

**FACTORS INFLUENCING SUSTAINABILITY OF WEI WEI
INTEGRATED DEVELOPMENT PROJECT IN WEST POKOT
COUNTY, KENYA.**

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DECLARATION

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

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DEDICATION

To my mother Sarah Chepoghoi for her untiring support, encouragement and prayers during the entire period of this research project and to my late father Abraham Nakireria whose memory has inspired me to go all the way and accomplish this task in his revered honor.

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ABBREVIATIONS AND ACRONYMS

ADF	Agricultural Development Fund
AGM	African Garden Maker
ASAL-	Arid & Semi-Arid Lands
C-F-	Conceptual Framework
FAO-	Food and Agricultural Organizations
GDP-	Gross Domestic Product
HCDP-	Horticulture Development Programs
IDB-	Irrigation and Drainage Board
IDC-	Italian Development Cooperation
IFAD-	International Fund for Agricultural Development
IMT-	Irrigation Management Transfer
KVDA-	Kerio-Valley Development Authority
MOA-	Minority of Agriculture
NERCORMP-	North Eastern Region Company Project
NGOs-	Non-Governmental Organizations
NIB-	National Irrigation Board
NRMGs-	National Resource Management Groups
PIA-	Participatory Impact Assessment
PIM-	Participatory Irrigation Management
P M & E-	Participatory Monitoring & Evaluation
PMU-	Project Management Unit

PPi-PfP-	Public- Private informal- Public formal Partnership
PPPs-	Public Private Partnership
PRA-	Participatory Rural Appraisal
RD-	Rural Development
SHG-	Self Help Groups
SPSS-	Statistics Package for Social Science
SR-	Self Reliance
TR-	Theoretical Framework
UN-	United Nation
UNESCO-	United Nation, Educational, Scientific & Cultural Organization
US\$-	United State Dollar
USA-	United States of America
USAID-	United States of America Aid
WARDA-	West Africa Rural Development Authority
WB-	World Bank
WU-	Water Users
WUAS-	Water Users Associations
WWIDA-	Wei Wei Integrated Development Association
WWIDP-	Wei Wei Integrated Development Program

ABSTRACT

In the recent years the Kenyan government initiated some interventions with the objective to enhance food security and alleviate extreme poverty and hunger by initiating Wei Wei Integrated Development Project (WWIDP) through bilateral trade collaboration between the Kenya government and the Italian government in Wei Wei, West Pokot County, Kenya in 1986. Therefore, this research project adopted participatory monitoring and evaluation approach to assess factors influencing sustainability of WWIDP in Wei Wei, West Pokot County because the previous conventional monitoring and evaluation methods used have failed to ensure project sustainability (Mulwa, 2008). The statement of the problem was necessitated by the fact that past interventions along the Wei Wei Irrigation Project piloted by Kerio Valley Development Authority (KVDA) were not successful beyond the donor support. Lam et al (2006) observed that in spite of the Italian Development Cooperation (IDC) investing huge amount of money on funding gravity sprinkler-fed WWIDP, in West Pokot County, it is not sustainable because it faces myriads of challenges. This study was guided by four objectives on, how cultural practice, management training, appropriate technology use and participatory monitoring and evaluation influence sustainability of WWIDP. Moreover, the study objectives were tested by a null hypothesis that cultural practices, managerial training, appropriate technology use and participatory monitoring and evaluation do not influence sustainability of WWIDP. The study in chapter two reviewed some relevant scholar's work both at international and local scale on four independent variables of cultural practice, management training, appropriate technology use and participatory monitoring and evaluation that influence sustainability of WWIDP. The study also explained the four variables listed in the conception framework that is assumed to greatly influence WWIDP sustainability. The study sought to bridge some knowledge gaps that have not yet been carried out on Wei Wei, relating to the influence of the four variables on WWIDP sustainability. The study used descriptive research methodology to collect the data, with the target population of 253 consisting of 225 farmers, 8 WWIDP employees, 2 Italian technical experts, 2 County government agriculture officers, 3 National government officers (chiefs) and 5 community elders. The study in chapter three used questionnaire to collect data from the target respondents since it was the most convenient way to collect information. The study employed statistical package for social sciences (SPSS) tool to present, interpret and analyse the data collected from the field. The study then considered ethical issues that allowed the researcher to carry out research by seeking approval letter from University of Nairobi and a letter granted from National Commission for Science, Technology and Innovation which assured the respondents of their confidentiality and the appropriate researcher's behaviour to the right of respondent's confidentiality. Chapter four of this study presented and interpreted the data that was collected from the field and discussed the findings in line with the objectives of the study which is to assess factors influencing WWIDP sustainability in Wei Wei, West Pokot County. Finally in chapter five the study provided the summary on the findings, conclusions and recommendations on how the findings of the project report can be utilized to enhance sustainability of WWIDP and suggested some further areas of research.

