MONITORING AND EVALUATION PRACTICES, ETHICS AND SUSTAINABILITY OF AGRICULTURAL FOOD CROP PROJECTS IN NYERI COUNTY, KENYA

BY

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DECLARATION

This research thesis is my original work and has not been presented for any award in any University.

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This thesis is dedicated to my wife, Millicent, and children, Jackline, Denis and Prudence, for their invaluable support extended to me.

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AfDB	Africa Development Bank
CBO	Community Based organizations
CDF	Constituency Development Fund
CLEAR	Centre for Learning on Evaluation and Results
FAO	Food Agriculture Organization
GMO	Genetically Modified Organisms
HLTF	High Level Taskforce
IMF	International Monetary Fund
INGO	International Non-Government Organization
MRV	Measuring Reporting and Verifying
NALEP	National Agriculture and Livestock Extension Program
NAMA	Nationally Appropriate Mitigation Actions
NEP	National extensive program
NIMES	National integrated Monitoring and Evaluation System
OECD	Organization for Economic Cooperation Development
OPM	Office of the Prime Minister
PME	Participatory Monitoring and Evaluation
R&D	Research and development
RAP	Rapid Assessment Procedure
SRA	Strategy Revitalizing Agriculture
SDG	Sustainable Development Goal
TOC	Theory of Change
UN	United Nations
UNDP	United Nations Development Program
UNICEF	United Names Children, Education Fund
WDR	World Development Report
WHO	World Health Organization
WTO	World Trade Organization

ABSTRACT

Many Kenyans still live below poverty line in rural areas and derive their livelihood directly from agriculture. Agriculture plays a dual role in efforts to eradicate hunger through enhancing food production and serving as a source of employment. providing families with a source of livelihood. and raw materials that stimulates the formation of industries. Agriculture is the world's single largest employer and can improve the income of the marginalized in tandem with the theory of change that advocates transformation through interventions. The revitalization of this sector is therefore critical. Monitoring and Evaluation are integral tools in managing and accessing efficiency and effectiveness in this sector. In the recent times, sponsors and development partners have increasingly focused on the impact derived from implementations of projects. The objective of this study was to assess the influence of Monitoring and Evaluation practices namely Monitoring and Evaluation planning, Monitoring and Evaluation capacity building, Monitoring and Evaluation data demand and use and surveillance & research in Monitoring and Evaluation and the practices combined and their influence on Agricultural food projects sustainability as well as the moderating influence of ethics in Monitoring and Evaluation. The research was conducted in Nyeri South Sub-County, Kenya, and adopted a descriptive survey design and correlation research design. The target population included the Sub-County agricultural officer, four other Sub-County officers, four extension officers and 211 farmers engaged in the agriculture food crops projects a total of 220 respondents. Stratified random sampling was used to get a sample population that represented the sub county and simple random sampling was used to identify respondents from the various groups while a census/saturated sampling was used for the five agricultural officers and four extension officers. Yamane's formula was used to determine the sample size from among the farmers' groups. The test-retest was used to calculate Content Validity Ration and the average CVI was 0.931 and reliability using the co-efficient alpha was 0.84.Questionnaires, observation and interviews were used to collect the data. The collected data was analysed using both descriptive and inferential statistics especially Pearson correlation tests. Multiple Linear regression was used for hypotheses testing. Statistical Package for Social Sciences (SPSS) software was used as a tool in the analysis of data. Based on the study findings, the study established a positive and significant influence of Monitoring and Evaluation planning and coordination (β_1=0.223, ρ<0.05), capacity building (β_2=0.170, ρ<0.05), data demand and use(β_3=0.155, ρ<0.05) and research &surveillance in Monitoring & Evaluation (β_4=0.282, ρ<0.05) on the sustainability of Agricultural food crop projects. Combined Monitoring and Evaluation practices did not influence sustainability of Agricultural food crop projects (β_5=0.103, ρ>0.05). In addition, findings also showed that ethics moderates the relationship between Monitoring & Evaluation planning and coordination (β_{6i}=0.139, ρ<0.05) and data demand &use (β_{6iii}=0.085, ρ<0.05),but does not moderate capacity building (β_{6ii}=0.287, ρ>0.05)research& surveillance in Monitoring & Evaluation (β_{6iv}=0.150, ρ>0.05) and the sustainability of Agricultural food crop projects. Therefore, the study concluded that with more planning and coordination, capacity building, data demand and use and research and surveillance as well as incorporation of ethics in Monitoring and Evaluation with due reference to efficiency and effectiveness sustainability of Agricultural food crop projects will be enhanced. Further there is need for proper planning and coordination regarding seedling distribution and planting, targets setting and indicator formulation and collaborative efforts regarding data demand and use and capacity building. There is need for increased investment in Research and Development as well as surveillance to enhance Monitoring and Evaluation work and projects sustainability.

CHAPTER ONE

INTRODUCTION

1.1 Background to the Study

The prominence given to aid effectiveness and results-based development compels practitioners to empirically work towards manifestation of impacts of their projects and programs resulting in a shift of focus regarding Monitoring and Evaluation from a concentration on inputs and outputs to a concentration on outcomes and impacts *(Naman Keita et al 2009).*The aim of Monitoring and Evaluation practices is to heighten the chances of project success. Project success can be regarded as having been achieved once sustainability of the project has been realized. Nuguti (2009) states that in developing countries getting to the level of sustainability of a project is immensely difficult, owing to inherent challenges. However, even with these challenges, almost all developed countries see Monitoring and Evaluation practices as important tools for line management within individual government ministries, and for enhancing sound accountability and surveillance in relationships between the government, Parliament and civil society (Mackay, 1998).

The United Nations Development Programme (UNDP) (2002) acknowledges that Monitoring and Evaluation enhances organizational management through improved planning, enhanced decision-making, besides indicating required training and other needs. In addition, the World Bank has in the past provided (evaluation capacity development (ECD) assistance to a number of countries, such as Argentina, China, Colombia, Indonesia and the Philippines. In support of this, Patton (1997) posits that monitoring practices form an integral part of all successful projects, including the food production sector. Without access to accurate and timely information, it is difficult if not impossible to effectively manage an activity, project or programme. Karanja (2013) concurs with this view in his study of youth projects in Kenya. The main problem in Monitoring and Evaluation include inadequate staff and capacity among those involved in data collection, compilation, analysis and dissemination of agricultural statistics; inadequate technical tools, packages and structures to support countries involved in data production; lack of institutional coordination which results in the presence of data that is not harmonized and

integrated; lack of capacity to analyse data formally resulting in misuse of resources, and difficult access to existing data by users(Hobbs, 2003).

In Kenya the government extension approach was used before 1974 in Kenya's agricultural sector. This was followed by the presidential soil and water conservation programme from 1974 and1982 and the training and visit approach between 1982 and1990. The NEP 1 followed from 1990-1996 and NEP 2 from 1996-2000after which the government initiated NAALEP 1 and NAALEP 2.The approach used was indicative of extension services as opposed to Monitoring & Evaluation. In Nyeri South Sub-County, projects funded through the Ministry of Agriculture includes (national and county governments) national Agriculture, the Work Accelerated Project, Traceability Project(coffee), County Coffee Improvement Project, Food Crop Growing Projects and the Subsidized Fertilizer Project. Other sources of funding for famers in the area include the National Resource Management and individual farmer resources. Despite these investment food crop targets are yet to be attained and production is way below yields per hectare achieved elsewhere (Appendix Viii, Appendix X, Appendix Xi) (Nyeri South- Sub County Agriculture Office, 2015).

This study sought to address the practices of monitoring and evaluation and their likely impact on sustainability of agricultural food crop projects with a view to identifying shortcomings in the practices and ultimately suggests ways and means of maximizing production to enhance food security and boost income. Kenya, in its Vision 2030, endeavoured to be a middle income country by the year 2030.

Twenty project groups were involved in production of various food crops in Nyeri South Sub-County, in Othaya Central Division, Othaya South Division and Othaya North Division. At the time of the study, Monitoring & Evaluation services were provided by Agricultural officials under the Nyeri South Sub County. There were, however, reports of little collaboration among the various Monitoring and Evaluation oversight agencies such as Kenya Plant Health Inspectorate Services(KEPHIS), agricultural officials, those regulating retail outlet licensing and related issue, the meteorological department and even public health officials (Nyeri South Sub County Agriculture Office, 2015).

1.1.1 Sustainability of Agricultural Food Crop Project

Project sustainability, especially in the food crop project sector, has continued to receive great scholarly attention. For instance, according to IFAD (2009), of the projects evaluated in 200750 per cent including in the agricultural sector, were rated as moderately satisfactory in sustainability and 33 per cent were not satisfactory. Even the best planning, that are designed to work effectively, may fail to produce good performance in community based agriculture projects if they are not successfully implemented to realize sustainability. In support of this, a UNDP Evaluation (as cited in Mugabe &Kanda, 2013) notes that there are many different practices that influence the success of community based projects, including planning and the systems or mechanisms in place for co-ordination and control. Therefore, it is important to identify and deal with these practices to ensure efficiency and effectiveness of Monitoring and Evaluation in community based projects and sustainability (John and Khilesh, 2008).

Many projects in Kenya, including those undertaken by international development organizations, fail to attain their objectives. An impact assessment on community-funded projects in Kiambu has shown that only 5 out of 36 groups funded in 2007 by Njaa Marufuku Kenya (NMK) were partially active while the rest had become defunct and could no longer be traced. This is an indication of the existence of challenges on the sustainability of projects. Despite having the largest number of funded food security projects in Kenya, Kiambu County continues to face persistent food insecurity among its rural communities (Wabwoba and Wakhungu, 2013).

In a number of countries, in Honduras where previously maize was grown exclusively now there is cultivation of over 25 crops per farm after diversification (Bunch & Lopez, 1996).In India, Gujarat there has been a move away from away from sorghum and millet with farmers diversifying to growing various types of vegetables (P. Shah, pers. comm., 1996).In Bolivia those growing potatoes reduced field sizes (by up to 90%) saving on labour while producing an equivalent amount of food.

Farmers in Taita, Kenya, working with the help of an NGO reintroduced sweet potato, arrowroot, sugar cane and bananas, constituting staple foods regarded as traditional as well as fruit trees. Culminating in improved food security and enhanced nutritional position of the local populace

(Hinchcliffe et al., 1996). In Nyeri South Sub-County farmers can enhance their income by focusing on cultivation of high value crops as well as engaging in diversification. Previously, areas that suffered food deficits such as parts of Ethiopia, Kenya, Uganda, Zimbabwe, Honduras and Guatemala, have become producers of surplus food following the adoption of sustainable agriculture (Hinchcliffe *et al.*, 1996; Bunch and López, 1996). The role of Agricultural officials in realizing all this cannot be gainsaid.

Sustainable improvements in agriculture to an extent should focus more on diversification as opposed to reliance on crops hitherto cultivated so as enhance improvement in livelihoods. At the same time, data available indicate a big gap in terms of yields realized in Kenya in comparison to the rest of the world. Therefore, there is a need to critically address the underlying causes of this deficit. In improving yields in new agricultural projects the role Monitoring and Evaluation plays is especially critical (WDR Report, 2008; Nyeri South Sub-County Agriculture Office,2015).Despite poor yields, food crop production in Kenya continues to be undertaken devoid of evolving technology, knowledge and best practices that have been adopted by other countries in the world.

Hunger is critical to agricultural policy-makers as demonstrated by its inclusion as the first Millennium Development Goal (MDG) and in the subsequent Sustainable development goal (SDG) as goal number two. This goal aimed at reducing the number of the hungry people globally between 1990 and 2015 with many countries failing to achieve this MDG. Globally among various countries it was only China and few others that registered significant achievements. Only about 925 million people worldwide have access to enough calories. Further about 1one billion get diet that has inadequate micronutrients. Vulnerability among the poorest to changes in global food prices is evident in the increase in global hunger numbers in 2008 instantaneously after food price increases and this compromises food security (Harkness, 2011).

Regarding the livelihoods of the world's people 75% of who are in rural settings agriculture remains critical in their small-farmer households (Harkness, 2011).A substantial increase in agricultural and fisheries production could be achieved, even without new information, by disseminating current best practice. On the other hand, considerable modernization will be a

prerequisite in boosting food production to requisite levels cognizant of sustainably in a world characterized by increased contestation for resources. The transformation of new science and information into applications in Agriculture is often a protracted and doubtful process, which calls for investment with the future needs planning in mind. Further, putting in place the requisite support to enhance farmers in the future to achieve progress in productivity requires dedication beyond the immediate and a decisive approach to support farmers to make use of fresh and existing information which is line with the theory of change and social change theory that ultimately aim at transformation of lives. In consideration of the foregoing, arduous action across several policy domains must be initiated now with a view of addressing futuristic challenges so as to ensure sustainability (Harkness, 2011).

Considerable potential exists to increase food production worldwide through encouraging better use of skills in existence, precise1information as well as technology. Yield gaps exist globally even within countries and even between countries that cannot be accounted for by local physical conditions. Monitoring and Evaluation is critical to addressing this gap. In least developed and middle-income bracket countries as the differences existing are remarkable owing to among other reasons service provision. The application of existing knowledge and technology has been estimated that it results in average yields increasing double fold to triple fold in a continent such as Africa in most parts, and double fold in a country such as Russia. Recent improvement in Brazil and China in the agricultural sector was realized mainly due to a considerable and improved research and surveillance unlike in many other nations, where a decline in agriculture research and surveillance prioritization has been witnessed in the preceding decades (Harkness, 2011). The Brazilian agency, Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA), is currently one of the biggest funders globally in research in the agricultural sector, having a budget of roughly US$1.11 billion dollars in 2009. This huge investment in agricultural research explains to a great extent as to why Brazil is among the largest agricultural exporters globally. Between 2001 and 2007, agricultural research in China consumed about US$1.78 billion in 2007 and grew by about 10% in the period 2001 to 2007. Owing to the impressive investment carried out by China benefits have been realized – and for every US$1,500 of investment in agricultural R&D it is estimated that it helps to move out of poverty cycle seven people. The agricultural research and surveillance influence in the case of China is likely to

become more pronounced, if South- South trade continues as expected and grows insignificance amongst countries in the southern hemisphere, resulting in bridging of the gap regarding yields. In some countries better policies amongst farmers provide for a practical demonstration of how changer can enhance productivity and sustainability (Harkness, 2011).

Yield gaps exist for numerous reasons, including lack of human capital and hence capacity building hinders the application of existing knowledge. The main staple food that is cultivated in many countries in Africa is maize which over 300 million Africans rely on but is seriously affected by drought (Harkness, 2011).This poses a critical challenge regarding food security status in Africa and indeed in Kenya and Nyeri South Sub County. Globally1the number of those who are hungry is about 925 million with another one billion suffering from inadequate vitamins and minerals. Insecurity owing to access to food that is sufficient currently but being at risk of lack in the future or having sufficient access to food that prevents famine, devoid of vitamins and minerals exists hence causing adversity among those affected and denting realization of sustainability(Harkness, 2011).With the requisite capacity and funding in place this adversity could be mitigated.

China attained the millennium development goal regarding addressing hunger in early 2000's unlike many countries in Africa and South Asia who were unable to meet this goal. In these regions agriculture can play a pivotal role in ending poverty. In Burkina Faso due to intense application of labour and fertilizer, productivity on plots managed by men was 30% higher over and above productivity of plots managed by their female counterparts. Coming up with indicators for measuring the government's dedication to hunger reduction could help, if this results in setting incentives to work towards the realization of this goal. Global ranking mentions Brazil, Vietnam, Ghana and China as nations that focussed on hunger reduction. Monitoring culture, learning and impact in agriculture is critical in addressing this challenge (Harkness, 2011). The experience of these countries in addressing hunger offers useful lessons to countries in Sub Sahara Africa and indeed Kenya where hunger poses a grave danger partly due to initiatives that have not worked effectively and the role of Government in realizing this objective is critical.

Appropriate measurement of the impact is still wanting in Kenya stemming from confusion on the role of agriculture in the long term outcomes. Mixed methods approaches to agricultural monitoring and evaluation are available and need to be used to understand what works, why and how (Harkness, 2011).Human development is critical in boosting sustainability of projects and food security and capacity building is central.

Agriculture accounts for 65% of full-time employment in Africa, 25-30% of GDP and over half of export earnings however a myriad of views exists regarding agriculture in Africa with the sector being perceived as being stagnant. Further this sector is perceived as having failed smallholders and the challenge still remains significant. According to Maputo Declaration (2014),in order for the agricultural sector to contribute more to GDP and development and to significantly reduce food insecurity, the sector requires greater public investment by African governments to increase the productivity and competitiveness of smallholder farmers. With a decrease in agricultural spending in Africa the agricultural sector provides substantial benefits, regarding food security as well as enhancing poverty alleviation. It is estimated that for every 10% growth in yields in Africa, there is a 7% reduction in poverty. However, progress in manufacturing and service sectors has no such equivalent effect (Harkness, 2011).Kenya is yet to meet the threshold recommended by the Maputo Declaration of 2014 that advocated for spending of 10% of their budget on agriculture.

Feeding the estimated world population of229 billion people by 2050 will be a gigantic challenge for countries. There are about a billion cadaverous people currently, more than there were 30 years ago By 2007 over two thirds of developing countries were depending on food imports to feed their people. In Cambodia commenced a sustainable rice cultivation intensification project culminating in improved of up to 60 per cent. With this, they have been able to raise their incomes and create a more stable food supply. Currently as part of the government's national agricultural strategy 130, 000 farmers are involved. (Navarro, 2011).These initiatives are critical in enhancing sustainability of the Agricultural sector in Kenya and indeed in Nyeri South Sub County and such lessons are critical.

There is need for greater recognition of the critical role that women play in agricultural production; most small-scale farmers around the world are run by women–with the help of greater access has trained over and these women are now leaders in their communities (Navarro, 2011). These Gender sensitive initiatives are critical in enhancing sustainability of the Agricultural sector in Kenya and indeed in Nyeri South Sub County especially given the critical findings established in this study that women play in small farmer groups.

The impact of hunger and the antecedent price increase are critical as exemplified by various cases such as the tortilla crisis in Mexico that set a precedent and was followed by more food riots in about 48 countries culminating in April 2008 overthrow of the Haiti prime minister. The global food crisis, largely reported by global media, was caused by unparalleled price increases in imported agricultural commodities for Appropriate M&E practices could have mitigated these shortcomings (FAO, 2009a).

Shelves. Those and, as a result, several people joined those incapable of getting their daily food according to the Food and Agricultural Organization. The Food and Agricultural Organization and for (FAO, 2009b).These challenges are critical in enhancing sustainability of the Agricultural sector in Kenya and indeed in Nyeri South Sub County and offer a pointer on the crises that looms in case food security issues are not handled prudently.

The world's governments and the international community did not remain unreceptive regarding the food crises noted above and in 2008 a number of international conferences on Food Security were organized in Rome in 2008, Madrid in 2009 and in 2008 and 2009the G8 summits. All these forums confirmed that hunger was a prerequisite in the international agenda. Since then the global food crises a High Level Task Force (HLTF) has coordinated responses by the international community on the Global Food Crisis (HLTF) initiated by Ban Ki-moon, a former United Nations' Secretary General and includes all organizations at the United Nations dealing in food and agriculture, the International Monetary Fund (IMF),World Bank and the World Trade Organization (WTO) (Navarro, 2011).

The World Development Report 2008 of the World Bank (2008a), recommended that more attention should be provided to the agriculture sector amongst policy makers and

intensified support given to Agriculture and in particular focus on smallholder farmers. The document advocated for developing countries to increase spending in agriculture and rural development to at least 10 percent (Navarro, 2011), this figure is similar to what was recommended by Maputo declaration though the challenge remains putting into practice these recommendations.

1.1.2 Monitoring and Evaluation Planning and Coordination

Planning is important in evaluation. It is a result of organizational management and enhances decisions and policy making, indicates where technical assistance and training is required and also improves monitoring (UNDP, 2002).Inadequate planning and coordination regarding data collection and use has been one of the many challenges in the World Bank project design and preparation. This challenge has had a negative impact on timely implementation, management and sustainability of projects as well as Monitoring and Evaluation incorporation (World Bank, 2002).

Wabwoba and Wakhungu (2013), in a study on projects in Kiambu County, Kenya, recommended that group members should be actively engaged in Monitoring and Evaluation planning and implementation for projects to enhance ownership and sustainability. Ownership of project is critical and antecedent failure can hinder the sustainability of project even in the Agricultural sector.

1.1.3 Monitoring and Evaluation Capacity Building

Capacity building can bridge the gap between planning and data demand and use. If officials and, indeed, farmers are deficient in capacity project sustainability will most likely be negatively impacted. Capacity building in Monitoring and Evaluation in many countries has yielded success. In Honduras, the Overseas Development Report (2011) notes that, as a result of Monitoring and Evaluation intervention, out of 7400 farmers involved, 6,000 increased their production of crops and increased their earning to $ 2,000 (Ksh 170,000) per hectare. Farmers were earning on average $ 1,000 (Kshs 103,000) per hectare before this intervention in form of training. Performance in the agricultural sector in the sub-Saharan Africa, compared to the rest of

the world, is still low. In terms of maximum yield per hectare, the sub-Saharan Africa continues to lag behind compared to the rest of the world (WDR, 2008).

In many countries, the capacity for fairly basic monitoring and assessment is severely limited (Cornwall *et al.,* 2000).Some of the questions that arise include: Are there workshops and seminars? Do field visits focus on Monitoring & Evaluation content? The quality of Monitoring & Evaluation is essential. It also includes human resource development – after completion of formal studies. The attendance of these courses, training and empowerment should be tailored to meet capacity building requirements. Questions that arise include: Whose capacity and use are being developed? Which capacities are we developing; are they soft capacities such as motivation, confidence or trusted relationship? How are the capacities developed?

Senior officials from 12 African countries meeting in Abidjan, Cote d'Ivoire, with 21 international agencies for development assistance acknowledged that developing African capacity for Monitoring & Evaluation brings about improvement in governance and advocated for training in Monitoring & Evaluation practices (OED & AfDB, 1998). In a conference that took place later the same year in Johannesburg, South Africa, the African Evaluation Association (AEE) noted that developing capacity in Monitoring &Evaluation should seek to improve skills and tools as well as create awareness on the need for Monitoring& Evaluation and its use. In a 2009meeting held in Casablanca, Morocco, the forum resolved that African institutions must do more to strengthen their capacity to monitor and evaluate and for Monitoring & Evaluation to be regarded as useful in Africa (AfDB, 2009).

1.1.4 Monitoring and Evaluation Data Demand and Use

Segone (2008), in reference to the World Bank Independent Group, notes that most stakeholders in projects studied fail to appreciate the value of the Monitoring and Evaluation findings. This shows there is a gap in terms of the existing and required information for sustainability of projects. In Kenya, Odhiambo (2000) says that evaluations are yet to reach acceptable levels. They merely deal with some aspects of the result chain, namely inputs and outputs at the expense of impact, are propelled by activist and donor demands and carried out by evaluators devoid of the requisite knowledge. With regard to demand and use, there is need to focus on the following:

documentation of old and recent information; use of data; need for data; data accuracy and relevance.

Monitoring and Evaluation systems should be demand-driven as opposed to being supply-driven, to facilitate sustainability (Mackay, 2007). Monitoring and Evaluation data should be generated in a cost effective manner. Patton (1997) posits that there is no point for costly Monitoring and Evaluation data. Monitoring and Evaluation demand and use is a significant practice and must focus on target groups (Segone, 2008).Monitoring and Evaluation capacity development can go a long way in ensuring that there is right demand and use of the data collected.

Mackay (2007) notes that one problem in African countries, and perhaps in other regions, is that although sector ministries collect a range of performance information the quality of data is often poor. Ibrahim (2007) observes that in Africa there is too much data and not enough information. And sector ministries collect a range of performance data whose quality is often poor and hence difficult to use. There is, therefore, a need to build reliable ministry data systems on which Monitoring and Evaluation systems depend. Data verification and reliability is partly a technical issue of accuracy, procedures and quality control.

The application of Monitoring and Evaluation results is a major determinant of project sustainability and it results from good planning, project implementation based on requisite capacity and informed decisions based on sound and relevant data (Mackay, 2007).Further, Mackay (2007) notes that Monitoring and Evaluation data provides a basis to feed back into the projects, improve policy analysis and policy development and aid in project and managerial activities.

1.1.5 Research and Surveillance in Monitoring and Evaluation

Surveillance is the standard analysis of multi-sector integrated context of the targeted populations/areas. It requires competent sharing of findings and recommendations in order to enable decision-makers to define adequate strategies for timely responses to observed changes in the operating context (Navarro,2011). In regard to research, key considerations include: the type of research; instances of research use; how the research is developed for purposes of sustainability, and what triggers the research to be developed and conducted. Research should be

conducted to respond to disease outbreaks, development of new crop varieties and to boost production. According to Khan (1998), Monitoring & Evaluation support entails provision of materials, evaluation champions to enhance advocacy and surveillance effectiveness, for instance, the case of Zambian minister cited by Kusek and Ray (2004) as well as assets and ICTs. Organizations need leadership that supports, recognizes and appreciates Monitoring and Evaluation functions and the use of Monitoring & Evaluation data to enhance project sustainability.

1.1.6 Ethics in Monitoring& Evaluation

For the purposes of the study ethics in Monitoring and Evaluation will be treated as the moderating variable. Several issues need to be considered in regard to Monitoring and Evaluation ethics, including falsification of data and reports, misuse of resources, inadequate capacity development, poor planning and coordination with a view of misusing resources disbursed and irrelevant research and shallow surveillance. The term self-regulation refers specifically to efforts by those involved in project work to develop standards or codes of behaviour and performance (Schweitz, 2001). Self-regulation presents a complementary path that directly addresses the sector-wide problems while retaining some integrity. Codes are an articulation of appropriate, or accountable, behaviour for an entire sector that can facilitate Monitoring and Evaluation practices. The process of developing a code of conduct is an opportunity for self-definition, as well as for public presentation of those involved in project work to pursue collective mission, principles, values and methods (Schweitz, 2001).

1.2 Statement of the Problem

Food is a basic human need and its necessity in human life has driven humanity to engage in activities of creating food by exploiting the environment. This is the basic function of agriculture. Every society globally engages in some form of agriculture. Like all other projects, agricultural projects rely Monitoring and Evaluation being integral tools in managing and accessing efficiency and effectiveness in this sector to ensure sustainability. Yet sustainability of projects is still a major challenge in many developing countries. This is in spite of the commitment of colossal resources by governments, non-governmental organizations and

individual investors, especially in agriculture sector. Globally there has been a shift of focus regarding Monitoring and Evaluation from a concentration on inputs and outputs to a concentration on outcomes and impacts especially among the donors *(Naman Keita et al 2009).* This can positively impact on sustainability.

Urban expansion will result in a 1.8–2.4% loss of global croplands by 2030, with substantial regional disparities. About 80% of global cropland loss from urban expansion will take place in Asia and Africa. In both Asia and Africa, much of the cropland that will be lost is more than twice as productive as national averages... Urban expansion is expected to take place on cropland that is 1.77 times more productive than the global average *(Christopher Brend'Amouraet al 2016).*The consequences are felt mostly in developing countries such as Kenya and even in Nyeri County where half of the total land acreage is semi-arid.

Data collected on the performance of agriculture in selected countries globally indicates African countries including Kenya and even Nyeri County lags behind other countries in comparison of yields per hectare. Further Nyeri South Sub County lags behind in comparison to yields attained on demonstration farms elsewhere in Africa indicating a lot needs to be done by Monitoring and Evaluation oversight agencies (Appendix Viii, Appendix X and Appendix Xi).In Nyeri South Sub-County, projects been funded through the Ministry of Agriculture Livestock and Fisheries include the National Agriculture Work Accelerated Project, Traceability Project(coffee), County Coffee Improvement Project, National Resource Management projects, Subsidized Fertilizer Project as well as individual farmer resources. Other initiatives include provision of seeds for planting and training of farmers. However follow-up on these initiatives has not been effectively undertaken and yield targets have not been attained indicating, need for critical examination of Monitoring and Evaluation practices in place (Nyeri South Sub-County, 2015).

.This study hypothesized that effective Monitoring and Evaluation practices in agricultural projects could increase the sustainability of agricultural food crop projects and sought to establish the extent to the practices this sustainability. Therefore there was, a need to assess the influence of Monitoring and Evaluation planning, Monitoring and Evaluation capacity development, Monitoring and Evaluation data use, and Monitoring and Evaluation research and surveillance on the sustainability of food crop projects and the moderation of ethics in

Monitoring and Evaluation on sustainability of food crop projects. As Monitoring and Evaluation is an integral tool in enhancing efficiency and effectiveness.

1.3 Purpose of the Study

The study was conducted to establish how monitoring and evaluation practices, moderated by the ethics in Monitoring and Evaluation, influences sustainability of agricultural food crop projects in Nyeri South Sub-County.

1.4 Objectives of the Study

The specific objectives of this study were:

i. To examine how Monitoring and Evaluation planning and coordination influences sustainability of Agricultural food crop projects
ii. To examine how Monitoring and Evaluation capacity building influences sustainability of Agricultural food crop projects
iii. To examine how Monitoring& Evaluation data demand and use influences sustainability of Agricultural food crop projects
iv. To establish how research and surveillance in Monitoring and Evaluation influences sustainability of Agricultural food crop projects
v. To examine the combined influence of Monitoring and Evaluation practices on the sustainability of Agricultural food crop projects
vi. To determine the moderating influence of ethics in Monitoring and Evaluation practices on the sustainability of agricultural food crop projects

1.5 Research Questions

The study sought to answer to the following research questions:

i. How does Monitoring and Evaluation planning& coordination influence sustainability of agricultural food crop projects?
ii. How does Monitoring and Evaluation capacity building influence sustainability of agricultural food crop projects?

iii. How does Monitoring and Evaluation data demand and use influence sustainability of Agricultural food crop projects?
iv. To what extent does Research and surveillance in Monitoring & Evaluation influence sustainability of Agricultural food projects?
v. How does combined influence of Monitoring and Evaluation practices influence sustainability of Agricultural food crop projects?
vi. What is the moderating effect of ethics in Monitoring and Evaluation practices on the relationship with sustainability of Agricultural food crop projects?

1.6 Research Hypotheses

The study sought to test the following research hypotheses:-

i. $H_{1:}$ Monitoring and Evaluation planning and coordination influences sustainability of agricultural food crop projects.
ii. $H_{2:}$ Monitoring and Evaluation for capacity building influences sustainability of agricultural food crop projects.
iii. H_3: Monitoring and Evaluation data demand and use collection system influences sustainability of agricultural food crop projects.
iv. H_4:Research and surveillance in Monitoring and Evaluation influences sustainability of agricultural food crop projects
v. H_5: There is an influence between the combined Monitoring and Evaluation practices and sustainability of Agricultural food crop projects.
vi. $H_{6:}$ Ethics in Monitoring and Evaluation practices have a moderating influence on sustainability of Agricultural food crop projects.

1.7 Significance of the Study

The study focused on various practices of Monitoring & Evaluation and how they influenced sustainability of agricultural food crop projects with a view to establishing what works. The findings are of great relevance to Agricultural officers in enhancing efficiency and effectiveness through adoption of Monitoring and Evaluation practices that are most appropriate in the agricultural sector and this will further trickle down to the farmers through the Agricultural

officers. The existing gaps in Monitoring and Evaluation practice will also be highlighted to help Monitoring and Evaluation practitioners in Nyeri South Sub-County find solutions. At the same time, this study will provide reference for other researchers and contribute to existing body of knowledge in project management as the work will be published in referenced journals. The study is also expected to contribute teaching content for Monitoring and Evaluation. The study findings will enable the practitioners of Monitoring and Evaluation to understand how Monitoring& Evaluation practices can be strengthened and be able to establish the relevance and place of each of the practices of the study and appreciate the role of any other practice not addressed by the study. This is likely to lead to improved planning, capacity building, data demand and of data, improved surveillance, cognizant of Monitoring and Evaluation ethics and improved research and theory. The study is further expected to help relevant officials in Monitoring and Evaluation decision-making process. The study is also expected to provide reference to future implementation of agricultural and other projects in Kenya due to increased bureaucratic procedures. The study would guide professional practices among practitioners in project management and form a benchmark for those offering courses, especially in tertiary colleges. Previous studies were scanty and related studies conducted in this area were mainly theoretical or document review hence this thesis can go to a great extent in filling this gap.

1.8 Limitations of the Study

In the course of the study some respondents were unwilling to provide the required information. Some officials said they did not have the authority to divulge certain details while others expressed fear that the information they would give would be incriminating to them. To overcome these challenges, the researcher came up with a number of strategies endeavouring to convince the respondents that the information provided would be treated with utmost confidentially and that it would not be divulged to any unauthorized parties. The researcher also avoided interviewing the respondents in groups and sought the opinions of experts. Further, research assistants helped in the interpretation of questions and were advised to use descriptive language to help clarify technical terms. The research assistants were also properly guided by the researcher. The introduction of devolved governance in Kenya was another limitation. To tackle issues emerging from this challenge, requisite consultation was undertaken with a view of ascertaining the role of various officers in the new dispensation. The researcher further

undertook pre-testing of the instruments to enhance their validity and reliability through administering the questionnaire and accordingly adjusting the same.

Another limitation was that the respondents' expressed high expectations for immediate solutions to various challenges that were in existence. The researcher explained to the respondents that the research was not meant to provide immediate answers to issues bedevilling them. Another challenge involved some respondents, especially the farmers, expecting hand-outs from the researcher, because of the mentality that those undertaking research are usually heavily funded. The researcher explained to the respondents that there was no extra funding from any other quarters but he was covering all the expenses.

1.9 Delimitation of the Study

The researcher identified Nyeri South Sub-County as the area of the study because it had a high potential characterized by farming on small pieces of land. The area enabled the researcher to look for ways and means of maximizing production among farmers through embracing the most appropriate practices. Nyeri South Sub-County is a high agriculture potential area, yet farmers have been unable to realize set annual targets for most food crops. Even their unit production is way below international standards. At the time of the study, there were number of agricultural project groups with minimal impact in the area. The researcher focused on the agricultural groups registered with the Kenya government as well as Government officers working in the Ministry of Agriculture in Nyeri South Sub County, namely the Sub County Agricultural Officer in charge, other officers at the Sub County level and extension officers.

The study adopted a mixed methods approach in which qualitative and quantitative techniques were employed. The focus of farmers has mainly been on growing of cash crops, yet the income derived from their sale was used in purchase of food crops. Moreover, food targets set in Nyeri South have not been realized (Appendix Viii). The study focused only on farmers in agricultural food crop projects. Since this County had a high population and low land ratio, there was need to have high yielding agricultural activities. At the same time the researcher reckoned that other practices were also likely to influence sustainability and that other projects also existed apart

from the agricultural food crop projects. There were also other agricultural stakeholders that the study did not include.

1.10 Basic Assumptions of the Study

The study assumed that the respondents would provide reliable and valid data that would be useful in drawing valid conclusions and making practical recommendations. Further, the study assumed that respondents would co-operate with the researcher and research assistants in responding to questions. The study also assumed that the concerned organizations would facilitate provision of the requisite data and that the farmers would be willing to provide factual information.

1.11 Operational Definition of Terms used in the Study

Ethics in Monitoring and Evaluation:	Rules and regulations aimed at regulating the behaviour of those involved, taking into consideration dimensions of right and wrong, good and bad cognizant of integrity, adherence to guidelines and professionalism, prudence and accountability, involvement of stakeholders and adherence to timelines in Management of Agricultural food crop projects
Monitoring and Evaluation Capacity Building:	Equipping those in the agriculture sector to enable them to perform their roles efficiently, effectively and sustainably through training, adoption of collaborative approaches and focus on content used to train. These efforts are aimed at empowering or facilitating those involved in agricultural food crop projects with Monitoring and Evaluation skills.
Monitoring and Evaluation data demand and use:	This is a regulated way of obtaining information aimed at ensuring there is demand and use of data, especially in the agriculture sector. It takes into consideration data use and demand in decision-making and review, relevance, frequency and quality of data as well as use of appropriate data collection methods while adhering to guidelines and professionalism in collecting information regarding Agricultural food crop projects.
Monitoring and Evaluation planning	Monitoring and Evaluation Planning is a systematic and

and coordination:	objective process for monitoring project performance through instituting and planning data feedback mechanisms, use of agreed upon strategies and indicator establishment through collaboration by various players involved in Management of Agricultural food crop Projects.
Monitoring and Evaluation Practices:	This refers to a combination of practices performed, including Monitoring and Evaluation planning, Monitoring and Evaluation capacity building, data use, research and surveillance in Monitoring and Evaluation, with a view to transforming processes and final results of Agricultural food crop projects.
Research and Surveillance in Monitoring and Evaluation:	Closely following and being alert over likely occurrences, type of data generated, mechanism for utilization and commitment to use of research findings in the field concerning Agricultural food crop projects.
Sustainability of Agricultural food Crop Projects:	This refers to having the capacity to continually meet food production targets, realizing sustainable increase in food yields, having projects that are continually active, use of better farming practices, continuous learning and empowerment and ownership of projects among those involved in Agricultural food crop projects

1.12 Organization of the Study

This study report has five chapters. Chapter One gives the introduction and background to the study and addresses various variables, statement of the problem, the purpose of the study, the objectives, research questions and objectives, significance of the study, the assumptions, the limitations, delimitation and definition of significant terms. Chapter Two presents a review of literature on the dependent and independent variables and the combined influence of the independent variables on the dependant variable as well as the moderating influence of ethics in Monitoring & Evaluation. Chapter Three describes the research design, research paradigm, target population sampling procedure and sample size, data collection methods, research instruments, data analysis, ethical considerations and operationalization of variables sections. Chapter Four has data analysis, presentation and interpretation while Chapter Five provides the summary of finding, discussion, conclusion and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter gives a review of the literature related to the study based on the following thematic areas: Concept of Monitoring & Evaluation Practices; Sustainability of Food Crop Projects; Agricultural Food Crop Projects in Nyeri; Monitoring and Evaluation Planning and coordination and Sustainability of Agricultural Food Crop Projects; Monitoring and Evaluation Capacity Building and Sustainability of Agricultural Food Projects; Monitoring and Evaluation Data Demand and Use on Sustainability of Agricultural Food Crop Projects; Influence of Monitoring and Evaluation Research and Surveillance on sustainability of Agricultural food crop projects; Ethics in Monitoring and Evaluation and Sustainability of Food Crop Projects; Theoretical Framework; Conceptual Framework and Summary of Empirical Literature.

2.2 The Concept of Monitoring and Evaluation Practices and sustainability of Agricultural Food Projects

Monitoring and Evaluation practices refer to a combination of various activities, including planning, capacity building, surveillance and data use that may viably contribute to project decision-making, learning and project sustainability (Scheirer, 2012). When undertaken professionally and ethically Monitoring and Evaluation activities can enhance realization of sustainable projects.

