2012) then be calculated using Spearman Brown correlation formulae to get the whole test reliability. If the sum scale is perfectly reliable, we expected that the two halves are perfectly correlated. A construct composite reliability co-efficient of 0.7 or above, for all the constructs, is considered to be adequate for this study (Rousson, Gasser & Seifer, 2012).

3.9 Data Collection Procedures

The study used primary data which was collected by use of questionnaires; use of questionnaires is based on the fact that they are suitable for a descriptive study given that they are easy to administer, ensure fast delivery and the respondent can answer at their convenience. The questionnaires were self-administered through drop and pick later method. The researcher delivered the questionnaire and gave the selected respondent a maximum of 3 days after which the researcher collected the completed questionnaire for analysis. The researcher also assured the participants that the information they give was treated with strict

confidentiality. An envelope marked “questionnaire” and thesis topic were provided so that once the employee completes the questionnaire, they would seal it to ensure confidentiality is maintained within the organization and guarded against potential victimization by the human resource division or the person designated by the company to co-ordinate the process. The researcher then proceeded to administer the questionnaires through the designated officers and co-ordinate with them to ensure respondents have adequate time to complete them. This enabled create a conducive environment for the distribution and administration of the questionnaire. Administration of the questionnaire followed the agreed schedule.

3.10 Data Analysis Techniques

Data was analyzed using Statistical Package for Social Sciences (SPSS Version 25.0). All the questionnaires received were referenced and items in the questionnaire were coded to facilitate data entry. After data cleaning which entailed checking for errors in entry, descriptive statistics such as frequencies, percentages, mean score and standard deviation were estimated for all the quantitative variables and information presented inform of tables. The qualitative data from the open-ended questions was analyzed using thematic content analysis and presented in narrative form.

Inferential data analysis was done using multiple regression analysis. Multiple regression analysis was used to establish the relations between the independent and dependent variables. The multiple regression model is chosen because it is useful in establishing the relative importance of independent variables to the dependent variable (Bryman & Cramer, 2012). Such importance is deduced from standardized regression coefficients (beta-weights), whose magnitudes show how much relative impact the independent variables have on the dependent variable, while the negative and positive signs associated with the coefficients show negative and positive impacts respectively (Park, 2008). Also, it is ideal for the dependent variable to be recorded at a continuous level of measurement. This study the multiple regression model generally assumed the following equation;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where: -

Y= Drought Mitigation Process

β_0 =constant

$\beta_1, \beta_2, \beta_3, \beta_4$ and β_5 = regression coefficients

X_1 = Drought management planning

X₂= Budget allocation

X₃= Management skills

X₄=Modern technologies

ε=Error Term

A One-Way ANOVA was used to test the fitness of the model. The basic principle of ANOVA is to test for differences among the means of the populations by examining the amount of variation within each of these samples, relative to the amount of variation between the samples (Kothari, 2012). Specifically, one-way (or single factor) ANOVA is a way to test the equality of three or more means at one time by using variances (Panneerselvam, 2012). The Levine's homogeneity of variance test with p value < 0.05 was interpreted to mean the ANOVA test results are significant and the study rejected the null hypothesis if computed $F > F$ critical at 95% confidence interval (Freedman, 2010). The value for the F-statistic was applied in determining the robustness of the model.

3.11 Ethical Considerations

Ethics are norms or standards that guide moral choices about behavior and relationship with others. All parties in research should exhibit ethical behavior (Mathooko et al, 2007). In research ethics refers to the appropriateness of one's behavior in relationship to the rights of those who become subjects of one's work or are affected by it (Saunders et al, 2003). The researcher observed the following standards of behaviour in relation to the rights of those who become subject of the study or are affected by it.

Authority

The relevant authorization and permits were obtained before proceeding to the field. Further consent was sought for concerned parties whose interest might be touched by the research in question. Copies of the research permit were availed to research assistants who were helping in data collection.

Plagiarism

This is a situation where a researcher refers to another person's work as theirs without acknowledging another (Mugenda & Mugenda, 2003). It is the unauthorized use of the language, and thoughts of another author and representation of them as one's own. The researcher ensured that sources for all information of others are acknowledged through complete, accurate and specific references, foot notes or through use of quotation marks.

Consent

Respondents in a research must make their decision to take part based on adequate knowledge of the study in which they are asked to participate (Oso & Onen, 2009). The researcher provided respondents with information on the purpose, duration, procedure of the study, risks, benefits and the extent of privacy and confidentiality.

Voluntary and informed consent was obtained from the participants each respondent was requested to sign a consent form or provide a verbal consent before taking part in the research.

To ensure privacy and confidentiality, respondents were made to understand that data collected from the study was used only for purposes of this report. They were informed that they can withdraw from the study at any time and for any reason. Their refusal to participate or withdrawal did not affect them in any way. Participants in this research were made aware of their right to remain anonymous in order to get more honest responses. The research team adhered to ethical issues by being confidential, anonymous and avoid any form of deception. The data collected from the study was kept confidential while the researcher ensured that his personal integrity was maintained.

3.12 Operationalization of Variables

The operationalization of variables is shown in Table 3.3.