CHAPTER ONE

INTRODUCTION

1.1 Background to the study

Though project is a complex set of unique activities of resources that are used to improve the quality of people's life, however, its overriding objective is to achieve sustainability (Gitonga, 2012). Karanja observed that, project sustainability is still a major challenge in most developing countries because many projects are implemented with large cost which often tends to experience difficulties with sustainability (Karanja, 2014). Therefore, Mulwa opines that, project designers must adopt PM&E mechanism in order to address sustainability challenges to ensure local ownership and enhance stakeholders to achieve project sustainability since it places the local people at the centre of project activities and programs that affect their lives.

Mulwa argues that PM&E calls for a radical change of conventional M&E attitudes and structures that places technical expertise at the centre for carrying out project interventions and assumes that the local people are ignorant and primitive to effectively discern and decide what is good and appropriate for them. Therefore, project priorities are left to the external experts to instruct and guide the people, while poverty is blamed on the poor themselves due to ignorance, laziness and lack of skills, which is further assumed, is worsened by high population growth, natural disasters and environmental conditions like floods, droughts, and epidemics. Likewise, development experts are assumed have the expertise to solve them. Therefore, M&E drivers induce local people to the execution of the predetermined blue-project print plans and force them to contribute labor, money or material resources towards the project implementation.

Mulwa opines that, PM&E is the most appropriate method to in carrying out project development to conventional M&E since it seeks to devolve power for decision making to the project beneficiaries. PM&E calls for new set of values and attitudes to be inculcated among the project stakeholders to recognize the local people as equal partners and incorporate their culture, knowledge, experience and ability in project development. PM&E ensure external experts become facilitators and not impartial observer and therefore, PM&E has influenced various government social development policies and planning both at macro and micro levels. PM&E has also ensured project stakeholders (donors, project team/staff and beneficiaries) participate

jointly in drawing up the project M&E terms of reference since it ensures stakeholder has the monopoly to interpret the observed reality but gives each party equal opportunity to perceive and interpret the given and agreed reality. So, Mulwa adds that, PM&E framework embraces diversity where stakeholder's views and insights are respected, considered and given opportunity to explain themselves and be understood. Thus, PM&E methodology strives to solicit the views of every individual members of the project community since, project management team and external technical experts have faith in local people perception on project performance. Through PM&E, each project stakeholder maintains a critical role throughout the phases of project initiation, designing, implementation and monitoring and evaluation and phase out process.

Therefore, MOA has observed that through the adoption of conventional M&E approaches, Kenya irrigation sub-sector is currently experiencing many challenges (MOA, 2015). Ngigi adds that various irrigation systems that have been successful in the past have declined in productivity and in some cases have been abandoned altogether (Ngigi, 1999). In this derelict state of irrigation agriculture, the Daily Nation (21 September, 2015) laments that the Kenyan government capacity to manage large scale irrigation schemes has collapsed. So, there is need to assess factors influencing project sustainability in light of the government reduced or collapsed support services to irrigators and bureaucratic centralized irrigation management system that has caused much government irrigation schemes to fail and abandoned. Therefore, in the next paragraph the study outlined brief background of Wei Wei Integrated Development project.

Wei Wei Integrated Development Project is situated in Sigor, Wei Wei Ward, Pokot Central Sub-County in West Pokot County some 500 km North West of Nairobi, Kenya. Mugova (1999) observed that the severe drought that affected West Pokot District (now West Pokot County) in 1984, forced Kerio Valley Development Authority (KVDA) to undertake feasibility study through which the Kenyan government entered into negotiation with the Italian government culminating in the signing of a bilateral trade co-operation of 1986 to fund the WWIDP to the tune of US\$ 15.5 million. The grant was channeled through KVDA to initiate WWIDP with the aim of upgrading the Pokot traditional furrow Irrigation system into a modern gravity sprinkler-fed irrigation system. Mugova adds that the aim of the project was to facilitate through farmers organization, the Wei Wei Farmers Association (WWFA) now Wei Wei Integrated Development Association (WWIDA) food security, generate household income, build the local institutional

capacity framework, transfer modern farming technology, improve the general economic standards of the local people and stimulate generally Wei Wei rural development process.

1.2 Statement of the problem

The concept of project sustainability has been of great concern to many project planners and implementers because the trend with implementers is showing significant improvement, yet the trend with sustainability is rather disappointing as fewer projects are being sustained (Karanja, 2013). In this regard, Lam et al (2006) observed that, the Italian Development Cooperation (IDC) invested huge amounts of money in funding gravity sprinkler-fed Wei Wei Integrated Development Project in Sigor, which was termed a success story, sustainable and efficient irrigation scheme. Unfortunately, its sustainability has been questioned because the farmers do not have adequate funds to carry out farm operation and maintenance.