The theory of social change as postulated by Nyerere and Freire aims at enhancing empowerment through participation of vulnerable groups as opposed to the traditional top-down approaches contrary to this with the exception of India most of the existing evaluations in South Asia are donor-driven. With the assistance of Japan Nepal introduced a project on Monitoring and Evaluation System strengthening to provide training in Monitoring and Evaluation and improve training manuals, monitoring reporting documents and sharing information and skills. These evaluations are often conducted to meet terms of donor agencies and are generally predisposed, provide inadequate feedback regarding interventions and are ineffective due to lack

of evaluation capacity (Santosh, 2012). Availability of trained Monitoring and Evaluation personnel is reportedly a key limitation in Sri Lanka another country in Asia (Velayuthan, 2010).

In building Monitoring and Evaluation system the theory of change can guide on challenges such as inadequate capacity-building programmes and weak accountability systems. Donors in Sri Lanka use their own systems rather than systems of the government to ensure accountability by enhancing local demand for evaluation with utilization focus and addressing issues of skills, procedures, methodology and data systems (Velayuthan, 2010). The existing challenges to Monitoring and Evaluation in Southern Asia include: lack of mechanisms to assess the skill gaps among personnel functioning in the Monitoring and Evaluation area, with experts being currently hired on a project basis; incompetence among organizations and personnel; scarcity of staff; lack of quality evaluations; Further, there is lack of meaningful authentication of monitored data leading to reliance on survey-based and also poor data analysis within line ministries (Santosh, 2012).

In Africa the main challenge for Monitoring and Evaluation is that the promotion of transparency and indeed surveillance is directly at the heart of challenging political hegemonies contrary to the advocacy of the theory of social change regarding inclusivity. Freedom to present findings in a public domain may be censored or fully prohibited (Naidoo, 2011).This tends to weaken surveillance, a key ingredient of Monitoring and Evaluation. Such practices do definitely impact on the relationship that Monitoring and Evaluation in agriculture has with project outcome and sustainability. The Monitoring and Evaluation mechanism in Benin relies on the national statistics system for measurement and data. It experiences constraints such as lack of capacity to update data, poor access to data to be collected and processed as well as information gathering limitations. There is also low level of professionalism in the Monitoring and Evaluation system and, despite the employees having considerable basic training, they are few and their knowledge is not frequently updated. This scenario resonates with some of challenges bedevilling Monitoring and Evaluation in Nyeri (Nyeri South Sub County Agriculture office 2017). In Ghana, constraints relating to Monitoring and Evaluation include institutional, operational and technical capacity challenges as well as disjointed and uncoordinated information, especially at the sector level. There is need for adequate capacity to support and sustain efficient Monitoring

and Evaluation and strengthen existing Monitoring and Evaluation mechanisms, their synchronization and effective coordination (CLEAR, 2012).

Monitoring and Evaluation if conducted by government agencies without the antecedent verification and authentication may have results that lack credibility contrary the Theory of change that advocates for checking on implementation for quality, to help distinguish between implementation failures and theory failures. Monitoring and Evaluation in Burundi is embedded in the Vision 2025 development framework with improved practices emerging in the terrain of localized monitoring and in the synergies that are being established between different institutional structures in Burundi's government. Integrated Monitoring and Evaluation in Kenya is comparatively recent, although project and programmed-based Monitoring and Evaluation has featured in the country since the 1980s but capacity and infrastructural challenges exist in the process of projects execution.. Kenya's 2010 Constitution introduced Monitoring and Evaluation evolved governance structures and provides an opportunity for strengthening the country's Monitoring and Evaluation systems as well as posing a risk for its continued existence especially as regards devolved units flaccid' accountability mechanisms (CLEAR, 2012).

Uganda's development Monitoring and Evaluation of Monitoring and Evaluation is inexplicably intertwined with the need to demonstrate government performance and receptiveness to citizens' demands as an indicator of good governance. Monitoring and Evaluation in Uganda is undertaken by a unit in the Office of the Prime Minister (OPM) with a small but growing arm of evaluative practice by civil society, including national and international NGOs working side by side with the government. Challenges include synchronizing data from all the Monitoring and Evaluation systems and different sectors before onward transmission to the OPM and making it accessible for use as well as capacity that is scattered throughout various sectors and hence limited (CLEAR 2012). Low demand for Monitoring and Evaluation products to inform decision-making is also a challenge as well as evolving a culture of managers using Monitoring and Evaluation data to improve performance. The incentive framework to drive Monitoring and Evaluation practices in public service systems is also still weak. Limited use is attributed to poor information propagation and the inability of the institution to build capacity for the timely generation and dissemination of information. Monitoring and Evaluation is characterized by weak coordination within and between national government departments in most developing

countries and shortage of human capacity (Adrien & Dennis, 2008).These challenges are similar to the experience of Ghana and Benin and indeed Kenya (CLEAR 2012 Nyeri South Sub County Agriculture office 2017)..

The evaluation tools presently used in Uganda include ministerial policy statements and budget framework papers, half-annual and annual cabinet retreats to review government performance, the community information system, the annual budget performance report and *Barazas*. Programme performance information, social, economic and demographic statistics and evaluation are the three major sources of data for Monitoring and Evaluation in the country. An important step in improving the country's Monitoring and Evaluation would be to create greater convergence and wider integration between the public service and civil society (CLEAR, 2012).The above noted tools are mainly controlled by the government or it's agencies and is likely to compromise authentication and verification of the information adduced hindering transformation of the lives of target groups

The Utilitarian Theory regards utility as core parameter and from the this study utility especially of data poses a challenge. The South African Government in 2005 introduced a government-wide Monitoring and Evaluation policy framework. A number of cross-cutting institutions are involved in the implementation of the overall Monitoring and Evaluation system. Monitoring and Evaluation is closely associated with the planning process in government (CLEAR, 2012).Further, there are challenges with respect to data quality and coordination management performance assessment tool (MPAT).Other challenges include a culture of compliance without using Monitoring and Evaluation to reflect on and improve performance and duplication of reporting. Weaknesses exist in the planning system as it is fragmented with different institutions playing different roles, and in lack of effective theories of change. However, growth of Monitoring and Evaluation is seen as being critical to supporting transformation and sustainability (Naidoo, 2011).Though regarded as critical in transformation and sustainability lack of effective theories of change serve as deterrent to institutionalization of effective Monitoring and Evaluation.

Monitoring and Evaluation work in Senegal is undertaken by the Ministry of Economic Affairs and Finance. The 'results method' and cost-benefit analysis that has a semblance to utilitarianism

are the project tools used in the evaluation. Donor countries in most cases develop evaluation standards, but there is need for developing countries to come up with their own evaluation standards (Adrien and Jobin, 2008).In Senegal, the objective of evaluating personnel rather than grading them is emerging and performance contracts are emerging in some departments. Evaluations carried out comprise some of the following types: mid-term evaluation, then pre-evaluation, process evaluation and final evaluation with impact and *ex ante* assessments being less frequent. A Monitoring and Evaluation system requires reliable, quality data to be effective. For this purpose, Senegal has set up the Department for Forecasting and Economic Research and the National Agency for Statistics and Demography for project and programmed implementation. The Annual Report on the Absorption of External Resources (RARE) has been recognized as good Monitoring and Evaluation practice resulting in an improved performance culture through the issuing of financial reports and reports on activities (CLEAR, 2012). This resonates with the theory of change and social change and their antecedent goal of social transformation but there there is need for verification and authentication by external evaluators.

Most development projects funders require that sustainability and capacity building be integrated into project planning and design, to ensure that when funding is withdrawn, the project's activities and positive impacts will be continue (Gervais, 2004; Canadian International Development Agency,2006). There is still much to learn on how these policy approaches are executed as well as how they interact with the implementation of food security projects in different contexts, including in relatively developing countries such as Kenya. These policy frameworks on relief and development examination raise questions about how vulnerability and chronic poverty cross over into development and humanitarian work, humanitarian work being regarded mainly as "unsustainable" (Longley *et al.*, 2003).This at cross purpose with the theory of social change that propagates implementation of development programs that take into cognizance of the interest of marginalized through inclusivity and empowerment (Vaughan 2010). Due to malaise and other limitations, such as poor coordination, farmers may fail to attend workshops. There is also the danger of engaging those who are already relatively better off within villages in workshops and other forums meant to equip farmers with the requisite skills. This is because the more exposed groups of farmers have greater capacity and access to outsiders while those who are unable to access project opportunities through such forums do not benefit.

Hilgers (2010) has documented countries with best achievements in Monitoring and Evaluation. The author includes only Latvia among the many developing nations an indictment of developing countries and a confirmation of a tortuous path before instituting a comprehensive Monitoring and Evaluation.

Ensuring effective implementation of the project Monitoring and Evaluation system requires attention to practical issues right from the point of conceptualization. There should be close monitoring by the government and the donors through agreed project planning and supervision mechanisms. The Monitoring and Evaluation Programme Plan would need to be elaborated and reflected in the Project Implementation Plan or Manual (PIP/PIM), with provisions made for updating annually or more frequently if necessary (IFAD, 2002). It is imperative to note that project implementers focus attention on projects during the implementation cycle as opposed to doing so right from the commencement of the project at the conceptualization stage.

According to FAO (2002), experience suggests that adopting a more informal participatory approach to data collection, rather than sole reliance on formal surveys, avoids the primary stakeholders being only superficially involved and can dramatically increase ownership in the project and the Monitoring and Evaluation system. Implementation of the Monitoring and Evaluation programme should commence only when competent key staff are in place, suitable office premises are requisitioned and the necessary equipment, especially for field transportation and Information Communication Technology (ICT), are procured.

All these would need to be catered for as a matter of priority during project start-up. In some countries, it may not be easy to find high calibre staff with enough seniority from within the public administration system to head up the project Monitoring and Evaluation unit/section. In such cases, recruitment from outside of government agencies should be considered. Operating the Monitoring and Evaluation system without highly skilled or trained personnel, or using seconded temporary staff with unclear tenure, is a common drawback that must be avoided. The issuance of government directives that clearly set out the institutional linkages and consent for the Monitoring and Evaluation unit and staff is critical in ensuring the unit appropriately discharges its mandate across all sections of the project (Morris, 1999).

2.3 Sustainability of Agricultural Food Crop Projects xxx1b

The sustainability concept provides a framework for understanding issues of economic development, community development and natural resource management across the world (Fraser, 2006).Sustainability is a critical challenge to all international development agencies. It is also one of the principles of engagement that are central to IFAD's identity and role. The IFAD Strategic Framework 2007-2010 noted that sustainability was one of IFAD's key concerns. Despite significant improvements in the sustainability of IFAD operations, especially over the two years ending in 2010, this issue remained a major challenge (IFAD, 2009).Critical problems were encountered by OECD countries in introducing performance measurement regarding the use of performance information in budgetary decision-making; connecting performance to resources; measurement of activities; quality of information; in data demand and use by politicians, and lack of capacity in various agencies (OECD, 2007).

Sustainability is the ability of a project to maintain its operations, services and benefits throughout its projected life time. The issue of sustainability is considered within the lifetime of a project and in light of changing social economic political contexts, especially since most projects tend to fail the sustainability test after some generation (Khan, 2010). Historically, donors have treated development and sustainability separately, a practice that has aggregated the concept of poverty, especially given the failure of interventions calculated to alleviate poverty.

Joacquin (1998), Lyson, Stephens and Smiths (2001), in defining sustainability, use terms such as magnitude of inheritance after donor support, ability of the government to take over donor supported programme after evaluation and before phase-out of donor support. Therefore, sustainability is regarded as the ability to produce and keep the outcomes and impacts that arise due to project intervention. Understanding of sustainability has tended to be biased towards natural resource management (De Beer and Swanepoel, 1998). However; sustainability should focus also on such issues as planning, capacity development and technology transfer (Mazibuko, 2007). This view is in line with theory of change. Efforts aimed at facilitating sustainability should focus on the people at the grassroots level. The concern that arises is on how ready the state and local structures are in empowering vulnerable groups, even as sponsors withdraw.

Development projects have tended to focus more attention on issues around planning and implementation at the expense of Monitoring and Evaluation and sustainability (Mazibuko2007). Planning strategies should be designed to ensure sustainability of the project. Projects must systematically identify, analyse and respond to risks in a way that ensures continuation of project benefits after completion of the project (Gusfield, 1975).This calls for proper establishment of research and surveillance systems, among other things. There is need to look for ways to strengthen the capacity of individuals, households, communities and formal and informal institutions to enable them to cope with future uncertainties (IFAD, 2005a).This can be done by designing Monitoring& Evaluation planning and coordination that take cognizance of requisite issues.

As already stated, for Monitoring and Evaluation systems to be useful, they should be driven by demand and not supply forces. Making use of Monitoring and Evaluation results is a major determinant of project sustainability. It is also a product of good planning, project implementation that is based on availability of the requisite capacity and informed decisions based on sound and relevant data (Mackay, 2007).Further, Mackay (2007) notes that Monitoring and Evaluation data provides useful information that can be fed back into the project. This information can be used to improve policy analysis and development. It also aids in project activities, managerial activities and to enhance transparency, surveillance and project sustainability. Capacity building can bridge the gap between planning and data demand and use. If the project officials and beneficiaries are deficient in capacity this will ultimately impact on project sustainability and hinder the empowerment process that should be intertwined with development interventions in tandem with the theory of social change and utilitarianism.

Segone (2008), in reference to the World Bank Independent group, notes that most stakeholders in projects do not value the findings of Monitoring and Evaluation. These projects do not think there is anything new or useful in the Monitoring and Evaluation reports. This gap can adversely impact on sustainability and the sense of ownership of projects. Planning is important in evaluation and it should be a part of organizational management as this enhances decision and policy making, indicates where technical assistance and training is required and also improves monitoring (UNDP, 2002).

2.3.1 Agricultural Food Crop Projects in Nyeri

At the time the study was conducted, twenty-six project groups were involved in production of various food crops in Nyeri South District, nine of which were in Othaya Central Division, eight in Othaya South Division and six in Othaya North Division. The divisions are further split into seven locations. Apart from the funding and technical assistance expected from the Ministry of Agriculture, Livestock and Fisheries, other groups funding famers in the area include the National Resource Management. The responsibility for Monitoring and Evaluation services falls under the Ministry officials. The major food crops grown in the Sub-County include maize, beans, grain, amaranth, Irish potatoes, sweets potatoes, yams, arrow roots, banana and cassava.

The Kenya Government funding for the Agricultural sector is normally split into two in a financial year. One phase runs from January to June and the second phase runs from August to December. Currently, Agriculture has been placed under the county government. The Njaa Marufuku project in Kenya and indeed in Nyeri South has had challenges owing to lack of adequate funds and capacity (Otieno & Atieno, 2006).Other initiatives include the NAALEP 1 and NAILEP 2 projects funded by the World Bank and GOK, the Constituency Water Harvesting Project funded by the GOK through the constituency development fund (CDF) and the projects for provision of fertilizer and seeds to farmers (District Agriculture Office Nyeri South, 2017). This last programme aimed to bridge the gap between actual and potential production. Through the system, 30% of the farm proceeds were to be put in a cereal bank for sales and in the following season the farmers were to purchase seeds for themselves. However, the sustainability of this project became a challenge. Later the project was reorganized and funds were given to the Kenya Equity Bank, the Kenya Women Finance Trust and Cooperative bank of Kenya, for disbursement to farmers in form of loans. These financial institutions are expected to monitor these projects. However, they are ill-equipped in Monitoring and Evaluation strategies in the agricultural sector. In the 1970s, a water harvesting programme was initiated Nyeri South Sub-County but it was unsustainable at the time. The programme was, however, recently revived but with no record from which to draw lessons from (Sub County Agriculture Office Nyeri South, 2O17).There is need to design clear sustainability strategies for all these initiatives. To do so, lessons from previous experiences can be drawn in line with data demand and use procedures and the requisite record maintenance culture.

In the recent years, Kenya has witnessed a lot of restructuring of its administrative units. In light of these developments, various ministries, including the Ministry of Agriculture, Livestock and Fisheries, are yet to send officials to man some of their devolved units. In Nyeri South Sub County, Agricultural activities at the level are under the Sub County Officer in charge; there are also several other officers in charge of various sections. These include the Sub County Industrial Crop Officer, the Sub County Food Crops Officer, the Sub County Agricultural Business Officer, Sub County Agricultural Engineer and Sub County Horticulture Officers. At the county level, the Ministry of Agriculture, Livestock and Fisheries is under five directorates, namely Agriculture, Livestock and Veterinary, Fisheries, Irrigation and Co-operatives.

2.4 Monitoring and Evaluation Planning and Coordination and Sustainability of Agricultural Food Crop Projects

In the words of Crawford and Bryce (2003), Monitoring &Evaluation planning enhances understanding of how project achievements will be measured and how to manage the project cycle. It also enables early detection of problems and further enhances implementation of Monitoring &Evaluation activities. Planning should indicate the verifiable indicators to be measured, the means of verification and the people responsible for collecting information. Kerzner (1998) argues that projects fail because managers set directives without sufficient details to guide the project team on what to do, when to do it and the resources to use in order to produce the deliverables of the project.

According to UNDP (2011), many different factors influence the success of strategy. Monitoring and Evaluation in community-based projects also target the systems or mechanisms in place for co-ordination and control. The requisite factors must be identified and dealt with to ensure efficiency and effectiveness in Monitoring and Evaluation in community-based projects (John & Khilesh, 2008).Spinner (1981) noted that some organizations do not spend enough time and effort on planning and control of projects. Project planning should indicate when and how often data will be collected as well who will be responsible for compiling and disseminating reports to the organization, the beneficiaries or even the donors as part of coordination (Crawford& Bryce, 2003).Further there is need for authentication and verification systems to be instituted to facilitate sustainability

A survey done for 11 countries indicated that there is a very fragmented approach to planning that focuses on technical and methodological issues at the expense of policy and other institutional issues (CLEAR 2012).In reference to Monitoring and Evaluation planning there are no mechanisms to ensure that recommendations of previous findings and reports are referred to when solutions to current challenges are being sought (Nyeri SouthSub County Agriculture Office,2017).In such cases, proper coordination is hindered. Monitoring and Evaluation activities carried out through a process of interaction enhance experiences, sharing and cohesiveness (Khan, 2010).All this is vital to enhancing the realization of sustainability. The Monitoring &Evaluation system should also be regularly monitored, periodically reviewed and improved upon. Being able to define issues in consultation with stakeholders ensures that project objectives are clearly stated, understood and supported by all. This agreement brings proper coordination (Reuben & Arévalo, 2005). Monitoring and Evaluation is about strengthening primary stakeholders' involvement as active participants and planning and coordination plays a critical role in enhancing this realization. They should be involved in interventions and given the lead role in tracking and analysing progress towards jointly agreed results and deciding on remedial measures.

Mazibuko (2007),in his study on *Enhancing Project Sustainability beyond Donor Support; An Analysis of Grassroots Democratization As a Possible Alternative,* carried out in Malawi, states that villages must be involved directly in development that is under their control and in an atmosphere that is reminiscent of self-management. However, Mazibuko (2007) advocates for further research to evaluate the effectiveness of local level planning. This approach contributes to demand-led planning and decision-making and improved coordination (Goetz &Jenkins, 2005).When Monitoring and Evaluation is undertaken effectively and efficiently, it is likely to enhance the performance of a project leading to improved future planning, delivery of service and better decision-making for project sustainability (Nuguti, 2009).Wabwoba and Wakhungu (2013), in a study on projects in Kiambu County, Kenya, notes that group members should be actively engaged in project planning and implementation for purposes of ownership and sustainability. There is need for policy guidelines on such involvements to avoid ambiguities.

Field visits are frequently used as a monitoring mechanism and should be planned for. Consideration should be given to the timing of the visit, and what to look for in order to measure

progress (Yang, Sun & Martin, 2008). Field visits may be undertaken by the project manager, the policy advisor and/or a team from organizations, particularly when dealing with complex outcomes (UNDP, 2000).A field visit may be scheduled for any given time of the year. If it is undertaken in the first half of the year, it may be oriented towards the validation of results and in the latter part of the year; the field visit should provide the latest information on progress (Ben, 2002).

Field visits validate the results reported by programmes and projects (Pfohl, 1986).In support of this, Amponsah (2012) notes that critical success and failure factors for projects include planning and field visits, and should be planned for and carried out at appropriate times so as to ensure that the staff is well aware of the project areas to enable them to easily carry out Monitoring & Evaluation. Other issues that are likely to affect Monitoring & Evaluation include budgeting and resource allocation. These need to be planned for to ensure that Monitoring &Evaluation of community projects are implemented effectively.

The Kenya Plant Health and Inspectorate Service are specifically mandated to facilitate improvement in the farming sector. Its impact, however, has not been felt in the areas where agricultural activities are mainly carried out, especially because there is little collaboration and coordination with the Ministry of Agriculture officials, even in Nyeri South (Sub County Agricultural Office Nyeri South, 2015). On the other hand, the role of KARI is to undertake research, whereas KEPHIS is the policy enforcement agency. KEPHIS faces challenges since its officers cover expansive areas and limitation of staff in terms of capacity and numbers. Therefore, other than following up on payment of licensing fee, they might not be very effective in enforcing standards, collaborating and coordinating with agriculture officials ((Nyeri South Sub County Agriculture Office, 2017).

While perceptions on the role and function of Monitoring and Evaluation planning may vary, its place as a key element of the project cycle and in sustainability of agricultural agencies is incontrovertible. IFAD places Monitoring and Evaluation at the heart of managing for impact, by which is meant the need to respond to changing circumstances and increase understanding, and managing adaptively so that the project is more likely to achieve its intended impacts. A well-designed Monitoring and Evaluation planning and coordination system provides data on the

progress of a project and indicates whether or not it is meeting the desired objectives. This data may show where adjustments are required in the project cognizant of different circumstances in the local environment (Morris, 1999).

Although Monitoring and Evaluation planning are usually discussed in tandem, they serve distinct yet complementary functions. The role of monitoring planning is seen as one of regular and continuous tracking of inputs, outputs, outcomes and impacts of development activities against targets and in the sustainability of agricultural projects and it's planning is critical. It determines whether or not adequate execution progress has been made to achieve outcomes, and provides management with information to facilitate execution. Unlike monitoring, evaluation establishes attribution and causality, and serves as a basis for accountability and learning by staff, management and clients. Information from evaluation is used to develop new directions, policies and procedures (IFAD, 2002).

According to FAO (2004), Monitoring and Evaluation planning processes in practice overlap and need to function as an integrated system in sustainability of agricultural projects. To properly serve project management, evaluation must be an on-going activity. This then goes hand in hand with project monitoring, drawing on the information supplied through monitoring as well as special studies to review results and reconsider project objectives. In this situation, it is particularly relevant to pilot projects. However, this needs to be done on a timely basis for it to serve its purpose. Evaluation is also necessary after project completion to assess emerging, medium-term effects of the project.

A number of bi- and multi-lateral agencies, including the World Bank, IFAD and the European Commission, and major NGOs such as OXFAM, have over several decades undertaken or supported the development of Monitoring and Evaluation planning methodologies and approaches, and preparation of operational guidelines. Monitoring and Evaluation planning systems of agriculture and rural development projects have, to a great extent, integrated a combination of the following elements and/or approaches, which are by no means mutually exclusive: Logical framework approach; results-based framework; formal surveys; rapid appraisal methods; participatory methods; impact evaluation; cost-benefit and cost effectiveness analysis (OED/World Bank, 2004).

2.5 Monitoring &Evaluation Capacity Building and Sustainability of Agricultural Food Projects

Capacity is the ability of individuals and organizations to perform functions effectively and systematically(UNDP, 1998).In the words of Morgan (1997), capacity development is the growth of formal organizational relationships and values, skills and relationships that lead to the ability of groups and organizations to carry out functions and achieve desired outcomes. According to Simister and Smith(2010), capacity, whether of an individual or an organization, keeps on varying, meaning there is need for vigilance to cope with the dynamic demands. Further, Boyle (1999) argues that capacity entails three interdependent levels, namely individual, organizational and environmental, all of which entail supply and use of Monitoring and Evaluation data as well as research and sustainability.

A World Bank and Africa Development Bank study has found that the key constraint to successful Monitoring and Evaluation capacity development in the sub-Saharan Africa is lack of demand which stems from the absence of performance orientation in the public sector' (Schacter,2000). Capacity in the workforce is needed to develop and sustain Monitoring and Evaluation systems and officers need to be trained in modern data collection methods and analysis (Kusek and Rist, 2004). There is growing recognition that donors and governments need to continue to invest in and support capacity development as this can be critical in facilitating Monitoring and Evaluation planning, M&E data use and Monitoring and Evaluation research and surveillance for sustainability (Sutherland, 2011). Achieving sustainability demands long-term institutional planning and adequate institutional capacity (Mazibuko, 2007).Without the requisite Monitoring and Evaluation knowledge, the Ministry of Agriculture officials' cannot be drivers of change so as to facilitate bridging of the gap between actual productions and maximum production possible. Capacity development is, therefore, a prerequisite in Kenya and indeed in Nyeri South.

Further, Lewis (1998) points out that technical skill enhance the ability of the project manager to lead and manage through an understanding of the complex issues that persist during a project life cycle including Monitoring and Evaluation. Morgan (2006) argues that capacity is often seen as a "means to an end" in development discourse which emphasizes "result based performance".

Karanja (2013), in a study on the influence of management practices on sustainability of youth income generating projects in Kangema District, Murang'a County, Kenya, focused on training, leadership and financial management aspects in relation to project sustainability. Karanja (2013) posits that training, leadership and effective Monitoring and Evaluation influence the sustainability of youth projects. Mugabe and Kanda (2013) conclude that Monitoring and Evaluation is affected by poor skills in results-based Monitoring and Evaluation community based projects. This study established that lack of training for those tasked with Monitoring and Evaluation activities and unclear institutional framework for conducting the same affects effectiveness. According to Estrella and Gaventa (1998), Monitoring and Evaluation that is poorly undertaken is in essence a waste of time.

Mugabe and Kanda (2013), in their study on the determinants of effective Monitoring and Evaluation of strategy implementation of community-based projects, notes that poor skills in Monitoring &Evaluation affect such projects. They recommend further studies to be conducted on the challenges facing the field staff working in community-based projects when carrying out Monitoring and Evaluation activities. This can bring out factors that need to be considered keenly in all the Monitoring and Evaluation activities of community-based projects so as to obtain effective outcomes from the projects. Somerset (1987) acknowledges achievements in developing and using evaluation information to improve the education sector indicating the importance of Monitoring and Evaluation. However, Odhiambo (2000) states that evaluations in Kenya only focuses on inputs and outputs, disregarding the impact of NGOs with donors and officials deficient in Monitoring and Evaluation skills as their main drivers. Apart from capacity for Monitoring and Evaluation to function efficiently, there is need for facilities such as computers, and supporting infrastructure (Douglah *et al.*, 2003).

Stir man *et al.* (2012), in a study on the sustainability of new programmes and innovations, note that influencers of sustainability include capacity and factors related to the new programme or practice themselves Monitoring and Evaluation is characterized by weak coordination within and between national government departments in most developing countries and shortage of human capacity, particularly in evaluation skills and knowledge. As such, more training in evaluation methods and approaches is needed. Donor countries in most cases develop evaluation standards

but there is need for developing countries to come up with their own evaluation standards (Adrien and Jobin, 2008).

In Kenya, limited capacity by quality assurance bodies is a challenge to the agricultural sector. Capacity of workforce is required to develop support and sustain existing systems. Officials need to be trained in data collection, monitoring methods and analysis and this can be difficult for many developing countries (Otieno and Atieno, 2006).In Nyeri, according to the study findings, those working in the Ministry of Agriculture and indeed those in Agricultural groups might need to constantly attend workshops, seminars or conferences to replenish their skills in planning, coordination, surveillance, data use, ICT and methodology among other areas.

According to a study conducted by FAO (2004),Monitoring &Evaluation capacity building processes should provide an important link between planning and feedback on the factual, i.e. what is happening on the ground, mutual learning and re-planning and sustainability of agricultural projects. These are interactive processes requiring to be developed between project Monitoring and Evaluation staff and other actors, especially partner agencies and departments. Building cooperation with those responsible for implementing specific project components/sub-components must extend beyond regular reporting obligations. Equally important are joint identification of on-going evaluation needs, including diagnostic and trouble-shooting studies, and collaborating in information gathering and beneficiary assessments.

Coherent series of thematic studies should permit on-going assessment of the adequacy, efficacy and relevance of interventions, e.g. rehabilitation/upgrading and maintenance of drainage structures, farm to market roads, and technology dissemination through a system of farmer field schools. Evaluation methods might include: formal/informal surveys of stakeholders on project results, e.g. changes in cropping intensity and yields over successive years by cropping season, and communities' perceptions of impacts, e.g. from improved road and drainage infrastructure associated with specific project services/outputs; direct observations. Studies should draw on expertise across various disciplines of different specialized institutions (IFAD, 2002).

There should be a close working relationship between Monitoring and Evaluation and capacity building activities of the project in order to enhance sustainability of agricultural projects. All

newly recruited staff should undergo a formal induction programme during which special attention is given to the log frame and results framework; the different components of the project and associated Monitoring and Evaluation requirements; complementary roles of the Monitoring information System and Monitoring and Evaluation; linkages between progress monitoring and routine Monitoring Information System, and data collection methods (IFAD, 2002).

Each implementing agency participating in the project should be required to develop its own Monitoring and Evaluation capacity, in keeping with the overall project management requirements. Day-to-day duties should be carried out by a Monitoring and Evaluation specialists supported by a Monitoring and Evaluation officers and administrative/secretarial assistance. In consideration of complexity of the project, the implementing agencies may require technical support of national and/or international institutions at various stages of system implementation (OECD, 2002).

The concept of the project is seen as providing an orderly and systematic approach to analysing and managing a set of investment activities. The project concept also encourages examination of alternatives. Moreover, the anticipated outputs and outcomes can be compared with alternative proposals in the same sector (IFAD, 2002).

2.6 Monitoring and Evaluation Data Demand and Use and Sustainability of Agricultural Food Crop Projects

Data use and demand is a key practice of Monitoring and Evaluation. However, Mackay (2007) notes that the problem in African countries, and perhaps in other regions, is that although sector ministries collect a range of performance information the quality of data is often poor. Ibrahim (2007), in support of this, notes that in such countries there is too much data, not enough information. According to Kuzek and Rist (2004), some developing countries collect a lot of data that cannot be put to use. Until recently in Moldova, the system was characterized by a low demand for, and poor supply of, qualitative data. Investment in statistics focused on improving supply and little attention was paid to generating demand for data and its use in planning (Marie-Helene &Dennis, 2008).Lack of clarity concerning the end users leads to collection of excessive amount of data that does not help (Guijt, 1999).There is need to pay more attention to timeliness

when releasing of Monitoring and Evaluation findings in order to ensure they help to alleviate the problem of relevance (Segone, 2008). To mitigate the inherent challenges indicators should be distributed appropriately in tandem with what they are required to measure; the input, activities, output, outcomes or impact.

The indicators should also be specific in terms of quality, time, target group and place (Nuguti, 2009).In China, lower levels of project management office only collected and tabulated data and passed it up to the next level without analysing or reflecting on their own data. This was an impediment. At the same time project management offices suffered from too much data which impacted on the analysis and led to review of monitoring data only once annually (China Watershed Management Project Report, 2006). Therefore, there is need to collect credible data for ease of use. Projects must systematically identify, analyse and respond to risks in a way that ensures continuation of project benefits after completion of the project (Gusfield, 1975).According to Potter *et al.* (2006), many Monitoring and Evaluation systems are complex and attempt to monitor too many issues. Further, Potter *et al.* (2006) recommend that Monitoring and Evaluation systems should be technically simplified and made user friendly. Riddell *et al.* (1997) conclude that a repeated and consistent conclusion drawn across countries and in relation to all clusters of studies is that the data quality remarkably poor. This study established that there is need to train various committees involved in Monitoring and Evaluation data collection and analysis

Some developing countries such as Brazil, Chile and Turkey have made progress with respect to linking expenditures to output and outcome targets (Kusek and Rist, 2004). Malaysia and Uganda have introduced laws –albeit different measures to budgetary process to make it more transparent, accountable and results focused. Use of Monitoring and Evaluation results improves the effectiveness of action and hence sustainability (Woodhill,2005).There is need to select methods in Monitoring and Evaluation practice that are relevant, whether quantitative or qualitative oriented, and also consider the purpose for which the data will be used (Guijt, 1999). Monitoring and Evaluation system must produce monitoring information and evaluation findings. This is particularly critical to key stakeholders and can be used to improve government performance, respond to a sufficient demand for the Monitoring and Evaluation work to ensure its funding and its sustainability. In many countries, the real challenge is the absence of demand

for Monitoring and Evaluation information, and this is a difficult hurdle to surmount (Mackay, 2007).

Collection of too much data is a problem and may result in a situation where the inclination to provide quality data is low since the information will not be used. There is need to build reliable ministry data systems to provide the primary data on which Monitoring and Evaluation systems will depend on (Mackay, 2007). Clearly, only a few government officials have been trained in modern data collection and monitoring methods and even fewer have been trained on how to interpret different modalities of data (Kusek and Rist, 2004).The solution in this case lies in auditing data systems and diagnosing data capacities as well as expertise involvement in conducting surveys, censuses and managing data. Sector ministries in developing countries are assisted by few statistical officers and agencies to strengthen their administrative data systems, better data collection on project delivery, regarding beneficiary satisfaction with government services and in using information in evaluating project performance.

The extent of utilization of Monitoring and Evaluation information is the real measure of Monitoring and Evaluation system and has nothing to do with its capacity to produce reliable monitoring information and evaluation findings. If evaluations are being conducted internally within government, data verification and auditing are necessary. Alternatively, the work can be contracted out to academia and consultants with the antecedent challenge of ownership of findings, objectivity and credibility. Some countries have successfully established Monitoring and Evaluation systems. These include Chile, Colombia, Australia and the United States(Bamberger, 2008).

Documented experiences indicate that this exercise is monotonous and requires patience and persistence. It also requires time: to create or strengthen; to train or recruit qualified staff; to plan, manage and conduct evaluations; to build systems for sharing Monitoring and Evaluation information among ministries, and to train staff to use Monitoring and Evaluation information in their day-to-day work. One of the key determinants of whether or not an evaluation will be useful and, whether or not the findings will be used, is the extent to which clients and stakeholders are involved in all stages of the evaluation process. The client should be kept informed of the progress of the evaluation and of preliminary findings as they emerge. They

should be constantly briefed and given an opportunity to respond before the conclusion of the process (Bamberger, 2008).There is need to critically look into the demand of data and to establish the extent of use and the specific ways of utilization. Sound systems for data demand and use can help improve performance, as more and more governments in developing countries are beginning to understand (Mackay, 2007).

The primary purpose of Monitoring and Evaluation data demand is to support management in making timely and effective decisions for planning, monitoring and managing the project. Monitoring and Evaluation data is essentially a system that uses formalized procedures to provide management at all levels with appropriate information from internal and external sources hence influencing sustainability of agricultural products (Vernon, 2001). Monitoring and Evaluation generally consists of accounting software and a database management system for planning and non-accounting information (Lecuit *et al*., 1999).

The baseline is the first critical measurement of the performance indicators and is used as a starting point, or guide, by which to monitor future performance of projects or programmes (Kusek and Rist, 2004). Therefore, baseline data should be collected at least for each identified outcome indicator. Because the success of a project will be, in part, measured by comparing target values with achieved or actual values, setting target values is critical. One method to establish targets is to start with the baseline indicator level, use historical data or another estimate of the rate of change to set the desired level of progress –cognizant of the available funding and other resources over the target period – to arrive at the performance target. Although it is tempting to set comparatively low targets to ensure they are reached, setting of targets that are high enough is of essence to ensure project execution impetus and the attainment of the theory of change ideal of transformation.

The results framework for Monitoring and Evaluation data, incorporated into the preparation of World Bank-assisted projects from end of 2004, is a crucial step towards an enhanced results orientation in project work. One major aim is to ensure ample focus on expected intermediary outcomes and the development objectives to be achieved by the targeted project beneficiaries. Most projects prepared using this framework are now under execution, and practical experience with Monitoring and Evaluation execution has yet to be thoroughly documented (Rist, 2004).

Focusing on higher level project results must not overlook information needed for monitoring resource availability and use and the quantity, quality and appropriateness of outputs generated. By relegating such information to other sections, the project results framework may convey the false impression. Not only is such information of limited importance, but they are also not an integral part of the overall Monitoring and Evaluation system. This would at best mean not meeting the basic information needs of project management, and at worst render a project's Monitoring and Evaluation system irrelevant to implementing agencies and managers in the field. This could mean repeating problems of the divide between the management information system (MIS) and the Monitoring and Evaluation system evident in some completed projects (Jim, 2007).

2.7 Research and Surveillance in Monitoring and Evaluation and Sustainability of Food Agricultural Food Crop Projects

According to the World Bank (2008), developing countries invest only a ninth of what industrialized countries put into agriculture research and development (R and D) as a share of agricultural Gross Domestic Product (GDP). To narrow this gap, developing countries must prioritize on increasing investment in R and D and intensify surveillance. In China and India, over the last two decades investment in agricultural R and D has tripled, whereas in the sub-Saharan African countries the investment increased by barely a fifth, with decline in half of these countries. Inadequate research, especially demand driven research related to capacity deficiencies, coupled with infective extension and delivery system of research finding have been identified as being issues of concern to the agricultural sector in Kenya, which hinders the use of the findings (Otieno and Atieno, 2006).

Lekorwe and Mpabanga (2007) point out that at the local level staff might not be familiar with government policies. This reduces efficiency in NGOs because of tensions which may arise slowing down surveillance. Tuckermann (2007) observes that the project team he studied did not recognize Monitoring and Evaluation as learning tool, believing that the results could be used against their work: Monitoring and Evaluation was perceived as opening room for criticism regarding performance, putting their knowledge and status at risk. Further King and Volkov, (2005) note that Monitoring and Evaluation should not only be used for accountability and

transparency but should constitute a critical inquiry as well. There is need to ask critical questions and avoid focusing on description of activities and recording of the number of those served (Khan, 2003).This reminiscent of what has been carried out regarding Monitoring and Evaluation activities in Nyeri South Sub County(Nyeri South Sub County Agriculture office 2017).

Smallholder agriculture feeds greater numbers of populations in Africa and beyond, yet extension policy and indeed Monitoring and Evaluation is biased against it (Ekechuwu &Eziakor,1990). This is an issue that research and surveillance could effectively address. Due to inadequate extension services, production is very low and an increasing number of African countries cannot feed themselves (Mazibuko, 2007).Meanwhile, earnings from exports are insufficient to permit enough food imports to make up the differences (Ayres, 1995). Concerted research and surveillance is critical in this respect. Turner (1990) notes that at times detailed audit cannot investigate problems to a satisfactory technical level because, in most cases, the auditor does not possess the technical knowledge which adversely impacts on surveillance. In Zambia, the Agriculture Research Institute (ZARI) generated a lot of technology through soils and crop research over the years whose benefit was not fully realized. The Norwegian Agency for Development Cooperation (NORAD), which provides substantial funds to governments and NGOs, requires only very brief annual reports for the purposes of surveillance (Ibrahim, 1999). Such reports and legal disclosures are significant tools of surveillance in that they make available (either to the public or to oversight bodies) basic data on projects and subsequently impact on Monitoring and Evaluation and sustainability.