Table 3. 3: Operationalization of variables

| Objectives | Type of Variable | Indicator | Measuring of Indicators | Tools of analysis | Type of analysis |
|---|------------------|-----------------------------|---|---------------------------|---|
| i.To examine the influence of drought management planning on drought mitigation process in Drought Management Programme in Makueni County, Kenya. | Independent | drought management planning | Existing local needs Community future participation Political commitment Networks available Mechanisms and resource availability | Percentages Mean score | Descriptive statistics Regression analysis |
| ii.To determine the influence of budget allocation on drought mitigation process in Drought Management Programme in Makueni County, Kenya. | Independent | drought management | Reliable funds Amount of funds Funding Approvals Financial availability Stationery Consistency of funds | Percentages Mean score | Descriptive statistics Regression analysis |
| iii.To assess the influence of Management skills on drought mitigation process in Drought Management Programme in Makueni County, Kenya. | Independent | management skills | Professional skills Technical expertise Experience Number of training Knowledge on policies on implementation Leadership Style | Percentages Mean score | Descriptive statistics Regression analysis |
| iv.To establish the influence of Modern technologies on drought | Independent | modern technologies | Enhance Workflow Control technological capabilities | Percentages Mean score | Descriptive statistics Regression |

| | | | | | |
|--|-----------|----------------------------|---|------------|---|
| mitigation process in Drought Management Programme in Makueni County, Kenya. | | | Environmental Analysis Use of checklists Failure testing Statistical Control | | analysis |
| | Dependent | drought mitigation process | Operating guidelines Preparedness Drought response Early recovery Livelihood rehabilitation | Mean score | Descriptive statistics Regression analysis |

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION AND INTERPRETATION OF FINDINGS

4.1 Introduction

This chapter discusses the findings obtained from the primary instrument used in the study. It discusses the characteristics of the respondents, their opinions on the institutional factors influencing Drought Mitigation Process in Drought Management Programme in Kenya, a case of Makueni County. The chapter is organized to present the findings by first looking at the response rate, the demographic variables and objectives. In order to simplify the discussions, the researcher provided tables that summarize the collective reactions of the respondents.

4.2 Response Rate

The respondents sampled of the study were 121. The questionnaires were administered to all of them but only 101 were returned. This gave a response rate of 83.47% which is within what Kumar (2008) prescribed as a significant response rate for statistical analysis and hence it was accepted for the study according to Mugenda and Mugenda (2003) recommendation that a response rate of above 70% was appropriate for the study.

Table 4. 1: Response Rate

| | Number of respondents | Percent |
|---------------|------------------------------|----------------|
| Response | 101 | 83.47% |
| Non- Response | 20 | 16.53% |
| Total | 121 | 100 |

4.3 Demographic Information

The sought to know general information of the respondents by examining their gender, how long they had been involved in drought mitigation process, level of education and their age bracket. This was of great importance for it gave the researcher a clue of who is filling the questionnaires and be able to know if the respondents are the targeted ones and whether the information given is the correct one they're seeking.

4.3.1 Gender of the respondents

The researcher asked the respondents to indicate their gender. Their responses were as shown in Table 4.2.

Table 4. 2: Gender of the respondents

| | Frequency | Percent |
|--------------|------------------|----------------|
| Male | 69 | 67.9 |
| Female | 32 | 32.1 |
| Total | 101 | 100.0 |

As per the findings the study found out that most of the respondents were male as shown by 67.9% and the rest were female as shown by 32.1%. This implied that most of the respondents were male and it was because most of the leaders in the community are men. This also reveals that the study was not gender biased.

4.3.2 Years involved with Drought Mitigation Process

The respondents gave their response on how long they had been involved in drought mitigation process. Table 4.3 presents their response.

Table 4. 3: Years involved with Drought Mitigation Process

| | Frequency | Percent |
|-------------------|------------------|----------------|
| Less than 3 years | 42 | 41.3 |
| 3-9 years | 32 | 31.2 |
| 9-12 years | 23 | 22.9 |
| Above 12 years | 5 | 4.6 |
| Total | 101 | 100.0 |

The results show that most of the respondents indicated that they had been involved in drought mitigation process in less than 3 years as shown by 41.3%, in 3-9years as illustrated by 31.2%, in 9-12 years as shown by 22.9% and above 12 years as shown by 4.6%. This implied that most of them had not been involved with drought mitigation process. This information was important to help the researcher know whether the respondents had information of the study the researcher was looking for.

4.3.3 Highest Level of Education of the Respondents

The researcher requested the respondents to indicate their highest level of education. Their responses were presented in Table 4.4.

Table 4. 4: Highest Level of Education of the Respondents

| | Frequency | Percent |
|-------------|------------------|----------------|
| Certificate | 48 | 47.7 |
| Diploma | 26 | 25.7 |

| | | |
|--------------|------------|--------------|
| Degree | 18 | 17.4 |
| Masters | 9 | 9.2 |
| Total | 101 | 100.0 |

Most of the respondents indicated that their highest level of education was certificate as shown by 47.7%, Diploma as shown by 25.7%, Degree as illustrated by 17.4% and Masters as shown by 9.2%. This implied that most of the respondents had attained Certificate. This information was important because it revealed that the respondents had basic knowledge and were able to answer the questionnaire.

4.3.4 Age Bracket of the Respondents

The respondents were requested to indicate their age bracket. Their responses were as shown in Table 4.5.

Table 4. 5: Age Bracket of the Respondents

| | Frequency | Percent |
|--------------|------------------|----------------|
| 20-30 years | 25 | 24.8 |
| 31-40 years | 35 | 34.9 |
| 41-50 years | 25 | 24.8 |
| 51-60 years | 16 | 15.6 |
| Total | 101 | 100.0 |

Most of the respondents indicated that they belong to the age bracket of 31-40 years as illustrated by 34.9%, belonged in 20-30 years and 41-50 years as shown by 24.8% and the least indicated that they belonged in the age bracket of 51-60 years as shown by 15.6%. This implied that most of the respondents belonged to age bracket of 31-40 years. This information was good for it revealed that the information they gave was reliable.