Contrary to the Italian funded WWIDP, Lam et al (2006) observed that, the USAID funded Kenya's horticultural development programs (HCDP) were successful because it utilized well the existing market information infrastructure and technical assistance to enhance increased smallholder farmer's income through successful market linkages. However, other irrigation schemes implementers have failed because they sidelined the beneficiaries to have a say or input in the scheme design throughout all the stages of the project cycle. Hence in adopting top-down management systems many irrigation schemes designers have failed to enhance stakeholders' project ownership as they established schemes that are not entirely farmer owned or semi farmer managed schemes but one that is foreign in outlook. Thus, Ngigi (1999) decried the Kenyan irrigation schemes poor management as in National Irrigation Board (NIB) managed Mwea Irrigation scheme in Kirinyaga County whose relationship with farmers deteriorated drastically.

Lam further posit that, project management and the technical experts have failed to build enough local knowledge capacity or put in place institutional framework to help management team to manage and mitigate project environmental conservation issues (Lam et al 2006). Therefore, the local community did not approve the project design as evidenced by lack of inherent social acceptability and empowerment in the project concept. Hence, the Daily Nation (Saturday August 3, 2013) reported that, since its inception WWIDP has faced myriads of challenges which affected its overall sustainability such as lack of local community ownership, poor leadership and

dilapidated infrastructure. This state of derelict infrastructure has led to low crop production, while Lonyangapuo cites poor road network and inadequate marketing system (Lonyangapuo, 2007). All these challenges require urgent attention by all the stakeholders involved in the WWIDP implementation to address them. Therefore, this study seeks to assess factors influencing sustainability of WWIDP and finding ways in which these factors can be enhanced for WWIDP to achieve its intended sustainability objective.

1.3 Purpose of the study

The purpose of this study was to assess the factors influencing sustainability of WWIDP in Wei Wei, West Pokot County, Kenya.

1.4 Research objective

This study was guided by the following research objectives:-

- (i) To establish how cultural practice influence sustainability of WWIDP
- (ii) To assess how management skills and training influence sustainability of WWIDP
- (iii) To examine how technology use influence sustainability of WWIDP
- (iv) To determine how participatory monitoring and evaluation influence sustainability of WWIDP

1.5 Research Questions

This study sought to answer the following questions:-

- (i) What is the influence of cultural practice on sustainability of WWIDP?
- (ii) To what extent do management training influence sustainability of WWIDP?
- (iii) What is the influence of technology use on sustainability of WWIDP?
- (iv) To what extent does stakeholder's participation in monitoring and evaluation influence sustainability of WWIDP?

1.6 Significance of the study

The study is important in identifying and understanding reasons for the failure or success operation of the projects below the expectation of the stakeholders/participants after the donor's support. The knowledge generated would provide important information that can be integrated

into the project cycle before or towards completion by government, private and non-governmental organizations.

The findings of this study are to provide important information and knowledge that influence policy reform for enhancing sustainability pertaining to irrigation projects in Kenya. In this case it may be of importance to the government institutions initiating and supporting irrigation projects in the country, particularly in the arid and semi-arid counties. The lesson drawn from this study would be utilized by the communities, implementing parties, donor and NGOs/civil societies to address the challenges of sustainability and enable them to plan the better ways of implementing the sustainable irrigation projects. This study therefore, would contribute to the knowledge of both the researchers and academicians on the need and challenges brought about by sustainability efforts. As a result of this study, stakeholders will appreciate the benefit of sustainability, understand the challenges of sustainability and benefit from the raft of mechanism that they can take to cushion themselves from the projects collapse brought about by lack of sustainability initiatives.

This study would be of significance to the following stakeholders WWIDP farmers in the process of implementing the strategy of self-sustainability. As a result of this study, the organization may be able to foresee the challenges of self-sustainability and to take reasonable measures to mitigate them. Stakeholders will accept the change initiatives to be undertaken since the study outlined suitable recommendations for the same. Likewise to donors who can use the findings of the study/research to make decisions on how to fund self-sustainable projects.

1.7 Assumptions of the study

The study assumed that the respondents will be conversant with the factors influencing WWIDP sustainability and that they will be co-operative and honest in giving the required information. The study also assumed that cultural practice, management training, technology use and participatory monitoring and evaluation will influence sustainability of WWIDP. It is also assumed that WWIDP sustainability is likely to be measured by the number of target beneficiaries who have achieved significant livelihood improvement after having actively participated in the successful project implementation of participatory monitoring and evaluation process. It is assumed that cultural practices influence on WWIDP sustainability is linked in the

way local initiatives, project design, local knowledge and resources are adopted and initiated by the target beneficiaries to be involved in the project implementation and enhancing gender mainstreaming. It is likewise assumed that management training on the project is necessary for the sustainability of the WWIDP. Also the study assumed that to achieve effective WWIDP sustainability beneficiaries will access appropriate technology that is locally available, easy to repair and maintain. Likewise, it is the assumption of the study that constant participatory project monitoring and evaluation has a positive correlation with WWIDP sustainability since regular tracking of the project activities ensure that the project progresses as scheduled and the benefits are maintained even after the external support has stopped.