In some cases, information provided by Monitoring and Evaluation influences decision-making neither during implementation nor during planning of an on-going project development and new initiatives (Britton, 2005).All this implies that such reports do not have a bearing on sustainability of projects. Karanja (2013), researching on sustainability of youth income generating projects in Kangema District, Murang'a County, Kenya, has found that majority of the youth projects are only evaluated twice a year and 23% have not been evaluated at all. The study recommends that Periodic Monitoring & Evaluation by experts from the Ministry of Youth or any other agency should be incorporated to boost the Monitoring and Evaluation of these projects and enhance quality of the projects. The author further recommend the need for those

concerned with these youth projects to involve professional or experts in management of youth projects, particularly during planning, implementation and Monitoring and Evaluation phases. There is need to carry out further studies on the challenges facing the field staff working in community-based projects in undertaking Monitoring and Evaluation activities so as to bring out factors that need to be considered ardently regarding such projects, and hence realize effective outcomes from the projects (Mugambi and Kanda, 2013).

In reference to Nyeri South, there are no mechanisms that exist to ensure that recommendations of previous Monitoring and Evaluation findings and reports are referred to when solutions to current challenges are being sought (Sub County Agriculture Office Nyeri South, 2015). Meanwhile, research work is mainly undertaken by institutions such as the Kenya Agriculture Research Institute (KARI), yet at the grassroots, these institutions are hardly represented. The implication of this is that the mistakes of previous years are still being repeated since agricultural activities are conducted without the benefit of research. The Kenya government, through the performance management system, has endeavoured to transform the public sector from a culture of laxity, laziness and complacency to a business oriented culture. This is one of the public sector reforms (PSRs) policies that aim to enhance delivery of quality, effective and efficient services to the public and facilitate realization of Kenya Vision 2030 (Kemunto, 2010).

Project Monitoring and Evaluation surveillance is an on-going process, especially for projects of a pilot or innovative nature. Both must go hand in hand with determining realistically the project's Monitoring and Evaluation requirements. Of invaluable use to this process is the log frame matrix. Establishing the means-ends linkages along the entire results chain, especially assessing the adequacy of interventions and the reasonableness of assumptions in relation to project objectives, are key aspects of project design that ought not to be buffed over. Availability of the log frame at the start of the project also helps link successive annual work planning and budgeting processes to the overall project plan and information gathering and reporting requirements (Jim, 2007).This has the capacity of positively impacting on surveillance.

Key to effective project Monitoring and Evaluation surveillance is investing adequate time and resources in system design at the outset, with provision for refinement and evolution over the course of implementation. It generally requires inclusion of an experienced individual to

undertake this task as a core member of the project preparation/appraisal team. Essential features of the Monitoring and Evaluation framework to be elaborated include: An all-inclusive Monitoring and Evaluation strategy, including an impact evaluation strategy, clearly showing roles and responsibilities of implementing and coordinating agencies and, where applicable, community based organizations, information requirements, specific tools and methodologies for data collection, analysis and reporting, and the necessary institutional arrangements, including well-designed linkages with management units and steering committees (USAID, 2000).

Project Monitoring and Evaluation surveillance requires a set of component-specific performance indicators for the entire results chain – distinguishing among input, output and outcome indicators, to measure success or failure in achieving each component's results. As part of the participatory approach, several iterations, involving a series of stakeholder consultations may be necessary to agree on the indicators. Precise targets, especially quantitative ones, and timelines may have to be decided on only at the time of project commencement or during execution, in concurrence with annual work planning (Woodhill, 2007).

The operational objectives of the Monitoring and Evaluation surveillance system are an integral part of the Monitoring and Evaluation framework which leads to sustainability of the projects. These will need to be specified and agreement sought amongst project stakeholders. They should ideally be accompanied by a set of Monitoring and Evaluation system outcomes – which are subject to monitoring, as for any other project component. For instance, systematic provision of information for control and coordination of implementation may be one operational objective, whereas timely identification of execution constraints and development opportunities could be a desired outcome (IFAD, 2002).

2.8 Ethics in Monitoring and Evaluation and Sustainability of Food Crop Projects

Trevino and Youngblood (1990) and Trevino (1986) developed and empirically tested a model of ethical decision-making that predicts an interaction of individual and situational factors in determining ethical decision-making in organizations. They also attempted to explain choice behaviour involving values and the antecedent conflict within organizations. In their framework, cognitions predict behaviour, whereas situational and individual variables function as constraints

(moderators) on the relationship between cognitions and behaviour. When testing their model, Trevino and Youngblood (1990) found that locus of control, organizational culture and other variables contribute to decision-making. In particular, Trevino and Youngblood's (1990) study indicates that both contextual and individual difference variables function as main effects on ethical decision-making.

The term self-regulation refers specifically to efforts by those involved in project work or other sectors to develop standards or codes of behaviour and performance (Schweitz, 2001).Self-regulation presents a complementary path that addresses directly organizational problems while retaining some integrity. Codes are an enunciation of suitable, or accountable, behaviour for an entire sector that can ease Monitoring and Evaluation work. The process of developing a code of conduct is an opportunity for self-definition, as well as for public presentation of those involved in project work to pursue collective mission, principles, values and methods (Schweitz, 2001).The code process establishment involves some degree of participatory negotiation a crucial ingredient of Monitoring and Evaluation. While the content of codes varies, they essentially agree on key principles and ethics of development (participatory and people-centred development), and they can provide guidelines on project management (Schweitz, 2001).Through self-regulation opportunities exists for organizations to improve their public image and also enhance performance and sustainability.

Proponents of social auditing offer numerous reasons why organizations should adopt the process and hence ethical systems in line with the deontological and rights imperative approaches. To begin with it offers internal management advantages in terms of Monitoring &Evaluation performance (Pearce, as cited in Volunteer Vancouver, 1999). As a mechanism of accountability, social auditing enables views of stakeholders (such as communities and funders) to be considered in developing or revising organizational values and goals, and in designing indicators for assessing performance (i.e. downward and upward accountability) in tandem with the social change theory. Social auditing can also serve as a valuable tool for strategic planning and organizational erudition if the information on stakeholder perspectives and social performance is fed back into decision processes (Mayo, 1996, p. 9).This has a positive bearing on Monitoring and Evaluation and sustainability.

The external verification of social audits provides a way for organizations to enhance their public reputations by disclosing information that is based on verified evidence rather than on anecdotes or unsubstantiated claims hence reinforcing surveillance (Pearce, as cited in Volunteer Vancouver, 1999). This can contribute to authentication of Monitoring and Evaluation data and prudent use of resources. The disclosure and verification role is especially important. It is a means of curtailing exaggerations by organizations of the degree to which they have succeeded. The issue of quality also raises concerns that are of importance to Monitoring and Evaluation teams. The questions that then arise are: to what length should those preparing data go to making sure it is credible, and to what extent are they responsible for the consequences arising from the generated data or even research results? (Crane and Mittens, 2004).Failure to grasp what constitutes best practice in a working environment constitutes incompetence, but knowingly ignoring best practices, even with antecedent ability to accomplish the same, is unethical (Kusek and Rist, 2000).

Monitoring and Evaluation practices should be carried out when there is informed consent. This means that the person participating in the evaluation is fully informed about the evaluation being conducted. Participants need to be made aware of the purpose of the project, who or what group is funding it, how the findings will be used, if there are any potential adverse impacts of their participation and who will have access to the findings. The main purpose of informed consent is that the participant is able to make an informed decision to either or not participate in the evaluation. Additional information should also be provided in the event that the participant becomes distressed in any way during their participation (European Commission, 2002).It is the right of participants to leave a programme of this nature at any time; therefore, no force should be placed on those who choose not to persist (Woodhill, 2007).

According to IFAD (2002), there should be no harm to participants in the process of carrying out Monitoring and Evaluation practices. Harm can be physical or psychological or both. It can take the form of: stress, pain, anxiety, low self-esteem or an invasion of privacy. It is imperative that the evaluation process does not in any way harm inadvertent or otherwise participants.

Confidentiality should also be maintained. Information that identifies participants should not be made available to or accessed by anyone except the programme coordinator. Confidentiality also

ensures such information is excluded from any reports or published documents. Given that there are often small numbers in peer based programmes, it is very important to consider how reports are worded to ensure that there is no opportunity for people to be identified and that their names are not used (White, 2003). These constitute important ethical challenges.

According to Howard (2003), only those components that are of relevance to the programme/initiative being conducted should be put into consideration. High risk populations are sometimes used as guinea pigs or a captive audience to ask all sorts of questions in evaluations that are paramount to groups conducting the programme/initiative. However, these are not relevant to the programme, nor will they be to the group that is involved in the programme. It is important to keep evaluations as simple as possible and to remain focused on the objective of the evaluation and what the data gathered will be used for.

2.9 Theoretical Framework

This study is guided by the Theory of Change, which is associated with, among others, Weiss. The Theory of Change seeks to enhance empowerment by encouraging participation of vulnerable groups, enhancing surveillance and capacity building, as opposed to the top-down approaches previously practiced in implementation of projects. These previous approaches negatively affected project sustainability. Due diligence in a project set up must be adhered to, especially regarding carrying Monitoring and Evaluation practices, be it in planning and coordination, capacity building, data demand and use or even in research and surveillance. This should also be done with ethical principles in mind and with a view to mitigating likely adversities that may accrue. Further, Monitoring and Evaluation reports should meet the requisite ethical standards.

2.9.1 Theory of Change

The Theory of Change is a model that explains how an intervention is expected to lead to intended or observed utility and impacts. Often referred to as the programme theory, results chain, programme logic model or attribution logic (TOC origins 2015), the Theory of Change illustrates the series of assumptions and links identifying the presumed relationships and has great relevance to planning and coordination as well as research and surveillance and capacity

building. Using the Theory of Change the Monitoring and Evaluation practices can be regarded as inputs whose outcome will be visible in more effective Monitoring and Evaluation system and the transformative effect on the livelihood of the target communities. The Theory indicates which aspects of implementation need to be checked for quality, to help distinguish between implementation failures and theory failures. It also provides a basis for identifying where along the impact pathway (or causal chain) an intervention may stop working. (Weiss,1955).

This type of information is essential to drawing a causal link between any documented outcomes or impacts and the intervention. It is also essential to explaining and interpreting the meaning and implications of impact evaluation findings. Further, if a participatory approach is taken, the development of the Theory of Change can help all participants think in outcome terms at the planning stage. The process can help develop ownership and a common understanding of the programme's planning and what is needed for it to be effective. The Theory is also essential in explaining and interpreting the meaning and implications of impact evaluation findings. In addition, if a participatory approach is taken, the development of the Theory of Change can help all participants to gain a common understanding of the programme's planning and what is needed for it to be effective as well as reinforcing surveillance. The Theory enables a community to claim credit for outcomes predicted in the theory based on the fact that success takes time to be recognized and hence the issue of sustainability (Kubsich,1998).

The Theory of Change was popularized by Weiss (1955). It has further been seen as a way of describing a set of assumptions that explains both the mini-steps that lead to long-term interest and also the connections between programme activities and outcomes at each stage. Employing best practices in Monitoring and Evaluation is likely to enhance the realization of project deliverables as well as ensure that projects are able to use resources and hence sustainability. Further, Reeler (2007) notes that the underlying assumptions that development processes are predictable or unpredictable generate a focus on the achievements of the results and not as much on understanding and learning regarding the process, especially as regards the Theory of Change. Often, rigid applicability undermines the flexibility required in dealing with the unexpected results and complexity of this process (Steff, 2008). A theory of change is one small contribution to a larger body of theorizing. It can be regarded as an observational map to help practitioners, whether field practitioners or donor or even beneficiaries, to read and thus navigate processes of

social change. There is need to recognize how change processes shape the situation and adjust practice appropriately (Reeler, 2007).

The Theory of Change process enhances the understanding of stakes and stakeholders hence assisting in thinking through the utilization of the Monitoring and Evaluation data and lessons and increases the consequence awareness. Monitoring involves tracking progress against plans, milestones and expected results. The Theory of Change takes a broader perspective. It looks at the problem the project is addressing, its wider context and changes in the relationships between the process indicators and outcomes that are unintended, to prove if they are valid. Therefore, revisiting the assumptions that have been made at the beginning during project implementation is importance. The Theory of Change is helpful to not only measure outcomes but also to understand the role of the project and other factors in contributing to outcomes. The main objective of mid-term review is checking if the project is contributing to the intended change in line with the underlying Theory of Change and if the Theory needs to be revised (Hinchcliffe *et al.,* 1996).

2.9.2 Utilitarian Theory

The Utilitarian Theory emphasizes the role of the greater good in society. In the Anglo Saxon world, utilitarianism has had greater acceptance. Its genesis is linked to the names of the British philosophers and economists Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873). It has been influential in modern economics in general. The basic principle of utilitarianism states that an action is right if it results in greater amount of good for the greatest number of people affected by its action. This view raises a number of ethical issues (Crane and Matten, 2007).

The Utilitarian Theory puts at the centre of its decision a variable that is very commonly used in economics as a parameter to measure the value of actions, namely utility(Crane and Matten, 2007). In Monitoring and Evaluation an analysis of costs and benefits is important since it enables one to understand the viability of a project and enhances surveillance. This also is very relevant when it comes to data use. In analysing two possible actions in a single business decision, a certain utility can be assigned to each consequence and each person involved, and the

action with the highest aggregate utility can be determined to be correct and its ethicality determined.

In Monitoring and Evaluation an analysis of costs and benefits is important. It enhances an understanding of the viability of a project. This is also very relevant when it comes to data demand and use, particularly making sure data collection is relevant, sound and cost effective. The terms of reference should be clear so that boundaries and decisions are less open to misinterpretation and challenges associated with ethical decision-making and value of actions are duly considered. Contractual agreement should be detailed with clearly defined procedures for benefits to be fully realized; this can be helpful if disagreements arise (Kusek and Rist, 2004).Further, Monitoring and Evaluation reports should meet the requisite ethical standards and data presented should be factual.

2.9.3 Theory of Social Change

The Social Change Theory is associated with, among others, Julius Nyerere and Paulo Freire, a Brazilian scholar. Most development practitioners are influenced by the work of Paulo Freire (1970, 1973), that was developed in the context of his work with communities battling against poverty and social inequalities (Frere, 1992). For Freire, community mobilization involves the processes of dialogue and critical thinking by marginalized people (Vaughan, 2010), facilitated by an external change agent, and generating a reflection-action cycle that 'empowers' vulnerable communities through interventions such as projects (Rifkin and Primrose, 2001). Small-scale local activism swell over time, coalescing into larger scale groups with shared identities, goals and strategies that ultimately serve as agents of change, with the capacity of transforming society. In practice, the Social Change Theory aims to enhance empowerment through participation of vulnerable groups, enhancing prudent planning and coordination, surveillance and capacity building as opposed to the traditional top-down approaches.

The Theory of Social Change advocates for combining theory and action to create social change. The theory aims at addressing the issue of how development projects did not lead to sustainable changes and this is particularly relevant to the agricultural sector because of the need to meet targets, mitigate poor planning, accountability and low incomes derived from the production

units. Empowerment should facilitate the individual's involvement in Monitoring and Evaluation during the lifetime of the project. Freedom and socialism (1968), which was central to Nyerere's *Ujamaa* (villagization) projects, indicated the dichotomous relationship between what Tanzanians needed for inclusive social development and what it inherited from imperial powers. This was very important for Nyerere and should have given him the support of his people. Nyerere's locally conceived, locally designed and locally responsive educational and social development policies, with on-going policy and programme re-structuring (which should be common to all such projects), would have undoubtedly, pragmatically yielded so much more for the people of Tanzania if the requisite support was forthcoming.

It is important that due diligence in a project set up is adhered to, including Monitoring and Evaluation practices, whether in planning, capacity building, data use or even in surveillance. This should be done ethically with a view to mitigating likely adversity that may accrue in case of mistakes. Further, Monitoring and Evaluation data reports should meet the requisite ethical standards.

The question of why economic growth leads to the rich getting richer needs to be addressed. It raises ethical concerns over implementation of projects. Project implementation ought to be an empowering process and Monitoring and Evaluation application should be able to identify loopholes in the process. Involvement of communities in community projects is not an arbitrary occurrence but is anchored on anticipated gains for the target communities. In Kenya there is no solid propensity to involve target groups in project work right from initiation, formulation, implementation, Monitoring and Evaluation up to project closure (Nyeri South District Agricultural Office, 2015). This approach is in stark contrast to what was hitherto practiced before the 1980s when the government was solely responsible for initiating and implementing development for the people (Nyeri South District Agricultural Office, 2017).Prudent utilization of resources accruing to those in charge of NGO's is needing so that resources contribute to uplifting of the marginalized.

The above approach is contradictory to the position taken by leading social change theorists such as Paulo Frere (1973) who advocates that it is necessary to empower people to participate in their own development. Further, Frere's work, the *Pedagogy of the Oppressed*, provides a basis for

discussion on empowerment. Zimmerman *et al.* (1993) also highlight the need for interventions to facilitate empowerment; such interventions would entail capacity development, involvement in planning as well as an active role in matters surveillance. The focus of empowerment, Zimmerman *et al.* (1993) observe, is an understanding and a strengthening process through which individuals take charge of their lives. Empowerment facilitates the individual's involvement in Monitoring and Evaluation during the lifetime of the project. The nature of interaction that involves Monitoring and Evaluation officials and farmers should be cordial and empowering. Similarly, the relationship between junior and senior officials in the Ministry of Agriculture should have positive results and all this should be carried out cognizant of ethics in Monitoring and Evaluation.

The Social Change Theory, instead of advocating for bottom-up approach, should have advocated for a mixed mode. This is because a bottom-up approach might be lead to conflict and inadequate appreciation of complex issues particularly by those at the grassroots. Passia (2001) contends that Monitoring and Evaluation system should be seen as something that helps a project or organizations know when plans are not working and when circumstances have changed giving management the requisite information it needs to make decisions about the project, organization or about changes that are necessary to strategy or planning. Chaplane (2008) states that the Monitoring and Evaluation system provides effective operations, meet internal and external reporting requirements of uniform future programming. Moreover, there is not a single recognized industry standard for, assessing the quality of M& E system (Chaplane, 2008). Many scholars in the field of international development argue that Freire's conceptualization of the use of communities through mobilization as a strategy for radical social change has been used by neo-liberal development agencies as a means to extend their control in setting of targets (Cooke &Kothari, 2001). Critics suggest that Freire's ideas have been used to frame the agendas of powerful international development agencies rather than communities (Campbell, 2014).This might lead to a scenario in which development agenda is wrongly credited to local communities but in essence is an imposition.

2.10 Conceptual Framework

The influences of Monitoring and Evaluation practices are crucial in facilitating the realization of project deliverables. Sustainability of projects is, affected by Monitoring and Evaluation practices. These practices comprise the independent variable and ethics in Monitoring and Evaluation, which constitute the moderating variable, all of which are likely to influence project sustainability. Conceptual framework presents, in a diagrammatic form, the way the researcher has conceptualized the research regarding the relationship among the independent, the dependent and the moderating variables. The conceptual framework is an illustration of practices influencing projects sustainability. The food crop projects are meant to boost food security in Nyeri North Sub-County. The three types of variables have various indicators that have been captured in the conceptual framework as indicated in the diagram below.

Monitoring and Evaluation practices are not likely to enhance food crop projects sustainability if not carried out professionally and competently. Further farmers if not adequately involved in project planning, resource availability and management, and ownership among other crucial activities are unlikely to experience the benefits accruing. Capacity can to a great extent enhance planning and coordination, data demand and use, research and surveillance and subsequently sustainability of agricultural food crop projects. Capacity building reduces the gap between the actual and expected. Ethics in Monitoring and Evaluation and the antecedent value system is critical in this realization. If the data is not of good quality, it is termed irrelevant and cannot be used in decision-making. Planning might not enhances research and surveillance if modalities are not in place to enhance facilitation. While surveillance is unlikely to influence use of data if it is ineffective and data use might fail to enhance capacity building if the data collected has limited information and is of poor quality.

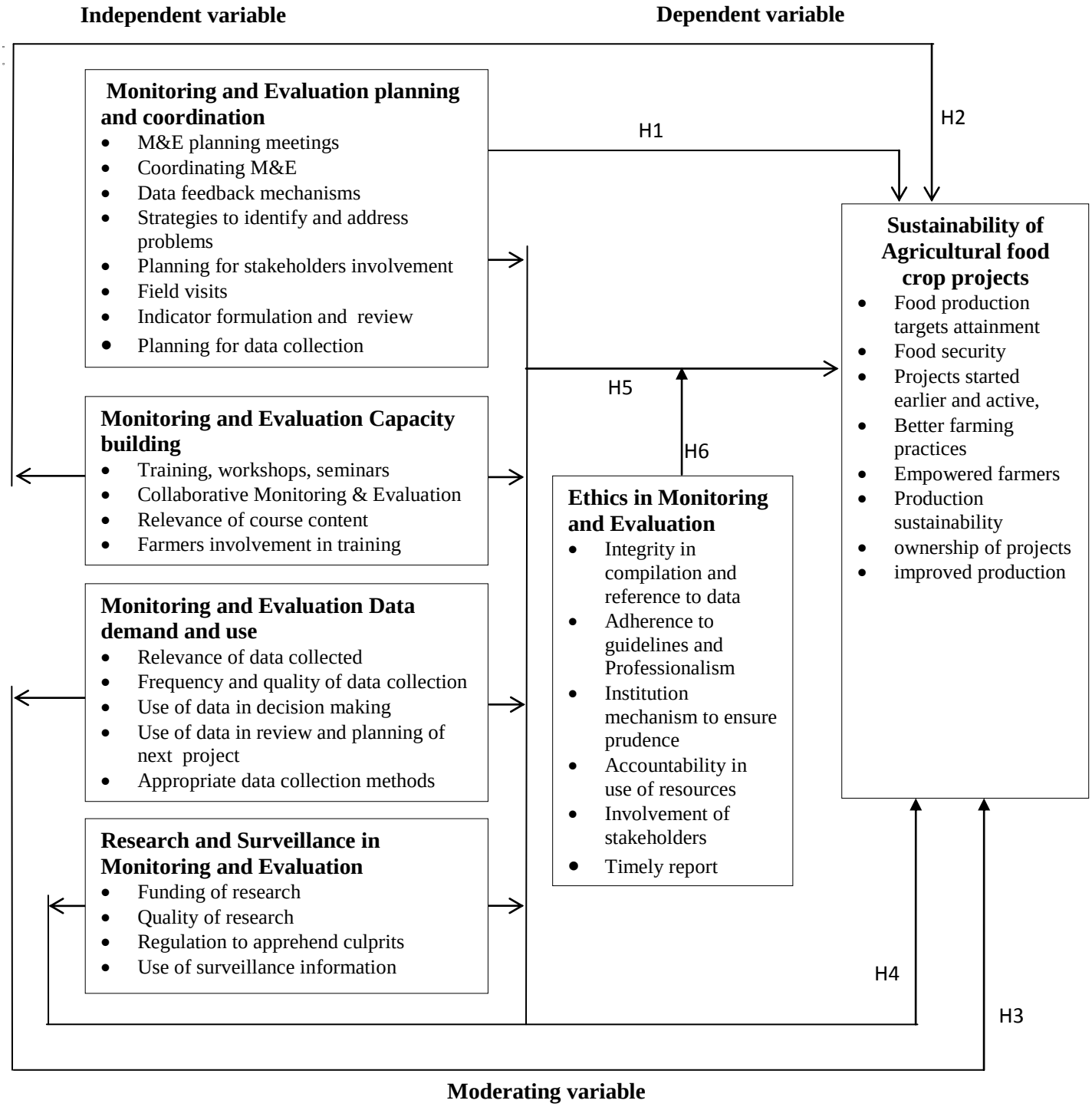

Figure 2.1: Conceptual Framework for Monitoring and Evaluation practices, Ethics in Monitoring and Evaluation and Sustainability of Agricultural food crop projects

Table 2.1: Summary of Literature Review

Variables	Authors/Year	Title of the study	Methodology	Findings	Knowledge Gap
Monitoring and Evaluation planning and coordination	Karanja, G. M. (2013)	Influence of Management Practices on Sustainability of Youth Income Generating Projects in Kangema District, Murang'a County, Kenya	The study used: • Descriptive survey design • 13 youth groups selected through stratified sampling Chairperson, member of each group and the district youth officer included in the sample. • Two groups involved in focused group discussion. • Descriptive statistics in analysis & results presented in form of tables and percentages	The study found that: • Effective Monitoring & Evaluation influence the sustainability of the youth projects. • Majority of the youth projects in Kangema were only evaluated twice a year. • 23% had not been evaluated at all.	• The study will investigate involvement of food crop agricultural groups in Monitoring and Evaluation planning and coordination considering groups and members • Involving professionals/experts in management of projects during Monitoring and Evaluation phases. • Use of inferential statistics and hypothesis testing
Monitoring and Evaluation capacity building	Mazibuko, J. B.(2007)	Enhancing Project Sustainability Beyond Donor Support. An Analysis of Grassroots Democratization as a Possible Alternative	The research used; • Purposive and simple random Sampling • A population of 25,000 people in situated in the northern region of Malawi.	The study revealed that: • Institutional capacity building is required in planning • Communities must be involved directly in development that is under their control	• The study will look at Monitoring and Evaluation capacity building activities

Research and surveillance in M and E	Mugambi, F.,& Kanda, E. (2013)	Determinants of Effective Monitoring and Evaluation of Strategy Implementation of Community Based Projects	Study used: • Desk research • Journals, books and other research papers on Monitoring and Evaluation	• The purposes of evaluation and the actual Monitoring &Evaluation process and objectives of Monitoring &Evaluation affect projects.	• Study only used review of literature • Did not link actual Monitoring and Evaluation to sustainability of projects. • Use of inferential statistics and hypothesis testing
Monitoring and Evaluation practices influence on sustainability	Stirman *et al.*(2012)	The Sustainability of New Programmes and Innovations: A Review of the Empirical Literature and Recommendations for Future Research	Study used: • Self- reports to assess sustainability or elements that influence sustainability. • Employed quantitative methodologies, • Employed qualitative or mixed methodologies. implementation quality	Influences on sustainability included: • Organizational context, capacity, processes • factors related to the new programme or practice themselves	• To look at various Monitoring and Evaluation practices as whole and their influence on sustainability of projects • Only reviewed literature
Monitoring and Evaluation data demand and use	Woodhill, J. (2005)	Monitoring & Evaluation as Learning; Rethinking the Dominant Paradigm, Monitoring & Evaluation of Soil Conservation and Watershed Development Project	Study used: • Desk research • Journals and books	Study concluded that: • Data collected should enhance interest among the consumers of the information • Data collected should result in learning	• Study involved only literature review • Study to look at data demand and use and how it is connected to capacity and sustainability
Monitoring and Evaluation planning and coordination	Wabwoba, & Wakhungu (2013)	Sustainability of food Agricultural Food Projects in Kiambu County, Kenya	Study adopted • AN evaluation research design • Purposive sampling method to select key informants • Data was collected using	The findings revealed that: • That group members must participate in Monitoring& Evaluation planning and implementation for purposes of	• Study should be done on involvement of group members in project planning to enhance sustainability

			face-to-face interviews with 10 key informants and focus group discussions with 20 groups that had benefitted from the funded projects • Data collected analysed using the Chi-square test at the 95% confidence interval level.	ownership • The sustainability of community food security projects is affected by: ➢ Group members' participation ➢ Management	
Research and surveillance in M and E	Tuckerman, N.B.(2007)	Challenges and Key Success Factors to Integrating Learning and Change in Monitoring & Evaluation of Development Projects: Case Study of an Urban Agriculture Project in Eastern Cuba	The evaluation methods used: • Were mainly quantitative • Fieldwork lasted eight weeks. • Individual and group semi structured interviews, informal conversations, group intervention, feedback sessions and participant observation were used.	• Failure to recognize Monitoring & Evaluation as learning tool • Monitoring & Evaluation was perceived as opening room for criticism • Putting official's knowledge and status at stake.	• Establish what needs to be done for those in organization to perceive Monitoring and Evaluation positively to ultimately facilitate sustainability • Explore involvement of stakeholders

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter describes the Methodology that was used in conducting the study. These includes: research paradigm, research design, the target population, sample size and sampling procedures, research instruments, reliability, validity, data collection procedures, data analysis techniques, test of hypothesis, operationalization of variables as well as ethical considerations.

3.2 Research Paradigm

A paradigm refers to how people view the world taking into consideration their beliefs (Morgan, 2007).Philosophers in the past regarded research as logic before modern research emerged (Chakraborty, 2012).Thinking about research can be seen through mainly three major perspectives: epistemology (acceptable knowledge), ontology (nature of reality) and axiology (judgment about value).The term epistemology comes from the Greek word *episteme* meaning knowledge. Epistemology deals with how the human mind comes to know. Although many paradigms exist, the pragmatist paradigm was chosen to guide this study.

Johnson and Onwuegbuzie (2004) note that pragmatism paradigm is the best suited for mixed methods research approach and that mixed methods research is an approach whose time has come. The pragmatist paradigm accommodates both the positivist and constructivist philosophies (Morgan, 2007). The positivists do not acknowledge the integration of views from others and recommend the use of inferential statistics to test hypothesis in the interpretation of the statistical results in reference to the original theory (Ponterato, 2005).The constructivist paradigm, on the other hand, tends to rely on the views of the participants in reference to the situation being studied. Therefore, the use of a mixture of both the positivist and constructivist approaches led to the pragmatism paradigm.

Positivists posit that the goal of knowledge is to describe the phenomena bringing about a cause and effect experience that can be observed and measured. The positivists thinking prevailed

inmid-20th century coinciding with the behaviourists such as Elton Mayo's (Hawarthorne studies) thinking that psychology could not be measured since emotions were not observable. The positivists saw the world as operating through the law of determinism. Some of the issues addressed in the study require more detailed understanding of how different people interpret reality. Therefore, constructivism was found to be a suitable alternative to positivism. According to this paradigm, people or phenomena cannot be analysed in an objective way because the researcher, context and social reality affects research outcomes. "Reality" in this approach is socially constructed and subjective (Veal, 2005, p. 24).It is not something for which there is universal truth. Therefore, under this paradigm, two researchers examining the same issue would come to different conclusions. Hansen (2004) argues that reality is constructed in the mind of the individual and is not an eternally singular entity. This raises a question over how people understand issues. Field research can influence this thinking to an extent. Learning takes place as knowledge is constructed based on the interpretation of the learners' experience and it is through this knowledge construction is undertaken (Jonnassen, 1999).

Angelle, Amudo and Inanga (2004) also note that this approach develops knowledge on the premise that external social factors and processes independent of human thoughts and beliefs exist which make people interpret situations differently and arrive at different conclusions, without their knowledge of existence of such factors. Examining phenomena at different points in time would also mean the environmental factors differ in importance and thus different conclusions would be reached. In these types of studies, the researcher becomes fully involved with individual subjects and analysis is subjective and based on perceptions. This generally involves qualitative methodologies (Hussey &Hussey, 1997). Taking cognizance of the fore going pragmatism paradigm that accommodates both the positivist and constructivist philosophies and is the best suited for mixed methods research approach hence guided this study.

3.2.1 Research Design

A mixed model comprising descriptive survey and correlation research designs was used in this study. This choice was informed by the fact that descriptive and inferential data analysis was required in this study. According to Sproull (1988), the aim of descriptive survey design is to observe relationships between variables. Descriptive survey design enables the researcher to

observe phenomena in their settings as they occur. Descriptive survey entails the application of questionnaires and interviews to relatively large groups of people (Singleton *et al*., 1993).Descriptive survey method also enable quicker collection of information that can be used to understand the general population. Correlation research design was used to measure two or more factors to determine the extent to which the values for the factors are related (Creswell, 2012). Correlation research design helped the researcher to identify relationships using correlations and regression modelling for testing hypotheses and descriptive survey helped the researcher to describe phenomena.

The research approach used in this study was a mixed model. The use of mixed mode research approach, qualitative and quantitative data analysis was carried out at the same time. Monitoring AND Evaluation uses both quantitative and qualitative approaches. Qualitative approach addresses questions such as how, why, that facilitate a thorough understanding of the concerned subject, providing information on perception of people on particular issues, while quantitative method addressed issues such as who, how much, how many among others (Nuguti, 2009). According to Stuffle beam (2001),the mixed methods approach facilitates reliable feedback on a range of questions in facilitating a more wholesome understanding of issues.

In this study, qualitative data included detailed descriptions, direct quotations in responses to open-ended questions, analyses of case study and observation of different kinds. Sekaran (2003) indicates that the mixed mode can be classified into mixed models and mixed methods. In mixed models approach, descriptive data analysis was undertaken independently followed by inferential data analysis. Alan and Emma (2011), among other advocates of pragmatism research, argue that mixed methods help researchers to undertake data analysis with greater freedom making use of both descriptive and inferential data analysis techniques.

In commencing project work quantitative methodology is most appropriate considering that the evaluator handles precise information, compared to the later stages when the evaluator contends with the perceptions of the respondents. This is why reliance on qualitative methodology, with the evaluator being the data gathering instruments, is important (Nuguti, 2009).The data collected was derived through preparation of work plans either on monthly or annual basis and through field visits, stakeholders meeting, systematic reporting through observing and recording

of details as per the requirement of funders and other stakeholders as well as data being derived from technical reports. Further, descriptive survey facilitated an in-depth understanding of Monitoring and Evaluation practices as undertaken in various projects in order to draw important lessons (Cooper, Schindler &Sun, 2006).

3.3 Target Population

The target population of a study, as defined by Borg and Gall (1989), comprises all the members of a real or hypothetical set of people, events or objects for which an investigator generalized the results of the research study. The target population of this study comprised 503farmers who are participating in agricultural projects, 1 Sub County Agricultural Officer, 4 other officers and 4 extension officers in Nyeri South Sub County Agricultural office. This amounted to a total of 512 respondents.

3.4 Sample Size and Sampling Procedure

In this study the sample size refers to the farmers, Sub County agriculture officials as well as the extension officers. Sampling refers to the process of selecting individual respondents from among various group that was undertaken using the Neymann allocation formula...

3.4.1 Sample Size

The study used a sample size of 211respondents drawn from a population of 503 using the Yamane's formula of (1967) and also used census in reference to the Sub County Agricultural Officer, 4 other officers and 4 extension officers hence the actual respondents were 220. From this sample, statistical generalization of findings was done.

3.4.2 Sampling Procedure

Sampling is a selection process that aims to obtain a representative sample from the target population. The sampling design represents the framework within which sampling takes place. According to Bless and Higson (1995), one of the major issues in sampling is to determine samples that best represent a population so as to allow the accurate generalization of results. The study used stratified sampling in which all the three divisions, namely Othaya Central, South and

North Divisions, were included. Further, to select respondents from farmer groups, simple random sampling procedure was used. Sekaran (2003) posits that random sampling minimizes sampling errors and provides a sample size that is more representative of the entire research population.

The farmers were stratified as per their division of residence where the agricultural projects were situated. Through stratified random sampling the researcher brought on board all the four divisions. Further, from each stratum random sampling was used to select 30% of the members or respondents to participate in the study. Consequently, 211 respondents were drawn from a total of 503 farmers using Yamane's formula. The use of divisions in the study was due to the fact that they had diversity that enriched the study. The following formula by Yamane (1967) was used to calculate the sample size of respondents to participate in the study:

$$n = \frac{N}{1+N\,(e)2}$$

Where

n =sample size

N= population size

e= level of precision

With a population of 503 assuming a 95% confidence level and p=0.05

We get n= =503÷2.375=211

=211 respondents

Therefore, the selected respondents drawn from agriculture project group'stotalled211. The allocation of a sample into the strata was done using Neyman allocation formula. The purpose of the method was to maximize survey precision, given a fixed sample size. With Neyman allocation, the "best" sample size for stratum was as shown in Table 3.1.

Table 3.1: Sampling Procedure for Individual Farmers' project Groups

	Groups of farmers by cluster	Groups	Sample $n_{h=}\left(\frac{N_h}{N}\right)f$ $\left(\frac{26}{503}\right)211 = 11$
1	Githunguri Kanyange	26	11
2	Karima Passion Fruit	24	10
3	Kihugiru Gitundu	17	7
4	Gatugi SHG	30	13
5	Gathambara SHG	36	15
6	Mathome SHG	31	13
7	Ihuririo Umoja	25	10
8	Gatugi Avocado	33	14
9	Gurawiteithie	26	11
10	Kagongo Water tank	36	15
11	Kamunga SHG	21	9
12	Othaya Orphans	9	4
13	3K Sisters	35	15
14	Ukira Tuthie	9	4
15	Muiringi SHG	18	8
16	Focal area development committee	24	10
17	Gathera United SHG	33	14
18	Kagere Youth	24	10
19	Kagongo Orange	28	12
20	Kirai Mwihoko	18	8
	TOTAL	**503**	**211**

Source: Nyeri South Sub County Agriculture Office (2014)

In case of the other respondents the study used census sampling procedure as shown in Table 3.2. The census technique was adopted and all the respondents were involved in the study. Consequently, all the five Sub County Agricultural Officers in the district, one Sub County agricultural officer and all the four extension officers were included.

Table 3.2: Summary of Sampling Procedure for other Groups in the Study

Respondent	Population (N)	Sample (n)
Sub County Heads of Department	4	4
Extension Officer	4	4
Sub County Agricultural Officer	1	1
Total	**9**	**9**

Source: Nyeri South Sub County Agriculture Office (2014)

3.5 Research Instruments

Two questionnaires and an interview guide were used to gather quantitative and qualitative data. One questionnaire was administered to the farmers selected from each of the agricultural projects and the second questionnaire was administered to the extension officers and an interview guide was used to solicit for information from the sub county officers. The use of the various data collection tools was in tandem with the pragmatist paradigm which allows the use of various tools. The questionnaire for farmers and extension officers comprised eight sections. The first section of the questionnaire was the section asking for general information. The purpose of the research was explained in this section to the respondent at the beginning before focussing on demographic issues. The section was meant to enhance rapport with the respondents. The next seven sections of the questionnaire were on planning, capacity building, data demand and use, research and surveillance, ethics in Monitoring and Evaluation, the combined influence of Monitoring and Evaluation practices on project sustainability and the agricultural project sustainability. According to Boynton and Greenhalgh (2004), questionnaires offer an objective means of collecting information about people's knowledge, beliefs, altitude and behaviour. They are also easier to administer, analyse and viable to use in reference to time and resources (Kothari, 2009; Miller and Salkard, 2002).

The interview guide was used to solicit for information from the Sub County agriculture officer in charge and four other Sub County officers had eight section preceded by a section on demographics was open-ended. Interviews enabled the researcher to further probe for in-depth information.

The questionnaire for the sub county officers comprised seven sections. The researcher also liaised with the Ministry in order to create understanding with the relevant officers. This facilitated the administration of the interview guide to the relevant officers with whose assistance the researcher was able to assess the respondents in farming projects in the Sub-County.