4.4 The Institutional Factors Influencing Drought Mitigation Process in Drought Management Programme in Kenya

Descriptive statistics under this section presents findings that were drawn in relation to the research questions as well as the study objectives. The study explored drought management planning, budget allocation, management skills and modern technologies.

4.4.1 Extent of Drought Management Planning

The respondents were asked to what extent does drought management planning influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya. Their responses were as presented in Table 4.6.

Table 4. 6: Extent of Drought Management Planning

| | Frequency | Percent |
|-----------------|------------------|----------------|
| Low extent | 8 | 8.3 |
| Not Sure | 25 | 24.8 |
| Moderate extent | 44 | 44.0 |
| great extent | 23 | 22.9 |
| Total | 101 | 100.0 |

Most of the respondents indicated that drought management planning influences the drought mitigation process to a moderate extent as shown by 44%, some were not sure as shown by 24.8%, to a great extent as shown by 22.9% and to a low extent as shown by 8.3%. This implied that drought management planning influences the drought mitigation process in a moderate extent.

The respondents gave their opinions on the influence of drought management planning aspects on drought mitigation process. The opinions are presented in Table 4.7

Table 4. 7: Influence of Drought Management Planning

| | Mean | Std. Deviation |
|--------------------------------------|-------------|-----------------------|
| Existing local needs | 4.5688 | .7119 |
| Community future participation | 2.4679 | 1.2139 |
| Political commitment | 3.9817 | .8163 |
| Networks available | 4.3486 | .6719 |
| Mechanisms and resource availability | 2.1468 | .9009 |

The respondents indicated that existing local needs as shown by a mean of 4.5688 influence drought mitigation process to a great extent. In addition, the respondents indicated that networks available as shown by a mean of 4.3486 and political commitment as illustrated by a mean of 3.9817 influence drought mitigation process to a moderate extent. Further, the respondents also indicated that community future participation as illustrated by a mean of 2.4679 and mechanisms and resource availability as shown by a mean of 2.1468 to a low extent influence drought mitigation process.

On how the various aspects of drought management planning influence the drought mitigation process in Makueni County, the respondents indicated that identifying the existing local needs and including community to participate in the process from the start makes the process to run smoothly and be successful. The respondents also indicated that having the right mechanisms and resources required helps a lot in the mitigating drought.

4.4.2 Extent of Budget Allocation

The respondents gave their views on what extent does budget allocation influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya. Table 4.8 presents their views.

Table 4. 8: Extent of Budget Allocation

| | Frequency | Percent |
|-----------------|------------------|----------------|
| Low extent | 14 | 13.8 |
| Not Sure | 14 | 13.8 |
| Moderate extent | 41 | 40.4 |
| Great extent | 32 | 32.1 |
| Total | 101 | 100.0 |

Most of the respondents indicated that budget allocation influences the drought mitigation process to a moderate extent as shown by 40.4%, to a great extent as shown by 32.1%, to a low extent as shown by 13.8% and some were not sure as shown by 13.8%. This implied that budget allocation influences the drought mitigation process to a moderate extent.

The respondents gave their opinions on the influence of budget allocation aspects on drought mitigation process. The opinions are presented in Table 4.9

Table 4. 9: Influence of Budget Allocation

| | Mean | Std. Deviation |
|------------------------|-------------|-----------------------|
| Reliable funds | 4.3486 | .6719 |
| Amount of funds | 4.5596 | .5999 |
| Funding Approvals | 2.8165 | .6690 |
| Financial availability | 2.1284 | 1.1635 |
| Stationery | 2.5688 | 1.4805 |
| Consistency of funds | 4.2450 | .6745 |

Table 4.9 showed that the respondents indicated that amount of funds as shown by a mean of 4.5596 to a great extent influence drought mitigation process. The study also revealed that respondents indicated that reliable funds as illustrated by a mean of 4.3486 and consistency of

funds as shown by a mean 4.245 to a moderate extent influence drought mitigation process. Further, the respondents indicated that funding approvals as shown by a mean of 2.8165 and stationery as illustrated by a mean of 2.5688 were not sure if they influence drought mitigation process. Finally, the respondents also indicated that financial availability as shown by a mean of 2.1284 to a low extent influence drought mitigation process.

In addition, on how the various aspects of budget allocation influence the drought mitigation process in Makueni County, the respondents indicated that amount funds allocated for the mitigation process determines its success. Further the respondents also indicated that having reliable funds, consistency of funds and stationery required enables those involved with the process to develop and implement their drought mitigation process with ease.

4.4.3 Extent of Management Skills

The respondents were asked to what extent does management skills influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya. Their responses were as presented in Table 4.10.

Table 4. 10: Extent of Management Skills

| | Frequency | Percent |
|-----------------|------------|--------------|
| Low extent | 14 | 13.8 |
| Not Sure | 23 | 22.9 |
| Moderate extent | 11 | 11.0 |
| Great extent | 53 | 52.3 |
| Total | 101 | 100.0 |

Most of the respondents indicated that management skills influence the drought mitigation process to a great extent as shown by 52.3%, some were not sure as shown by 22.9%, to a low extent as shown by 13.8% and to a moderate extent as shown by 11.0%. This implied that management skills influence the drought mitigation process in a great extent.