1.8 Limitations of the study

The quality of information that was sought under survey and interviews as method of data collection depends on the willingness and cooperation of the respondents. The study provided the respondents with an introductory letter stating clearly the use of information to be sought. To ensure co-operation of the respondents to this study, the researcher sought and obtained introduction letter from the University of Nairobi explaining that the study was for academic purposes only. Further the researcher explained to the respondents that their responses will be treated with utter anonymity and confidentiality. The study was also limited by time, bureaucracy of the project organization and difficulties in reaching respondents for survey and interviews and administration of the same. To overcome the challenges of resources, the researcher used his savings, friends and family support to carry out the study. Further, the researcher employed four research assistants to help in data collection.

1.9 Delimitations of the study

In achieving the objectives of the study, the study was limited to the background to the study, literature review by focusing on only four variables namely cultural practice, management training, technology use and participatory monitoring and evaluation influence on WWIDP sustainability. Due to space, the study was further limited to theoretical framework by looking at two theories of self-reliance and empowerment and liberation education and the conception framework, explanation of variables, knowledge gap and the summary of literature review. The study was also limited to research methodology employed such as research design, target

population, sample size and sampling procedures, research instruments, validity and reliability of instruments used, data collection procedures and analysis, ethical consideration in addition to data analysis, presentation, interpretation, discussion and the summary of findings, conclusion, recommendation and suggested areas for further research.

1.10 Definitions of significant terms used in the study

Sustainability of WWIDP: - this refers to long-term plan and execution of WWIDP to continue meets the needs, aspiration of the community far beyond the time of external funding end.

Cultural Practices:- refer to the manifestation of a culture or sub-culture in regard to traditional and customary practices of a particular community or ethnic group that may influence or impact the project/organization plans, activities, objectives and policies either negatively or positively.

Management training: this is the process in which target beneficiaries acquire knowledge and skills in addition to acquiring new set of values and attitudes which gives them self-confidence and sense of autonomy to overcome dependency syndrome inherent in centralized management and be able to implement and sustain the project effectively and efficiently for sustainability.

Technology use:- this refers to scientific knowledge and practices for the purpose of handling, making, modifying and using tools, machines, techniques, systems, crafts, and methods in operating electronic devise to accomplice a specific task using available resources efficiently and effectively to achieve a goal for maximum project input/output in a secure environment with minimum risks.

Participatory monitoring and evaluation: - this refers to the process of devolving power for decision making and review of the same decisions in favor of the target project beneficiaries. This process calls for new set of values and attitudes among the professional monitors and evaluators by

recognizing local people as equal partners in the project design, initiation and implementation.

1.11 Organization of the study

This study was organized in five chapters, with chapter one giving the background of the study, statement of the problem, purpose of the study, objectives, research questions, justification, significance, basic assumptions, limitations, delimitations and the definitions of the terms used in the study. Chapter two contain literature review which comprises the concept of sustainability, theoretical framework, Freire philosophy of liberated education and the Harambee concept of self-reliance as the basis for the factors that influence project sustainability such as cultural practices, management skills and training, technology use and participatory monitoring and evaluation, conceptual framework and the summary. Chapter three contain methodology which includes research design, target population, sample size and sampling procedures, research instruments-pre-testing of instruments, validity and reliability of instruments, data collection, data analysis techniques, operationalization of variables and the ethical considerations. Chapter four deal with data collection, interpretation and discussion, analysis and presentation, while Chapter five is a summary of the findings, conclusion and recommendations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviewed some relevant literature to the current study with a focus on WWIDP sustainability. The review included other scholar's work both at international and local scale by pointing at the weaknesses and gaps of the previous researches which helped support the current study with a view to suggesting possible viable measures of filling them. The chapter looked at the factors influencing project sustainability, challenges that irrigation projects face and finally theoretical and conceptual frameworks.

Tango observed that to achieve project sustainability, project designers must ensure that sustainability is conceptualized from the beginning to the end of the project cycle and that project sustainability efforts must deliberately be geared towards transformation in a sustainable manner. Hulsmann adds that in project management, sustainability cannot be limited to only one aspect of sustainability, but rather cumulatively include other forms like cultural, managerial, technology use and participatory monitoring and evaluation (Hulsmann, 2005). Moreover, one factor to consider in project management is the aspect of cultural practice influence on sustainability which helps the project to restore people's sense of worth and dignity. In this regard, Ledwith observed that the project aims is to cultivate a strong sense of dignity and self-worth among the community members during the project undertaking (Ledwith, 2010). Management training influence on project sustainability helps the management team to identify, train and employ locally available human resource persons to run the project in a self-generating manner without depending on donors. Therefore, management training enables the project managers are responsive to the community needs and aspirations. Appropriate technology use influence on project sustainability enables the management team to tap into and develop technology that suits the local capacities and also environmental friendly so as to ensure the project achieve sustainability. Participatory monitoring and evaluation mechanism influences the quality of project leadership and management by enhancing participative decision making efforts are geared towards achieving project sustainability.