An observation schedule was used to collect data. The schedule was made more effective by structuring its design. Much can be learnt by observing human behaviour. This tool enabled a deeper understanding of relationships among various individuals and groups. It is a common research method in social issues. Direct observation is also useful invalidation during monitoring as it allows for cross-checking of responses elicited through other methods (Gebremedhin *et al.,* 2010). During observation, the researcher was able to pay attention to non-verbal cues that facilitated a better understanding of respondents' behaviour. It was important to collect enough information to exhaustively answer the research questions. One limitation of observation was that the researcher was wary about was the tool's tendency to be time-consuming and expensive as well as resulting in collection of unnecessary data.

3.5.1 Pre-testing of the Instruments

The validity and reliability of the instruments was determined through piloting of the questionnaire to officers and farmer groups in the neighbouring Mathioya Sub-County. The groups were from a different jurisdiction and were not involved later. Validity is concerned with the interpretation of the test results in terms of their quality and the decisions that are made on the basis of how well the inferences made can be justified. In testing the tools for validity, the researcher examined whether or not the questions complied with the content, criterion and constructs validity. The Cronbach's Alpha method was used to test for reliability with a measure of 0.6 normally considered acceptable. This was done after collecting data for pilot test from 30 respondents. Thereafter data was coded and sorted in SPSS.

Piloting testing assisted in determining if the instruments were able to measure and determine if the respondents easily responded to questions. Further, this assisted the researcher to determine whether the instruments being used were comprehensive enough to facilitate exhaustive feedback. Along this line, therefore, the appropriateness of the language level used was also

checked. Pilot testing was undertaken to improve the internal validity of the research instruments. Testing of research instruments on a pilot sample was undertaken to assess the clarity and accuracy of the questions in the instruments before conducting the research. According to Kerlinger (1978), a sample size of at least 10% is adequate provided it is large enough to allow for reliable analysis of cross-tabulation for pilot testing giving 30 respondents. The registered agricultural food crop projects in Mathioya Sub-County were sampled for pilot testing in the study.

After the pilot test, revisions was undertaken to ensure the data collection tools would elicit relevant and accurate data. According to Patton (2001), if validity is established in instruments it would also guarantee reliability.

3.5.2 Validity of Research Instruments

There are several categories, of validity including construct, criterion and content validity. It is the degree to which an instrument measures what it was intended to measure. To ensure content validity of the research tools the study considered the variables and their scope in line with the literature (Hogan, Greenfield and Schmidt, 2001).Validity refers to the extent to which an instrument used in research is accurate, true and meaningful (Mugenda and Mugenda, 1999).The researcher also sought the opinions of the university supervisors together with research experts to assist in reviewing the appropriateness of the research tools. To ensure harmony and consistency with the content area, the Content Validity index was calculated with each item in the questionnaire being evaluated by experts on a point scale ranging from very relevant to not relevant. The proportion of experts rating each item at 3 or 4 relevant and very relevant was then calculated on the scale (*Devon et al., 2007).*Any item with a ratio of 0.65 and above was accepted. The researcher requested supervisor and expert to assess the content validity, by rating each item on a point rating scale (1=very good, 2= Average and 3 =very poor). The ratings was analysed by computing an item-level CVI (I-CVI) and a scale-level CVI (S-CVI). The 1-CVI was computed by dividing the number of experts, who related the goodness of an item with 3, 4 or 5, by the total number of experts. Result shows that the average CVI was 0.931 for the items measured in the questionnaire. Based on the figures above, the research instruments were

deemed to be valid. The S-CVI was computed by averaging the I-CVIs. In addition, according to Polit and Beck (2014), the S-CVI should be 0.90 or higher.

Criterion related validity refers to evidence of a relationship between attributes in a measurement tool and its performance on other variables. Construct validity refers to the extent to which an instrument measures the variable it was intended to measure and it requires the instrument of the content to be related to the operationally defined theory and concepts (Devon *et al*., 2007).Construct validity was tested using Factor analysis. Further, the research instrument was administered to a pilot group in Mathioya Sub-County, with a view to validating the instruments.

3.5.3 Reliability of Research Instruments

Reliability is the measure of the degree to which a research instrument yields consistent results or data after repeated trials. The researcher endeavoured to use consistent and systematic questions. According to Berg (1999), it is important to strive for reliability to ensure possible replication of the study. Carmines and Zeller (1979) define reliability as the extent to which any measuring tool yields the same results across different fields. Pilot testing was conducted in Mathioya Sub-County to check for reliability of the research instruments.

According to Mugenda and Mugenda (1999), reliability refers to the degree to which a measuring instrument used in research is consistent. Therefore, the reason behind the pilot (pre-testing) was to assess the clarity of the questionnaire items. Those items that were found to be inadequate or vague were modified and some replaced to improve the quality of the research instruments thus increasing their reliability. In order to improve the reliability of the research instruments the researcher employed test-retest method. The researcher then assessed the consistency of the responses on each pair of the pilot questionnaires to make a judgment on the reliability (Mugenda and Mugenda, 1999). Pearson product moment was determined and the acceptable correlation arrived at. The study also benefited from triangulation of methods since the study used a combination of various data collection methods. The computation of split half was aided thorough use of Statistical Package for Social Sciences computer software. The Cronbach alpha test was used to assess the research items regarding whether they were within the acceptable range of between 0-1After making the entries for all number of questionnaires the

test was used to examine the extent to which all the items in the two set of questions measured the same construct. Co-efficient alpha of 0.84 was obtained for the two sets of data. This coefficient alpha was considered acceptable as Kothari (2004) indicated that a reliability value index of 0.6 and above is adequate and preferable for descriptive research. In addition, Oluwatayo (2012) suggested that a reliability index of 0.80 and above is considered ideal for the study.

3.6 Data Collection Procedures

Questionnaires were used in gathering qualitative and quantitative data. A letter of identification from University of Nairobi, Department of Extra Mural Studies, was used to obtain research permit from National Council of Science and Technology. The researcher reported to Nyeri County Governor's office and the Nyeri South Sub-County Agricultural Officer before proceeding to the field. A letter of transmittal was used to introduce the researcher to the respondents and assure them of confidentiality. The researcher personally administered the questionnaires to the respondents to ensure that the right data was collected from the respondents and on time. Therefore, the respondents had a chance to clarify their queries on the spot and also the researcher had an opportunity to motivate respondents to respond to questions. The interviews were conducted on pre-arranged dates using an interview guide. Similarly, specific dates were set for administration of questionnaires to the Sub-County Officers and extension officers to collect their views about Monitoring and Evaluation. The views of the various groups of farmers over what they thought about Monitoring and Evaluation practices in Nyeri South Sub-County were also sought. The questionnaires were collected back for analysis by the researcher with the assistance of the research assistance. The researcher sought clearance from the Ministry of Education, Science and Technology before undertaking the research.

3.7 Data Analysis Techniques

The researcher examined the collected questionnaires to establish if they were properly filled. Thereafter, the questionnaires were organized under the various themes. The researcher used descriptive statistics, which entailed calculating frequencies, percentages, means, standard deviation, skewness and kurtosis as well as inferential analysis. The study adopted Pearson

correlation to establish the nature and strength of relationships that existed between the variables of the study. The Pearson product correlation formula used is as follows:

$$r = \frac{n(\sum xy) - (\sum x)(\sum y)}{\sqrt{[n\sum x^2 - (\sum x)^2[n\sum y^2 - (\sum y)^2]]}} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 1$$

The Pearson product moment correlation was used to test the relationship between the independent and dependant variables. Relationships with values of r = 0.7 and above were considered very strong and those with r value of between 0.5 and 0.69 were regarded as strong and those with between 0.3 and 0.49 were reasonably strong. Those relationships with a value of r below 0.29 were considered weak, an indicator that there was no relationship at all. After analysis the information was presented in tabular form.

To test the first 5 hypotheses multiple regression model was used and hypothesis 6 hierarchical regression model at the confidence level of 95% was used to draw inferences and conclusions by analysing the research questions using the Statistical Packages for Social Sciences (SPSS) software for data analysis.

3.7.1 Research Hypothesis

The empirical analysis was based on the standard regression terms.

Table 3.3: Test of Hypothesis

Objective	Hypothesis	Statistical Analysis	Model
Monitoring and Evaluation planning	H_1 there is relationships between Monitoring and Evaluation planning and sustainability of food crop projects	-Pearson correlation; simple regression analysis	$Y_1=b_0+b_1x_1+e_1$
Monitoring and Evaluation capacity development	H_2there is a relationships between Monitoring and Evaluation capacity development and sustainability of food crop projects	-Pearson correlation ; simple regression analysis	$Y_1=b_0+b_2x_2+e_1$
Monitoring and Evaluation data demand and use	H_3There is a relationship between Monitoring and Evaluation data use and sustainability of food crop projects	Pearson correlation, Simple regression analysis	$Y_1=b_0+b_3x_3+e_1$
Research and Surveillance in Monitoring and Evaluation	H_4there is a relationship between Monitoring and Evaluation research and surveillance and sustainability of food crop projects	Pearson correlation, simple regression analysis	$Y_1=b_0+b_4x_4+e_1$
Ethics in Monitoring and Evaluation	H_5There is a moderating influence of Monitoring and Evaluation ethics in the relationship between Monitoring and Evaluation practice and sustainability of food crop projects	Pearson correlation, hierarchical regression analysis	$Y_1=b_0+b_5x_5$

$Y_i=b_0+b_1x_1+b_2x_2+b_3x_3+b_4x_4+b_5x_5…….B_nX_n$

Where:

Y_i =dependent valuable

b_0 = $_{Constant}$ term

x_1=first independent valuable& b_1 is the coefficient of the first variable.

x_2 = the 2^{nd} dependent variable & b_2 is the coefficient of the second variable.

X_3 = the 3^{rd} dependent variable & b_3 is the coefficient of the third variable.

X_4 = the 4^{th} dependent variable & b_4 is the coefficient of the fourth variable.

X_5 = the 5^{th} dependent variable & b_5 is the coefficient of the fifth variable.

3.8 Ethical Considerations

The researcher gave the respondents opportunity to fill the questionnaires without coercion. The researcher also provided requisite explanations to respondents were necessary and assured them of confidentiality as regards the information provided. Further, the researcher prepared guidelines for data collection, undertook training of data collectors and also pre-tested data collection instruments, indicators and procedures. The respondents consent was sought by the researcher and they were assured of confidentiality and anonymity as regards the whole research process.

3.9 Operationalization of the Variables

The operationalization of variables was done by making the variables measurable. The researcher intended to use subjective and objective measurements.

Table 3.4: Operationalization of the Variables

Objectives	Variables	Indicators	Scale of Measurement	Type of statistical analysis	Research approach	Tools of analysis.
Influence of Monitoring and Evaluation practices on the sustainability of food crop projects	Sustainability of agricultural food crop projects	• Food production targets • Increase in food yield realized • Food security • Projects started earlier and active, • Better farming practices • Empowered farmers • Production sustainability • Ownership of projects • Improved production	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	-Descriptive statistics -Pearson product moment correlation -Inferential statistics
To establish the extent to which Monitoring and Evaluation planning influence sustainability agricultural food crop projects	Monitoring and Evaluation Planning and Coordination	• Monitoring and Evaluation planning meetings • Coordinating Monitoring and Evaluation • Data feedback mechanisms • Strategies to identify and address problems • Planning for stakeholders involvement • Field visits • Indicator formulation and review • Planning for data collection	Ordinal Ordinal Ordinal Ordinal. Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	Descriptive statistics -Pearson product moment Correlation -Inferential statistics
To determine the extent to which Monitoring and Evaluation capacity building influences	Monitoring and Evaluation capacity development	• Training, workshops, seminars • Collaborative Monitoring & Evaluation	Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	-Descriptive statistics -Pearson product

sustainability. of agricultural food crop projects		• Relevance of course content • Farmers involvement in training • Facilities and resources for training	Ordinal			moment Correlation -Inferential statistics
To assess how research and surveillance in Monitoring and Evaluation influences sustainability of agricultural food crop project	Monitoring and Evaluation research and surveillance	• Undertaking surveillance • Mechanism for surveillance • Regulation to apprehend culprits • Use of surveillance information	Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	-Descriptive statistics -Pearson product moment Correlation -Inferential statistics
To establish the extent to which Monitoring & Evaluation demand and use influences sustainability of agricultural food crop project	Monitoring and Evaluation data demand and use	• Relevance of data collected • Frequency and quality of data collection • Use of data in decision making • Use of data in review and planning of next project • Appropriate data collection methods • Data storage and feed back	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	Descriptive statistics -Pearson product moment Correlation -inferential statistics
To determine the moderating influence of ethics in Monitoring and Evaluation on the relationship between Monitoring and Evaluation practices and sustainability of agricultural food crop project	Ethics in Monitoring and Evaluation	• Integrity in compilation and reference to data • Adherence to guidelines and Professionalism • Institution mechanism to ensure prudence • Accountability in use of resources • Involvement of stakeholders • Timely report	Ordinal Ordinal Ordinal Ordinal Ordinal Ordinal	Parametric	Quantitative	-Descriptive statistics - Hierarchical multiple regression -inferential statistics

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents the findings of the study. It provides findings of the empirical research on the direct relationship between Monitoring and Evaluation practices of planning and coordination capacity building, data demand and use and research and surveillance in Monitoring and Evaluation, on one hand, and sustainability of agricultural food crop projects, on the other hand. It also provides results on the moderating of ethics in Monitoring and Evaluation on the relationship between Monitoring and Evaluation practices and sustainability of agricultural food crop projects. The chapter opens with a section on the demographic characteristics of participants who were involved in data collection Variable construction & factor analysis. This is followed by a reporting of the data pertaining to the research findings on the objectives of the study and correlation and regression analysis. The chapter also presents the qualitative analysis of the research findings that was undertaken after descriptive and inferential statistics. The discussions in this chapter are undertaken on the basis of analysis and interpretation of descriptive, inferential and qualitative information.

4.2 Questionnaires Return Rate

A total of two hundred and eleven farmer respondents were sampled for the study. In the process of collection of the data, 211 questionnaires were administered to the respondents; one questionnaire per respondent. Out of the 211 questionnaires administered, 206 of them were completed and returned to the researcher translating to a 97.63% questionnaire return rate. From the Sub-County Agricultural officer and 4 other Officers, 4completed and returned the questionnaires giving a rate of 80%. Of the 4 extension officers, all of them completed and returned the questionnaires translating to a return rate of 100%.This was in line with the view by Orodho (2009) that a response rate of above 50% contributes sufficient data that could be generalized to represent the opinions of the target population of the study. This response rate was deemed satisfactory, as suggested by Fowler (1993) who recommends a minimum of 75% as a rule of the thumb response or return rates. The high response rates facilitated gathering of

sufficient and complete data that could be generalized to determine the relationship between Monitoring and Evaluation practices and sustainability of agricultural food crop projects as well as the moderating role of ethics in Monitoring and Evaluation on the relationship between Monitoring and Evaluation practices and sustainability. Further, in line with the views of Jaworski and Kohli (1993) and Prasad *et al.* (2001), this questionnaire return rates were considered satisfactory and comparable to research on similar studies.

4.3 Demographic Information

The study was interested in understanding personal characteristics of the respondents in terms of gender, age and highest level of education. These demographic characteristics were important because understanding of these characteristics provides a means of appreciating the role played by confounding factors such as those related to demographic information other than the main factors being investigated in the study for the specified phenomenon. The results are presented in tables 4.1, 4.2 and 4.3.

Table 4.1: Demographic Information of farmers

Personal Characteristics of farmers	**Frequency**	**Percentage**
Gender		
Male	91	44.2
Female	115	55.8
Total	**206**	**100**
Age in Years of farmers		
Under 30	4	1.9
31-40	32	15.5
41-50	72	35
51-60	58	28.2
Over 60yrs	39	18.9
Any Other	1	0.5
Total	**206**	**100**
Highest Level of Education of farmers		
Below Primary Education	5	2.4
Primary	123	59.7
Form Four	69	33.5
Diploma	9	4.4
Total	**206**	**100**

From the data presented in table 4.1, it shows that out of 206 respondents who participated in the study, 115 (55.8%) were female while 91 (44.2%) were male. This implies that women tend to take a more active part in small farmers groups than men and this is likely to impact on the sustainability of agricultural food crop projects positively

On age, 4 (1.9%) fell in the age bracket of under 30 years, 32 (15.5%) were in the age bracket of 31 – 40 years, 72 (35%) were in the age bracket of 41 – 50 years, 58 (28.2%) fell in the age bracket of 51 – 60 years while 40 (19.4%) were in the age bracket of 60 years and above. The results reveal that 108 (52.4%) of the respondents fell in the age bracket of 21 – 50 years who are still energetic and are capable of working hard to sustain agricultural food crop projects in the county to ensure that there is enough food crop to feed the county population. It is imperative to note that 98 farmers or 47.1% were in the ages 51-60 years and above a very worrying trend given that their energy levels have dissipated and the Agriculture sector cannot afford to continue relying on them and their capacity to embrace and adopt new ideas and technology could jeopardize agriculture productivity

On the level of education, out of 206 who participated in the study, 123 (59.7%) had attained primary education while 69 (33.5%) had form four qualification, 5 (2.4 %) had below primary education and 9 (4.4) had diploma level of education. These findings imply that 123 (59.7%) of the respondents had primary school level of education while 5 (2.4%) of the respondents had no formal education and the majority 62.1% had low or no formal education. This is likely to influence sustainability of agriculture food crop projects negatively as they may have difficulties in adopting new technologies

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Table 4.2: Demographic Information for Extension Officers

Personal Characteristics of extension officers	Frequency	Percentage
Gender		
Male	3	75
Female	1	25
Total	**4**	**100**
Age in Years of extension officers		
41-50	2	50
51-60	2	50
Total	**4**	**100**
Highest Level of Education of extension officers		
Form Four	4	100
Total	**4**	**100**

On age, 2 (50%)were in the age bracket of 41 – 50 years and 2 (50%) fell in the age bracket of 51 – 60 years The results indicated that only (50%) of the respondents were in the age bracket of 41 – 50 years and this group is likely to be relatively energetic and are likely to contribute more to sustainability of agricultural food crop projects in the county to ensure that there is adequate food at the same time their counterparts who are older are likely to have a better masterly of government policies &programs. On the level of education, the four officers had form four level of education, which is relatively reasonable in enhancing adoption of new technologies in the agricultural sector and this may impact positively on sustainability of agricultural food crop projects in adoption and use of new technology. In reference to gender there was only 1 officer who was female hence constituting 25% of the respondents with 3 officers **(**75%) being male given credence to the perception that female farmers are likely to be more active in Project work run by male officers given the findings of the study regarding female participants. At the same time the officers are likely to have been employed at a time when gender affirmative policies had not yet taken shape in hiring of technical staff especially given that all the officers were over 40 years unlike the pattern prevalent in other groups involved in the study.

Table 4.3: General Information for Sub County Head and Other Sub County Officers

Personal Characteristics	Frequency	Percentage
Gender		
Male	3	60
Female	2	40
Total	**5**	**100**
Age in Years of farmers		
31-40	1	20
41-50	2	40
51-60	2	40
Total	**5**	**100**
Highest Level of Education		
Diploma	1	20
Degree	2	40
Masters	2	40
Total	**5**	**100**

On age, 1 (25%) of the extension officer was in the age bracket of 31 – 40 years, 2 officers (40%) fell in the age bracket of 41 – 50 years, 2 (40%) fell in the age bracket of 51 – 60 years. Those in the age bracket of 31 – 40 years and 41-50 years who are still energetic and are capable of working hard to sustain agricultural food crop projects in the county to ensure that there is enough food crop to feed the county population. In reference to gender there was 2 officers who were female hence constituting 40% of the respondents with 3 officers**(**60%) being male, different from the composition of the extension officer possibly because at the University and other tertiary institutes gender affirmation started earlier and the work involved amongst the graduating students is likely to be perceived as white collar.

On the level of education, out of the 5 officers who participated in the study, 1 (25%) had attained diploma level of education and 2 (40%) had a degree and 2 (40%) had Masters Degree. Gender parity is also a prerequisite in enhancing sustainability of community-based food projects and in the case of Nyeri South County 40% of the Sub County officers were female an attestation that this County has a relatively equitable gender distribution even in critical sectors such as a Agriculture. This is critical in facilitating access and encouragement to participants of the female gender in Agricultural Food Crop Projects though project initiators and other officers must make concerted effort to bring on board more males in these projects as females are more active in

these projects and this might be attributed to greater levels of advocacy and sensitization within communities.

4.4 Data Preparation and Screening

The next stage in the analytical process was data preparation and screening. This is an indispensable stage in the process because researchers may face hurdles regarding the data, which may consequently lead to failure of the analysis or biased findings. Data preparation and screening included handling of missing data, identifying outliers and checking for normalcy.

4.4.1 Missing Data

The first task during data preparation and screening stage was to check for any missing data. It is anticipated that during the completion of the questionnaire, some respondents do not attempt certain questions, or they forget to answer. In any case, these missing values in the data set must be handled, as it may cause serious problems during the analyses, consequently producing biased results. Schafer and Graham (2002) rightly state that most of the statistical software lacks the capability of handling missing data. That explains why special care is required during the administration stage of the questionnaire (De Vaus, 2001; Schafer and Graham, 2002). Moreover, thorough planning is required during the collection and data entry stage (Roth, 1994). Therefore, these propositions were taken into consideration and were implemented in the current research.

Once the questionnaires were received, labelling, coding and data entry into SPSS software was carefully undertaken. Later the data entered was tested for frequency of occurrence to cross-check missing values or illegal entries. These results revealed that there were five cases with missing values or zero variance, indicating invalid cases which were eventually excluded from further analysis, leaving 206 valid cases

4.4.2 Outliers

In this second step of data preparation and screening process, both univariate and multivariate outliers were screened. With regard to univariate outlier, a case shows odd responses compared

to the rest of the cases on a single variable of the study, whereas a case showing peculiar responses on more than one variable is called multivariate outlier (Kline, 2011).In order to detect univariate outliers, it is important to note that the value of skewness above 3 and kurtosis above 10 may trigger caution, as it may be a univariate outlier (Kline, 2011).Similarly, testing for multivariate outliers require examining Mahalanobis D2 measure (Byrne, 2010; Hair *et al.*, 2010). In this case, value lower than 0.001 (statistical significance lower than 0.001) indicates a possible case of multivariate outlier (Tabachnich and Fidell, 2001) the data was within the specified range.

4.4.3 Normality

The study was interested in assessing whether the data used exhibited normality. That is, if the data was obtained from a population that has a normal distribution. Normality generally refers to the shape of the distribution of the data and this was tested using skewness and kurtosis.

Extreme values in skewness and kurtosis indicate the possibility of abnormality in the data distribution. Kline (2011) suggests skewness values above 3 and kurtosis values above10 might indicate possible problem in the data with regard to normality. An examination of the level of kurtosis and skewness against threshold values defined by Kline (2011) indicated that all the variables values of kurtosis and skewness were within the defined parameters. As a result, it was concluded that the sample from which the data for the study was obtained came from a normally distributed population.

4.4.4 Variable Construction

While assumptions of normality are made in the case of data which is collected from an unknown population, it is essential in this case to conduct assessment of whether the data is approximately normally distributed since the study obtained a sample from the population. The tests of assessing normality comprised the mean, standard deviation, skewness and kurtosis. The results were presented in table 4.4.

Table 4.4: Variable Construction

Variables	n	Mean	Std. Deviation	Skewness	Kurtosis
Sustainability	206	2.4106	0.54163	0.023	-0.56
Monitoring and Evaluation planning	206	2.3798	0.58649	1.006	1.359
Monitoring and Evaluation capacity building	206	2.1307	0.41828	0.697	1.326
Monitoring and Evaluation data use	206	2.5225	0.6624	0.478	0.522
Research and Surveillance in Monitoring and Evaluation	206	2.4778	0.67325	0.587	0.498
Ethics in Monitoring and Evaluation	206	2.7272	0.67103	0.065	0.199
Monitoring and Evaluation Practices combined	206	1.9901	0.59278	0.188	-0.162

The results in table 4.4 provide descriptive statistics for all variables. Results showed that data use had the highest mean of 2.5225 while capacity building had the lowest mean of 2.1307. Although this was the case, the results showed a general disagreement with aspects used to define the variables and in 2 variables, the overall response was of being unsure for Monitoring and Evaluation data demand and use and Monitoring and Evaluation ethics. Further, to test the normality distribution the study examined the skewness and kurtosis values. Skewness is used to measure the symmetry of a distribution while kurtosis is used to measure the peakness or flatness of a distribution (Tabachnick and Fidell, 2007). Based on the results, the skewness values were in the range of 0.023 to 1.006. The value for kurtosis, on the other hand, was in the range of -0.56 to 1.359. The skewness and kurtosis values were within the recommended range of -1.96 to +1.96 hence there was normal distribution.

4.5 Monitoring and Evaluation planning and coordination and sustainability of agricultural food crop projects

The study sought to understand the aspects that define Monitoring and Evaluation planning and sustainability of agricultural food crop projects by assessing the perspective of the farmers, extension officers and by sub county agricultural officers and development leads. The views of the respondents were measured on a 5- point Likert scale where; the lowest measure of 1 implied strong disagreement (SD) with the statement posed to the respondent, a measure of 3 implied neutrality (NS) with the statement posed while a Likert measure of 5, which is the highest measure, implied strong agreement (SA) with the statement posed with the mid-Likert measures of 2 and 4 showing the level of disagreement and agreement with the statements posed by

respondents. This also means that the mean responses from the farmers will have an upper limit of 5 which conforms to the strong agreement with a particular statement and a lower limit of 1 that conforms to strong disagreement on the Likert scale. This implies that a mean of 0.5 – 1.55 would indicate strong disagreement, 1.6 – 2.55 would indicate moderate disagreement, 2.55 – 3.5 would indicate being not sure, 3.6 – 4.5 would indicate moderate agreement while 4.5 – 5.5 would indicate strong agreement. In addition, the measures of dispersion, mean and standard deviation, were used to summarize the data with means that are lower than a Likert measure of 3 indicating disagreement and strong disagreement with the statements.

4.5.1 Monitoring and Evaluation planning and coordination response by farmers

It is worth noting that Monitoring and Evaluation planning especially from the perspective of the farmers is important and provides avenues or platforms for sharing and interchanging information, clarifying, stimulating and seeking the best solutions regarding sustainability of agricultural food crop projects. The views of the farmers regarding aspects of Monitoring and Evaluation planning were assessed and the results presented in table 4.5using the likert scale of 1-5 where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.5 Monitoring and Evaluation Planning and Coordination (Response by Farmers)

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Planning meetings before conducting Monitoring and Evaluation are held								
	Freq.	54	99	34	9	10	2.12	0.995
	%	26.2	48	16.5	4.4	4.9		
Planning influences sustainability of food crop sustainability	Freq.	26	80	29	16	55	2.97	1.433
	%	12.6	38.8	14.1	7.8	26.7		
Field visits are conducted to check on Monitoring and Evaluation	Freq.	25	119	34	23	5	2.33	0.9
	%	12.1	57.8	16.5	11.2	2.4		
Indicator formulation is done during the planning process	Freq.	19	135	28	14	10	2.33	0.914
	%	9.2	65.5	13.6	6.8	4.9		
The indicators are reviewed	Freq.	24	120	33	22	7	2.36	0.941
	%	11.7	58.2	16	10.7	3.4		
The indicators review involves other stakeholders	Freq.	33	126	25	17	5	2.2	0.891
	%	16	61.2	12.1	8.3	2.4		
Jointly agreed targets are set between officials and farmers	Freq.	18	131	19	29	8	2.66	1.712
	%	8.7	63.6	9.2	14.6	3.9		
Indicator review influences food crop sustainability	Freq.	30	145	16	9	6	2.11	0.807
	%	14.6	70.4	7.8	4.3	2.9		

From the results in table 4.5, majority of the farmers 153(74.2%) were of the view that planning meetings before Conducting Monitoring and Evaluation is not normally undertaken (mean = 2.12, SD = 0.995) although 19(9.3%) of individual farmers were of the opinion that the meetings are held implying that in some areas the meetings are held and 34(16.8%) were not sure. These findings would indicate though meetings are held in a few areas there is a serious challenge since such meetings are none existent in most cases and this can negatively impact on sustainability of agricultural food crop projects. These findings contradicted the views of the Sub-County agriculture officers who stated:

''that they held meetings every four months''(Personal Communication, Sub-County Agriculture Officer 1).

These findings indicated that although there are meetings held between the sub-county agriculture officers and the farmers, they were not enough according to the views of the farmers or the meetings were not held throughout the Sub County or could not adequately handle planning. This is because according to the sub-county agriculture officers, there were meetings held in which planning to conduct Monitoring and Evaluation was discussed. In the meetings, planning to conduct Monitoring and Evaluation is discussed. One of the officers interviewed even stated that:

> *"Issues of Monitoring and Evaluation are mentioned in our weekly meetings" (Personal Communication, Sub-County Agriculture Officer 1).*

These findings also show that Monitoring and Evaluation planning and coordination meetings specifically were not given priority but were only included in records with little input from the relevant stakeholders and this might be the reason why the farmers stated that planning to conduct Monitoring and Evaluation meetings are not held severally. Based on these findings, it is thus a challenge to communicate and share project information through Monitoring and Evaluation planning amongst the farmers and the sub-county agriculture officers. As a result, these meetings may not serve as a feedback forum between the supervisors, frontline extension workers and farmers.

In addition, through planning is of essence in both decision-making and policy making, the respondents 106 (51.4%) disagreed that planning influence sustainability of food crops. However the opinion by the majority while 71 (34.5) agreed that planning influence sustainability of food crops, only 29 (14.1%) were not sure whether planning influence sustainability of food crops this could be probably because most of the farmers in groups, with the exception of officials, do not actively participate in planning activities were not sure whether planning influence sustainability of food crops. It is, therefore, a challenge for them to fully ascertain the role that planning plays in the sustainability of food crops. In addition, this might be attributed to a lack of participation in the decision-making on agricultural policies at various levels contributing to lack of progress in the agricultural sector. Normally, lack of ownership, capital, skills, knowledge and resources

constrain the ability of communities to fully understand and embrace the importance of planning in agriculture sector and antecedent impact on sustainability (Scheyvens, 2003). Some of the interviewed respondents indicated that it is important to be clear about the overall purpose and scope of the Monitoring and Evaluation system. In particular, it should be made clear who needs what sort of information for what reasons and how extensive or minimal Monitoring & Evaluation needs to be, and what resources are available, their allocation and shortcomings in existence and ways and means of mitigating this.

This may enable farmers to achieve their objectives regarding their farm in a more organized manner. Planning enables a careful examination of the existing resources and their best allocation and impacts on sustainability. It helps farmers to make decisions in relation to selection of crops and acreage to cultivate different crops. This also helps the farmer to identify the input and credit needs. It helps in estimating future cost and returns and coming up with the most appropriate strategies for farmers to embrace and all this is critical to sustainability.

From the results, farmers also indicated that field visits were mainly not conducted to check on Monitoring and Evaluation (mean = 2.33, SD = 0.900).On field visit 144 (69.9%) farmers disagree that field visits are conducted, 28 (13.6%) agreed that field visits are conducted while 34 (16.5%) were not sure. These study's findings that field visits are mainly not undertaken constitutes a critical omission particularly given the critical importance of contact between officers and farmers on sustainability. There were limited field visits and face-to-face meetings with the farmers with only 28 farmers (13.6%) answering in the affirmative representing. Since field visits were not conducted as often as they should be, monitoring of the projects becomes difficult. Also, it is a challenge to enhance experience sharing among the members thus impeding the realization of sustainability. Fieldtrips are an important part of informal education. They help farmers to explore their environment and establish links regarding the information learnt from extension officers and practical farming. Field visits enable extension staff to provide further advice regarding farm preparation and planting and related activities. This is supported by one of the personally communication officer who said that;

> *"The opportunity to evaluate the efficiency of visits to farmers was provided through written trip reports made by extension staff and transcribed and translated*

recordings of conversations with farmers" (Personal Communication, Sub-County Officer 1)."

Majority of the farmers were also of the view that formulation of indicators is not undertaken during the planning process (mean = 2.33, SD = 0.914) since 154 (74.7%) farmers disagreed that indicators are formulated during the process, 24 (11.7%) agreed that indicators are formulated while 28 (13.6%) were not sure whether they are formulated. Failure to undertake formulation of indicators is a critical omission whose ramifications can be dire as measuring the impact of M&E practices in sustainability of agriculture food crop cannot be ascertained

In addition to this, majority of the farmers also indicated that indicators are not reviewed(mean = 2.36, SD = 0.941) with 144 (70%) disagreeing regarding review of indicators but 29 or 14% indicated that indicators were reviewed. The review of indicators is necessary to ensure that change being dynamic is constantly considered and requisite adjustments done. In the case of the indicators review involving other stakeholders majority indicated they were not involved (mean = 2.20, SD = 0.891) since 159 (77.2%) were of the view that this does not happen but 22 or 10.7% of the farmers indicated that other stakeholders were involved and 25 or 12.1 % were not sure. These results indicate that in a few areas stakeholders are consulted. The engagement of other service providers is critical in ensuring information provided to farmers is not ambiguous and also given the critical role that stakeholder involvement plays in implementation of projects.

Further, farmers were unsure over whether or not jointly agreed targets are set between officials and farmers (mean = 2.66 SD = 1.712), 149 (72.3%) farmers disagreed that there was jointly targets set by officials and farmers, 37 (18.5%) agreed that there was joint targets set, while 19 (9.2%) were not sure. It is possible there is a communication breakdown between the farmers and officials and lack of clarity concerning the mode this setting of targets takes. This makes it difficult for the farmers to ascertain whether or not there are jointly agreed targets with the officials.

Regarding indicator review as to whether it influences food crop sustainability majority of the farmers 175 or 85% felt this is not the case the case (Mean = 2.11, SD = 0.807) with only 15 or 7.2% indicating that indicator review as it is influences sustainability. This is related to the fact that when choosing indicators, the starting point should be to ask: "Is this proposed indicator

measurable?" This helps considerably in the quest to identifying a minimum list that does not require complicated Monitoring and Evaluation structures. However, the range of possible indicators is still sizeable, which reflects the fact that the Monitoring and Evaluation systems still have to satisfy the needs of a broad range of users, and that their needs are not identical by any means.

There is abundant literature regarding the selection of appropriate indicators, and extensive lists have been prepared suggesting suitable indicators for monitoring different types of projects. These are useful reference materials, but in many cases, impractical to apply. Not only are there hundreds of indicators, but also the data that underpin them usually cannot be secured with the necessary precision or regularity. There should be an involvement of other stakeholders especially in formulating indicators as opposed to imposition of indicators from outside. This is in incongruous to the sentiments of the Sub-County Agriculture Officers who indicated that:

> *"For project indicators most of them are developed during project inception and they come as a package with the project"(Personal Communication, Sub-County Agriculture Officer 1).*

> *"From the officer who uses them to suit the situations since Sub County lack initiative and each county is unique "(Personal Communication, Sub-County Agriculture Officer 2).*

The researcher asked the Sub County officers if the indicators were developed by the county government or the ministry of agriculture, fisheries and cooperatives. Regarding this issue the response was:

> *"This year sub county offices were not involved due to resources constraints and also county government wanted to have this done immediately" (Personal Communication, Sub-County Agriculture Officer4).*

> *"Yes, at times it is mostly done by the Monitoring and Evaluation units" (Personal Communication, Sub-County Agriculture Officer 2).*

4.5.2 Monitoring and Evaluation Planning and Coordination response by extension officers

The research sought to understand the nature and level of Monitoring and Evaluation planning from the perspective of the extension officers. The findings were as presented in Table 4.6using the likert scale where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.6 Monitoring and Evaluation Planning and Coordination (Response by Extension Offices)

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Planning to conduct Monitoring and Evaluation is undertaken	Freq.	3	1	0	0	0	2	0
	%	75	25	0	0	0		
Planning provides for field visits	Freq.	2	1	0	1	0	1.5	0.577
	%	50	25	0	25	0		
Field visits are conducted to check on Monitoring and Evaluation	Freq.	3	0	0	1	0	2.75	0.957
	%	75	0	0	25	0		
Planning for data collection is adequate	Freq.	2	1	0	1	0	2.5	1
	%	50	25	0	25	0		
Planning and coordination influences sustainability of food crop projects	Freq.	3	0	0	1	0	1.75	0.5
	%	75	0	0	25	0		
indicator formulation is done during the planning process	Freq.	2	0	0	2	0	1.75	0.5
	%	50	0	0	50	0		
The indicators are reviewed	Freq.	1	0	3	0	0	2	0
	%	25	0	75	0	0		
The indicators review involves other stakeholders	Freq.	3	0	0	0	1	1.75	0.5
	%	75	0	0	0	25		

From the study results in table 4.6, majority of the extension officers 3 (75%) disagreed while 1 (25%) strongly disagreed indicating that planning to conduct Monitoring and Evaluation was not undertaken (mean = 2.00, SD = 0.000) 1 extension officer indicated that planning to conduct

Monitoring and Evaluation is undertaken. These findings conform to the view of the farmers in terms of Monitoring and Evaluation planning. Due to inadequate planning, determining when an agricultural food crop project is on track and when changes are required posits a challenge. The fact that 1 extension officer had views contrary to the rest means that some elements of planning to conduct Monitoring and Evaluation exist. Most likely the planning undertaken is not well streamlined especially given that the officer strongly agreed with this perspective. The results also indicated that planning did not provide for field visits (mean = 1.5, SD = 0.577) with 3 officers (75%) disagreeing that field visit planning is done while only 1 (25%) agreed that planning for field visits is undertaken indicating lack of clearly streamlined structures in carrying out such activities. Field visits are supposed to provide an opportunity for extension officers to monitor the way farming activities are undertaken with a view of taking corrective measures as the need arises. The visiting officers are supposed to compile reports on the basis of which resources availed by the government and other organizations can be disbursed as well as facilitating surveillance concerning activities of groups and establish whether there are signs of trouble regarding these groups.. Farmers are, therefore, unable to learn from their experience and improve future interventions since their progress is not adequately monitored.

This finding also confirms that the majority view of the farmers was that Monitoring and Evaluation field visits are not undertaken regularly during the year (mean = 2.75, SD = 0.957) 3(75%) disagreed that field visits are done, while 1(25%) agreed that field visit is under taken to check on Monitoring and Evaluation hence having a contrary opinion. This implies that feedback on the level of performance of the farmers within defined periods is not known to both the farmers and the extension officers. Due to this, farmers are unable to reflect upon and share experiences and lessons with a view of gaining the full benefit accruing from agricultural food crops projects interactions and facilitating the realization of sustainability.