The respondents gave their opinions on the influence of management skills aspects on drought mitigation process. Table 4.11 presents their opinions.

Table 4. 11: Influence of Management Skills

| | Mean | Std. Deviation |
|---------------------|--------|----------------|
| Professional skills | 4.3853 | .7687 |
| Technical expertise | 4.3486 | .6719 |
| Experience | 3.5688 | 1.0217 |

| | | |
|---|--------|--------|
| Number of training | 2.6972 | 1.0672 |
| Knowledge on policies on implementation | 1.9083 | .9082 |
| Leadership style | 4.5596 | .5999 |

As per the findings, the respondents indicated that leadership style as illustrated by a mean of 4.5596 influence the drought mitigation process to a great extent. In addition, the respondents also indicated that professional skills as shown by a mean of 4.3853, technical expertise as shown by a mean of 4.3486 and experience as illustrated by a mean of 3.5688 influence the drought mitigation process to a moderate extent. Further, the respondents indicated that number of training as expressed by a mean of 2.6972 were not sure if they influence the drought mitigation process. Finally, the respondents indicated that knowledge on policies on implementation as shown by a mean of 1.9083 influence drought mitigation process to a low extent.

Moreover, on how the various aspects of management skills influence the drought mitigation process in Makueni County, the respondents stated that implementation of government drought mitigation process requires personnel with the required knowledge and expertise and that training to those involved with the drought mitigation process will heed a great success of the process. Further the respondents indicated that specialized training of project managers, staff, community members and the whole project team is very important for project success and sustainability

4.4.4 Extent of Modern Technologies

The respondents gave their views on what extent does modern technologies influence the drought mitigation process in Drought Management Programme in Makueni County, Kenya. Table 4.12 presents their views.

Table 4. 12: Extent of Modern Technologies

| | Frequency | Percent |
|-----------------|------------|--------------|
| Low extent | 9 | 8.3 |
| Not Sure | 22 | 22.0 |
| Moderate extent | 13 | 12.8 |
| great extent | 57 | 56.9 |
| Total | 101 | 100.0 |

Most of the respondents indicated that modern technologies influence the drought mitigation process to a great extent as shown by 56.9%, some were not sure as shown by 22%, to a

moderate extent as illustrated by 12.8% and to a low extent as illustrated by 8.3%. This implies that modern technologies influence the drought mitigation process in a great extent.

The respondents gave their opinions on the influence of modern technologies aspects on drought mitigation process. Table 4.13 presents their opinions.

Table 4. 13: Influence of Modern Technologies

| | Mean | Std. Deviation |
|------------------------------------|-------------|-----------------------|
| Enhanced Workflow | 4.4037 | .6820 |
| Control technological capabilities | 4.5596 | .5999 |
| Environmental Analysis | 4.0275 | 1.0315 |
| Use of checklists | 3.5413 | .9674 |
| Failure testing | 1.8257 | .9214 |
| Statistical Control | 4.6697 | .6534 |

From the findings, the respondents indicated that statistical control as shown by a mean of 4.6697 and control technological capabilities as illustrated by a mean of 4.5596 influence the drought mitigation process to a great extent. The respondents indicated that enhanced workflow as shown by a mean of 4.4037 and environmental analysis as shown by a mean of 4.0275 influence the drought mitigation process to a moderate extent. Further the respondents indicated that use of checklists as illustrated by a mean of 3.5413 were not sure if they influence the drought mitigation process. Moreover, the respondents indicated that failure testing as shown by a mean of 1.8257 influence the drought mitigation process to a low extent.

Finally, on how the various aspects of modern technologies influence the drought mitigation process in Makueni County, the respondents indicated that cost control can be carried out using the ICT tools integrated in the internet. The shared databases in the internet can be used by drought mitigation process team for improvement of the cost performance. The respondents also indicated that environmental analysis in the area is of good importance to identify the existing needs and plan well for a successful mitigation process.

4.4.5 Drought Mitigation Process

The respondents were asked to give their opinions aspects of drought mitigation process in Drought Management Programme in Makueni County, Kenya for the last five years. Their responses were as shown in Table 4.14.

Table 4. 14: Drought Mitigation Process

| | Mean | Std. Deviation |
|----------------------|-------------|-----------------------|
| Operating guidelines | 1.8899 | 1.3426 |

| | | |
|---------------------------|--------|--------|
| Preparedness | 3.8349 | 1.0230 |
| Drought response | 4.5872 | .8412 |
| Early recovery | 3.5688 | 1.1576 |
| Livelihood rehabilitation | 3.0275 | .7250 |

The respondents indicated that drought response as shown by a mean of 4.5872 has greatly increased in the last five years. The respondents also indicated that preparedness as shown by a mean of 3.8349 and early recovery as illustrated by a mean of 3.5688 has increased in the last five years. The respondents also indicated that livelihood rehabilitation as shown by a mean of 3.0275 had remained constant for the last five years. Finally, operating guidelines as shown by a mean of 1.8899 had decreased for the last five years.

4.5 Multiple Regression Analysis

Multiple regression analysis was conducted as to determine the relationship between drought management planning, budget allocation, management skills and modern technologies against the dependent variable drought mitigation process. After running the selected data through SPSS, a statistical model was generated.