2.2 Cultural practices and sustainability of WWIDP

In this section literature on the effects of the cultural practice on project sustainability is reviewed.

Culture is one of the key factors in project sustainability that ensures the project restores and cultivates a strong sense of self-worth and dignity among the project beneficiaries (UNESCO, 2006). Roseland states that culture is perceived in terms of capital, traditions, values, heritage and place, arts, diversity and social history (Roseland et al, 2005). Hence Tango international opines that sustainability of any particular project depends largely on its overall impact on participating households and communities rather than on the sum of its outcomes of individual's activities (Tango International, 2010). Thus UNESCO states that cultural development encompasses social policy and goals among other factors that foster social cohesion, inclusion, diversity, rural revitalization, ecological preservation and sustainable development (UNESCO, 2006).

Community development aims at strengthening the economy and the social ties within the community through locally based initiatives that combine environmental, social, and economic wellbeing with cultural wellbeing and good governance of the project (Ledwith, 2005). Ledwith adds that the goal of community development depend largely on the local people ability to express their values, be self-reliant, satisfy their basic human needs and have greater participation and accountability in the project. Such goals are achieved through education, citizen participation, dialogue and access to information that create a sense of ownership in the community project, which empower the local people to make critical decisions over their own resources. Williams observed that project sustainability reflects the capacity of the community to cope with changes and adapt to new situations (Williams, 2003). In addition, Roseland says that sustainability is about creating a more just and equitable society through encouraging social and cultural diversity and requires community to define sustainability from its own perspective (Roseland et al, 2005). Hence, Tafara quoting Beatley and Manning (1997) argued that Sustainable development involves development of a local and self-reliant economy that does not damage the social well-being of communities but enable the local people to employ home-grown solutions and strategies that are integrative and holistic when combined with government policies

and programs that are designed to bring about multiple objectives of sustainability (Tafara, 2013). Matthew and Herbert adds that sustainable project must design solutions that utilize essential aspects of cultural identity that can serve to synthesize the past with the present for the benefit of the future by involving the local people in the project design and contribute towards improving the quality of life for the project to achieve sustainability (Matthew & Herbert, 2004).

Tango International observed that, for the project to contribute to sustainable management and improve sustainability, the project implementers should draw on and promote local knowledge and practice in farming (Tango International, 2009). This observation is evident in South Asia where IFAD used successfully social mobilization strategy to promote local participation that contributed to building grass root institutions throughout the region. The local strategy gave IFAD project special opportunity to establish a strong collaboration mechanism with NGOs working in partnership with IFAD to play critical role in enhancing training, rural finance, policy, advocacy and direct supervision. The strategy also helped IFAD to realize that villages with strong traditional institutions were capable of internalizing new approaches and technologies and equipped them to participate in relatively intense project activities in short term while sustaining effective practices for long-term objective.

Tango notes that project ownership by poor rural people is a critical social factor that contributes to project sustainability which ideally entails involving project beneficiaries at all stages of project cycle and ensuring that it engages potential participants and other stakeholders prior to project design by supporting ongoing local initiatives (Tango International, 2009). This principle of involvement was effective in India where innovative local approaches were used by North Eastern Region Company Project (NERCORMP) to implement and promote long-term sustainability of project impacts. NERCORMP enjoined various self-help groups (SHGs) with National Resource Management Groups (NRMGs) into clusters, federations and apex bodies to form its sustainability strategy. Through local networking these groups enabled project members to protect their interests, lobby for government favorable policies that benefited their members and served as a source of channel for service and credit facilities to individual groups. Thus, Svenden observed that, rehabilitation of irrigation system to enhance production can be better when local knowledge, labor, money/resources and other inputs are mobilized through Water-

User Association (WUA) and the members are facilitated by community organizations to rehabilitate the irrigation system (Svenden et al, 2003).

However, Lynch argued that most irrigation schemes in Africa reflect the colonial influences which designed and constructed them (Lynch et al, 1987). Lynch adds that for present project implementers to make meaningful contribution in irrigation development in Africa they must consider such long, rich and varied history of irrigation development with its colonial heritage for it to achieve sustainability. In this regard, Lynch says that the modern irrigation development researchers and planners should look at the previous efforts done by both European and Africans who have researched, examined and evaluated irrigation issues in Africa in order to inform the present irrigation agriculture understanding. Sugden observed in a research conducted on the sustainability of water hand pump in Africa that the facilities failed because there were large gaps in knowledge and understanding of the project's design and management at all levels of stakeholders' organizations (Sugden, 2003). Hence, Shediac-Rizkallah agree with Sugden that cultural values must be used as building blocks in the best interest of organization than imposing structural frameworks that are at odd with the local people aspirations (Shediac-Rizkallah, 2010).