In addition, extension officers indicated that they were expected to undertake eight field trips per year but were not facilitated in execution of this task. These involve visiting farmers' groups and progressive farmers in major food crops within the extension officer's ward. According to the extension officers, progressive farmers provide a model and a challenge to smaller growers. Extension officers' conduct regular farm visits to the farmers involved in farmers' groups, giving encouragement, establishing close working relationship and identifying the problems faced and

prescribing the requisite remedies but mainly only when facilitated. The distribution of planting materials to farmers and /or supervising planting constitutes another major activity for advisory officers, but there have been problems in this area as a result of shortages and the poor transport facilities. An advisory officer can visit an individual farm only when that farmer has sought assistance and planting materials can only be provided when a farmer has specifically asked from the office.

As to whether planning for data collection is adequate majority of them disagreed(mean = 2.00, SD = 1.000) with 3 or (75%) holding this view and only 1 officer or 25% holding a contrary view concurring that planning for data collection is adequate. This again confirms the finding that there was inadequate field visits conducted to check on Monitoring and Evaluation confirming the views of farmers. As such, determining whether or not the projects' efforts had had a measurable impact on expected outcome and whether or not they had been implemented effectively is a challenge. This is because there is doubt over whether or not planning for data collection is adequate hence this constitutes a challenge in Monitoring and Evaluation since data should represent facts but failure to preserve the environment of collection and interpretation renders it futile. A major part in Monitoring and Evaluation planning is the process of preparing for gathering data. It should be done prior to and during the creation of the strategic plan and continue on throughout the implementation and monitoring phases of the project.

Extension officers held the view that most aspects of the project were not adequately planned for. Particularly, there was no adequate planning to conduct data collection, 3 extension officers disagreed that planning did not mainly influence sustainability of food crop projects (mean = 2.5, SD = 1 with 1 officer or 25% holding a contrary opinion. Further, 3 extension officers (75%) indicated that planning and coordination did not influence sustainability of food crop projects (mean = 1.75, SD = 0.5 with 1 officer or 25% holding a contrary opinion, that planning influences sustainability. Data quality should be maintained before, during and after data collection. It is important to develop detailed plans for data collection as part of the M&E planning process as well as ensuring the requisite coordination is undertaken.

Furthermore, half of the extension officers (mean = 1.75, SD = 1.000) with 2 or 50% disagreeing that coming up with indicator formulation is not done during the planning process

and 2 officers or 50%agreeing that this exercise is carried out meaning the modus operandi of the extension officers could be at variance and needs moderation. This is an indication that to an extent indicator formulation is practised although to a significant extent this has not been done. It is important to develop detailed plans for indicator formulation as they impact on sustainability.

In the case of whether indicators are reviewed1(25%) strongly disagreed and3 extension officers or (75%) were not sure (mean = 2.00, SD = 0.000).This an indication that review of indicators needs to be urgently taken up, as to a large extent this has not been done.

The review of indicators should be a dynamic process that is constantly responding to changes as they occur so as to be able to facilitate the process of sustainability especially given that the range of possible indicators is sizeable, as Monitoring and Evaluation systems deal with a broad range of users with diverse needs and hence the complexity coming up with appropriate indicators for different types of projects, so as to facilitate sustainability in the food sector.

In the case of indicator review involving other stakeholders 3 0f the extension officers or 75% disagreed (mean = 1.75, SD = 0.5) and one officer (25%) strongly agreed. This an indication that some element of involvement is currently being practised although to a large extent this has not been done. There should be an involvement of other stakeholders especially in formulating indicators as opposed to imposition of indicators from outside.

4.6 Monitoring and Evaluation Capacity Building and Sustainability of Agricultural food crop projects

The study sought to establish the view of the farmers, extension officers and Sub County agricultural officers and other officers concerning. Monitoring and Evaluation capacity building whose items were measured on a 5-point Likert scale. The respondents were asked to indicate their level of agreement or disagreement with respect to capacity building by ticking 1-5 for strongly disagree, disagree, not sure, agree and strongly agree, respectively.

4.6.1 Monitoring and Evaluation Capacity Building for farmers

The views of the farmers were sought regarding their level of agreement or disagreement with the various aspects of Monitoring and Evaluation capacity building. An understanding of Monitoring and Evaluation capacity building aspects related to the farmers is important in establishing whether they are constantly being updated on important Monitoring and Evaluation issues related to farming. The results regarding Monitoring and Evaluation capacity building for the farmers were presented in table 4.8using a likert scale where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.7 Capacity Building for Farmers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Am trained in Monitoring and Evaluation use and implementation	Freq.	29	117	16	24	20	2.42	1.144
	%	14.1	56.8	7.8	11.7	9.7		
Training for farmers is undertaken	Freq.	23	147	24	12	0	2.09	0.634
	%	11.2	71.4	11.7	5.9	0		
Ministry of agriculture officials are trained in Monitoring and Evaluation	Freq.	24	124	46	6	6	2.23	0.768
	%	11.7	60.2	22.3	2.9	2.9		
Training programs regarding Monitoring and Evaluation are relevant	Freq.	26	144	24	5	7	2.07	0.66
	%	12.6	69.9	11.7	2.4	3.4		
Funds meant for training and related activities including fuel are enough	Freq.	14	115	46	18	13	2.47	0.915
	%	6.8	55.8	22.3	8.7	6.3		
Farmers are involved in the preparation of training material	Freq.	16	136	34	14	6	2.3	0.807
	%	7.8	66	16.5	6.8	2.9		
Officers involved in preparing training program for farmers collaborate with other service providers	Freq.	29	132	29	13	3	2.16	0.777
	%	14.1	64.1	14.1	6.3	1.5		
Capacity building influences sustainability of food crop projects	Freq.	32	140	30	3	1	2	0.593
	%	15.5	68	14.6	1.5	0.5		

The results in table 4.7 shows that 146 farmers (70.9%) disagreed that they were trained in Monitoring and Evaluation use and implementation and 44(21.4%) however agreed that they had been trained while 16 (7.8%) were not sure (mean = 2.42 SD = 1.144).The results indicate that some effort has been made but there is need for gigantic strides to be made in this critical area. Lack of capacity building in Monitoring and Evaluation use and implementation can negatively interfere with the performance of the monitoring and evaluation system, since Monitoring and Evaluation capacity building is particularly important in long-term training programmes where feedback from training participants can be used to shape future course content. Training is meant to help those tasked with Monitoring and Evaluation to develop a positive attitude towards the project and acquire skills that can contribute to improved productivity and hence sustainability. As such, farmers largely lack the requisite skills and knowledge required to improve the quality of project's Monitoring and Evaluation practices.

In addition, majority of the farmers indicated that training for farmers was rarely undertaken with170(82.6%) disagreeing it is not undertaken, 12(5.9%) agreeing it is undertaken while 24(11.7) were not sure(mean = 2.09, SD = 0.634). Farmers, therefore, lack adequate technical capacity and expertise in conducting Monitoring and Evaluation to a great extent. This means that they lack requisite skills when it comes to Monitoring and Evaluation.

Besides, majority of the farmers 148(71.9%) revealed that the Ministry of Agriculture officials were not adequately trained in Monitoring and Evaluation (mean = 2.23, SD = 0.768) but 12 farmers or 5.8% felt that Agricultural officers were trained in M & E. This is an impediment since lack of adequate training for those tasked with Monitoring and Evaluation activities affects the effectiveness of the projects and hence sustainability.

Regarding training programmes in Monitoring and Evaluation 170 (82.5%) disagreed that the training were relevant and 12(5.8%) agreed they were relevant and 24 (11.7 %) were not sure. (mean = 2.07, SD = 0.66).Farmers held this perception because they lacked the opportunity to understand the broader issues around sustainability of agricultural food crop projects although 12 farmers regarded the training programs as being relevant. This is a result of lack of adequate training for both farmers and ministry officials. Furthermore, these findings indicated inadequacy of the Monitoring and Evaluation training curriculum for both the farmers and the ministry

officials. Although this was the case, the Sub-County agricultural officers(1, 2,3, and 4) were of the view that farmers' training forums are very relevant indicating differences in perception among those groups. In relation to the number of training forums held for farmers in a year, some Agriculture Officer gave the following responses*:*

> *"About 12" (Personal Communication, Sub-County Agriculture Officer 1)*
>
> *"Farmer's field days are conducted once every month" (Personal Communication, Sub-County Agriculture Officer 2)*
>
> *"About1" (Personal Communication, Sub-County Agriculture Officer 3)*
>
> *"About8" (Personal Communication, Sub-County Agriculture Officer 4)*

Based on the ministry officials varied responses above this could be a pointer that these activities are supposed to be carried but in reality this is not happening hence inadequacy in terms of Monitoring and Evaluation capacity building was clearly shown because the various ministry officials interviewed did not know or have a clear view of the number of training forums held for farmers in a year. In addition, although the Sub County officials indicated that there were a number of trainings conducted during the year, the views of the farmers showed that they were not adequate in terms of content because of little involvement of the farmers in the preparation phase as well as inadequately trained ministry officials that are supposed to capacity built the farmers.

Financing of Monitoring and Evaluation training and related activities is of utmost importance. However 129 (62.8 %) disagreed that funds for training and related activities were adequate, only 31(15%) of farmers agreed they were enough while 46(22.3) %) were not sure(mean = 2.47, SD = 0.915). This means that the budgeting of the Ministry of Agriculture and the County government has not been adequately catering for financing of training activities hence denying the farmers an opportunity of benefiting from this critical activity. Attention needs to be directed towards mobilization of funds to support training activities since it is key to attainment of project sustainability.

Concerning involvement in preparation of training materials 152(73.8%) of farmers disagreed that they are involved in the preparation of training materials and only 20(9.7%) farmers agreed

that they are involved in preparation of materials while 34(16.5%) were not sure(mean = 2.30, SD = 0.807). This means that to a great extent training activities lack the capacity required to develop and sustain Monitoring and Evaluation systems for agricultural food crop projects sustainability as they are not cognizant of the needs of the farmers and other stakeholder and this can adversely impact on sustainability. Majority of the farmers indicated that they are not involved in the preparation of training material and it is unlikely for them to embrace the training program. This infers that since majority farmers do not participate in the whole training process this is likely to interfere with learning process hence the achievement/deviation from original concerns and problems faced by local development projects being implemented, as corrective measures cannot be taken on time. This denies opportunity for those involved in agricultural food crop project implementation to assess deficiencies in the project designs and objectives and work plans that are unrealistic, funding inadequate and project ownership by the farmers shaky. As noted earlier, majority of the farmers avowed that they did not consider the training programmes regarding Monitoring and Evaluation adequately relevant and this finding confirms this. Lack of farmer involvement in the preparation of training content is one of the underlying reasons for such a perception.

Furthermore, the results in table 4.8shows that majority of the 161(78.2%) of farmers disagreed that there was collaboration and only 16(7.8%) agreed there was collaboration while 29 (14.1%)were not sure about collaboration (mean = 2.16, SD = 0777). This confirmed that collaboration does not exist between officers involved in preparing training programme for farmers with other service providers. This can greatly affect service delivery in the Agricultural sector due to inadequate coordination between the officers involved in preparing the training program for farmers and other service providers. This also confirms the finding that indicates that the farmers are not mainly involved in the preparation of training materials however despite the position taken by majority of the farmers 16(7.8%) felt that there is collaboration The eventual outcome is limited information and capacity to conduct training of farmers, duplication of services and confusion and this is likely to adversely affect sustainability of food crop projects.

Finally, majority of the farmers were of the view that capacity building as it is influences sustainability of food crop projects with 172(83.5%) disagreeing while 30(14.6) were neutral or not sure (mean = 2.00, SD = 0.593). This infers that the poor coordination between farmers and

officials has brought about a situation whereby farmers do not fully benefit or are unable to embrace the benefits of capacity building. This is further reinforced by the position taken by extension officers with3 (75%) indicating that capacity building influences does not influence Sustainability. Consequently, farmers have been unable to harness the benefits borne by capacity building hence they lack the acumen to drive agricultural food crop projects to sustainability.

4.6.2 Capacity Building by Extension Officers

The views of the extension officers regarding Monitoring and Evaluation capacity building were sought in order to understand the gaps that exist in terms of Monitoring and Evaluation capacity building programmes by the ministry and how this impacts on the sustainability of the agricultural food crop projects. The results were presented in table 4.9using a likert scale of 1-5 where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.8 Capacity Building by Extension Officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Training for farmers is undertaken	Freq.	3	0	0	0	1	1.75	0.5
	%	75	0	0	0	25		
I am trained in Monitoring and Evaluation	Freq.	3	1	0	1	0	1.75	0.5
	%	75	25	0	25	0		
The training programs are relevant	Freq.	2	1	0	1	0	2.5	1
	%	50	25	0	25	0		
Funds meant for training and related activities including fuel are enough	Freq.	3	0	0	1	0	2.75	0.957
	%	75	0	0	25	0		
Farmers are involved in the preparation of training material	Freq.	2	0	0	2	0	1.75	0.5
	%	50	0	0	50	0		
Officers involved in preparing training program for farmers collaborate with other service providers	Freq.	1	0	3	0	0	2	0
	%	25	0	75	0	0		
Capacity building as it is currently influences sustainability of food crop projects	Freq.	3	0	0	1	0	2.75	0.957
	%	75	0	0	25	0		

From the findings in table 4.8, majority of the extension officers indicated that training for farmers was rarely undertaken with 3(75%) strongly disagreed that training is undertaken while only 1 (25%) strongly agreed that training is undertaken (mean = 1.75, SD = 0.5).This infers that extension officers to a great extent do not have the requisite capacity to identify the most valuable and efficient use of resources and also confirms the view of the farmers on inadequately being capacity built. In addition, since they are not adequately trained, they are unable to develop objective conclusions regarding the extent to which the project can be judged a "success "or a "failure" and how to facilitate success for the project.

On training on Monitoring and Evaluation 4(100%) of extension officers disagreed that they are trained in Monitoring and Evaluation (mean = 1.75, SD = 0.500).This being the case, they are unlikely to embrace it fully. The eventual result is that extension officers are unable to impart enough skills regarding Monitoring and Evaluation practices to farmers or at best they impart skills that are not helpful. Since they lack the requisite capacity to monitor and evaluate project and this hinders their ability to efficiently use resources in the most viable way, adhere to timelines and assesses the impact of projects on the target groups. This critical especially given that Monitoring and Evaluation is a major component of Projects and the current trend amongst funders is to judge projects on the basis of value for money

Another response from the extension officers was that the training programs were not very relevant 3(75%) of extension officers disagreed that training programmes were relevant and only 1(25%) of extensions officers agreed that they were relevant (mean = 2.25, SD = 1.258). Due to the perception of the officers the training is unlikely to positively change their mind set with adverse consequences on sustainability of projects. This could be as a result of the training curriculum being imposed by their seniors from above without adequate consultation.

From the findings in table 4.9 majority of the extension officers highlighted the issue of lack of adequate resources geared towards Monitoring and Evaluation capacity building similar to the findings among farmers with 3 (75 %) of the extension officers disagreeing that funds meant for training and related activities, including fuel are enough and 1 officer or 25% indicating that the funds are enough (mean = 2.75, SD = 0.957).This is an indication that the concerned stakeholders have made an effort towards ensuring that training and related activities are funded

and the requisite information availed however, the resources in terms of funding are not adequate and this also confirms the view of the farmers in terms of inadequate funding of Monitoring and Evaluation capacity building activities. This means that facilitation, payment of facilitators as well as frequency of holding training sessions are curtailed by inadequate funding of Monitoring and Evaluation capacity building activities.

In addition, some of the extension officers were not sure if farmers are involved in the preparation of training material with 2(50%) disagreeing and 2(50%) agreeing (mean = 1.75, SD = 0.5).This definitely affirms the view of the farmers who indicated that they were not involved in the preparation of training materials and clearly means that there is lack of synergy between the ministry officials and the farmers. Furthermore, this means that there is lack of ownership of the process by the farmers since they are not involved in the preparation phase. This also means that the materials prepared do not really address the gap on the ground since the input of the farmers is not captured in the training materials being used. This evidently impacts negatively on the sustainability of the agricultural food crop projects since there are a myriad of unaddressed issues regarding farmer involvement, funding as well as the lack of capacity on the part of the ministry officials that are tasked with the capacity building of the farmers.

Majority of the extension officers were not sure on whether officers involved in preparing training programmes for farmers collaborate with other service providers with 3(75 %) of extension officers not sure whether there is collaboration in preparing training programmes for farmers with service providers and only 1 (25%) of extension officers strongly disagreed that there was collaboration (mean = 2, SD = 0). The findings have already indicated that one of the most important stakeholders, the farmer is not involved fully in the preparation of training materials and to affirm this lack of stakeholder involvement is critical and inimical to sustainability of Agricultural food crop projects officers. Since the officers involved in preparing training programmes did not fully collaborate with other service providers, there was lack of input into the training programmes and likelihood of farmers being provided with parallel and at times contradictory information compounding the situation further. Their lack of input from various stakeholders' means that important information regarding the existing gaps on the ground as well as ownership of the process by the various stakeholders is not catered for in the preparation process. In addition, the officers were unable to learn from the experience of other

service providers and adapt to changing needs of farmers and/or best practices as undertaken elsewhere.

Capacity building forms the basis for gaining knowledge on effective and efficient ways to enhance the sustainability of food crop projects. Despite this, majority of the extension officers 3(75%)strongly disagreed that capacity building as currently undertaken influences sustainability of food crop projects and only (1(25%) holding the view that capacity building influences sustainability (mean = 2,75 SD = 0.957).This is attributed to inadequate training of farmers, inadequate funding, lack of stakeholder involvement in preparation, poor coordination with other service providers and the content of the training program that is not mutually developed.

4.7 Monitoring and Evaluation Data Demand and Use and sustainability of Agricultural food crop projects

The study also sought to understand the views of the farmers, extension officers and Sub County Agricultural officers on Monitoring and Evaluation data demand and use and how this would influence sustainability of agricultural food crop project. The items regarding Monitoring and Evaluation data demand and use were measured on a 5-point Likert scale 1 – 5 that indicates the level of disagreement at the lowest measure of 1 to the level of strong agreement at the highest measure of 5.

4.7.1 Monitoring and Evaluation Data Demand and Use by Farmers

The views of the farmers were sought so as to understand their level of agreement or disagreement with various aspects of Monitoring and Evaluation data demand and use and how this impact on the sustainability of agricultural food crop projects. Data demand and use would imply how the farmers see the need to make informed decisions using data that has been gathered in the Monitoring and Evaluation process. The results are presented in table 4.11using a likert scale of 1-5 where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.9 Monitoring and Evaluation Data Demand and Use by Farmers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Data is normally collected	Freq.	24	73	56	45	8	2.69	1.065
	%	11.7	35.4	27.2	21.9	3.9		
Records of the data collected are kept	Freq.	25	90	52	32	7	2.51	0.967
	%	12.1	43.7	25.2	15.5	3.4		
The method of keeping the data recorded is reliable	Freq.	34	79	54	33	6	2.49	1.027
	%	16.5	38.3	26.2	16	2.9		
The data collected is properly organized	Freq.	18	95	60	28	5	2.55	0.919
	%	8.7	46.1	29.1	13.6	2.4		
Previous data is referred to in making decisions	Freq.	19	67	84	21	15	2.73	1.01
	%	9.2	32.5	40.8	10.2	7.3		
Better methods of collecting data are overlooked	Freq.	24	86	57	32	7	2.6	0.983
	%	11.6	41.7	27.7	15.5	3.4		
Data collection as currently undertaken influences sustainability of food crop projects?	Freq.	30	105	38	23	10	2.33	0.971
	%	14.6	51	18.4	11.2	4.8		

The results in table 4.19 on whether data is normally collected 97(47.1) of farmers disagreed that data is normally collected and 56(27.2%) were not sure whether data is normally collected and 53 (25.8 %) agreed that data is collected (Mean = 2.69, SD= 1.065).Since most farmers were not aware about the collection of data this is likely to influence sustainability of Agricultural food crop projects negativity however owing to the large number of those not sure consistent and conclusive results regarding data collection could not be established from the farmers' perspective. However, based on the responses of the Sub-County Agricultural Officers, Monitoring and Evaluation units do not have data entry clerks and this could account for low number of farmers indicating that data is collected. This is reinforced by the comment below that was made by one of the sub-county agricultural officers when asked about the role played by the data entry clerk:

> *"Data is mostly entered by each individual officer in respect to their role" (Personal Communication, Sub-County Agriculture Officer 2).*

The above noted view from the Sub County officer is diametrically opposed to the view of the extension officers most of whom were of the view that data is not normally collected and hence it is possible there is a gap in terms of what the officers are supposed to have implemented and the reality on the ground.

Majority of the farmers were also uncertain if records of the data collected are kept with 115(55.8%) disagreeing data collected is kept in records and 39(18.9%) agreed they are kept in record, while 52(25.2%) were not sure whether data collected is kept in records (mean = 2.51, SD = 0.967). Given this number it would indicate that old and recent information are rarely properly documented. A case in point was a water harvesting project that was undertaken in the 1970s Nyeri South Sub County and when a similar undertaking a few years ago became imminent there were no records from which lessons could be drawn from.

Regarding whether keeping the data collected is reliable 113(54.8%) of farmers disagreed that methods of keeping collected data is reliable, However, 39(18.9) agreed the method was reliable, while 54(26.2%) of farmers were not sure if the way records are kept and its reliability(mean = 2.49, SD = 1.027). This could be attributed to the quality of the data collected. In the event that data is of poor quality, it cannot be put to use or even properly recorded.

In addition, to confirm constraints regarding data collected there is no formally recognized and planned way of data storage for future use. This clearly implies that there is a gap in terms of data archiving by the relevant Monitoring and Evaluation unit. This implies that lessons that can be used to inform present processes as well as make decisions cannot be relied upon because of lack of information from past projects. Consequently, mistakes from the past projects are likely to be replicated in current and future projects because the responsible entities do not have the capacity in terms of know-how, resources, capacity and technologies to ensure that data collection becomes a major resource that can be used to guide and drive the sustainability of agricultural food crop projects.

The results on whether data is properly organized had (54.8%) 113 farmers disagreeing and 33 (16%) agreeing that it is properly organized and 60 (29.1%) were not sure. This put its use in a questionable state with antecedent impact on sustainability of agricultural food crop project

closely behind (mean = 2.55, SD = 0.919). This is an indication that the Monitoring & Evaluation data available is one that cannot be wholly relied on in making decisions. Poor data organization means that the preparation phase in terms of data collection was wanting and this has been highlighted by the lack of involvement of important stakeholders, lack of capacity of the relevant and responsible ministry officials as well as the lack of adequate resources that can be used to drive the process to success.

The highlighted inadequacies are further expounded by the fact that 86(41.7%) of farmers disagreed that previous data is used to make decisions, However 36(17.5%) of the farmers agreed that previous data is referred to when making decisions and 84 (40.8%) of farmers were not sure of the use of data collected before making decisions(mean = 2.73, SD = 1.010). The main reason for collection of data is that it can be used to inform future decisions by drawing lessons from past experiences and overlooking the data collected means that past mistakes are repeated and become even more. This is because accessing such data is a problem and if the data exists, the quality is often poor especially regarding the way it is organized and stored. This means decisions in this sector are not guided by requisite data and this raises a lot of questions on the management of the agricultural activity and the antecedent influence on sustainability.

Regarding whether better methods of data collection were overlooked 110(53.3%) of farmers disagreed and 39(18.9%) of the famers however agreed while 57(27.7 %) of the farmers were not sure (mean = 2.60, SD = 0.983).Given that the majority of the famers are in disagreements it means that the farmers are not adequately empowered as to be able to appreciate different data collection methods just as this was reinforced by the previous response in which 86 farmers or 40.7% indicating that data is not referred to in making decisions with only a partly 17.5% or 36 farmers indicated that the data is used in decision making. This is a clear indication of lack of capacity building on the part of the farmers as well as ministry officials in which the existing gaps in terms of data collection are not identified so that they can be used to inform the development of better methods of collecting the data. This means that it ceases to become a problem of not using better methods of data collection but rather becomes a problem of lack of awareness on better methods of collecting data. This definitely negatively impacts on the quality of data collected as well as lessons learnt from the data.

Finally, basing on the previous findings regarding whether data collection influences sustainability glaring gaps in terms of data collection, storage and documentation have been noted and 135 (65.6%) of famers disagreed and only 33(16%) of famers agreed while 38(18.4%) of famers were not sure (mean = 2.33, SD = 0.971). This would indicate that the collection structure as currently constituted jeopardizes the sustainability of agricultural food crop projects.

4.7.2 Monitoring and Evaluation Data Demand and Use by Extension Officers

The study also sought to understand the nature and level of Monitoring and Evaluation data demand and use from the perspective of the extension officers. This would help inform the current level of data use and hence the identification of existing gaps that can be used to perfect future data use for the purpose of ensuring sustainability of agricultural food crop projects. In addition, the results can be used to ascertain the views of the farmers regarding Monitoring and Evaluation data use. The results were presented in table 4.12 which shows the level of disagreement and agreement with 8 statements regarding Monitoring and Evaluation data use as where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.10: Monitoring and Evaluation Data Demand and Use by extension officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Data is normally collected	Freq.	3	0	0	0	1	1.75	0.5
	%	75	0	0	0	25		
Records of data collected are kept	Freq.	3	0	0	1	0	2.75	0.957
	%	75	25	0	25	0		
Data collected is properly organized	Freq.	2	1	0	1	0	3.25	0.957
	%	50	25	0	25	0		
Previously collected datais used to make decisions	Freq.	3	0	0	1	0	2.33	0.577
	%	75	0	0	25	0		
The data collection process is undertaken by qualified personnel	Freq.	2	0	0	2	0	2	0.816
	%	50	0	0	25	0		
The data collected is forwarded to the ministry headquarters and feedback provided	Freq.	1	0	3	0	0	3.5	0.577
	%	25	0	75	0	0		
The data collected focuses only on input and activities at the expense of impact	Freq.	3	0	0	1	0	2.75	0.957
	%	50	25	25	25	0		
Better methods of collecting data are overlooked.	Freq.	2	0	1	1	0	3.25	0.957
	%	50	0	25	25	0		

From the results presented in table 4.10, 3(75%) disagreed that data is not collected but 1 officer or 25% strongly stated that data is collected (mean = 1.75, SD = 0.500) as the majority of the extension officers were of the view collection of data is not undertaken this is likely to influence sustainability of Agricultural food crop projects negativity as the data used is not likely to be factual. This finding was confirmed by the Sub-County agriculture officer 2 who stated that:

> *"The lead Monitoring and Evaluation agency has difficulty receiving quality and timely data and information from other parts and levels of government. In many cases, because of its own limited budget and resources, the lead Monitoring and Evaluation agency is dependent on others to provide data and relies on goodwill, rather than explicit authority to encourage compliance. There is also lack of sufficient numbers of skilled Monitoring and Evaluation personnel to gather required data, and weak management information systems that make storing and sharing data difficult" (*Sub-County agriculture officer 2).

These results highlight a major gap where data collection periods are not clearly defined and from the Sub County agricultural officer views, there is a clearly lack of quality data, timeliness in terms of collection and submission of data which is compounded by the fact that there are no financial and other resources such as human resources that can be used in implementing data collection activities and ensuring frequency of data collection is high and that the data is collected in a timely and quality fashion as well as having efficient storage and dissemination of the data.

In addition to this, 3 (75%) disagreed that the collected records for data are available but 1 (25%) agreed (mean = 2.75, SD = 0.957). This means that that different officers could be approaching this issue differently. As a result, there is lack of clear and accurate documentation of the results achieved by projects. Therefore, accessing data for the purpose of decision-making and impact assessment is a challenge. Consequently, information reporting poses a challenge and does not provide opportunity for critical analysis and organizational learning, informed decision-making and impact assessment and the antecedent impact on sustainability.

Furthermore, 3(75%) of the extension officers were not sure whether the data collected is properly organized and 1 officer (25 %)was of the view that data is properly organized (mean = 3.25, SD = 0.957). This clear lack of data organization means that the important indicators are not well defined and this might prove difficult in terms of data retrieval and report generation

and this hinders sustainability. A well-designed and organized Monitoring and Evaluation system will ensure that the right data is collected at the right time during and after project implementation and that it is available to guide project implementation and strategic decisions. In addition to this, a good system would ensure that the entire essential indicators are well defined and collected. It will also ensure that project staff and stakeholders will not be overwhelmed by huge amounts of data gathered and that only a reasonable amount of time and money is spent in collecting and analysing data, and collating and reporting the information. To affirm this finding, one Sub-County officer stated:

> *"Once data has been collected, a structure for the analysis should be developed based on themes and concerns that emerge from the information. Data should then be organized under the themes and patterns, trends and possible interpretations that are identified. After evaluation data has been analysed, the findings need to be reported to various project stakeholders. Reporting is undertaken in different forms, including written form, verbal communication, or Power-Point presentations, slides and videos" (Personal Communication, Sub-County Agriculture Officer 4).*

Regarding whether data collected is used to make decisions 3 (75%) disagreed but 1 officer or 25% agreed that the data is used to make decisions (mean = 2.33, SD = 0.577). As noted previously, the data collected should be used to make informed decisions based on the gaps identified so that the projects being implemented have refined processes that would greatly contribute to the outcome. Since, as previously noted, it is also a challenge to access data; the available data cannot be wholly relied on because it has not been adequately validated. This means that the quality of data is questionable. Policymakers and project managers make a wide range of decisions for which they use data, including policy development, project design and scale-up, and resource allocation. Nevertheless, barriers perceived to limit uptake and use of data for decision-making included poor data quality, weak human resource capacity and lack of organizational support to analyse, disseminate, interpret, and utilize data. Efforts to share information across organizations and delays in releasing information limit the usefulness of the data.

In addition to this 2 (50%) disagreed that data collection process is undertaken by qualified personnel with 2 (50%) agreeing (mean = 2.00, SD = 0.816). This affirms a previous finding that indicated the lack of adequate and qualified human resources to ensure implementation of the

data collection process. This implies that those tasked with data collection to an extent lack training on modern data collection methods. Therefore, the quality of the data collected is in doubt. In addition, for such personnel, interpretation of the different modalities of the data is also a challenge hence the data is not used in decision making.

The Sub County Agriculture Officer in charge reported a need for training on data analysis and use for decision-making while extension officers working at facilities with poor quality data expressed a need for training on data collection. There was a common perception that the importance of using data is not valued which affects how well it is recorded, processed and reported. From Sub County officers half of respondents perceived that a culture of data use was not promoted in their facility and that decision making was not based on data. For data to be useful in decision-making, decision-makers need to have access to all relevant data sources. Access to both summary reports and full data sets is critical in programme management and improvement and policy formulation. For example, complete data is necessary in supporting trend, output and outcome monitoring, problem identification, target setting, site comparison, and hypothesis testing. Without sufficient access to full and multiple data sources, data-informed decision-making will be severely curtailed.

On a positive note, majority of the extension officers indicated that data collected is forwarded to the ministry headquarters and feedback provided 3(75%) of the respondents 1(25%) of the respondents agreeing (mean = 3.5, SD = 0.577).This infers that the Ministry reliably stores, manages and accesses Monitoring and Evaluation data but the question arises regarding the quality of the data and feedback elicited given doubts related to the source. Data collection is therefore, inexplicably intertwined with its analysis and use and chances are that the data forwarded is aimed at meeting routine office procedures. However, doubt lingers as to whether or not the data collected focuses only on input and activities at the expense of impact. This situation is brought about by ineffective methods of collection of data as well as unqualified personnel among those involved in the process. In addition to this, it means that there is lack of clearly defined indicators which points to a poor preparation process with 3(75%) of the respondents disagreeing that data focuses only on input and activities at the expense of impact and 1 (25%) agreeing that it does (mean=2.75, S.D =0.957)..

Finally the extension officers regarding if better methods of collecting data are overlooked 2(50%) disagreed 1(25%)were not sure. and 1 (25%) agreed. (mean = 3.25, SD = 0.957).This is because data is rarely collected and there is lack of capacity to collect quality information. In addition, this means that because past data is rarely of good quality and rarely used in decision making, the methods of data collection, storage and sharing have not been upgraded to meet current needs especially in terms of technology that can ensure quality and efficiency. As a result, extension officers are unaware of better methods of collecting data that may have been overlooked.

4. 8 Research and Surveillance in Monitoring and Evaluation

Surveillance in Monitoring and Evaluation was also put into consideration by the study. This would assist in understanding and identification of current gaps with the aim of perfecting the projects. Four items were measured on a 5-point Likert scale. The 5- point Likert scale was defined such that the scale of 1 meant strongly disagree, 2 was disagree, 3 was neutral, 4 was agree and 5 was strongly agree with the statements.

4.8.1 Research and Surveillance in Monitoring and Evaluation by Farmers

The views of the farmers were sought regarding their level of agreement or disagreement with various aspects of research and surveillance in Monitoring and Evaluation. This helped in getting an understanding on the level of implementation of research and surveillance activities from the perspective of the farmers with the aim of identifying existing gaps and ways of addressing emerging them. The results regarding this were presented in table 4.14 a likert scale of 1-5 was used where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.11: Research and Surveillance in Monitoring and Evaluation by Farmers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Research &Surveillance is undertaken in food crop projects	Freq.	12	107	43	30	12	2.63	1.04
	%	5.8	51.9	20.9	14.6	5.9		
Research &Surveillance on the agricultural food crop production is effective	Freq.	35	96	44	27	4	2.36	0.977
	%	17	46.6	21.4	13.1	1.9		
Research &Surveillance in its current state influences sustainability of food crop projects	Freq.	44	88	44	26	4	2.3	0.992
	%	21.4	42.7	21.4	12.6	2		
Information from Research &Surveillance is used in decision making	Freq.	18	67	91	25	5	2.67	0.888
	%	8.7	32.5	44.2	12.1	2.4		

From the results in Table 4.11, 119 (57.7%) of the famers disagreed that research surveillance is undertaken in food crop projects and (20.9%) were not sure and 43(20.9%) were not sure and 42 (20.5%) agreed research and surveillance is undertaken in agricultural food crop project. (mean = 2.63, SD = 1.04). This is an indication that there was no reliable data available to the public on research and surveillance of agricultural food crop projects. It was, therefore, difficult to fully ascertain its contributions to sustainability. Surveillance should be complemented by essential research, including epidemiological, evaluation and social impact research. Evaluation is mostly done through surveys and surveillance to determine outcomes and impact.

Similarly, majority of the farmers were not sure whether research and surveillance was agricultural food crop projects was effective with 131(63.62) disagreeing that its effective, 44% (21.4%) were not sure while 31(15%) did agree that they are effective(mean = 2.36, SD = 0.977). This means that there is no sufficient research and surveillance on food crop projects making it difficult for farmers to prudently manage resources at their disposal as well as enhancing sustainability and ascertaining conclusively contributions realized. Moreover, lack of research and surveillance has contributed to Monitoring and Evaluation being biased against farmers engaging in agricultural food crop projects as opposed to large scale farmers despite the critical

role they play in enhancing food security. As such, majority of the farmers disagreed the research and surveillance of the agricultural food crop production is effective.

Research and surveillance rarely influence sustainability of food crop project with 132(64.1%) of famers disagreeing and 44(21.4%) not sure while 30(14.6%) agreed it influences project sustainability (mean = 2.30, SD = 0.992).The farmers were unable to establish if research and surveillance would contribute to food project sustainability since much has not been done with respect to research and surveillance and information from research and surveillance is rarely used in decision making

As to whether information from research and surveillance is used in decision making 91(44.2%) were not sure and 85(41.2%) disagreed that they are used to make decisions with only 30(14.5%) were in agreement (mean = 2.67, SD = 0.888). The farmers viewed use of information from research and a Surveillance it as ineffective and unreliable and an undertaking whose role and place in agricultural food crop sustainability is still uncertain.

4.8.2 Research and Surveillance in Monitoring and Evaluation by Extension Officers

Table 4.15presented the results on research and surveillance in Monitoring and Evaluation from the perspective of the extension officers. Gaining an understanding of research and surveillance from the extension officers helps understand how the ministry and ministry officials identify its importance especially towards the sustainability of agricultural food crop projects. The likert scale of 1-5 was used where SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.12 Research and Surveillance in Monitoring and Evaluation as Observed by Extension Officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Funds are available for research	Freq.	3	0	0	0	1	3	0.816
	%	75	0	0	0	25		
Mechanisms for surveillance for the funds received exist	Freq.	3	1	0	0	0	2.33	0.577
	%	75	25	0	0	0		
Regulation to apprehend those misappropriating funds exist	Freq.	2	1	0	1	0	2.25	0.957
	%	50	25	0	25	0		
Monitoring and Evaluation work is undertaken based on research findings	Freq.	3	0	0	1	0	2.5	1.291
	%	75	0	0	25	0		
Employees are adequately motivated to undertake research	Freq.	2	0	0	2	0	2.25	0.5
	%	50	0	0	50	0		

On availability of research funds 3(75%) disagree that the funds are available while 1(25%) agreed that research fund are available (mean = 3.00, SD = 0.816).This implies that there are insufficient funds for the purpose of research and surveillance in militating against crop diseases, enhancing prudent management of scarce resources among other undertakings so as to boost production. However, majority of the extension officers felt that there were no mechanisms for research and surveillance for the funds.

Concerning whether there is mechanism, for surveillance for the funds provided 4(100%) of the extension officers disagreed (mean = 2.33, SD = 0.577). Lack of closer scrutiny of use of funds received is a challenge thus creating opportunities for misappropriation of funds and compromise on sustainability of agricultural food crop projects. There is need of putting mechanisms in place to mitigate against misuse of funds and other resources

The situation above is compounded by the fact that 3(75%) disagreed that there were appropriate regulation to apprehend those misappropriating funds and 1(25%) agreeing that such regulation existed(mean = 2.25, SD = 0.957) but in this respect, accountability is not enhanced since there are no regulations to deal with misappropriation. This adversely impacts on project sustainability.

Further 3(75%) disagreed that Monitoring and Evaluation work is undertaken based on the outcome of research and only 1(25%) agreed that Monitoring and Evaluation work is undertaken based on research and surveillance findings (mean = 2.50, SD = 1.291).This scenario portends great risk since there is need to use research findings to guide M&E work with a view of ensuring maximisation in productivity and ultimately sustainability.

Finally, the lack of mechanisms to manage funding of resources as well as the making of decisions that are devoid of being informed by findings from research and surveillance was brought out clearly by majority of the extension officers who indicated that employees are not adequately motivated to undertake research This was exhibited by 2(50%) of Extension officers disagreeing that employees are motivated, while 2(50%) agreed they extension officers are motivated to undertake research. (mean = 2.25, SD = 0.500) Due to inadequate motivation to undertake research and surveillance, employees are unable to undertake research and surveillance to satisfactory levels. This would definitely adversely impact on project sustainability as there is no alertness on challenges in existence and no mechanisms for early warning systems regarding issues bedevilling food crop projects.

4. 9 Ethics in Monitoring and Evaluation from Farmers Perspective

The study sought to understand the nature of Monitoring and Evaluation ethics from the farmers, extension officers as well as Sub County agricultural officers. Their level of agreement or disagreement with the various statements regarding Monitoring and Evaluation ethics was sought with the statements being measured on a 5- point Likert scale that defined the level of disagreement or agreement.