Table 4. 15: Model Summary

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|-------|-------|----------|-------------------|----------------------------|
| 1 | 0.817 | 0.668 | 0.654 | 1.311 |

From the findings, Table 4.15 is a model fit which establish how fit the model equation fits the data. The adjusted R^2 was used to establish the predictive power of the study model and it was found to be 0.654 implying that 65.4% of the variations in drought mitigation process are explained by changes in drought management planning, budget allocation, management skills and modern technologies.

Table 4. 16: Analysis of Variance (ANOVA)

| Model | Sum of Squares | Df | Mean Square | F | Significance. |
|--------------|----------------|------------|-------------|--------|---------------|
| Regression | 341.857 | 4 | 85.464 | 48.238 | .000 |
| 1 Residual | 170.086 | 96 | 1.772 | | |
| Total | 511.943 | 100 | | | |

The probability value of 0.000 indicates that the regression relationship was highly significant in predicting how the drought management planning, budget allocation, management skills and modern technologies affected drought mitigation process in Makueni County, Kenya. The F calculated at 5 per cent level of significance was 48.238. Since F

calculated is greater than the F-critical (value = 2.459), this shows that the overall model was significant.

Table 4. 17: Regression Coefficients

| | Un standardized Coefficients | | Standardized Coefficients | t | Sig |
|-----------------------------|------------------------------|------------|---------------------------|--------|------|
| | B | Std. Error | Beta | | |
| (Constant) | 1.647 | 0.143 | | 11.517 | .000 |
| Drought management planning | 0.878 | 0.293 | 0.771 | 2.997 | .003 |
| Budget allocation | 0.789 | 0.344 | 0.652 | 2.294 | .023 |
| Management skills | 0.897 | 0.339 | 0.875 | 2.646 | .009 |
| Modern technologies | 0.833 | 0.301 | 0.713 | 2.767 | .006 |

The regression equation obtained from this outcome was: -

$$Y = 1.647 + 0.878X_1 + 0.789 X_2 + 0.897 X_3 + 0.833X_4.$$

From the findings the study found that if all independent variables were held constant at zero, then the drought mitigation process will be 1.647. From the findings the coefficient for drought management planning is 0.878 which is significant since $p=0.003$ is less than 0.05, meaning that a unit change in drought management planning leads to a 0.878-unit change in drought mitigation process. The study also found that a unit change in budget allocation changes would lead to 0.789 units change in drought mitigation process. The variable was significant since $p\text{-value}=0.023 < 0.05$.

The study further found that a unit change in management skills would lead to 0.897 units change in drought mitigation process. The variable was significant since $p\text{-value}=0.009 < 0.05$. Finally, the study revealed that modern technologies would lead to 0.833 units change in drought mitigation process if all other variables are held constant and the variable was significant since $p\text{-value}=0.006 < 0.05$.

Finally, the study found out that management skills had the greatest influence on drought mitigation process followed by drought management planning in Makueni County, Kenya, followed by modern technologies then budget allocation had the least influence on drought mitigation process. All variables were significant since their $p\text{-values}$ were less than 0.05.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter gives summary of the data findings, discussion of the data findings, conclusion drawn from the findings highlighted and recommendation made. The conclusions and recommendations drawn are focused on addressing the objective of the study.

5.2 Summary of the Findings

This section will focus on the key variables discussed in chapter four and give a summary of those findings.

5.2.1 Drought Management Planning

The study sought to examine the influence of drought management planning on drought mitigation process in Drought Management Programme in Makueni County, Kenya. The study found out that existing local needs have a greater influence on drought mitigation process. In addition, the study also found out that networks available and political commitment have a moderate influence on drought mitigation process. Further, the study revealed that community future participation and mechanisms and resource availability have a low influence on drought mitigation process. This study found that drought management planning has a moderate influence on the drought mitigation process.

5.2.2 Budget Allocation

The study sought to determine the influence of budget allocation on drought mitigation process in Drought Management Programme in Makueni County, Kenya. The study found that amount of funds has a great influence on drought mitigation process. The study also revealed that reliable funds and consistency of funds have a moderate influence on drought mitigation process. Further, the study found that funding approvals and stationery that the respondents were not sure if they influence drought mitigation process. Finally, the study found out that financial availability has a low influence on drought mitigation process. This study finally found that budget allocation influences the drought mitigation process moderately.

5.2.3 Management Skills

The study sought to assess the influence of management skills on drought mitigation process in Drought Management Programme in Makueni County, Kenya. The study found that leadership style influences the drought mitigation process greatly. In addition, the study found that professional skills, technical expertise and experience have a moderate influence on the drought mitigation process. Further, the study also found out that the respondents indicated that they were not sure if number of training influences the drought mitigation process. Finally, the study found that knowledge on policies on implementation have a low influence on drought mitigation process. This study found that management skills influence the drought mitigation process greatly.

5.2.4 Modern Technologies

The study sought to establish the influence of modern technologies on drought mitigation process in Drought Management Programme in Makueni County, Kenya. The study found that statistical control and control technological capabilities have a great influence on the drought mitigation process. The study further found that enhanced workflow and environmental analysis have a moderate influence on the drought mitigation process. Further the study found that respondents indicated that they were not sure if use of checklists influence the drought mitigation process. Moreover, the study also found that failure testing has a low influence on the drought mitigation process. This study found that modern technologies influence the drought mitigation process greatly.

5.3 Discussion of the Findings

This section links the findings of the study with the literature in chapter two.