In Senegal West Africa, Lynch observed that the WARDA irrigation project was designed to sensitize engineers to the social and institutional issues, identify indigenous water management institutions and rules and to explore the effects of ethnicity on water management practices (Lynch et al, 1987). However, in Mauritania large-scale irrigation systems used strategies that made irrigation system sustainable and economically viable. Nevertheless, their strategies failed because the systems were planned and built with imported technology, engineers, designers and agronomic experts that designed and supervised constructions and managed irrigation systems in total disregard to the local people's knowledge, values, contribution and involvement. Hence, Lynch posited that the best remedy is to involve farmers in the project planning and maintenance and increase planner's attention to social factors that are likely to affect the its performances.

Yahaya contend that development strategies that bring about total transformation in the quality of life of the people must be enhanced because people are the most essential means of achieving development and the ultimate goal of development project (Yahaya, 2002). Also, Sishula laments the failure of many irrigation projects in South Africa whose irrigation management and

consultants are generally oriented towards dealing with the technical or agronomic aspects, while ignoring or neglecting the human aspect that is critical to project sustainability (Sishula, 2005). In this respect, Sishula observed that farmers were relegated to the bottom of the production chain in a system that emphasize compliance with all directives of the centralized irrigation management systems to a point where farmers have no say to influence irrigation scheme management. In Zimbabwe, Lynch observed that the government irrigation policy intervention restricted farmers to water use despite its commitment to provide subsidized capital systems. In the end, the government failed to achieve irrigation system economic viability due to high cost of irrigation system in spite of its efforts to turn irrigation systems into self-sustaining and supporting enterprise (Lynch et al, 1987).

Gitonga posited that in Kenya the local power structure needs to be understood during project design because it has led to many projects failure (Gitonga, 2011). However, Ngigi adds that, the remedy for irrigation management failure is to adopt an integrated irrigation water resource management approach since centrally managed irrigation schemes have proved to be unsustainable causing irrigation agencies to rely more on the government for subsidies (Ngigi, 1999). Likewise, Ngigi observed that in Kenya, farmers have not been comfortable with such top-down approach because farmers have not realized its benefits even though they were intended to improve their living standards but has left them to reel in abject poverty. A classic example is Mwea irrigation scheme in Kirinyaga County where National Irrigation Board (NIB) used centralized management system that caused deteriorating relationship with the farmers. Thus, Ngigi calls for a paradigm shift in large scale national irrigation schemes management for sustainability to be achieved.

Lam observed that, in Kenya, the Kibuon and Tende irrigation scheme in Nyanza based its project design on the beneficiaries' irrigation experiences and built it on their local knowledge and customs. The design strengthened farmer's capacity and created awareness that ensured irrigation project ownership rather than rely on outside expertise, skills and management (Lam et al, 2006). Also Lynch observed that, the Kenyan government introduced and imposed unfamiliar irrigation concept on the local pastoralist communities in the ASAL areas which affected its new irrigation systems performance. As a result, the government faced the greatest obstacles in incorporating pastoralist households into the irrigation activities (Lynch et al, 1987). Lynch adds

that another factor to irrigation management disappointment is the universities social science faculties' failure to recognize indigenous irrigation system because of Palutikof view influence that the era of indigenous irrigation systems ended in the 1950s.

Peter argued that, cultural consideration in project development creates opportunities for gender mainstreaming and equity for women to participate in irrigation management which reduces the risks of gender biases. Therefore, involving gender in irrigation management ensures project activities are effective, inclusive and equitable to influence the project sustainability (Peter, 2004). Nonetheless, Tango International observed that, in India, the NERCORMP project was based on locally innovative model which enhanced local contribution and ownership for decision-making and women empowerment. The project had broad mix of interventions that responded well to the observed and experienced the local community complimentary needs. Women groups formed economic activities which provided forums for awareness on issues of health and hygienic and empowerment that helped them become proactive in promoting children education and resolve social ills such as men excessive alcohol consumption. Moreover such initiatives and activities were planned through village employment councils that ensured consistency with local people priorities (Tango International, 2009).

Moreover, Yahaya noted the effects of gender bias that, Women in Northern Nigeria lacked exposure and participation in public production enterprise because they were culturally secluded from participating actively in the economic and agricultural irrigation project activities. However, women in Purdah project overcame such gender biases and misconceptions by working hard to earn a living from their economic activities which helped to sustain many poor families (Yahaya, 2002). Ngigi adds that, in Western Kenya, gender bias and discrimination hindered women from participating actively in and contributing towards irrigation development success. Men the dominant decision makers in the community engaged more in maize production than women who were relegated to vegetable production which has minimal sale returns (Ngigi, 1999). Hence, gender constraint is the greatest hindrance to women farmer's contribution to irrigation development in Africa and particularly in the Kenyan situation.