4.9.1 Perspective of farmers on Monitoring and Evaluation ethics

The view of the farmers with regard to Monitoring and Evaluation ethics was assessed based on a 5- point Likert scale which was used to measure 5 items. This would help in understanding the general understanding of Monitoring and Evaluation ethics by the farmers as well as identify the gaps and challenges they face in terms of Monitoring and Evaluation capacity building which also involves training the farmers on Monitoring and Evaluation ethics to assure adherence to proper and standard Monitoring and Evaluation principals. The results were presented in table

4.17a likert scale of 1-5 was used where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.13: Monitoring and Evaluation Ethics from farmers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
There is integrity in collection of data	Freq.	27	79	52	44	4	2.61	1.024
	%	13.1	38.3	25.2	21.4	1.9		
Resources available are used well	Freq.	17	66	78	29	16	2.81	1.035
	%	8.3	32	37.9	14.1	7.8		
Shops selling farm inputs and seedlings are closely monitored	Freq.	18	69	53	49	17	2.89	1.117
	%	8.7	33.5	25.7	23.8	8.3		
Reports compiled are factual	Freq.	22	74	85	10	15	2.62	0.994
	%	10.7	35.9	41.3	4.9	7.3		
If resources available are misused, action is taken	Freq.	28	64	80	9	25	2.7	1.141
	%	13.6	31.1	38.8	4.4	12.1		

From the findings in table 4.13, majority of the farmers were not sure on whether there is integrity in collection of data 106 (51.4 %) disagreed and 52 (25.2%) and 48 (23.3%) disagreed that there is integrity in collection of data(mean = 2.61, SD = 1.024). As evidenced in adherence to integrity in the process of data collection means that there are ethics and principals that are well defined and set to govern the process. In reference to lack of such principles and ethic in this sector this means that integrity is compromised even at the earliest stage of data collection. Though data is normally collected, integrity in collection of data is in doubt since quality of data is often poor. In most cases, the data lacks enough information hence it cannot be put to use.

In addition to this, the development of such ethics and principles that would define the data collection process would more often require adequate funding. As such, the results also indicated that majority of the farmers disagreed that resources available are used well constituting 83(40.3%) disagreeing and 78(37.9%) not sure and 45 (21.9%) of the respondents agreeing (mean = 2.81, SD = 1.035).This means this a critical area requiring attention so as to realize sustainability of food crop projects.

From the findings in table 4.23, majority of the farmers were not sure whether shops selling farm inputs and seedlings are closely monitored with 87(42.2%) and 53(25.7%) not sure and 66 (32.1 % of the) respondents disagreeing (mean = 2.89, SD = 1.117).This was possibly a pointer to poor coordination among those tasked with monitoring the sale of farm inputs and seeds. In addition, these findings clearly show that there is lack of adequate documentation that can facilitate follow-up on allocation and use of farming resources.

Furthermore a significant number of farmers disagreed that reports compiled are factual 96(46.6%) and 85(41.3%) were not sure and 45 (12.2%) of the respondents agreed that they were factual mean = 2.62, SD = 0.994). This means that the integrity of the reports is compromised and the reports are not a true reflection of the actual events and records. From the foregoing, it is evident that there is limited data and information thus making it a challenge to authoritatively determine if information on the reports compiled are factual.

Finally, 92(44.7%) disagreed that if resources are misused action is taken and 80(38.8%) were not sure and 34 (16.5%) of the respondents agreed that action is taken in case of misuse of resources (mean = 2.70, SD = 1.141). This implies that that those involved in agricultural food crop projects have insufficient details on what needs to be done with respect to resources in order to produce the deliverables of the project successfully and the action to take in case of misuse of resources. In addition, the results indicate that although there might be means of addressing the misuse of resources, action is rarely taken in the event of misuse of resources. Therefore, proper surveillance mechanisms need to be put in place.

4.9.2 Ethics in Monitoring and Evaluation from Extensions Officers

The research sought to establish the views of extension officers regarding Monitoring and Evaluation ethics. Their views were based on their level of agreement or disagreement with 8 statements regarding Monitoring and Evaluation ethics that were measured on a 5- point Likert scale with a measure of 1 indicating strong disagreement, 2 indicating disagreement, 3 indicating not being sure, 4 indicating agreement and 5 indicating strong agreement. The results were presented in table 4.17. The findings would aid in understanding the perceptions of the extension officers on Monitoring and Evaluation ethics as well as their knowledge on ethics and how this

would influence the sustainability of agricultural food crop projects and the likert scale of 1-5 was used where ;SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.14: Monitoring and Evaluation Ethics perspective from Extensions Officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Integrity in compilation and reference to data exist	Freq.	3	0	0	0	1	2.25	0.5
	%	75	0	0	0	25		
Use of accurate and factual data exists	Freq.	3	0	0	1	0	2.25	0.5
	%	75	0	0	25	0		
Prudent utilization of resources exists	Freq.	2	1	0	1	0	2.5	0.577
	%	50	25	0	25	0		
If resources available are misused action is taken	Freq.	3	0	0	1	0	2.25	0.5
	%	75	0	0	25	0		
Timely reports exists	Freq.	2	0	0	2	0	2	0.816
	%	50	0	0	25	0		
Reports compiled are factual	Freq.	3	0	0	0	1	2	0.816
	%	75	0	0	0	25		
Retail outlet selling farm inputs and seeds are closely monitored	Freq.	3	1	0	0	0	3	0.816
	%	75	25	0	0	0		
Whistle blowers among are protected	Freq.	2	1	0	1	0	2.75	0.957
	%	50	25	0	25	0		

From the findings in table 4.14, majority of the extension officers indicated that integrity in compilation and reference to data does not exist 3(75%) and only 1 officer (25 %) agreeing (mean = 2.25, SD = 0.500) . This indicates that Monitoring and Evaluation has been carried out without full adherence to established standards to a great since. These standards are those that clearly define and guide the process of data collection as well as its use in making informed decisions. Lack of such standards means that the process of data collection is not well managed and planned which ideally means there are doubts regarding integrity of the data collected which means that even if the data is utilized, the decisions that are drawn from such reference are compromised because of lack of ethics.

This also means that even the use of accurate and factual data does not exist as revealed by majority of the extension officers. In this case 3(75 %) disagreed and 1 (25%) agreed that data is not factual and hence cannot be relied upon in making critical decisions (mean = 2.25, SD = 0.500) .This development adversely impedes sustainability of agricultural food crop projects

The results also revealed that majority of the extension officers indicated that prudent utilization of resources does not exist with 3(75 %) disagreeing and 1(25%) agreeing mean = 2.50, SD = 0.577).Regarding prudent utilization of resources extension officers appear not fully involved in the process of resource allocation and, due to limited monitoring, they were unable to ascertain if there was prudent utilization of resources provided to farmers by various organizations or locally raised by members of the groups.

Furthermore, majority of the extension officers indicated that in case resources available are misused action was not taken 3(75 %) disagreed and 1 (25%) agreed(mean = 2.25, SD = 0.5) majority of the respondents at 75% had their doubts which confirmed the view of the farmers who had indicated a similar view with regard to taking action in case of mismanagement of resources. This infers that there is no satisfactory monitoring and regulatory framework to deal with those misusing resource in the groups. As a result, misuse of resources continues since individuals do not suffer the consequences arising from their culpability.

Further, half of the extension officers or 50% of the respondents indicating that timely reports did not exist and 50% of the respondents indicating that timely reports did exist (mean = 2.00, SD = 0.816). As a result, there is no prompt and relevant information regarding the progress of projects and areas that require improvement to realize sustainability. In addition, in relation to taking accountability for the misuse of resource, lack of these timely reports provides a means for those who are culpable to get away with the mistakes making it impossible to ensure efficient management of the resource and also creates gaps that lead to the misuse of the resources. These gaps need to be sealed to curtail future misuse. This means that Monitoring and Evaluation reports cannot be relied on in decision-making since their authenticity is questionable.

Basing on the study findings all the extension officers indicated that retail outlets selling farm inputs and seeds were not closely monitored 4(100%)(mean = 3.00, SD = 0.816).As a result, there is a likelihood that the quality of farm inputs and seeds is jeopardized since retail outlets operate without strict regulatory framework as oversight bodies such as the Kenya Plant Health Inspectorate Services (KEPHIS) are hardly represented at the grassroots**.**

Furthermore, it seems that there are no avenues for ensuring the Monitoring and Evaluation ethics are followed to the letter as indicated by majority of the extension officers at 3(75%) who disagreed that whistle blowers are protected and only 1(25%) agreed (mean = 2.75, SD = 0.957).As such, employees and individual farmers are unlikely to reveal inconsistencies in resource use and funds availed to the respective projects due to lack of clear frameworks to safeguard them in event of disclosure. Therefore, it is difficult to investigate problems inherent in the agricultural projects to a satisfactory level.

4. 10 Monitoring and Evaluation practices and sustainability of agricultural food crop projects

The study sought to understand the nature of the combined Monitoring and Evaluation practices in relation to the sustainability of agricultural food crop projects. Ideally, all the aspects that define an effective and efficient Monitoring and Evaluation system within an organization or project are essential to the determination of the final outcome of such where each component of the system is designed to play a specific and unique role towards the overall function of the Monitoring and Evaluation system. These combined Monitoring and Evaluation practices had items measured on a 5 point Likert scale that defined the respondent's level of agreement or disagreement with the statements.

4.10.1 Monitoring and Evaluation practices combined for farmers

A view of the farmers with regard to their agreement or disagreement on the combined Monitoring & Evaluation practices was sought in order to aid in the understanding of the overall influence of Monitoring and Evaluation practices especially with regard to the sustainability of agricultural food crop projects. Their views on 6 statements that were used to define the nature of combined Monitoring and Evaluation practices was sought with each statement being measured on a 5- point Likert scale where the lowest scale of 1 meant strong disagreement with the statement posed, 2 meant disagreement with the statement, 3 meant not being sure of the statement, 4 meant agreement with the statement while 5 meant strong agreement with the statement. The results were presented in table 4.20 using the likert scale of 1-5; Where SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.15: Monitoring and Evaluation Practices combined for farmers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Monitoring and Evaluation practices influence food crop projects sustainability?	Freq.	44	114	29	11	8	2.15	0.948
	%	21.4	55.3	14.1	5.3	3.9		
Monitoring and Evaluation Planning & coordination influences capacity building	Freq.	58	109	32	5	2	1.94	0.761
	%	28.2	52.9	15.5	2.4	1		
Monitoring and Evaluation Capacity building influences use of data	Freq.	61	107	30	8	0	1.93	0.771
	%	29.6	51.9	14.6	3.9	0		
Monitoring and Evaluation Planning enhances Surveillance	Freq.	60	111	30	5	0	1.89	0.713
	%	29.1	53.9	14.6	2.4	0		
Research and Surveillance in Monitoring and Evaluation enhances use of data	Freq.	63	101	30	12	0	1.95	0.818
	%	30.6	49	14.6	5.8	0		
Data Demand and use in Monitoring and Evaluation enhances capacity building	Freq.	51	111	37	3	4	2	0.789
	%	24.8	53.9	18	1.5	2		

From the results in table 4.15 above 158 (76.7%) of the respondents indicated that Monitoring and Evaluation practices does not influence food crop projects sustainability and 19 (9.2%) agreed and 29 (14.1%)were not sure(mean = 2.15, SD = 0.948).This is attributed to the fact that farmers were not adequately involved in project planning, resource availability and management, Monitoring and Evaluation, ownership among other crucial activities and hence sustainability of food crop projects is adversely impacted upon.

In addition167 (80.9%) of the farmers, they indicated that planning& coordination did not influence capacity building and 7(3.4%) agreeing with 32 (15.55%) being not sure (mean = 1.94, SD = 0.761).Farmers also indicated that they had limited involvement in capacity building; hence they did not participate in project planning for purposes of ownership and sustainability.

Additionally, 168 (81.5%) of the respondents indicated that capacity building does not influence the use of data with 8(3.9%) agreeing and 30(14.6%) not sure (mean = 1.93, SD =

0.771).Capacity building offers the recipients the expertise to interpret data and put it to good use among other skills. However, if the data is not of good quality, it is termed irrelevant and cannot be used in decision-making.

In the same vein, majority of the farmers at 171(83%) indicated that planning does not enhances surveillance with 12(5.8%) agreeing and 30 (14.6%) not sure (mean = 1.89, SD = 0.713).This means that planning did not directly contribute to surveillance and more so, research. Modalities might be in place to facilitate surveillance though efforts towards realization of surveillance might be non-existent due to failure to put in consideration requisite issues.

Besides, majority of the farmers at 164(79.6%) indicated that surveillance did not enhance use of data with a further 14.6 % not sure and 12(5.8%) agreeing (mean = 1.95, SD = 0.818).This implies that the surveillance on food crop projects had been ineffective, meaning the information derived from it cannot be used for the purpose of decision-making. This ideally means that the existing structures that govern surveillance activities were not up to date especially in addressing current emerging issues.

Finally, majority of the farmers at 161 (78.7%) farmers indicated that data used not enhance capacity building with 7(3.5%) agreeing and 18% or 37 not sure (mean = 2.00, SD = 0.789).As noted earlier, the data collected had limited information and was low in terms of integrity. The respondents were, therefore, unable to link data use to capacity building since the data collected did not capture farmers' needs. Consequently, farmers describe the content of training as irrelevant and cannot be used to instil the adoption of best practices.

4.10.2 Monitoring and Evaluation practices combined for extension officers

The study sought to understand the nature of the combined Monitoring and Evaluation practices from the perspective of the extension officers. This would assist in establishing the level of implementation of such practices and their eventual influence on the sustainability of agricultural food crop projects. Their views on 4 statements which were used to define the nature of combined Monitoring and Evaluation practices was sought with each statement being measured on a 5- point Likert scale where the lowest scale of 1 meant strong disagreement with the statement posed, 2 meant disagreement with the statement, 3 meant not being sure of the

statement, 4 meant agreement with the statement while 5 meant strong agreement with the statement. The results were presented in table 4.21and using a likert scale of 1-5 where**;** SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.16: Monitoring and Evaluation practices combined for Extension Officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
Monitoring and Evaluation Planning as undertaken enhances capacity building	Freq.	3	0	0	0	1	2.25	0.5
	%	75	0	0	0	25		
Monitoring and Evaluation Capacity building as undertaken influences use of data	Freq.	3	0	0	1	0	2	0.816
	%	75	0	0	25	0		
Monitoring and EvaluationPlanning as undertaken enhances surveillance	Freq.	2	1	0	1	0	2.25	0.5
	%	50	25	0	25	0		
Research and Surveillance in Monitoring and Evaluation as undertaken enhances use of data	Freq.	3	0	0	1	0	2.25	0.5

As evidenced in table 4.16, majority of the extension officers or 75% indicated that when Monitoring and Evaluation planning was undertaken it rarely enhanced capacity building (mean = 2.25, SD = 0.500).This means that capacity building not only requires planning but also concerted efforts by the stakeholders involved are required to ensure that the outlined plan is implemented. For it to succeed, planning must cater for the financial provisions of capacity building and other evident issues for it to succeed.

Similarly, majority of the extension officers at 75% noted that Monitoring and Evaluation capacity building did not influence data demand and use (mean = 2.00, SD = 0.816).Since there was no adequate training of extension officers; they are not fully aware of the role capacity building plays in instilling knowledge on data demand and use. Precisely, capacity building enables those tasked with use of data to interpret it effectively to meet the demands of the end

users. Extension officers had negative perception of capacity building since they had not undergone training effectively hence they were not fully appreciative of the benefits.

Further, most of the extension officers at 75 % for those strongly agreeing and disagreeing indicated that Monitoring and Evaluation planning does not enhances surveillance (mean = 2.25, SD = 0.500).This implies that for surveillance to take place, it requires the implementation of the plans in place together with support mechanisms such as funds. Finally, majority of the extension officers indicated that surveillance does not enhances data demand and use with 3(75%) disagreeing and 1 (25%) agreeing (mean = 2.25, SD = 0.5).Since surveillance on food crop projects had been ineffective, information derived from it could not be relied on.

4. 11 Sustainability of Agricultural Food Crop Projects

The study sought to understand the nature and level of sustainability of agricultural food crop projects from the perspective of the farmers and extension officers. This is aimed at gaining an understanding of the current level of sustainability as well as the emerging challenges that tend to stifle the sustainability efforts.

4.11.1 Sustainability of agricultural food crop projects by farmers

The study sought to understand the views of the farmers with regard to the nature and level of sustainability of agricultural food crop projects. This would aid in understanding, from the point of view of the farmer, whether the sustainability efforts are in the right track and what the future holds for such efforts especially in the event of emerging challenges. To assess this items were measured on a 5- point Likert scale were used with the level of agreement or disagreement with the statements posed ranging from a measure of 1 for strong disagreement and 5 for strong disagreement and 3 for not being sure. The results were presented in table 4.23using a likert scale of 1-5 where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.17: Sustainability of Food Crop Projects by farmers

Statements		SD	D	NS	A	SA	Mean	Std. Deviation
There is food yield increase	Freq.	51	94	32	14	13	2.22	1.083
	%	24.8	45.6	15.5	6.8	7.3		
Food targets for previous years realized	Freq.	31	76	58	37	4	2.54	1.002
	%	15	36.9	28.2	18	2		
Food targets for current year realized	Freq.	17	58	82	36	13	2.85	1.011
	%	8.3	28.2	39.8	17.5	6.3		
Other food crop projects in the area have experienced sustainability	Freq.	29	77	65	20	15	2.59	1.077
	%	14.1	37.4	31.6	9.7	7.3		
Food crop projects started earlier and active exist	Freq.	26	106	45	24	5	2.39	0.92
	%	12.6	51.5	21.8	11.7	2.4		
Food crop projects have empowered farmers	Freq.	60	111	21	12	2	1.94	0.82
	%	29.1	53.9	10.2	5.8	1		
Monitoring and Evaluation systems enhances accountability & learning	Freq.	31	96	60	17	2	2.33	0.866
	%	15	46.6	29.1	8.3	1		
Better data storage systems exist	Freq.	30	85	49	31	11	2.55	1.08
	%	14.6	41.3	23.8	15	5.3		
There is use of Monitoring and Evaluation data in decision making	Freq.	30	90	66	12	8	2.4	0.926
	%	14.6	43.7	32	5.8	3.9		
If the food yield increase is there, this can be attributed to Monitoring and Evaluation of food crop projects?	Freq.	28	122	34	11	11	2.3	0.955
	%	13.6	59.2	16.5	5.3	5.3		

Results in the table 4.17 indicated that, majority of the farmers 145 (70.4%) indicated that there was no increase in food yield realized through training of farmers, with 32(15.5%) not sure and 27 (14.1%) in agreement (mean = 2.22, SD = 1.083).Farmers have not fully benefited from the training programs due to lack of ownership of the programs as well as poor planning and management of various resources for the projects. They are, therefore, not empowered and are unable to make use of better farming practices.

The results in table 4.17further revealed that majority of the farmers107 (51.9%) indicated that food targets were not met and 58 (28.2 %) were not sure if food targets for the previous year were realized and 41 (20%) were in agreement (mean = 2.54, SD = 1.002).This implies that farmers lacked adequate set of records on food targets hence it was difficult for them to establish

if the food targets for the previous year were met. Farmers were unaware if food targets in current year were met with the findings indicating that 75 (36.5 %) were of the view that targets were not realized and 82 (39.8 %) were not sure if food targets in previous years were met and 39 (23.8) indicating that the food targets were met (mean = 2.85, SD = 1.011) since data on such food targets is either non-existent or because of integrity related issues that are not addressed in time, this renders the data unreliable coupled with the fact that literacy levels are not very high.

There was also doubt on whether other food crop projects in the area have experienced sustainability with 106 (51.5%) indicating they were not aware of such projects and 65 (31.6%) not sure and only 35 (16.9%) in agreement hence portending doubts regarding sustainability (mean = 2.59, SD = 1.077).This implies that food projects in the area are yet to realize sustainability or the level of sustainability has yet to meet the set targets. There is therefore a similar trend with respect to project attainment of food crop projects in the area. Further, it was uncertain if food crop projects started earlier were active with 132 (64.1%)indicating they were not active and 21.8% not sure and 29 (14.1%) indicating they were active(mean = 2.39, SD = 0.92).There should be efforts aimed at ensuring that food crop projects are sustainable through developing better systems so as to curtail inherent challenges..

The results also showed that food crop projects had not empowered farmers as such with 171 (83%) disagreeing and 21 (10.2%) not sure and14 (6.9%) indicating farmers had been empowered(mean = 1.94, SD = 0.82).This is because they lacked the requisite knowledge to make use of better farming practices and from the onset, since the planning stage excluded key stakeholders, ownership of the projects by the farmers was not there and since even the ministry officials lacked the capacity to make the farmers better understand how to carry out and sustain the projects, every aspect of proper management of the projects at ministry level and at farmer level seem to be lacking. This can be aptly described by the fact that majority of the farmers at 127 (61.6 %) felt that Monitoring & Evaluation systems did not enhance accountability and learning a critical ingredient and 60 (29.1%) not sure and 19 (9.3%) indicating there is enhancement of accountability through use of Monitoring and Evaluation systems(mean = 2.33, SD = 0.866).The implies that the use of Monitoring and Evaluation systems has not been fully embraced by the farmers due to poor coordination among the stakeholders involved. More so, the officials tasked with ensuring that the Monitoring and Evaluation systems were making a

positive impact on the sustainability of the agricultural food crop projects were not adequately trained and lacked the necessary expertise and experience. In addition, there was doubt over whether or not resources allocated were put to good use and whether or not there were repercussions for resource misuse.

Further, it was uncertain if better data storage system with exist115 (55.95%) indicating they did not exist and 49(23.8%) not sure and42 (20.3%) indicating better storage system exists (mean = 2.55, SD = 1.08).As witnessed earlier, data is rarely documented because of its quality. As a result, efforts have not been directed towards developing better storage systems since data that is of good quality is unavailable. Furthermore, poor record keeping is also a contributing factor for uncertainty in regards to attainment of food targets in previous years. This also means that there is an inherent gap in terms of lack of adequate resources, in this case, for the management of data that is collected from the farmers. This gap means that the security integrity of the data storage systems is wanting; the data is thus prone to interference as well as loss.

Consequently, because of such challenges, majority of the farmers at 120 (58.3%) indicated that there was no use of Monitoring and Evaluation data in decision-making and 66 (32%) were not sure and 20 (9.7%) agreed there was use of Monitoring and Evaluation data (mean = 2.40, SD = 0.926). Since there is evidently no use of Monitoring and Evaluation data in decision making, the decisions being made would definitely be wanting and would impact negatively on the overall goal of attaining sustainability of the agricultural food crop projects. Finally, the respondents indicated that if there were any food yield increases it could not be attributed to Monitoring and Evaluation of food crop projects at 150 (72.8 %) disagreed and 34 (16.5 %) were not sure and 22 (10.6%) were of the view that food yield increases could be attributed to Monitoring and Evaluation of food crop projects (mean = 2.30, SD = 0.955).This implies that food yield is not attributed to only Monitoring and Evaluation but it can be attributed to other factors.

4.11.2 Sustainability of agricultural food crop projects by extension officers

The study also sought to understand the aspects of sustainability of agricultural food crop projects from the perspective of the extension officers in order to establish existing gaps from the ministry which might have a negative effect on the sustainability of the projects. In order to gain this understanding, 13 items measured on a 5- point Likert scale were used with the level of

agreement or disagreement with the statements posed ranging from a measure of 1 for strong disagreement and 5 for strong disagreement and 3 for not being sure. The results were presented in table 4.24and measured on the likert scale of 1-5 where; SD = Strongly Agree, D = Disagree, Ns = Not sure, A = Agree, SA = Strongly Agree

Table 4.18: Sustainability of agricultural food crop projects perspective of extension officers

Statement		SD	D	NS	A	SA	Mean	Std. Deviation
There is application of previous lessons in the projects.	Freq.	3	0	0	0	1	2.25	0.5
	%	75	0	0	0	25		
There is ownership of projects	Freq.	3	0	0	1	0	2.25	0.5
	%	75	0	0	25	0		
Existence of systems to ensure linkage between data collected and decision made	Freq.	2	1	0	1	0	2.25	0.5
	%	50	25	0	25	0		
Better record leading to improved production costs	Freq.	3	0	0	1	0	2.25	0.5
	%	75	0	0	25	0		
Better farming practices are currently being used	Freq.	2	0	0	2	0	2.25	0.5
	%	50	0	0	25	0		
Food security has been achieved by members	Freq.	3	0	0	0	1	2.25	0.5
	%	75	0	0	0	25		
There has been an increase in food yield realized through training of farmers	Freq.	3	1	0	1	0	2.25	1.258
	%	75	25	0	25	0		
Prudent utilization of resources exist	Freq.	2	1	0	1	0	1.75	0.5
	%	50	25	0	25	0		
Food production targets for the previous years were realized	Freq.	3	1	0	1	0	1.75	0.5
	%	75	25	0	25	0		
Food targets in previous year were met	Freq.	3	0	0	0	1	3.25	0.957
	%	75	0	0	0	25		
Other food crop projects in the area experienced sustainability	Freq.	3	0	0	1	0	3.75	1.258
	%	75	0	0	25	0		
Food crop projects started earlier exists	Freq.	3	1	0	1	0	3.67	0.577
	%	75	25	0	25	0		

As evidenced in table 4.18, 3 (75%) of the extension officers indicating that; there was no application of previous lessons in the projects and only 1 (25%) indicated that there was application of previous lessons (mean = 2.25, SD = 0.5).Regarding ownership of projects 3 (75%) of the respondents indicated that there is no ownership of projects and 1 (25%) indicated there is ownership of the project (mean = 2.25, SD = 0.500).

Based on the results, half of the extension officers at 3 (75%) indicating that there does not exist systems to ensure linkage between data collected and decision signifying a critical omission and one extension officer1 (25%) in agreement (mean = 2.25, SD = 0.500) and also that better record keeping does not exist to enhance improved production (mean = 2.25, SD = 0.500) with 3(75 %) strongly disagreeing and 1 (25%) in agreement that such record keeping exists. This implies that data was not adequately documented and Monitoring was also not fully conducted as evidenced by little in form of field visits. Therefore, crucial information that would have been derived from such forums was unavailable. Due to this, there was poor application of previous lessons in the projects and hence negative effect on sustainability.

There was no strong link between data collected and decisions made as data collected was not adequately documented. Extension officers had not received adequate training on better records that could facilitate improved production costs .Besides, the respondents at 3 (75%) indicated that better farming practices were not being used currently with only 1 (25%) indicating that such practices existed (mean = 2.25, SD = 0.500).Extension officers were of the opinion that farmers were not adequately trained on better farming practices. Similarly, increase in the food yield from previous years had not been realized with 3 (75%) disagreeing and 25% agreeing (mean=2.25, S.D=1.258).

In addition, the respondents at 75% indicated that food security had not been realized by members with 1(25%) agreeing (mean = 2.25, SD = 0.500).This is in agreement with the fact that food targets in Nyeri South Sub-County had not been achieved despite efforts put in place to enhance this realization. Food security had not been achieved since members were unable to use the best practices in food production. Food production targets from previous years were yet to be realized hence extension officers were of this opinion. In addition, majority of the extension officers indicated that, to a great extent at 3 (75 %) the respondents, there had not been an

increase in food yield that could be attributed to training of farmers with 1 (25%) in agreement (mean = 2.25, SD = 1.258).There was inadequate training of farmers; hence any food yield increase could not be attributed to training.

Besides, the extension officers indicated that, to a great extent at 3(75 %), prudent utilization of resources did not exist with 1 (25%) in agreement (mean = 1.75, SD = 0.500).This was because a framework for monitoring the resources allocation and utilization did not exist. The situation is further worsened by lack of punitive measures for culpability in misuse of resource. Further, 3(75%) of the extension officers indicated that food production targets for the previous years were not realized with 1 (25%) in agreement (mean = 1.75, SD = 0.500).Food targets in previous years had not been met as farmers lacked the skills to achieve this. This is because there was no adoption of best practices to bolster the realization of food production targets.

Poor coordination was noted between farmers and extension officers and extension officers lacked information regarding farmers' food production progress. At the same time, 3(75%) of the extension officers were not sure if food targets in the previous year had been realized with 1 (25%) in agreement (mean = 3.25, SD = 0.957). Regarding whether other food crop projects in the area experienced sustainability3(75 %)disagreed with 1 (25%) in agreement (mean = 3.75, SD = 1.258) .It appears that other food projects in the area had, to some extent, made use of Monitoring & Evaluation hence realizing a certain level of sustainability. In addition, majority of the extension farmers at 3 (75%) disagreed that food crop projects started earlier and were active (mean = 3.67, SD = 0.577)with 1 (25%) in agreement regarding continued existence of food projects that had been started earlier..

4.12 Correlation Analysis

The study used Pearson Product Moment correlation analysis to assess the nature of the relationship between the independent variables and the dependent variable as well as the relationships among the independent variables (Wong & Hiew, 2005; Jahangir and Begum, 2008). Wong and Hiew (2005) posit that the correlation coefficient value (*r*) ranging from 0.10 to 0.29 is considered weak; from 0.30 to 0.49 is considered medium, and from 0.50 to 1.0 is considered strong;

Table 4.19: Correlation Analysis

	Sustainability	Planning	Capacity Building	Data Use	Surveillance	Ethics	Practices Combined
Sustainability	1						
Planning	0.459**	1					
	0.000						
Capacity Building	0.437**	0.564**	1				
	0.000	0.000					
Data Use	0.165*	0.133	-0.031	1			
	0.018	0.057	0.662				
Surveillance	0.439**	0.355**	0.405**	-0.008	1		
	0.000	0.000	0.000	0.909			
Ethics	0.605**	0.480**	0.288**	0.137*	0.546**	1	
	0.000	0.000	0.000	0.050	0.000		
Practices Combined	0.220**	0.209**	0.315**	-0.116	0.126	-0.001	1
	0.002	0.003	0.000	0.097	0.070	0.987	

** Correlation is significant at the 0.01 level (2-tailed)

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* Correlation is significant at the 0.05 level (2-tailed)

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From the results in table 4.21, there was a strong relationship between ethics and sustainability (r = 0.605, p< .01). Additionally, the study exhibited a medium relationship between Monitoring and Evaluation planning and sustainability (r = 0 .459, p< .01), capacity building with sustainability (r = 0.437, p< .01) and surveillance with sustainability (r = 0.439, p< .01). However, data use had a weak relationship with sustainability (r = 0.165, p< .05) together with Monitoring and Evaluation practices combined with sustainability (r = 0.220, p< .01).

4.13 Model Summary

The model summary involves computation of the correlation coefficient R, the coefficient of determination R^2, the adjusted R^2, the standard error associated with it and the Durbin- Watson statistic which is used to test for first order serial correlation. The amount R^2refers to the amount of variability in the data explained or accounted for by the regression model. This means that $R^2$is the percentage of independent variables that explains the variance in dependent variable (sustainability). The results were presented in table 4.20.

Table 4.20 Model Summary

Model Summary					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	0.592a	0.350	0.334	0.44297	2.327

a Predictors: (Constant), Monitoring and evaluation practices combined, data demand and use, research and surveillance, Monitoring and Evaluation planning and coordination, capacity building

b Dependent Variable: sustainability

.Table 4.30 further illustrates that all the five predictors (practices combined, data use, surveillance, Monitoring and Evaluation planning and capacity building) explained 35 percent variation of sustainability.R^2 was not a respectable result because it is less than 75% (the pegging percentage to accept the R^2 result for any model); 35% of it was due to the model (or due to change in independent variables) and 75% was due to error or some unexplained factor.

4.14 Analysis of Variance (ANOVA)

The analysis of variance is used to assess amount of variation in the dependent variable that is accounted for by the model with the degrees of freedom being used to ensure correctness of the data and the model. The ANOVA results were presented in table 4.20.

Table 4.21: ANOVA Model

Model		**Sum of Squares**	**Df**	**Mean Square**	**F**	**Sig.**
1	Regression	21.046	5	4.209	21.451	0.000b
	Residual	39.049	199	0.196		
	Total	**60.095**	**204**			

a Dependent Variable: sustainability

b Predictors: (Constant), Monitoring and Evaluation practices combined, data demand and use, research and surveillance, Monitoring and Evaluation planning and coordination, capacity building

From the results in table 4.26, the overall F statistic is significant, F = 21.451, p-value = 0.000 which indicated that the model as a whole accounts for a significant portion of the variation in sustainability of agricultural food crop projects and this means that an evaluation of the tests of

the effects can be carried out. That is, the model was fit to predict sustainability using Monitoring and Evaluation practices combined, Monitoring and Evaluation data use, research and surveillance, Monitoring and Evaluation planning and Monitoring and Evaluation capacity building.

4.15 Hypothesis Testing

The study sought to test the hypotheses on whether Monitoring and Evaluation practices significantly influence sustainability of agricultural food crop projects and whether Ethics in .Monitoring and Evaluation moderates the relationship between the practices and sustainability of agricultural food crop projects. To test the hypothesis, the study regressed practices and ethics against sustainability of agricultural food crop projects and used P values (Sig.) to accept or reject the hypothesis

Before explaining the results of simple and multiple regression analysis, it is useful to check the existence of multi-co linearity or co linearity between the independent variables. Multi-co linearity or co linearity means that two or more of the independent variables are highly correlated and this situation can have damaging effects on the results of multiple regressions. The VIF values in table 4.22 were less than four meaning that there was no multi co linearity

Table 4.22 Coefficient of Estimate

	Un standardized Coefficients		Standardized Coefficients			Co linearity Statistics	
	B	Std. Error	Beta	T	Sig.	Tolerance	VIF
(Constant)	0.382	0.222		1.724	0.086		
Planning	0.206	0.066	0.223	3.12	0.002	0.638	1.567
capacity building	0.221	0.096	0.17	2.297	0.023	0.593	1.686
data use	0.127	0.048	0.155	2.647	0.009	0.951	1.052
Surveillance	0.227	0.051	0.282	4.442	0.000	0.812	1.231
practices combined	0.094	0.055	0.103	1.697	0.091	0.886	1.128

a Dependent Variable: sustainability

4.15.1 Hypothesis testing of Monitoring and Evaluation planning and Coordination

To test the hypothesis, the study regressed Monitoring and Evaluation planning& Coordination against sustainability of agricultural food crop projects and used P values (Sig.) to accept or reject the hypothesis. Interpretation for the beta value was based on standardized coefficients. Based on the results on the nature of Monitoring and Evaluation planning, the study sought to test the alternate hypothesis that states that Monitoring and Evaluation planning and coordination significantly influence sustainability of agricultural food crop projects. The p- value computed was assessed against a level of significance value of 0.05.Multiple regression results were presented in table 4.23.

Table 4.23: Hypothesis testing of Monitoring and Evaluation planning and Coordination

	Unstandardized Coefficients		Standardized Coefficients			Correlations		
	B	Std. Error	Beta	T	Sig.	Zero-order	Partial	Part
(Constant)	1.401	0.141		9.956	0.0			
Monitoring & Evaluation Planning	0.424	0.057	0.459	7.383	0.0	0.459	0.459	0.459
R Square	0.211							
Adjusted R Square	0.207							
F	54.513							
Sig.	.000							

a Dependent Variable: Sustainability

The findings showed that Monitoring and Evaluation planning had coefficients of estimate which was significant basing on β_1 =0.459(p-value = 0.0 which is less than α = 0.05).The hypothesis was thus accepted and it was concluded that Monitoring and Evaluation planning and Coordination had a significant effect on sustainability of agricultural food crop project. This suggested that there was up to 0.223 unit increase in sustainability of agricultural food crop project for each unit increase in Monitoring and Evaluation planning. The influence of Monitoring and Evaluation planning was more than 3 times the influence attributed to the error, this was indicated by the t-test value = 3.12. These findings indicate that for planning and coordination of Monitoring and Evaluation activities, to be carried out effectively it would involve the concerted efforts from the ministry with active involvement of the farmers as well as other stakeholders because the findings have shown that lack of involvement of the farmers and

other stakeholders in the planning and coordination would have a negative influence as the farmers as well as other stakeholders would not have ownership of the process from the start. This means that the ministry should embrace the contribution of the farmers as well as other stakeholders in order to have the actual needs of the farmers actually included in the planning and coordination process.

The results are similar to those of Khan (2003) indicating that M& E activities enhances experience sharing and cohesiveness thus resulting to the realization of sustainability. Consequently, Nuguti, (2009) posits that when Monitoring and Evaluation is undertaken effectively and efficiently, it is likely to enhance the performance of a project leading to improved future planning, delivery of service and better decision making for sustainability. As well, Crawford and Bryce (2003) echo that Monitoring and Evaluation planning enhances understanding of how project attainment will be measured and observes how the management is functioning. In this way, project sustainability is enhanced. Further support to the study findings is by Amponsah (2012) who notes that critical success and failure factors for projects include planning and field visits which should be planned for and carried out at appropriate times in order to ensure that staffs are aware of the project areas thus enabling them to carry out Monitoring and Evaluation easily. In a similar vein, Wabwoba and Wakhungu (2013) in a study on projects in Kiambu County, Kenya infer that group members should be actively engaged in project planning and implementation for purposes of ownership and sustainability.

This might be related to common practice in planning hitherto practiced by government extension agencies in deciding on which extension programmes to carry out without reference to stakeholders, its beneficiaries and even when and where to deliver the Monitoring and Evaluation services that contradicts the theory of social change advocacy. Lack of effective planning might lead to poor sustainability of food productions as indicated by the World Bank (2012) who contend that the success of rural development projects and programmes has been shown to depend largely on direct stakeholder involvement in planning, implementation and evaluation. It has been shown that Monitoring and Evaluation planning and coordination has a significant and positive effect on the sustainability of food crop projects. Research on the planning process describes formulation and implementation as intertwined. Therefore, the actual

formulation is quite difficult to distinguish in most of the research studies on Monitoring and Evaluation (Harris *et al.*, 2000; Blackburn *et al.*, 2013).

Based on these findings, it is thus a challenge to communicate and share project information through Monitoring and Evaluation planning amongst the farmers and the sub-county agriculture officers hence these meetings may not serve as a feedback forum between the supervisors, frontline extension workers and farmers. These findings are contrary to the views of Beggs (2015) who suggested that extension officers need to be committed in visiting and interacting with farmers regularly for the opportunity to hear from farmers about the policy and advocacy work carried out on their behalf.

The theory of change contributed to several indicators in the planning level, like monitoring and evaluation meetings for stakeholders, training seminars for the farmers, field visits and use of available resources and this is critical to enhancement of sustainability. This research study used integrated approach of three theories namely; theory of change, social change theory and utilitarianism.

4.15.2 Hypothesis testing for Monitoring and Evaluation capacity building

The study sought to test the hypothesis that states that Monitoring and Evaluation capacity building significantly influences sustainability of agricultural food crop projects. To test the hypothesis, the study regressed Monitoring and Evaluation capacity building against sustainability of agricultural food crop projects and used P values (Sig.) to accept or reject the hypothesis. Interpretation for the beta value was based on standardized coefficients.