5.3.1 Drought Management Planning

The study found out that existing local needs have a greater influence on drought mitigation process. In addition, the study also found out that networks available and political commitment have a moderate influence on drought mitigation process. These findings were similar with those of Lekapana (2013) who stated that planning in drought management is vital for both mitigation and action taking. Further he suggested that, a drought plan has been developed containing emergency preparedness actions and different tasks of different groups and level to include the donor, government ministries, infrastructures involved and

populations. The rationale behind planning is to ensure that life is saved maximally and the damage is minimized by preparing to respond appropriately when drought is imminent.

Further, the study revealed that community future participation and mechanisms and resource availability have a low influence on drought mitigation process. This was in line with Leigh and Blakely (2016) assertion that the first is the need to ensure adequate capacity for sound people-centered planning at the county level, as well as the establishment of an accountability framework which ensures adherence to constitutional principles of public participation and rights-based development. Areas of support may include methodologies for ensuring strong citizen participation, particularly of conventionally excluded groups (such as the poor, women, young people, nomadic households and minority clans), the development of baselines, the use of statistics, the capacity to access and act on early warning information, and the coordinated use of complementary instruments for climate change adaptation, drought risk reduction and social protection.

This study found that drought management planning has a moderate influence on the drought mitigation process. These findings were in line with Speranza (2010) who asserted that a continuous forecast of the expected water resources, evaluation of water demands and improving the influence liveness of water use and mitigation measures will be essential to develop the DMP. Monitoring mechanisms should be used to decide, if the drought response plan is having its intended influence, and to provide the required information needed to evaluate the performance of the drought management plan in alleviating the influences of drought.

5.3.2 Budget Allocation

The study found that amount of funds has a great influence on drought mitigation process. The study also revealed that reliable funds and consistency of funds have a moderate influence on drought mitigation process. This was in line with Muchemi (2009) who points out that devolved governments need access to finances to enable them to develop and implement their drought mitigation process. Historically devolved governments have been relying on a single source which revenue to the government as a source of funds to implement their drought mitigation process. However, over time their capacity to build up internal sources from revenue became eroded, partly by government policies and partly by poor performance resulting from declining margins.

Further, the study found that funding approvals and stationery that the respondents were not sure if they influence drought mitigation process. Finally, the study found out that financial availability has a low influence on drought mitigation process. This was in line with Mwaura (2013) who pointed out that County government increasingly relies on national government support for finances and from their limited revenues. Although given out for recurrent and development expenditure, these are very often not repaid. Devolved government becomes trapped in a dependency parasitic relationship with national government which seriously weakened their ability to develop sustainable activities.

This study finally found that budget allocation influences the drought mitigation process moderately. This was consistent with Sambu (2014) who stated that although the government is severely handicapped in having ways of raising funds of their own to meet their needs such as drought mitigation process, they are in a privileged position in matters of government financial assistance. The government has started to see the need to diversify in order to survive in a liberalized environment.

5.3.3 Management Skills

The study found that leadership style influences the drought mitigation process greatly. In addition, the study found that professional skills, technical expertise and experience have a moderate influence on the drought mitigation process. These findings were in line with those of Farelo and Morris (2009) who stated that the personnel development issue within government needs prioritization in order to have management that will support development drought mitigation process of the government. He noted that the education system needs to be aligned with the project management demands of the country and scarce monitoring and evaluation skills need to be attracted and retained particularly within the government. This was supported by Brar (2010) who asserted that It is noted that the influence of implementation of government drought mitigation process requires personnel with the required knowledge and expertise.

Further, the study also found out that the respondents indicated that were not sure if number of training influence the drought mitigation process. These findings were supported by Barasa and Jelagat (2013) Human capacity development through specialized training of project managers, staff, community members and the whole project team has been noted to be important for project success and sustainability. Campo (2008), in an intervention model introduced in Peru for water supply considered community training as an important

component in which the project used various methods of training such as audio-visuals, visual, argues that training on issues like operation and maintenance empower the communities to look after water supply systems thus aiding sustainability. Lack of community training is cited as one of the factors which could lead to breakdown and no sustainability of water supply drought mitigation process in developing countries.

Finally, the study found that knowledge on policies on implementation have a low influence on drought mitigation process. This study found that management skills influence the drought mitigation process greatly. These findings were in line with Vanessa and Gala (2011) who stated that the technical capacity of the organization in conducting evaluations, the value and participation of its human resources in the policymaking process, and their motivation to impact decisions, can be huge determinants of how the evaluation's lessons are produced, communicated and perceived.

5.3.4 Modern Technologies

The study found that statistical control and control technological capabilities have a great influence on the drought mitigation process. These findings were in line with those of Mwaura (2013) who asserted that the cost control can be carried out using the ICT tools integrated in the internet. The shared databases in the internet can be used by drought mitigation process team for improvement of the cost performance. This was supported by Forbes and Ahmed (2010) who reported that cost control was an area that could be improved with the improvement of ICT systems. The authors stated that Cost-Plus was one of the software that could be used to influence ively control the cost of drought mitigation process during project monitoring phases. As such, it is important to understand the ways through which ICT can be used to control cost during project monitoring and how this can affect the performance of the overall drought mitigation process.

The study further found that enhanced workflow and environmental analysis have a moderate influence on the drought mitigation process. Further the study found that respondents indicated that they were not sure if use of checklists influence the drought mitigation process. Moreover, the study also found that failure testing has a low influence on the drought mitigation process. This study found that modern technologies influence the drought mitigation process greatly. These findings were similar with those of Davis and Luehlfing (2009) who reported that as adopting technology in logistics service process can also be considered as technological innovation for the industry, it would be expected that there is a

positive relation between technology adoption and supply chain performance for service providers. Moreover, based on the resource-based view, technology is a vital resource for a firm to obtain competitive advantages. A firm should develop a viable strategy to marshal resources to produce superior performance.