2.3 Management training and sustainability of WWIDP

This section analyzed how capacity building can enhance project sustainability citing some of the key success story globally and locally and the failure of the previous conventional irrigation management to sustain projects. Also, assessed is the project management training and the prerequisite technical skills to manage the projects to achieve sustainability.

Joost observed that in Asia, the most serious and intractable cases of poor irrigation performance relate to previous ineffective system management. Hence, all efforts that were aimed at improving managerial performance on technology to upgrade irrigation bureaucracy skills failed miserably (Joost, 1995). In Andhra Pradesh, India, irrigation management experienced deteriorating irrigation infrastructure and increased maintenance most of its agency staff salaries consumed over 80% of its operation costs. Though training of staff was a key priority with clear training conducted under FAO technical assistance, there was decline in both the staff skills and community members' capacities working in communication system over the years (FAO, 1993). Thus, the irrigation agency relied heavily on in-service training which though had some benefits, led to staff turnover and frequent changes of people in communication committees.

To ensure WUAs sustainability, the Andhra Pradesh irrigation management realized that they require technical skill to modernize irrigation system by automating water distribution to influence irrigation system efficiency. Thus, training was aimed at bridging gaps in knowledge and skills and equality among farmers to facilitate the change process (Peter, 2004). However this was done despite WUs encountering some challenges of water user's elites holding farmers captive to project management discrimination, corruption and inefficiency.

In Asia, Geijer observed that, Irrigation Management Transfer (IMT) depended on external support to train its farmers on management courses despite its primary training objectives to achieve attitudinal change among the policy makers, engineers, implementers and organizers to enable them play a permanent role in managing the irrigation scheme transfer (Geijer, 1996). Geijer noted that there were also inadequate training for irrigation staff, farmer's leaders and agriculture department on a number of business management skills and other irrigation agricultural support services providers to assist farmers with small enterprises development. There is no expert available to establish and develop farmer organizations to take over irrigation

management. So, Geijer argued that, the critical need for training management staff in operation and maintenance for transferred system at national and regional levels is to enhance farmers' ability to plan and supervise operation and maintenance. Joost observed that irrigation staff and agricultural ministry lacked adequate technical skills to monitor and evaluate and assess the performance of the irrigation management system after transfers (Joost, 1995). So, Joost opined that, the best option is to have alternative irrigation operation and maintenance technology that is more appropriate to farmer management which can be tested in the field.

Karanja observed that, in Africa and other developing countries, significant management training paradigm shift for projects may not be achieved because project sustainability in rural areas of Limpopo South Africa could not be implemented and sustained without active community participation because they will collapse leaving communities to be trapped in abject poverty. Moreover, lack of education and skills to run the projects initiated is likely to affect the project productivity negatively as the management will make mistakes and cause blunders which may hamper projects sustainability (Karanja, 2014). Karanja cites a case in Tanzania where the findings from the study by Alex (2006) on factors affecting sustainability of rural water supply concluded that, sustainability of rural water supply projects is undermined by poor financial management which must be addressed by all implementing agencies for the project to be sustainable.

Karanja stated that training is the process in which target groups acquire knowledge and skills to enable them to operate effectively and efficiently. Such training enables farmers to acquire new set of values and attitudes that reinforce their self-confidence and sense of autonomy to overcome dependency syndrome inherent in centralized project management system. Therefore, the project management team must be offered quality training on all the necessary tasks identified during planning which matches effectively and efficiently project post implementation requirement for the project to be successfully implemented and sustained for sustainability (Karanja, 2014)

Karanja notes that to increase chances of successful project sustainability, the management team needs to be trained on the present mitigating measures (risk assessment), financing and accountability and participatory monitoring and evaluation process. This will enable project

management to assess the challenges of project failure, take the necessary measures to address them and to proactively anticipate future drawbacks in the project planning. However, Karanja notes that, small-scale irrigation schemes lack financial capacity to train their project management team on essential skills needed for effective implementation and project sustainability. Moreover, Karanja says, most smallholder irrigation developments unlike large scale irrigation schemes have less formal trainings for management staff because they rely mainly on informal trainings (Karanja, 2014). This is supported by Tango statement that, government politics and policies are some of the moderating factors that can either positively or negatively influence project sustainability. Yet, without the government support and commitment through proper policy formulation and implementation, the local project success and sustainability will be jeopardized. However Tango asserts that the project implementation must seek opportunities to utilize local technical training to assist in the implementation while the government actors offer technical and financial resources to the community groups during project implementation and after phase out. This is the reason Tango observed that one critical factor to project sustainability is the availability of skilled personnel (Tango International, 2009).

In South Africa, Sishula observed that trained personnel were critical for Tyhefu Irrigation Scheme where there is widespread functional illiteracy among the farmers who requires various training skills for them to achieve greater independence. Likewise, in the Western Cape Province, small-scale farmers have limited business management skills like keeping proper farm account and records since none have high agriculture training. Therefore, Sishula opined that Tyhefu farmers only possessed general farming skills like weeding, fencing and driving without specialized skills that are suited to their local needs and situation thereby lacking innovative and practical training (Sishula, 2005).