Table 4.24 Hypothesis testing for Monitoring and Evaluation capacity building

	Unstandardized Coefficients		**Standardized Coefficients**	**T**	**Sig.**	**Correlations**		
	B	**Std. Error**	**Beta**			**Zero-order**	**Partial**	**Part**
(Constant)	1.204	0.177		6.802	0.000			
Capacity Building	0.566	0.082	0.437	6.945	0.000	0.437	0.437	0.437
R	.437a							
R Square	0.191							
F	48.229							
Sig.	.000b							

a Dependent Variable: sustainability

The study findings have shown low levels of implementation of Monitoring and Evaluation capacity building activities because of lack of adequate resources and inadequately trained ministry officials. Based on the findings in table 4.10 on estimation of the model coefficients, the results showed that Monitoring and Evaluation capacity building had a coefficient of estimate which was significant basing on β_2= 0.437(p-value = 0.000 which was less than α = 0.05).Therefore, the hypothesis was accepted. For each unit increase in capacity building, there was 0.17 units increase in sustainability. Furthermore, the effect of capacity building was stated by the t-test value = 2.297 which implied that the standard error associated with the parameter was less than the influence of the parameter. This positive influence of Monitoring and Evaluation capacity building on sustainability of agricultural food crop projects implies the concerted efforts to; include the views of the farmers in the development of training materials, ensuring that the ministry officials are adequately trained in Monitoring and Evaluation so that they can effectively train the farmers in the same, availing adequate funds for Monitoring and Evaluation capacity building activities and having constant documented feedback on Monitoring and Evaluation capacity building activities, is critical in facilitating sustainability.

The study findings are in line with findings by Mazibuko (2007) indicating that sustainability demands long-term institutional planning and adequate institutional capacity. Consistently, Sutherland (2011) echoes that donors and governments need to continue investment in support of capacity development. This is because capacity is required to develop and sustain Monitoring and Evaluation systems (Kusek and Rist 2004).Similarly, a study conducted by Karanja (2013) revealed that training, leadership and effective Monitoring and Evaluation influence the sustainability of the youth projects. Further support to the study findings is by Mugabe and Kanda (2013) who concluded that Monitoring and Evaluation is affected by poor skills. Additionally, Morgan (2006), argues that capacity is often seen as a" means to an end" in development discourse which emphasizes "result based performance". This is also backed up by Stir man *et al;* (2012) who note that capacity together with factors related to the program had an influence on sustainability

4.15.3 Hypothesis testing for Monitoring and Evaluation Data Demand and Use

The study sought to test the hypothesis stating that Monitoring and Evaluation data demand and use significantly influences sustainability of agricultural food crop projects. Basing on the estimates of coefficients results presented in table 4.25. To test the hypothesis, the study regressed Monitoring and Evaluation data demand and use against sustainability of agricultural food crop projects and used P values (Sig.) to accept or reject the hypothesis. Interpretation for the beta value was based on standardized coefficients.

Table 4.25 Hypothesis testing for Monitoring and Evaluation data demand and use

	Unstandardized Coefficients		**Standardized Coefficients**			**Correlations**		
	B	**Std. Error**	**Beta**	**T**	**Sig.**	**Zero-order**	**Partial**	**Part**
(Constant)	2.07	0.148		13.10	0.000			
Data demand &use	0.135	0.057	0.165	2.389	0.018	0.165	0.165	0.165
R Square	0.027							
Adjusted R Square	0.023							
F	5.707							
Sig.	0.018							
a Dependent Variable: sustainability								

The findings showed that data use had coefficients that were significant basing on $\beta_3 = 0.165$ (p-value less than $\alpha = 0.05$) implying that the alternate hypothesis was accepted. Showing that data demand and use has significant and positive influence on sustainability of agricultural food crop projects. This implied that for each unit increase in data use, there was up to 0.155 unit increase in sustainability of agricultural food crop projects. The effect of data use was stated by the t-test value = 2.647 which indicated that the effect of data use was twice that of the error associated with it. Results from the views of the farmers and the extension officers have shown that the data collected is; rarely used to inform decision making, is not collected based on clearly defined Monitoring and Evaluation standards, is of low integrity, is not stored according to set standards and that there are no known better methods that can be adopted in the collection of data among those concerned. In addition, the results also showed that there is inadequate human resource to carry out data collection. This means that concerted efforts between the ministry, the farmers and

other stakeholders would ensure that the above identified challenges are addressed resulting in increased use of Monitoring and Evaluation data.

In conformity with the results, Woodhill, (2005) argues that the use of Monitoring and Evaluation results improves the effectiveness of action and hence sustainability. As such, Mackay, (2007) notes that there is need for building of reliable ministry systems to provide the primary data on which Monitoring and Evaluation systems will depend on. Similarly, there is need to train various group leaders involved in Monitoring and Evaluation data gathering regarding ways and means of improving communication. The problem is that data is exceptionally poor (Riddell, *et al.,* 1997).Limited data and information makes it a challenge to authoritatively determine the impact of projects as well as sustainability.

Data use and insufficient personnel with data skills constitute a problem in Kenya (Odhiambo, 2000), as is often the case in countries where Monitoring and Evaluation systems are in the formative stage. Other international agencies that have focused on these issues should be a part of the discussion on the way forward for Monitoring and Evaluation. Accesses to appropriate data and data sets that can be processed into usable, timely and relevant statistical information are essential for effective Monitoring and Evaluation that in turn can lead to learning experience and also facilitate sustainability. The problem is that data is exceptionally poor (Riddell *et al.*,1997).Limited data and information makes it a challenge to authoritatively determine the impact of projects as well as sustainability.

4.15.4 Hypothesis testing for research and surveillance in Monitoring and Evaluation

Results on Monitoring and Evaluation research and surveillance from farmers and extension officers have shown that Monitoring and Evaluation research and surveillance activities are rarely carried out. Furthermore, there are no adequate funds that can be used to implement Monitoring & Evaluation research and surveillance activities. The findings have also shown that there are poor tracking mechanisms in place to ensure that those who misappropriate resources are held accountable. Furthermore, the findings also showed that employees are not adequately motivated to undertake research and surveillance. These highlighted gaps, if not properly

addressed, will have an eventual negative effect on the sustainability of agricultural food crop projects.

To test the hypothesis, the study regressed Monitoring and Evaluation research and surveillance in Monitoring and Evaluation against sustainability of agricultural food crop projects and used P values (Sig.) to accept or reject the hypothesis. Interpretation for the beta value was based on standardized coefficients. Hypothesis 4 (H4) stated that surveillance and research in Monitoring and Evaluation significantly influences on sustainability of agricultural food crop projects. Research findings showed that surveillance and research had coefficients of estimate which was significant basing on $\beta 4 = 0.282$ (p-value = 0.000 which is less than $\alpha = 0.05$) implying surveillance has a significant effect on sustainability. This indicates that for each unit increase in research and surveillance, there is 0.282 units increase in sustainability. Furthermore, the effect of surveillance was stated by the t-test value = 4.422 which implies that the standard error associated with the parameter is less than the effect of the parameter

Table 4.26 Hypothesis Testing for Research and Surveillance in Monitoring and Evaluation

	Unstandardized Coefficients		**Standardized Coefficients**			**Correlations**		
	B	Std. Error	Beta	T	Sig.	Zero-order	Partial	Part
(Constant)	1.535	0.13		11.819	0.00			
Surveillance	0.353	0.051	0.439	6.979	0.00	0.439	0.439	0.439
R Square	0.193							
Adjusted R Square	0.189							
F	48.705							
Sig.	.000							

Dependent Variable: sustainability

Basing on these results and the multiple regression results presented in table 4.26 on estimates of the model coefficients, the study also sought to test the hypothesis stating that Monitoring and Evaluation research and surveillance significantly influences sustainability of agricultural food crop projects. The results showed that Monitoring and Evaluation research and surveillance had a coefficient of estimate which was significant basing on $\beta 4 = 0.439$ (p-value = 0.000 which is less

than α = 0.05) implying research and surveillance in Monitoring and Evaluation has a significant influence on sustainability of agricultural food crop projects. This meant that for each unit increase in Monitoring and Evaluation research and surveillance, there was 0.282 units increase in sustainability of agricultural food crop projects. Furthermore, the effect of Monitoring and Evaluation research and surveillance was stated by the t-test value = 4.422 which implied that the standard error associated with the parameter was less than the effect of the parameter.

Based on study findings also Ibrahim (1999) posits that the Norwegian Agency for Development Cooperation (NORAD) provides substantial funds to governments and NGOs for the purpose of surveillance. In so doing, they make available to the public or to oversight bodies basic data on projects and subsequently Monitoring and Evaluation and sustainability. The results are also in line with that of Otieno and Atieno (2006) indicating that inadequate research especially demand driven research related to capacity deficiencies is among the issues of concern to agriculture sector in Kenya. On the same note, Ekechuwu and Eziakor (1990) echo that lack of surveillance has led Monitoring and Evaluation to be biased against small holder agriculture despite the fact that it feeds the whole population in Africa and beyond.

4.15.5 Hypothesis testing for Monitoring and Evaluation practices combined

The study sought to test the hypothesis stating that combined Monitoring and Evaluation practices significantly influences sustainability of agricultural food crop projects.

Table 4.27: Monitoring and Evaluation practices combined

	unstandardized coefficients		**standardized coefficients**			**Correlations**		
	B	**Std. Error**	**Beta**	**T**	**Sig.**	**zero-order**	**Partial**	**Part**
(Constant)	2.011	0.13		15.522	0.00			
practices combined	0.201	0.062	0.22	3.215	0.002	0.22	0.22	0.22
R Square	0.048							
Adjusted R Square	0.044							
F	10.33 6							
Sig.	.002b							

a Dependent Variable: sustainability

The results based on the views of the farmers and extension officers regarding the nature of combined Monitoring and Evaluation practices showed a general disagreement with their influence on sustainability of food crop projects, influence on capacity building, use of data, enhanced surveillance and the influence of surveillance on the use of data. The results on the multiple regression estimates of the coefficients presented in table 4.27 showed that Monitoring and Evaluation practices combined had no significant influence on sustainability of agricultural food projects basing on β_5= 0.22 (p-value = 0.002 which is more than α = 0.05).The null hypothesis was, therefore, rejected. Further, the findings indicated that the effect of Monitoring and effect of Monitoring and Evaluation practices combined surpassed that of the error.

4.15.6 Hypothesis testing of moderating role of Monitoring and Evaluation ethics and Sustainability of Food Crop Projects

The study sought to test the hypothesis on the moderating effect of Monitoring and Evaluation ethics. The alternate hypothesis stated that Monitoring and Evaluation ethics do not have a significant moderating influence on sustainability of food crop projects. The results are presented in table 4.28. The hypotheses were tested using moderated regression analysis to establish the extent that the moderator variables affect the relationship between the specific Monitoring and Evaluation practices and sustainability of food crop projects. The moderator effect was examined using regression analysis procedures as outlined by Baron and Kenny (1986).

Table 4.28: Moderating effect of Monitoring and Evaluation ethics

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
	B (Std. Error)	B (Std. Error)	B (Std. Error)	B (Std. Error)	B (Std. Error)	B (Std. Error)
(Constant)	0.382 (0.222)*	1.012 (0.227)*	1.102 (0.225)*	1.104 (0.225)*	1.088 (0.225)*	(1.135 0.224)*
Planning	0.206 (0.066)*	-0.34 (0.107)*	0.337 (0.25)*	0.318 (0.257)	0.394 (0.263)*	0.353 (0.261)*
Capacity building	0.221 (0.096)*	0.235 (0.088)*	-0.544 (0.275)*	-0.577 (0.292)	-0.417 (0.315)	-0.064 (0.355)
Data use	0.127 (0.048)*	0.095 (0.044)*	0.101 (0.044)*	0.143 (0.131)	0.174 (0.133)	0.167 (0.132)*
Surveillance	0.227 (0.051)*	0.095 (0.051)*	0.059 (0.052)*	0.059 (0.052)	-0.193 (0.194)*	-0.14 (0.194)*
Practices combined	0.094 (0.055)	0.152	0.133	0.134	0.134	-0.297

		(0.052)*	(0.051)*	(0.051)	(0.051)	(0.211)
Planning*ethics		0.139	-0.104	-0.097	-0.119	-0.099
		(0.022)*	(0.084)*	(0.087)*	(0.088)*	(0.088)*
Capacity			0.287	0.298	0.244	0.118
building*ethics			(0.096)*	(0.102)*	(0.109)*	(0.124)
Data use*ethics				-0.015	-0.026	-0.026
				(0.045)*	(0.046)*	(0.045)*
Surveillance*ethics					0.083	0.061
					(0.062)*	(0.062)*
Combined*ethics						0.15
						(0.071)*
R Square	0.35	0.457	0.48	0.48	0.485	0.497
Adjusted R Square	0.334	0.44	0.462	0.459	0.461	0.471
F	21.451	27.742	25.991	22.655	20.425	19.144
Sig.	0.000b	0.000c	0.000d	0.000e	0.000f	0.000g

** Correlation is significant at the 0.01 level (2-tailed)

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* Correlation is significant at the 0.05 level (2-tailed)

Table 4.28presents the results on the moderating effect of ethics in Monitoring and Evaluation. It is evident from the table that there is a positive and significant moderating effect of ethics in Monitoring and Evaluation on the relationship between Monitoring and Evaluation planning and sustainability of agricultural food crop projects (β =0.139, ρ<0.05).This implies that whenever there is monitoring of activities such as shops selling farm inputs, i.e. seedlings to ensure quality adherence, objective data collection and conformity to guidelines, there is a higher likelihood of improved sustainability of agricultural food crop projects. Generally, ethics in Monitoring and Evaluation facilitates individuals/organizations to embrace proper Monitoring and Evaluation practices leading to sustainability. However, the results in Table 4.28 revealed that ethics in Monitoring and Evaluation had no significant moderating effect on the relationship between capacity building and sustainability of agricultural food crop projects (β = 0.287, ρ>0.05).This implied that professionalism in planning has no impact on the relationship between capacity building (training, workshops and seminars) and the sustainability of agricultural food crop projects.

Further, ethics in Monitoring and Evaluation negatively and significantly moderate the relationship between data use and sustainability of agricultural food crop projects (β= -0.015, ρ<0.05).In other words, a decrease in sustainability was significantly associated with data use, and this relationship was enhanced by ethics in Monitoring and Evaluation. Additionally, ethics

in Monitoring and Evaluation had no significant moderating effect on the relationship between surveillance and sustainability of agricultural food crop projects (β= 0.083, ρ>0.05). Therefore, the study concluded that ethics in Monitoring and Evaluation plays no role in the relationship between surveillance and sustainability of agricultural food crop projects. Similarly, it can be seen from Table 4.28 that ethics in Monitoring and Evaluation had no significant moderating effect on the relationship between combined Monitoring and Evaluation practices and the sustainability of agricultural food crop projects (β = 0.15, ρ>0.05).

Findings coincide with Pearce, as cited in Volunteer Vancouver, (1999) that adoption of social auditing process and ethical systems in line with the deontological and rights imperative approaches enhances project performance. This is supported by Schweitz (2001) who noted that although codes vary, they essentially agree on key principles and ethics of development (participatory and people-centred development), and they can provide guidelines on project management. Also, European Commission, (2002) reported that Participants need to be made aware of the purpose of the project, who or what group is funding it**.**

Finally, the findings indicated that R^2 value = 0.354, showing that the model parameters account for 35% in the change of sustainability of agricultural food crop projects while the adjusted R^2 = 0.334 indicates about 33.4%. The analysis of variance attributed to the model parameters was significant as indicated by the F-ratio = 21.451 with a p-value = 0.000 which implied that the variation accounted for by the model parameters on sustainability of agricultural food crop projects is significant and is over 21 times that accounted for by the residuals.

Summary findings of monitoring and evaluation practices combined (Hypothesis 5) showed that Monitoring and Evaluation practices combined had no significant influence on sustainability of agricultural food projects basing (β_5= 0.103,p< 0.05).

Table 4.29 Summary of Test of Hypotheses Results

Hypothesis	Beta	*p* – Values	Decision
Hypothesis H_1: Monitoring and Evaluation planning influences sustainability of agricultural food crop projects.	0.459	0.000	Accepted
Hypothesis H_2: Monitoring and Evaluation capacity building influences sustainability of agricultural food crop projects.	0.437	0.002	Accepted
Hypothesis H_3: Monitoring and Evaluation capacity building influences sustainability of agricultural food crop projects.	0.165	0.000	Accepted
Hypothesis H_4: Research and surveillance in Monitoring and Evaluation influences on sustainability of agricultural food crop projects	0.439	0.000	Accepted
Hypothesis H_5: There is an influence between the combined Monitoring and Evaluation practices and sustainability of Agricultural food crop projects	0.22	0.02	Accepted
Hypothesis H_{6a}: Ethics in Monitoring and Evaluation have a moderating influenceMonitoring and Evaluation planning and sustainability of Agricultural food crop projects	0.139	0.022	Accepted
Hypothesis H_{6b}: Ethics in Monitoring and Evaluation have a moderating influence Monitoring and Evaluation capacity building and sustainability of Agricultural food crop projects	0.287	0.096	Rejected
Hypothesis H_{6c}: Ethics in Monitoring and Evaluation have a moderating influence on Monitoring and Evaluation Data Use and Demand and sustainability of Agricultural food crop projects.	0.015	0.45	Accepted
Hypothesis H_{6d}: Ethics in Monitoring and Evaluation have a moderating influence on Monitoring & Evaluation Research and surveillance and sustainability of Agricultural food crop projects.	0,083	0,062	Rejected
Hypothesis H_{6e}: Ethics in Monitoring and Evaluation have moderating influence on Monitoring and Evaluation practices combined and sustainability of Agricultural food crop projects	0.15	0.071	Rejected

**p<0.05*

Source: *Research Data (2016)*

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary of findings, conclusion, recommendations and suggestions for further studies. The summary of findings is presented inline with the specific objectives of the research. Also presented in this chapter are recommendations and areas for further research arising from the research and the conclusion.

5.2 Summary of the Findings

The summary of findings is presented in line with the independent, moderating and dependant variables of the study namely: Monitoring and Evaluation planning and coordination and sustainability of agricultural food crop projects, Monitoring and Evaluation capacity building and sustainability of agricultural food crop projects, Monitoring and Evaluation data demand and use and sustainability of agricultural food crop projects, research and surveillance in Monitoring and Evaluation and sustainability of agricultural food crop projects, combined Monitoring and Evaluation practices and sustainability of agricultural food crop projects, ethics in Monitoring and Evaluation and its moderating role on sustainability of agricultural food crop projects and the dependant variable sustainability of agricultural food crop projects

5.2.1 Monitoring and Evaluation Planning and Sustainability of Agricultural Food Crop Projects

Study findings on Hypothesis 1showed that Monitoring and Evaluation planning and coordination significantly influences sustainability of agricultural food crop projects ($\beta_1 = 0.459$, p-value = 0.000). From the findings Monitoring and Evaluation planning and coordination meetings are not held, to a great extent, so are field visits meant to check on Monitoring and Evaluation. This implies that it might be a challenge to enhance experience sharing among the members making it difficult to realize sustainability of food crop projects. Since field visits are not conducted as often as it should be, monitoring of the projects is made difficult. In support of

this, the theories chosen for this study and especially the theory of change implied that the outputs and outcomes should reflect the transformational change among the members. The involvement of the members is key in monitoring and evaluation. The outcomes can be measured by effectiveness and efficiency of the members through the high levels of agricultural food crop production. The members may also resist radical change and that is why this study was carried out to offer useful solutions on how planning and influences monitoring and evaluation in project sustainability.

The results also showed that planning does not cater for critical activities such as seedlings and planting activities in food crop projects. Majority of the respondents pointed out that indicators are not reviewed in case of need and indicator review does not influence sustainability of food crop projects. There was uncertainty with respect to whether or not planning influences sustainability of food crop projects and whether or not jointly agreed targets are set between officials and farmers. From the foregoing findings, much has not been done with regard to Monitoring & Evaluation planning. This means that it might be a challenge to detect problems early and enhance improvement in carrying out Monitoring and Evaluation activities or refer to previous methods used in undertaking Monitoring and Evaluation which further implies that mistakes of previous years continue unabated.

Agricultural Extension Officers communicate with farmers to support decision-making by providing information on sustainable farming practices. The absence of a link between farmers and officers might deny farmers knowledge, information; experiences and technologies needed to increase and sustain productivity and for improved welfare and livelihoods. Besides, since planning was not fully embraced, monitoring was a challenge hence it was hard to establish whether targets were set between the two parties (farmers and officials).An assessment of the effect of Monitoring & Evaluation planning and coordination influence on sustainability of agricultural food crop projects revealed that Monitoring and Evaluation planning and coordination has a positive and significant effect on the sustainability of agricultural food crop projects such that with each unit increase in Monitoring and Evaluation planning and coordination, there was 0.223 unit increase in the sustainability of agricultural food crop projects.

5.2.2 Monitoring and Evaluation Capacity Building and Sustainability of Agricultural Food Crop Projects

From the study findings capacity building significantly influences sustainability of agricultural food crop projects (β_2= 0.437, P<0.05). Regarding capacity building, there is lack of training on Monitoring and Evaluation use and implementation. Specifically, training for farmers is not undertaken and the Ministry of Agriculture officials are not adequately trained in Monitoring and Evaluation. This is an impediment since inadequate training of those tasked with Monitoring and Evaluation work affects the effectiveness of the projects and curtails prudent utilization of resources and adherence to work schedules as well impacting negatively on the scope. Besides, the respondents did not consider the training programmes on Monitoring and Evaluation to be overly relevant. In addition, there is lack of adequate support for capacity building activities and majority of the respondents contended that capacity building does not influences sustainability of food crop projects. The study showed that in capacity building the groups lacked training skills which the theory of change guides the project to tackle. Monitoring and evaluation capacity building and sustainability of agricultural food crop projects becomes useful to the members if all the members gain a common understanding of the benefits attached to the project.

Additionally, the research findings on data use indicate a lot of uncertainty regarding collection of data, storage, organization and the use of previous data to make decisions. It was also unclear whether or not better methods of collecting data were being overlooked. An assessment of the effect of Monitoring and Evaluation capacity building on sustainability of agricultural food crop projects revealed that Monitoring and Evaluation capacity building has a positive and significant effect on the sustainability of agricultural food crop projects such that with each unit increase in Monitoring and Evaluation capacity building, there was 0.17 unit increase in the sustainability of agricultural food crop projects.

5.2.3 Monitoring and Evaluation Data Demand &Use and Sustainability of Agricultural Food Crop Projects

Based on the findings in previous chapter Monitoring and Evaluation data demand and use significantly influences sustainability of agricultural food crop project (β_3 = 0.165, p<0.05). The

findings showed lack of clearly defined systems for collection, use and sharing of data. In addition, the resources allocated to the process of data collection were not adequate. It was also shown that there was no use of new and better technologies for documentation and storage of data. Basing on these challenges, the data collected was found to be lacking in terms of integrity. An assessment of the effect of Monitoring and Evaluation data demand and use showed that with each unit increase in Monitoring and Evaluation data demand and use, there was 0.155 units increase in the sustainability of agricultural food crop projects.

5.2.4 Research and Surveillance in Monitoring and Evaluation and Sustainability of Agricultural Food Crop Projects

Based on study findings of Hypothesis 4, research and surveillance in Monitoring and Evaluation significantly influences on sustainability of agricultural food crop projects (β_4= 0.282, $p<0.05$). Furthermore, results on surveillance in Monitoring and Evaluation revealed that the respondents were uncertain as to whether or not surveillance had an influence on food crop projects and if information from surveillance is used in decision making. However, it was established that research and surveillance on the agricultural food crop production is ineffective. This infers that there is no sufficient research and surveillance on food crop projects making it difficult for farmers to ascertain conclusively its contributions. Assessment of the effect of Monitoring and Evaluation research and surveillance showed that for each unit increase in Monitoring and Evaluation research and surveillance, there was 0.282 units increase in sustainability of agricultural food crop projects.

5.2.5 Monitoring and Evaluation Ethics and its Moderating Role on Sustainability of Agricultural Food Crop Projects

Based on the findings ethics in Monitoring and Evaluation had a positive and significant moderating effect on the relationship between Monitoring and Evaluation planning and sustainability of agricultural food crop projects (β =0.139, $\rho<0.05$). However, ethics in Monitoring and Evaluation had no significant moderating effect on the relationship between capacity building and sustainability of agricultural food crop projects (β = 0.287, $\rho>0.05$). Further, ethics in Monitoring and Evaluation negatively and significantly moderate the

relationship between data use and sustainability of agricultural food crop projects (β= -0.015, ρ<0.05).Additionally, the results on Monitoring and Evaluation ethics exhibited a lot of uncertainty. Specifically, it has not been fully established whether or not there is integrity in collection of data and if resources available are used well. There was also doubt over whether or not shops selling farm inputs and seedlings are closely monitored and if reports compiled are factual and also whether or not action is taken in the event that resources available are misused. Finally, results on Monitoring and Evaluation practices combined revealed that Monitoring and Evaluation practices have not influenced food crop projects sustainability. Specifically, the respondents indicated that planning did not influence capacity building; inturn capacity building did not influence use of data and did not enhance surveillance; surveillance did not enhance use of data to enhance capacity building.

5.2.6 Monitoring and Evaluation Practices Combined and Sustainability of Agricultural Food Crop Projects

Summary findings of monitoring and evaluation practices combined (Hypothesis 5) showed that M & E practices combined had no significant influence on sustainability of agricultural food projects basing (β_5= 0.103, p< 0.05). The results showed a general disagreement on combined Monitoring and Evaluation practices and their influence on sustainability of food crop projects, influence on capacity building, use of data, enhanced surveillance and the influence of surveillance on the use of data.

5.3 Conclusions of the Study

Based on the study findings, Monitoring and Evaluation planning and coordination contributes significantly to the sustainability of agricultural food crop projects. Despite this, much has to be done with respect to Monitoring and Evaluation planning and coordination as meetings and field visits are not conducted as often as envisaged. As such, monitoring is a challenge and farmers are unable to share their experiences so as to facilitate the sustainability of agricultural food crop projects. Further concerning planning, activities such as seedling and planting activities are not adequately catered for. The situation is further compounded by inability of officials and farmers to jointly agree on targets. It is thus a challenge to attain project sustainability.

Capacity building in Monitoring and Evaluation contributes significantly to the sustainability of agricultural food crop projects. However, sufficient efforts have not been directed towards developing capacity. The underlying reason for this is lack of support of capacity building activities. The end result is farmers lack adequate Monitoring and Evaluation also be due to the fact that farmers consider training related to Monitoring and Evaluation irrelevant. The sustainability of agricultural food crop projects is, therefore, hindered due to lack of capacity. This is not commensurate to the advocacy of the theory of change on how an intervention is supposed to lead to intended or observed impacts and utility occasioned by an analysis of costs and benefits as advocated by the utilitarian theory.

Similarly, Monitoring and Evaluation data use and demand can contribute significantly to the sustainability of agricultural food crop project. There are, however, issues that need special attention. Precisely, there is lack of clarity on the collection of data, its storage and use to make decisions. This is an indication that the Monitoring and Evaluation data is one that cannot be wholly relied on. The contributing factors, in this case, are the quality of the data and the manner in which the data was collected, including those involved in the collection of data. It is, therefore, a challenge to depend on such data and rely on it to make decisions as per the theory of change that is regarded as a way of describing a set of assumptions that explains both the mini steps that lead to the long-term interest and the connections between project activities and outcomes at each stage.

Finally, research and surveillance in Monitoring and Evaluation is of essence in the sustainability of agricultural food projects. Through surveillance, the concerned stakeholders can access information on projects and can be used to provide early warning systems as well mitigate the challenges inherent in agricultural food crop projects. Such information can also be used in decision-making, thus contributing to sustainability.

In the context of this study, there is inadequate surveillance. The farmers require sensitization on the role of adopting to change by being informative, formative and transformative on the integrative approach of monitoring and evaluation. This transformational approach is advocated for by the theory of change and utilitarianism. The performance of agriculture sector cuts across the whole development of economy of any state. Therefore, this study borrows a lot from the

theory of change which acts as an eye opener for agricultural growth and development in monitoring and evaluation. The planning element is very vital in monitoring and evaluation of agricultural projects. Therefore, this study advocates for urgent policy review on how monitoring and evaluation planning should be is effectively done in agricultural sector in Kenya. This means that most of the farmers were unaware of its contribution to food projects sustainability. This presents a gap that needs to be filled in order to enhance the sustainability of projects.

5.4 Recommendations

The study established that Monitoring and Evaluation planning has a positive influence on the sustainability of agricultural food crop projects. There is, therefore, a need for Monitoring and Evaluation to be undertaken effectively and efficiently so as to enhance the performance of a project and better decision-making for sustainability. To achieve this, field visits need to be frequent since they act as monitoring mechanism for the project. Meetings should also be held so that farmers can exchange ideas on effective planning and on ways and means of enhancing the sustainability of agricultural food crop projects. There is also need for planning activities, such as seedling and planting, and joint agreement between farmers and officials on targets. In so doing, Monitoring and Evaluation planning can contribute effectively and efficiently to the sustainability of agricultural food crop projects.

From the findings of the study the theory of social change advocated for community mobilization and more so empowering the marginalized people. The members 'participation in decision making with a view of empowering them can contribute to improved livelihood. This contributes to ownership of the decisions made and it makes work easy for the groups at the implementation level. The groups were in a position to cooperate although it was very challenging to mitigate poor planning leading to lack of meeting and lack offset targets in the strategic plans.

The study established a positive and significant influence of capacity building on the sustainability of agricultural food crop projects. It is, therefore, paramount that both farmer and Ministry of Agriculture officials undergo sufficient training on Monitoring and Evaluation. Such training will change farmers' perceptions of the programme and they will be able to acquire the

right skills and acumen to sustain agricultural food crop projects. Most importantly, there is need for the government and donors to continue investing in support of capacity building.

Since data demand and use has an influence on the sustainability of agricultural food crop projects, it is important to ensure that data collected is of good quality, sound and relevant. To achieve this, government officials need to be trained on modern data collection methods so as to ensure that data collected is of good quality. Such training will make it possible for the officials to interpret different modalities of the data, making it easier for the data to be used in decision-making. The end result will be better data collection processes and management which will in turn contribute to the sustainability of agricultural food crop projects. There is also a need for those entrusted with diverse responsibilities to ensure they undertake their duties ethically. This was noted as critical in the relationship between Monitoring and Evaluation and sustainability of agricultural food crop projects.

Research and surveillance is of essence in the attainment of project sustainability. It is, therefore, necessary for surveillance to be undertaken on food crop projects. The surveillance requires proper framework for it to be effective so that information derived from it can be used for the purpose of quality decision making and enhancement of sustainability. Moreover, there is need for increased investment in R&D to be in tandem with other food success story nations such as Brazil and China (Harkness, 2011).This can further enhance project sustainability.

Further, there is need for the Ministry of Agriculture to develop a comprehensive guideline and/or ensure enforcement of the same so that the views of stakeholders are brought on board particularly regarding critical decisions. In implementation of community food projects, there is need for such involvement of the target groups to enhance ownership and sustainability. Modalities should also continually be put in place to ensure that farmers and indeed officials at the grassroots have access to locally and internationally available best practices that are critical in the agriculturally successful nation systems.

In addition, systems should be put in place to harmonize Monitoring and Evaluation and agricultural systems and projects as originally envisioned and run by the national government and currently by the county governments in the new dispensation to curtail drawbacks that might

be occasioned by this change. Apart from this, there is need for a comprehensive framework that will guide sourcing and utilization of resources accruing to projects as well as intensive training regarding sourcing of data, recording and utilization.

Gender parity is also a prerequisite that enhances sustainability of community-based food projects. Project initiators must make concerted effort to bring on board more males in inception of these projects. Greater levels of advocacy and sensitization within communities are likely to have occurred in Nyeri South Sub County, as it was evident in the research that more women are active in these groups compared to the male gender. Further, the study established that fewer youths were involved in community food projects. Even where the youth were active, the sustainability of such groups was in jeopardy. This is incongruous as change is critical to realization of higher yields and embracing of modern strategies. The low participation levels could be connected to calls for male gender empowerment, especially in places such as Nyeri County where the male gender is perceived to have been disenfranchised. The study encourages monitoring and evaluating practices to be critically embraced for future improvement of the sectors such as education and agricultural in Kenya.

5.4.1 Recommendations for further Research

1. There were some limitations in regard to the scope of the research topic, method, theory and empirical data. It was imperative that further critical reflection is conducted on the topic of this study to further identify research opportunities. Other avenues of future research in the area of Monitoring and Evaluation practices relate to some of the inconclusive or contestable findings of this study. As there was uncertainty and disagreement on some aspects of Monitoring and Evaluation practices, more work needs to be done to ascertain the validity of the same.
2. In addition, future researchers might require a sample of respondents that is larger, possibly from several jurisdictions, for the sake of increased generalizability the results of the study and/or for comparative analysis.
3. Moreover, there is need for the government to come up with a comprehensive regulatory framework to guide the use of resources in agricultural food crop projects so that they do not lapse into dormancy when no external funding is no longer forthcoming. Research can

inform the government to institute mechanisms to nurture locally conceived and funded projects.

4. There is need for researchers to look for ways in which Monitoring and Evaluation practices can be used to strengthen other groups that are not within the purview of agriculture with a view to enhancing maximum results by ascertaining what is normally undertaken within such groups and also establishing ways and means of viably running such groups.
5. Researchers can also investigate strategies that can be used to enhance flourishing Monitoring and Evaluation culture, especially in community-based groups, so that the focus on acquisition of resources without the antecedent accountability does not become the order of the day.
6. Researchers can also investigate the most effective methods that can be used to finance and/or provide them with credit facilitate. Future studies could use other research instruments such as focus group discussions with a view to eliciting more detailed responses, especially from farmers and other respondents of similar categories. This could go a long way towards enriching Monitoring and Evaluation as a discipline. The study, however, calls for urgent further research on future measures to be taken to improve the influences of monitoring and evaluation practices in project sustainability on agricultural food crop projects in Kenya.

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APPENDICES

Appendix I: Introductory Letter

James Ndagi

P.O. Box 365-10106

Othaya

Dear respondents,

RE: REQUEST TO PARTICIPATE IN RESEARCH

I am James Mugo Ndagi a PhD candidate at the University of Nairobi who has specialized in Monitoring and Evaluation. I intend to undertake research aimed at looking at how Monitoring & Evaluation practices influences sustainability of agriculture food crop project. The finding of the research are meant to identify the gaps that may exist in the practice of Monitoring And Evaluation and this information will enrich this sector and facilitate other researcher to use the findings and equip the body of knowledge and project management. Participation in this research is voluntary, but the information provided will be confidential.

This questionnaire is designed for study on the influences of Monitoring and Evaluation practices on agriculture projects sustainability in Nyeri South District. Please do respond to each question through provision of appropriate responses. Please do note that information provided will only be used for academic purposes.

Thank you in anticipation of favourable response.

Yours faithfully,

James MugoNdagi

PhD Candidate at the University of Nairobi

Appendix II: Questionnaire For Farmers

This study aims at studying the Monitoring and Evaluation practices on sustainability of agriculture food crop projects. Kindly tick the choice you deem most appropriate.

Section A: Demographic Information

1. Select your Gender Male: ☐ Female: ☐

2. Select your age in years

Under 30 years ☐
30-40 years ☐
40-50 years ☐
50-60 ☐
Over 60 years ☐

3. What is your highest level of Education?

Primary ☐
Form four ☐
Diploma ☐
Degree ☐
Master's Degree ☐
Doctorate ☐

Section B: Monitoring and Evaluation Planning

4. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/ statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
Planning meetings before conducting Monitoring and Evaluation are undertaken					
Planning influences sustainability of food crops					
Field visits are conducted to check on Monitoring and Evaluation					
Indicator formulation is done during the planning process					
The indicators are reviewed					
The indicators review involves other stakeholders					
Jointly agreed targets are set between officials and farmers					
Indicator review influences food crop sustainability					

Section C: Monitoring and Evaluation Capacity Building

5. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/ statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
I am trained in Monitoring and Evaluation use and implementation					
Training for farmers is undertaken					
Ministry of agriculture officials are trained in Monitoring and Evaluation					
Training programs regarding Monitoring and Evaluation are relevant					
Funds meant for training and related activities including fuel are enough					
Farmers are involved in the preparation of training material					
Officers involved in preparing training program for farmers collaborate with other service providers					
Capacity building influences sustainability of food crop projects					

Section D: Monitoring and Evaluation Data Demand and Use by Extension Officers

6. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/ statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
Data is normally collected					
Records of the data collected are kept					
The method of keeping the data recorded is reliable					
The data collected is properly organized					
Previous data is referred to in making decisions					
Better methods of collecting data are overlooked					
Data collection as currently undertaken influences sustainability of food crop projects?					

Section E: Research and Surveillance in Monitoring and Evaluation by Farmers

7. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/ statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
Research and Surveillance is undertaken in food crop projects					
Research and Surveillance on the agricultural food crop production is effective					
Research and Surveillance in its current state influences food crop project sustainability?					
Information from Research and Surveillance is used in decision making					

SECTION F: Ethics in Monitoring and Evaluation

8. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/ statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
There is integrity in collection of data					
Resources available are used well					
Shops selling farm inputs and seedlings are closely monitored?					
Reports compiled are factual					
If resources available are misused, action is taken					

SECTION G: Monitoring and Evaluation Practices Combined

9. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	=Strongly Agree
Monitoring and Evaluation practices influence food crop projects sustainability?					
Monitoring and Evaluation Planning and coordination influences capacity building					
Monitoring and Evaluation Capacity building influences use of data					
Monitoring and Evaluation Planning and coordination enhances Surveillance					
Surveillance and Research in Monitoring and Evaluation enhances use of data					
Data use in Monitoring and Evaluation					

enhances capacity building					

Section H: Sustainability of Food Crop Projects.

10. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
There is food yield increase					
Food targets for previous years realized					
Food targets for current year realized					
Other food crop projects in the area have experienced sustainability					
Food crop projects started earlier and active exist					
Food crop projects have empowered farmers					
Monitoring & Evaluation systems enhances accountability & learning					
Better data storage systems exist					
There is use of Monitoring & Evaluation data in decision making					
If the food yield increase is there, this can be attributed to Monitoring & Evaluation of food crop projects?					

Appendix III: Questionnaire For Extension Officers

This study aims at studying the Monitoring and Evaluation practices influence on sustainability of agriculture food crop projects. Kindly provide the choice you deem most appropriate.