5.4 Conclusion

The study concluded that drought management planning has a positive and significant influence on drought mitigation process. The study concluded that existing local needs influence drought mitigation process. In addition, the study also deduced that having networks and political commitment in the process influence drought mitigation process. Further, the study revealed that community participating in the mitigation process really influence the success of the process. Further having good mechanisms and having required resources for the process positively influence its success.

The study concluded that budget allocation has a positive and significant influence on drought mitigation process. The study deduced that amount of funds that the drought management programme have determine the success of the process. Reliable funds and consistency of funds were found to influence drought mitigation process. Further, it was deduced that funding approvals and stationery influence drought mitigation process. Finally, having financial that are enough influence drought mitigation process in a positive way for this leads to the success of the process.

The study concluded that management skills has a positive and significant influence on drought mitigation process. The study concluded that the style of leadership used in the process influences the drought mitigation process. In addition, having professional skills, technical expertise and experience in the process of drought mitigation leads to success of it. Further, number of training during the drought mitigation process was found to influence the drought mitigation process in a positive way. Finally, it was deduced that knowledge on policies on implementation influence drought mitigation process.

The study concluded that modern technologies has a positive and significant influence on drought mitigation process. The study concluded that statistical control and control technological capabilities of the drought management programme influence the drought mitigation process. Further enhanced workflow and environmental analysis of the area influence the drought mitigation process. Use of checklists and failure testing during the drought management programme influence the drought mitigation process.

5.5 Recommendations

The study recommends that there is need for policy change to increase community's participation and decision making in resource conservation and protection. The current national policies relevant to community development are top-down. Some of these policies are ASAL development Policy (2010) and National Disaster Policy (2010). Community and their representatives have to be consulted and involved in the planning, formulation and implementation of programmes that affect their life and livelihood.

The study recommends that there is a need for strong policy framework for strengthening the mitigation measures against the hazards associated with climate change. This will require a participatory approach that incorporates the needs of the community and the perspectives of the technical staff.

The study found that inadequate financial and logistical support to different government departments in the county has curtailed implementation of different mitigation measures. The government should increase financial support and provide adequate logistical support to various departments relevant for drought management in the County.

The study recommends that approaches and mitigation measures taken by the government be communicated effectively so as to benefit the community as well to save the county and country. Further the study recommended that government should commit itself in distribution of drugs to the livestock so as to effectively mitigate drought.

The study recommends that the county government management should ensure that they engage in proactive and effective resource allocation mechanisms to improve implementation of the development plans. The allocations should be deliberate with significant resources given to critical implementation areas.

The study recommends that there is a need to enhance community communication and feedback mechanism in the county. The county information and communication infrastructure is wanting and the available channels of communication do not effectively deliver information to the communities. The county government needs to encourage public-private partnership in establishing local media station that effectively gives information to the communities.

5.6 Recommendations for Further Studies

Since this study was limited to Makueni County, the study recommends the same study should be done based on other counties in Kenya to determine the influence of drought mitigation process.

Further research is necessary as the findings were based on a relatively small sample that may have influenced the nature of results that were obtained. There is need to expand on the sample size and carry out similar research in other locations.

More research on the individual variable that is drought management planning, budget allocation, management skills and modern technologies to enhance deep and through understanding of influences of each variable on drought mitigation process.

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APPENDICES

Appendix I: Letter of Transmittal

Gordon Owino

P.O Box91-90300

Makueni.

Dear Sir/ Madam,

RE: ACADEMIC RESEARCH PROJECT

I am a Master of Arts in Project Planning and Management student at University of Nairobi. I wish to conduct a research entitled institutional factors influencing drought mitigation process in Drought Management Programme in Kenya. A case of Makueni County, Kenya. A questionnaire has been designed and will be used to gather relevant information to address the research objective of the study. The purpose of writing to you is to kindly request you to grant me permission to collect information on this important subject from your organization.

Please note that the study will be conducted as an academic research and the information provided will be treated in strict confidence. Strict ethical principles will be observed to ensure confidentiality and the study outcomes and reports will not include reference to any individuals.

Your acceptance will be highly appreciated.

Yours faithfully,

OWINO GORDON OCHIENG

Appendix II: Research Questionnaire

This questionnaire is to collect data for purely academic purposes. The study seeks to investigate the *institutional factors influencing drought mitigation process in Drought Management Programme in Kenya. A case of Makueni County, Kenya*. All information will be treated with strict confidence. Do not put any name or identification on this questionnaire.

Answer all questions as indicated by either filling in the blank or ticking the option that applies.

Section A: Demographic Information

(Please tick (√) appropriate answer)

1) Please indicate your gender: Female Male

2) For how long have you been involved in drought mitigation process?

Less than 3 years 3 to 9 years

9 to 12 years Above 12 years

3) State your highest level of education

Certificate Diploma Degree Masters PhD

Others (Specify) -----

4) Please Indicate your age bracket

20-30 yrs 31-40 yrs 41-50 yrs 51 – 60

Section B: Questions on Drought management planning

To what extent does drought management planning affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Not Sure

4= To a Low extent

5= No extent at all

Please tick (√) where appropriate, the level that best explains your situation.

No extent at all To a Low extent

Not Sure To a moderate extent To a great extent

5) To what extent do the following affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Note Sure

4= To a Low extent

5= No extent at all

Please tick (√)where appropriate, the level that best explains your situation.

| | No extend at all | To a Low extent | Not Sure | To a moderate extent | To a great extent |
|---|---------------------|-----------------------|----------|----------------------------|----------------------|
| Existing local needs | | | | | |
| Community future participation | | | | | |
| Political commitment | | | | | |
| Networks available | | | | | |
| Mechanisms and resource availability | | | | | |

6) In your view how do the above aspects of drought management planning affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

.....

Section C: Questions on Budget allocation

7) To what extent does budget allocation affectthe drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Note Sure

4= To a Low extent

5= No extent at all

Please tick (√)where appropriate, the level that best explains your situation.

No extend at all [] To a Low extent []

Not Sure [] To a moderate extent [] To a great extent []

8) To what extent do the following affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Note Sure

4= To a Low extent

5= No extent at all

Please tick (√)where appropriate, the level that best explains your situation.

| | No extend at all | To a Low extent | Not Sure | To a moderate extent | To a great extent |
|------------------------|------------------|-----------------|----------|----------------------|-------------------|
| Reliable funds | | | | | |
| Amount of funds | | | | | |
| Funding Approvals | | | | | |
| Financial availability | | | | | |
| Stationery | | | | | |
| Consistency of funds | | | | | |

9) In what way does budget allocation affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

.....

Section D: Questions on Management Skills

10) To what extent does management skills affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Note Sure

4= To a Low extent

5= No extent at all

Please tick (√) where appropriate, the level that best explains your situation.

No extend at all [] To a Low extent []

Not Sure [] To a moderate extent [] To a great extent []

11) To what extent do the following affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Note Sure

4= To a Low extent

5= No extent at all

Please tick (√) where appropriate, the level that best explains your situation.

| | No extend at all | To a Low extent | Not Sure | To a moderate extent | To a great extent |
|--|------------------|-----------------|----------|----------------------|-------------------|
| Professional skills | | | | | |
| Technical expertise | | | | | |
| Experience | | | | | |
| Number of training | | | | | |
| Knowledge on policies on implementation Leadership Style | | | | | |

12) In your view how does management skills affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

.....
.....
.....

Section E: Questions on Modern technologies

13) To what extent do modern technologies affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Not Sure

4= To a Low extent

5= No extent at all

Please tick (√) where appropriate, the level that best explains your situation.

No extent at all [] To a Low extent []

Not Sure [] To a moderate extent [] To a great extent []

14) To what extent do the following affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

1= To a great extent

2= To a moderate extent

3= Not Sure

4= To a Low extent

5= No extent at all

Please tick (√) where appropriate, the level that best explains your situation.

| | No extent at all | To a Low extent | Not Sure | To a moderate extent | To a great extent |
|------------------------------------|------------------|-----------------|----------|----------------------|-------------------|
| Enhanced Workflow | | | | | |
| Control technological capabilities | | | | | |
| Environmental Analysis | | | | | |
| Use of checklists | | | | | |
| Failure testing | | | | | |
| Statistical Control | | | | | |

15) In your view how do modern technologies affect the drought mitigation process in Drought Management Programme in Makueni County, Kenya?

.....
.....
.....

Section F: Questions on Drought Mitigation Process

16) What is the trend of the following aspects of drought mitigation process in Drought Management Programme in Makueni County, Kenya for the last 5 years?

Where, 5 = greatly increased, 4= increased, 3= constant, 2= decreased, 1 = greatly decreased

| | 1 | 2 | 3 | 4 | 5 |
|---------------------------|---|---|---|---|---|
| Operating guidelines | | | | | |
| Preparedness | | | | | |
| Drought response | | | | | |
| Early recovery | | | | | |
| Livelihood rehabilitation | | | | | |

Thank you for participating

Appendix III: Budget

| ITEM | QUANTITY | UNIT COST (KSHS) | TOTAL COST (KSHS) |
|------------------------|---------------------|-----------------------------|------------------------------|
| Stationary | 4 reams | 500 | 2,000 |
| Transport cost | 10 trips | 1000 | 10,000 |
| Typing services | 84 pages (1 copy) | 30 | 2,520 |
| Binding | 84 pages (8 copies) | 100 | 10,200 |
| Hard cover binding | 5 | 600 | 3,000 |
| Photocopying services | 84 pages (7 copies) | 5 | 2,940 |
| Internet services | 3 months | 3000 | 9,000 |
| Research assistants | 3 | 5000 | 15,000 |
| Data analysis | | | 5,000 |
| Miscellaneous Expenses | Various | 10,000 | 10,000 |
| Total | | | 69,660 |

Appendix IV: Work Plan

| | 2019 | | 2020 | | | | | | | |
|---|------|-----|------|-----|-----|-------|-----|------|------|-----|
| | Nov | Dec | Jan | Feb | Mar | April | May | June | July | Aug |
| Development of Proposal | █ | | | | | | | | | |
| Presentation of Research proposal | | | | | █ | | | | | |
| Research Proposal Corrections | | | | | | █ | | | | |
| Data collection | | | | | | | | █ | | |
| Data Analysis | | | | | | | | | █ | |
| Report writing | | | | | | | | | | █ |
| Presentation of the project | | | | | | | | | | █ |
| Corrections on research report | | | | | | | | | | █ |
| Submission of the research project report | | | | | | | | | | █ |