SECTION A:

Demographic Information

1. Select your Gender Male: ☐ Female: ☐

2. Select your Age in years

Under 20 year ☐ 30-40 years ☐ 40-50 years ☐

50-60 years ☐ Over 60 years ☐

3. What is your highest level of Education?

No education ☐ Primary ☐ Form four ☐

Diploma ☐ Degree ☐ Master's Degree ☐

Doctorate ☐

4. How many years of work experience do you have in monitoring and Evaluation work?

None ☐ Below 1 ☐ 1-5 ☐

6-10 ☐ 11-15 ☐ 16-20 ☐

20-25 ☐ 25-30 ☐ Over 30 ☐

Section B: Monitoring and Evaluation Planning and Coordination

5. On a scale of 1:5 indicate to what extent you agree or disagree with the following statements:

Statements	1=Strongly disagree	2=agree	3=Not sure	4=Agree	5=Strong agree
Planning to conduct Monitoring and Evaluation is undertaken					
Planning provides for field visits					
Field visits are conducted to check on Monitoring and Evaluation					
Planning for data collection is adequate					
Planning and Coordination influences sustainability of food crop sustainability					
Indicator formulation is done during the planning process					
The indicators are reviewed					
The indicators review involves other stakeholders					

Section C: Monitoring and Evaluation Capacity Building

6. On a scale of 1:5 indicate to what extent you agree or disagree with the following statement

Statement	1=Strongly disagree	2=Disagree	Not sure	4=Agree	5=Strongly Agree
Training for farmers is undertaken					
I am trained in M&E					
The training programs are relevant					
Funds meant for training and related activities including fuel are enough					
Farmers are involved in the preparation of training material					
Officers involved in preparing training program for farmers collaborate with other service providers					
Capacity building as it is currently influences sustainability of food crop projects					

Section D: Monitoring and Evaluation Data Demand and Use by Extension Farmers

7. On a scale of 1:5 indicate to what extent you agree or disagree with the following statement

Statement	1=Not at all	2=Small extent	3=Not sure	4=Great extent	5=Very great extent
Data is normally collected					
Records of data collected are kept					
Data collected is properly organized					
Previously collected data is used to make decisions					
The data collection process is undertaken by qualified personnel					
The data collected is forwarded to the ministry headquarters and feedback provided					
The data collected focuses only on input and activities at the expense of impact					
Better methods of collecting data are overlooked.					

Section E: Research and Surveillance in Monitoring and Evaluation by Extension Officers

8. On a scale of 1:5 indicate to what extent you agree or disagree with the following statement.

Statement	1=Not at all	2=Small extent	3=Not sure	4=Great extent	5=Very great extent
Funds are available for research					
Mechanisms for surveillance for the funds received exist					
Regulation to apprehend those misappropriating funds exist					
Monitoring and Evaluation work is undertaken based on research findings					
Employees are adequately motivated to undertake research					

Section F: Ethics in Monitoring and Evaluation

9. On a scale of 1:5 indicate to what extent you agree or disagree with the following statement.

Issues	1=Not at all	2=Great extent	3= Not Sure	4=Great Extent	5=Very great Extent
Integrity in compilation and reference to data exist					
There is use of accurate and factual data exists					
Prudent utilization of resources exists					
If resources available are misused action is taken					
Timely reports exists					
Reports compiled are factual					
Retail outlet selling farm inputs and seeds are closely monitored					
Whistle blowers among employees are protected					

Section G: Combined Monitoring and Evaluation Practices

10. On a scale of 1:5 indicate to what extent you agree or disagree with the following statement

Issues	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	=Strongly Agree
Monitoring and Evaluation Planning & Coordination as undertaken influences capacity building					
Monitoring and Evaluation Capacity building as undertaken influences use of data and demand					
Monitoring and Evaluation Planning as undertaken enhances surveillance and Research					

Surveillance and Research as undertaken enhances use of data					

Section H: Sustainability of Food Crop Projects.

11. On a scale of 1-5 indicate to what extent you agree or disagree with the following statement

Question/statement	1=Strongly disagree	2=Agree	3=Not sure	4=Agree	5=Strongly Agree
There is application of previous lessons in the projects.					
There is ownership of projects					
Existence of systems to ensure linkage between data collected and decision made exists					
Better record leading to improved production costs					
Better farming practices are currently being used					
Food security has been achieved by members					
There has been an increase in food yield realized through training of farmers					
Prudent utilization of resources exist					
Food production targets for the previous years were realized					
Food security has been achieved by members					
Food targets in previous years were met					
Other food crop projects in the area experienced sustainability					
Food crop projects started earlier exists					

Appendix IV: Interview Guide: Sub County Agriculture Officer in Charge and Sub County Agriculture Officers

This study aims at studying the Monitoring & Evaluation practices influence on sustainability of agriculture food crop projects. Kindly provide the choice you deem most appropriate.

SECTION A:

Demographic Information

1. Select your Gender Male: ☐ Female: ☐

2. Select your Age in years

Less than 20 ☐ 30-40 years ☐ 40-50 years ☐

50-60 ☐ Over 60 years ☐

3. What is your highest level of Education?

No education ☐ Primary ☐ Form four ☐

Diploma ☐ Degree ☐ Master's Degree ☐

Doctorate ☐

4. How many years of work experience do you have in monitoring and Evaluation work?

None ☐ Below 1 ☐ 1-5 ☐

6-10 ☐ 11-15 ☐ 16-20 ☐

20-25 ☐ 25-30 ☐ Over 30 ☐

Section B: Monitoring and Evaluation Planning and Coordination

Question statement	Codes	Response
i. Do you plan to conduct Monitoring and Evaluation	1=Yes 2=No	
ii. If yes how often in a year?		
iii. How would you rate the influence of planning on sustainability of food crop sustainability		
iv. If yes, how often do you hold meetings to discuss Monitoring and Evaluation planning and co-ordination in a year		
v. Do field visits have an influence/impact on food crop production project sustainability	1=Yes2=No	

vi. Do you conduct field visits to check on Monitoring and Evaluation	1=Yes2=No	

vii) How are the project indicators developed?

.....

viii) Does the Ministry of agriculture or the county government involve you in coming up with Monitoring and Evaluation indicators?

.....

ix) Out of a possible score of 100 Percent how would you rate the performance of agriculture food crop project?

……

x) Does your department involve stakeholders in coming up with Monitoring & Evaluation indicators?.....

Section C: Monitoring and Evaluation Capacity Building

Question statement	Codes	Response
i. Do you normally train farmers belonging to Agricultural Food Crop Projects?	1=Yes2=No	

ii)How are the training forums for farmers ?

……

……

iii) Are Agricultural officers also trained in Monitoring and Evaluation ?.....

……

iv)How do you regard their training programme in monitoring and evaluation? ……..

Section D: Monitoring & Evaluation Data Demand & Use

Question statement	Codes	
i. Do you normally collect data?	1=Yes2=No	
ii. Do you have a data entry clerk?	1=Yes2=No	
iii. Do you refer to previous data in making decisions?		
iv. Which methods are used in data collection		
v. Are there better methods of collecting data?		
vi. Does lack of data collecting influence sustainability of food crop		

projects?		
vii. How is the collection of data		
viii. How do you keep records of the data collected		
ix. In which form do you keep the data recorded?		
x. How is the data organized?		

xi) Does your organization provide supporting facilities in carrying out Monitoring and Evaluation?

.....

xii) Are there forums to train and equip data collectors with the relevant skills?.....

xiii) In ICT are officers provided with the requisite facilities?.....

xiv) Are external data collectors contracted?.....

xv) Does a feedback system exist aimed at provision of guidelines and direction from the Ministry headquarters and or county government on the basis of reports provided?.....

xvi) Are the results used in making decisions?.....

Section E: Research & Surveillance in Monitoring and Evaluation

Question statement	Codes	Response
i. Is surveillance carried out?	1=Yes2=No	
ii. Is it recorded once undertaken	1=Yes2=No	
iii. How do you rate your surveillance on the agricultural food crop production?		
iv. How do you rate research & surveillance influence on food crop sustainability?		
v. Is information from research used in decision making	1=No 2=Yes	
vi. Is there any research undertaken to improve existence?	1=No 2==Yes	

Section F: Ethicsin Monitoring and Evaluation

Question statement	Codes	Response
i. Is the data collected ethical	1=No 2=Yes	
ii. Are there instances of misuse of resources		
iii. Is there any research undertaken to improve production?	1=No 2=Yes	

Section G: Monitoring & Evaluation Practices Combined

Question statement	Codes	Response
i. How do you rate the influence of Monitoring & Evaluation practices on food crop sustainability?	1=Not at all 2=Not sure 3=Fair 4=High 5=Very high	

Section H: Sustainability of Food Crop Projects.

Question statement	Codes	Response
iv. Has there been food yield increase	1=No 2=Yes	
v. If the food yield increase is there, to what extent can it be attributed to Monitoring & Evaluation of food crop projects?	1=Not at all 2=Small extent 3=Not sure 4=Great extent 5=Very great extent	
vi. Were the food production targets for the previous year realized?	1=No 2=Yes	
vii. Are the food targets realized at all times	1=Not at all 2=Not sure 3=sometimes 4=Always	

Appendix V: Factor Analysis Results

Factors Analysis of Monitoring and Evaluation Planning and Coordination

Table A shows that the factor loadings results were above 0.5. This implies that all the factors were retained for further analysis. All the Monitoring and Evaluation, Monitoring and Evaluation planning factors notably, Monitoring and Evaluation planning meetings are held, planning influences sustainability of food crop sustainability, field visits are conducted to check on Monitoring and Evaluation, planning caters for seedlings and planting activities, coming up with indicator is done during the planning process, the indicators are reviewed in case of need, indicators review involves not just officers, jointly agreed targets set between officials and farmers exist and indicator review influences food crop sustainability were later used for further analysis. To sum up, Monitoring and Evaluation planning explained 51.451% of total variance. The Kaiser-Meyer-Olkin Measure value (0.795) was above 0.5 hence acceptable. Also, the Bartlett's Test was significant.

Table A Monitoring and Evaluation Planning and coordination

	1	2
Planning before conducting Monitoring and Evaluation is undertaken	0.715	
Planning influences sustainability of food crop sustainability		0.788
Field visits are conducted to check on Monitoring and Evaluation	0.672	
Indicator formulation is done during the planning process	0.634	
The indicators are reviewed	0.735	
The indicators review involves other stakeholders	0.804	
Jointly agreed targets are set between officials and farmers	0.802	
Indicator review influences food crop sustainability	0.559	
Total Variance Explained		
% of Variance	37.72	13.731
Cumulative %	37.72	51.451
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.795	
Bartlett's Test of Sphericity (Approx. Chi-Square)	588.128	
Df	45	
Sig.	0.000	

Extraction Method: Principal Component Analysis.
a 2 components extracted.

Factor analysis for Monitoring and Evaluation Capacity Building

Factors with factor loadings of above 0.5 are excellent and should be retained for further data analysis. The study therefore, drew conclusions that capacity building factors namely, I am trained on Monitoring and Evaluation use and implementation, training for farmers is undertaken, Ministry of agriculture officials are trained in Monitoring and Evaluation, the training programs regarding Monitoring and Evaluation are relevant, training and related activities are financed, farmers are involved in the preparation of training material, Officers involved in preparing training program for farmers collaborate with other service providers and capacity building influences sustainability of food crop projects be retained for further data analysis.

Table B Monitoring and Evaluation Capacity Building

Loadings	1	2	3
Am trained in Monitoring and Evaluation use and implementation			0.856
Training for farmers is undertaken		0.654	
Ministry of agriculture officials are trained in Monitoring and Evaluation		0.512	
Training programs regarding Monitoring and Evaluation are relevant		0.696	
Funds meant for training and related activities including fuel are enough	0.741		
Farmers are involved in the preparation of training material	0.79		
Officers involved in preparing training program for farmers collaborate with other service providers	0.583		
Capacity building influences sustainability of food crop projects		0.791	
Total Variance Explained			
Total	2.03	1.901	1.109
% of Variance	25.38	23.767	13.857
Cumulative %	25.38	49.146	63.003
KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.678		
Bartlett's Test of Sphericity (Approx. Chi-Square)	295.328		
Df	28		
Sig.	0.00		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 5 iterations.

Capacity building cumulatively explained 63.003% of variance. Sampling adequacy was tested using the Kaiser- Meyer- Olkin Measure (KMO measure) of sampling adequacy. As evidenced in table 4.17, KMO was greater than 0.5, and Bartlett's Test was significant

Factor analysis for Monitoring and Evaluation Data use and demand

Factor analysis for data use was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. The study requested that all loading less than 0.5 be suppressed in the output, hence providing blank spaces for many of the loadings. All the data use factors notably, data is normally collected, records of the data collected are kept, the method of keeping the data recorded is reliable, data is properly organized, previous data is referred to in making decisions, better methods of collecting data are overlooked and data collection as it is influences sustainability of food crop projects should be retained for further data analysis. Data use cumulatively explained 67.453% of variance. Sampling adequacy was tested using the Kaiser- Meyer- Olkin Measure (KMO measure) of sampling adequacy. As evidenced in table 4.18, KMO was greater than 0.5, and Bartlett's Test was significant.

Table C Monitoring and Evaluation Data Use

	Component	
	1	2
Data is normally collected	0.877	
Records of the data collected are kept	0.914	
The method of keeping the data recorded is reliable	0.871	
The data collected is properly organized	0.747	
previous data is referred to in making decisions	0.521	
better methods of collecting data are overlooked		0.85
Data collection as currently undertaken influences sustainability of food crop projects?		0.651
Total Variance Explained		
Total	3.223	1.499
% of Variance	46.04	21.413
Cumulative %	46.04	67.453
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.81	0.81
Bartlett's Test of Sphericity Approx. Chi-Square	650.319	650.319
Df	21	21
Sig.	0	0

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

Factor analysis for Monitoring and Evaluation Research and Surveillance

Factor analysis was conducted in order to make sure that the items belong to the same construct (Wibowo 2008).Table 4.12 illustrates the factor analysis for surveillance in Monitoring and Evaluation. As shown in the table, there were no exceptions, as all variables scored above the threshold of 0.5. The criterion for communality was fulfilled by surveillance in Monitoring and Evaluation factors notably, surveillance influence is undertaken in food crop projects, and surveillance on the agricultural food crop production is effective, surveillance as it is undertaken influence food crop project sustainability and information from surveillance is used in decision making. Surveillance in Monitoring and Evaluation cumulatively explained 51.231% of variance. The KMO Measure is an index for comparing the magnitude of the observed correlation coefficients to the magnitude of the partial correlation coefficients. As shown in table 4.19, KMO was greater than 0.5, and Bartlett's Test was significant.

Table D Monitoring and Evaluation Research and Surveillance

	Component
Research and Surveillance is undertaken in food crop projects	0.528
Research and Surveillance on the agricultural food crop production is effective	0.731
Research and Surveillance in its current state influences sustainability of food crop projects	0.758
Information from Research and Surveillance is used in decision making	0.814
Total Variance Explained	
Total	2.049
% of Variance	51.231
Cumulative %	51.231
KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.663
Bartlett's Test of SphericityApprox. Chi-Square	143.645
Df	6
Sig.	0.000

Extraction Method: Principal Component Analysis.
1 component extracted.

Factor analysis for Ethics in Monitoring and Evaluation

Factor analysis is conducted in order to make sure that the items belong to the same construct (Wibowo 2008). Table 4.20 illustrates the factor analysis for M& E ethics. As shown in the table, there were no exceptions, as all variables scored above the threshold of 0.5.As such, M& E ethics items namely, there is integrity in collection of data, resources available are used well, shops selling farm inputs and seedlings are closely monitored, reports compiled are factual and If resources available are misused, action is taken should be retained for further data analysis. M & E ethics cumulatively explained 61.023% of variance. Sampling adequacy was tested using the Kaiser- Meyer- Olkin Measure (KMO measure) of sampling adequacy. As evidenced in table 4.20, KMO was greater than 0.5, and Bartlett's Test was significant.

Table E Ethics Monitoring and Evaluation

	1	2
Resources available are used well	0.803	
Shops selling farm inputs and seedlings are closely monitored	0.711	
Reports compiled are factual	0.856	
If resources available are misused, action is taken		0.887
Resources available are used well		0.801
Total Variance Explained		
Total	1.855	1.196
% of Variance	37.102	23.922
Cumulative %	37.102	61.023
KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.645	
Bartlett's Test of Sphericity, Approx. Chi-Square	142.415	
Df	10	
Sig.	0.000	

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a Rotation converged in 3 iterations.

Monitoring and Evaluation practices combined

Factor analysis for Monitoring and Evaluation practices combined was conducted to ensure that all of the constructs used are valid and reliable before proceeding for further analysis. The study requested that all loading less than 0.5 be suppressed in the output, hence providing blank spaces

for many of the loadings. Thus from the findings all values for all the factors namely, Monitoring and Evaluation practices influence food crop projects sustainability, planning influences capacity building, capacity building as it is influences use of data, planning as it is enhances Surveillance, Surveillance as it is carried out enhances use of data and data use as undertaken enhances capacity building were more than 0.5 reflecting the accepted value of factor loading. Monitoring and Evaluation practices combined explained 57.681% of variance. The Kaiser-Meyer-Olkin Measure value (0.805) was above 0.5 hence acceptable. Also, the Bartlett's Test was significant.

Table F Monitoring and Evaluation practices combined

	Component
Monitoring and Evaluation practices influence food crop projects sustainability?	0.667
Planning influences capacity building	0.606
Capacity building influences use of data	0.852
Planning enhances Surveillance	0.862
Surveillance enhances use of data	0.878
Data use enhances capacity building	0.639
Total Variance Explained	
Total	3.461
% of Variance	57.681
Cumulative %	57.681
KMO and Bartlett's Test	
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0.805
Bartlett's Test of Sphericity,Approx. Chi-Square	588.946
Df	15
Sig.	0.000

Extraction Method: Principal Component Analysis.
a 1 components extracted.

Appendix VI: Name of Farmers' Project Groups in the Three Divisions in Nyeri South District

OTHAYA CENTRAL DIVISION	OTHAYA SOUTH DIVISION	OTHAYA NORTH DIVISION
Githunguri Kanyange	Kagongo Water tank	Kagere Youth
Karima Passion Fruit	Kamunga SHG	Kagongo Orange
Kihugiru Gitundu	Othaya Orphans	Kirai Mwihoko
Gatugi SHG	3K Sisters	
Gathambara SHG	Ukira Tuthie	
Mathome SHG	Muiringi SHG	
Ihuririo Umoja	Focal area development committee	
Gatugi Avocado	Gathera United SHG	
Gura Witeithie		

Source: Agricultural Office in Nyeri South

Appendix VI: Crop Production Deviations in Nyeri South Years 2010-2011

Crop/year		Production in HA		Deviation/Deficit per HA
Maize	2010	Target	91000	22600 bags
		Actual	68400	
	2011	Target	95000	8000 bags
		Actual	87000	
Beans	2010	Target	26600	7400 bags
		Actual	19200	
	2011	Target	26600	3500 bags
		Actual	23100	
Grain Amaranth	2010	Target	10	1.6 bags
		Actual	84	
	2011	Target	10	4 bags
		Actual	6	
Irish potatoes	2011	Target	80000	16000 mt
		Actual	64000	
	2011	Target	100000	1000 mt
		Actual	99000	
Sweet Potatoes	2010	Target	730 mt	230 mt
		Actual	500 mt	
	2011	Target	800 mt	250 mt
		Actual	550 mt	
Yams	2010	Target	91 mt	6 mt
		Actual	85 mt	
	2011	Target	120 mt	0 mt
		Actual	120 mt	
Arrow Roots	2010	Target	560 mt	46 mt
		Actual	514 mt	
	2011	Target	600 mt	0 mt
		Actual	600 mt	
Bananas	2010	Target	1080mt	1120 mt
		Actual	2200mt	
	2011	Target	600Mt	1080Mt
		Actual	1680Mt	
Cassava	2010	Target	96 bags	30 bags
		Actual	66 bags	
	2011	Target	80 bags	10 bags
		Actual	70 bags	

Source: District Agricultural Office Nyeri South

Appendix VIII: Crop Production Figures – Nyeri South District For The Year 2012

S/N	CROP	HA	YIELD/ HA	TOTAL PRODUCTION B=BAGS T=TONNES	VALUE (Million Kshs)
1	Maize	3900	16.3 B	63600 B	204 M
2	Beans	1900	8B	15200 B	91 M
3	Irish Potato	1000	75 B	7500 bags	300 M
4	Bananas	60	48.4T	2424 T	29.1 M
5	Cassava	9	111T	100 T	1 M
6	Arrow Root	31	19.4T	600 T	6 M
7	Sweet Potato	33	22 T	720 T	3.6 M
8	Cabbages	30	48 T	1450 T	14.5 M
9	Kales	10	25 T	250 T	2.5 M
10	Bulb Onion	1.2	8 T	10 T	0.4 M
11	Carrot	2	15 T	30 T	0.9 M
12	Amaranths	1.2	15 T	18 T	0.54 M
13	Avocado	38.5	30	1200 T	12 M
14	Passion Fruit	10.5	15 T	157.5 T	4.7 M
15	Plums	5	20 T	100 T	1 M
16	Macadamia	13	30 T	290 T	19.5 M
17	Tea	3565	10733 KG	38262520 KG	2075 M
18	Coffee	2160	1929 KG	3918716 KG	183.4 M

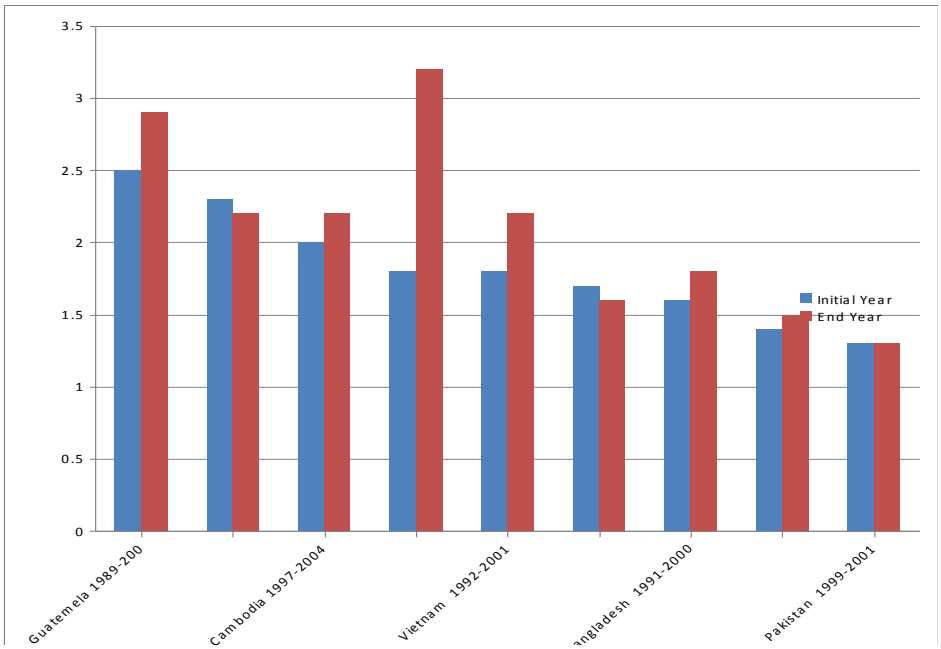
Source: District Agriculture Office, Nyeri South District (2012)

Appendix IX: Analysis of Food Crop Production Value Per Hectare

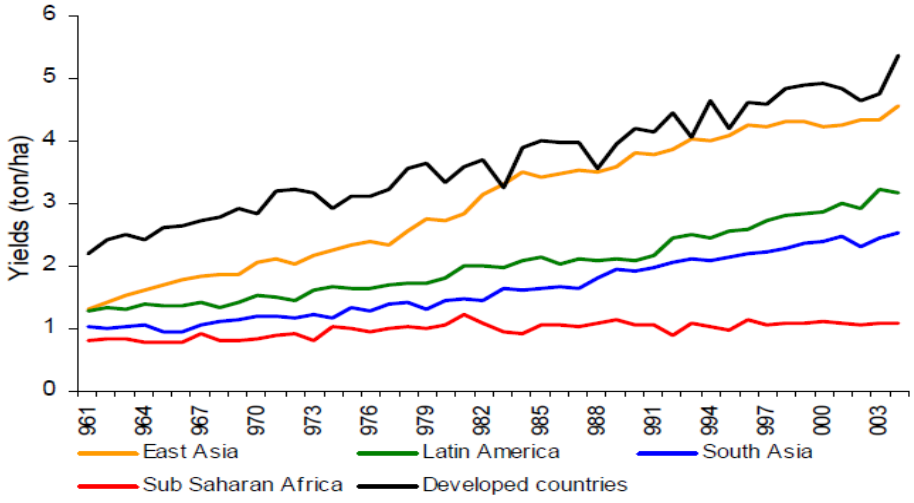
CROPS VALUE PER HECTARE	KSHS(MILLION)
Potatoes	0.3m
Maize	0.052m
Beans	0.4478m
Bananas	0.485m
Cassava	0.115m
Arrowroots	0.1935m
Sweet potatoes	0.109m
Cabbages	0.483m
Kales	0.25m
Bulb onions	0.33m
Carrot	0.45m
Amaranths	0.45m
Avocado	0.31m
Passion fruit	0.44m
Plums	0.2m
Macadamia	1.5m
Coffee	0.849m
Tea	0.582m

Source: Author analysed from APPENDIX VI

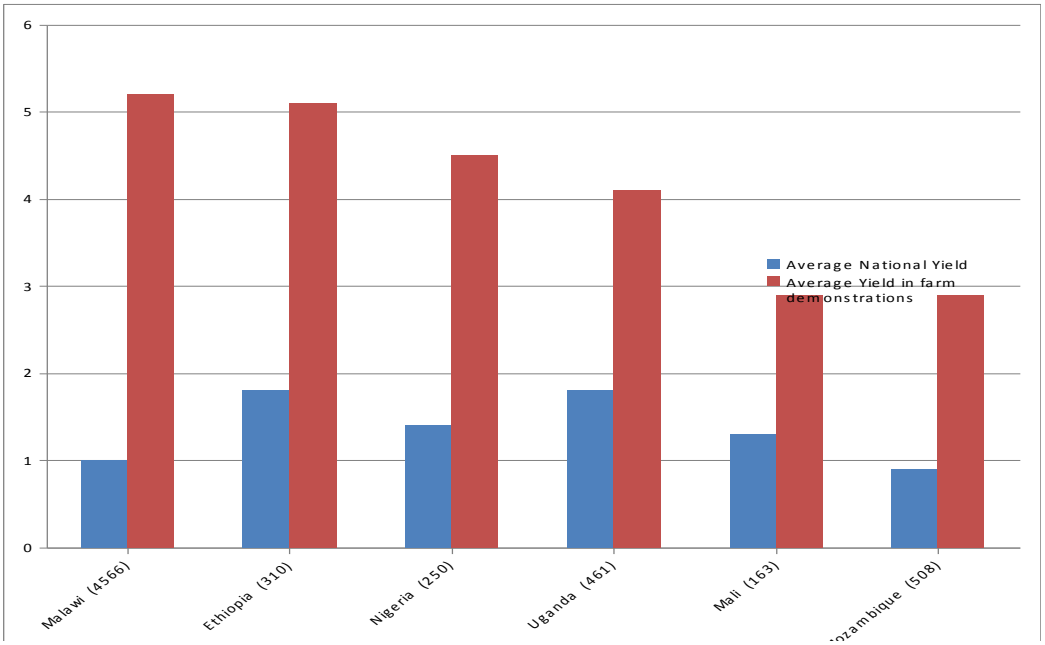
Appendix X: Progressive Performance Of Agriculture In Selected Countries Globally (Wdr Report 2008)



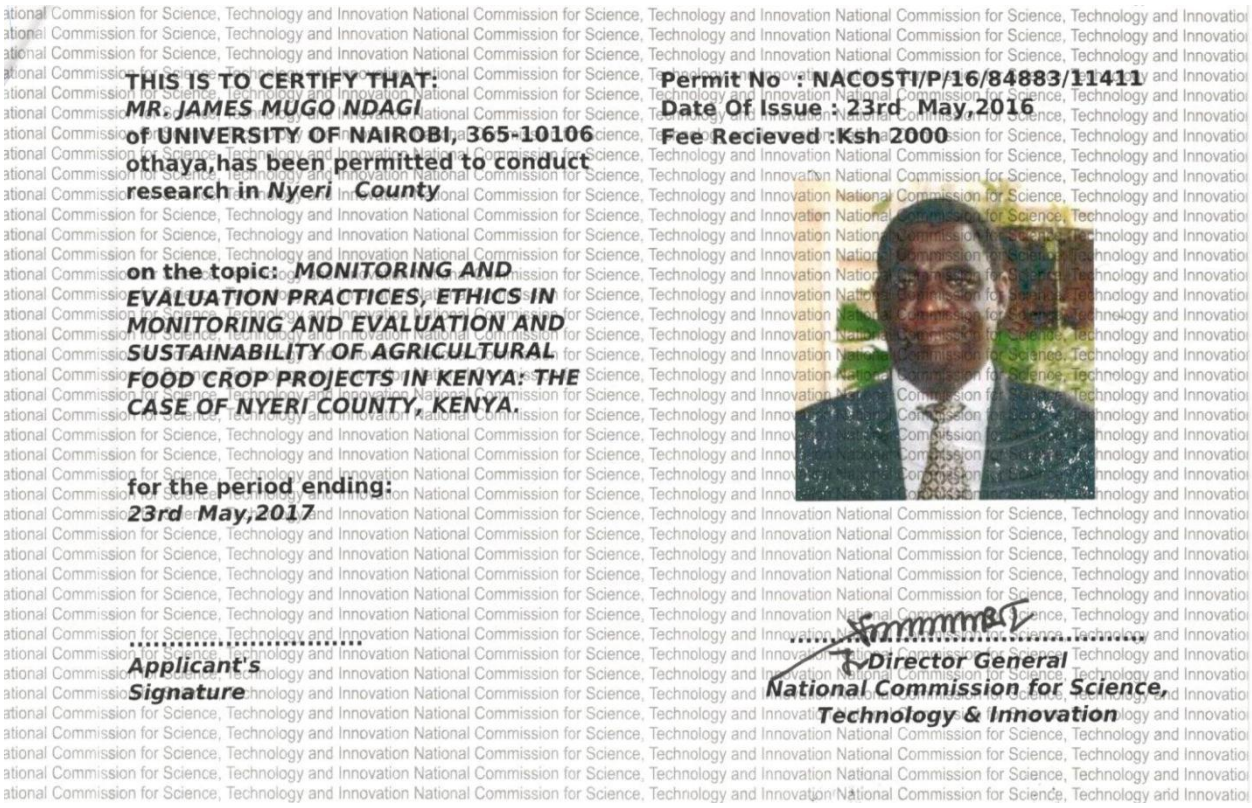
Appendix XI: Comparison Of Yields Per Hectare (Wdr Report 2007)



Appendix XII: The Exploitable Yields Gaps For Maize In Africa Acres Indicated



Appendix XIII: Research Permit (Nacosti)



CONDITIONS

1. **You must report to the County Commissioner and the County Education Officer of the area before embarking on your research. Failure to do that may lead to the cancellation of your permit**
2. **Government Officers will not be interviewed without prior appointment.**
3. **No questionnaire will be used unless it has been approved.**
4. **Excavation, filming and collection of biological specimens are subject to further permission from the relevant Government Ministries.**
5. **You are required to submit at least two(2) hard copies and one(1) soft copy of your final report.**
6. **The Government of Kenya reserves the right to modify the conditions of this permit including its cancellation without notice**

REPUBLIC OF KENYA

National Commission for Science, Technology and Innovation

RESEARCH CLEARANCE PERMIT

Serial No. A 9234

CONDITIONS: see back page

Appendix XIV: Authorization Letter (Nacosti)

NATIONAL COMMISSION FOR SCIENCE, TECHNOLOGY AND INNOVATION

Telephone:+254-20-2213471,
2241349,3310571,2219420
Fax:+254-20-318245,318249
Email:dg@nacosti.go.ke
Website: www.nacosti.go.ke
when replying please quote

9th Floor, Utalii House
Uhuru Highway
P.O. Box 30623-00100
NAIROBI-KENYA

Ref: No. **NACOSTI/P/16/84883/11411**

Date: **23rd May, 2016**

James Mugo Ndagi
University of Nairobi
P.O. Box 30197-00100
NAIROBI.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on ***"Monitoring and evaluation practices, ethics in monitoring and evaluation and sustainability of agricultural food crop projects in Kenya: The case of Nyeri County, Kenya,"*** I am pleased to inform you that you have been authorized to undertake research in **Nyeri County** for the period ending **23rd May, 2017.**

You are advised to report to **the County Commissioner and the County Director of Education, Nyeri County** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

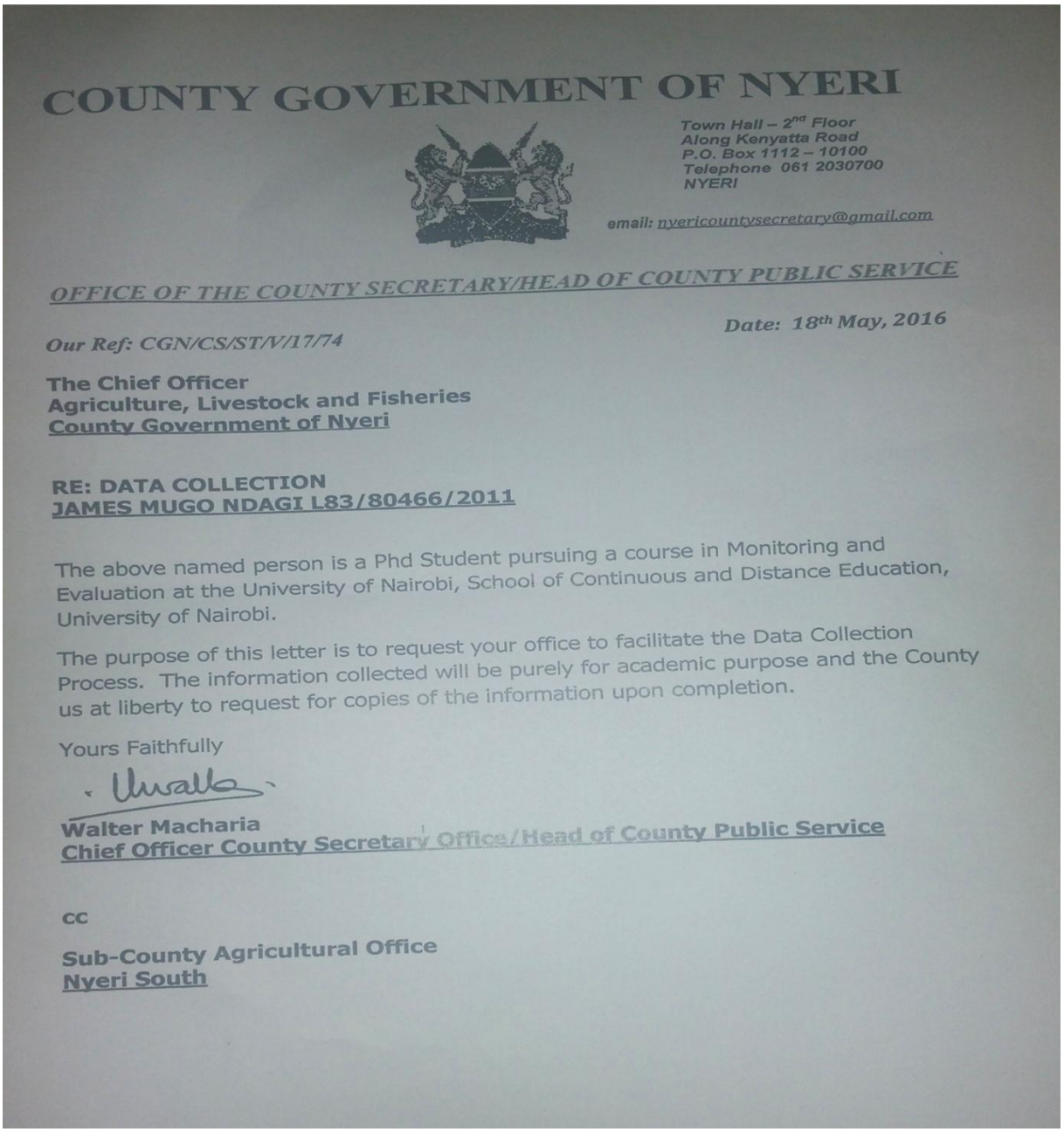
BONIFACE WANYAMA
FOR: DIRECTOR-GENERAL/CEO

Copy to:

The County Commissioner
Nyeri County.

The County Director of Education
Nyeri County.

Appendix XV: Authorization Letter (County Government o f Nyeri)



COUNTY GOVERNMENT OF NYERI

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Telephone 061 2030700
NYERI

email: nyericountysecretary@gmail.com

OFFICE OF THE COUNTY SECRETARY/HEAD OF COUNTY PUBLIC SERVICE

Our Ref: CGN/CS/ST/V/17/74

Date: 18th May, 2016

The Chief Officer
Agriculture, Livestock and Fisheries
County Government of Nyeri

RE: DATA COLLECTION
JAMES MUGO NDAGI L83/80466/2011

The above named person is a Phd Student pursuing a course in Monitoring and Evaluation at the University of Nairobi, School of Continuous and Distance Education, University of Nairobi.

The purpose of this letter is to request your office to facilitate the Data Collection Process. The information collected will be purely for academic purpose and the County us at liberty to request for copies of the information upon completion.

Yours Faithfully

Walter Macharia
Chief Officer County Secretary Office/Head of County Public Service

cc

Sub-County Agricultural Office
Nyeri South

Appendix XVI: Authorization Letter (Institution)

UNIVERSITY OF NAIROBI
COLLEGE OF EDUCATION AND EXTERNAL STUDIES
SCHOOL OF CONTINUING AND DISTANCE EDUCATION
DEPARTMENT OF EXTRA MURALSTUDIES

OFFICE OF THE CHAIRMAN

Phone: **(02) 318262 Ext 120**
Telex 22095 Varsity Nairobi, Kenya
Email: dems.staff@yahoo.com

P.O BOX 30197- 00100 Nairobi, Kenya
P.O BOX 92- 00902, Kikuyu

17th May, 2016

Our Ref: UON/CEES/SCDE/DEMS/2/3

THE CHAIRMAN,
NATIONAL COUNCIL OF SCIENCE & TECHNOLOGY
NAIROBI, KENYA

Dear Sir/Madam,

RE: DATA COLLECTION

This is to introduce **JAMES MUGO NDAGI;** student Registration Number **L83/80466/2011** who is pursuing a **Degree of Doctor of Philosophy** course **IN PROJECT PLANNING AND MANAGEMENT** at the School of Continuing and Distance Education of the University of Nairobi.

As part of his course, he is required to prepare a research project. He is therefore collecting data which is related to his research topic: **MONITORING AND EVALUATION PRACTICES, ETHICS IN MONITORING AND EVALUATION AND SUSTAINABILITY OF AGRICULTURAL FOOD CROP PROJECTS IN KENYA: THE CASE OF NYERI COUNTY, KENYA.**

The information he is gathering is purely for academic purposes and will be treated with utmost confidentiality.

Any assistance extended to him will be highly appreciated.

PROF. CHARLES M. RAMBO (PhD)
CHAIRMAN, DEPARTMENT OF EXTRA MURAL STUDIES