In Kenya, Gitonga observed that leadership and managerial capability is critical for project success because sustainable organization revolves around good communication and dialogue that enabled it to responds to the farmers' felt needs appropriately and timely (Gitonga, 2013). However, Kariuki noted that, the government policy on irrigated agriculture has been poor (MOA, 2015). Hence, Ngigi stated that despite such noble efforts to formulate policies, the Kenyan government needs to reconsider its policy formulation by building farmers capacity to prepare them to assume irrigation management responsibilities adequately. Ngigi proposes that

farmers and irrigation staff should be exposed through demonstration trainings to improve water management technologies, establish model farms, promote exchange visits among counties, train irrigation leaders on leadership and management skills and strengthen farmers organizations (Ngigi, 1999).

To Ngigi, most irrigation schemes in Kenya lack adequate skills that enable them to adopt new technologies. There is also no practical orientation training provided by the universities for field officers to help farmers management team acquire the necessary skills, expertise and experience to manage the irrigation schemes towards sustainability. Unreliable database and inadequate training and management skills in most irrigations schemes means less farmer information provided as there is no research and information centers available to provide them with proper information they need to make decisions. Thus, Ngigi observed that, poorly trained staff with limited extension services and poor irrigation infrastructure designs has led to low irrigation productivity.

Ngigi added that in the past, smallholder irrigation schemes in Kenya depended entirely on donors whose diminishing support are making the future of irrigation projects in the country to look bleak (Ngigi, 1999). Ngigi opined that unless new participatory management strategies are developed through devolving irrigation development to counties, then smallholder irrigations sustainability cannot be enhanced. This over reliance on donor support and funding have proved unsustainable in building a self-reliant irrigation project mechanism that suit the prevailing local farmer conditions. Ngigi aver that, financial mismanagement due to lack of specialized training has also contributed to the collapse of most irrigation projects, while limited funding has disadvantaged poor farmers making them reluctant to cost-share irrigation activities leading to poor project performance. All these constraints are the reason irrigation project sustainability in Kenya has been very discouraging and disappointing. This disappointing state of Kenyan irrigation schemes is captured succinctly by the Sunday Nation (November 22, 2015) when it stated that the viability of the second phase of the 400 billion Galana-Kulalu food security project is set to start amidst expert warning that it is not financially and environmentally viable.

2.4. Appropriate technology use and sustainability of WWIDP

This section assessed the influence of technology on irrigation project sustainability on key areas of technology viability, poverty alleviation, technology use impact, comparative profitability, financial viability and the low-cost modified micro-Public-Private Partnership (PPPs).

Saa observed that some low-cost micro irrigation technologies that show considerable success in India, China and Nepal can also be useful for micro-irrigation technologies in Africa (Saa et al, 2010). This is because multinational Authorities in West Africa countries tried various irrigation developments unsuccessfully because of skepticism associated with large-scale irrigation schemes viability and effectiveness. Likewise, Saa adds that earlier technology inadequacy experiences had impacted negatively on irrigation agriculture in the Sahel region as experience in Ghana show when it applied little scientific technology in their irrigation schemes.

World Bank observed that, for a project to be appropriate and viable it must be formulated and designed in a sustainable way under the prevailing socio-economic conditions that benefit the intended users (World Bank, 1989). World Bank adds that major irrigation infrastructure facilities should be intertwined with technical, social and economic factors to determine the success of any irrigation projects. However, Saa observed that technical technology viability alone is not enough to ensure irrigation sustainability that serve small-scale farmers unless it is technically, economically and socially acceptable and adoptable to them (Saa et al, 2010). Hence Saa aver that, economic viability can only be achieved when there is ready made-market for high value horticultural crop production that can fetch high price both locally and abroad. Therefore, any technology system to be employed must target the needs of the majority smallholder farmers including women to ensure equity, poverty alleviation and food security in the region.

Saa observed that, Asia developed a well -functioning irrigation system that helped alleviate poverty yet recent research conducted on the advantage of technology in the Sahel region of West Africa has shown that drip technology has the potential to alleviate hunger and poverty. However, the perceived impact of drip technologies on farmers and their households are actually on short term intervention rather than on long term (Saa et al, 2010).

Saa quoting FAO report showed that the area under informal irrigation in Niger and Senegal exceeds those under formal irrigation because the contribution of informal irrigation has enhanced greatly the economies of West African countries. The high population percentage in West Africa is a clear indication of agricultural technology use to reduce poverty. Hence, Yahaya observed that, informal irrigation system have been found to be more economically efficient than formal irrigation (Yahaya, 2002). Kenya should therefore borrow a leaf from Asia in its attempt to tackle poverty and food insecurity by designing low-cost sustainable agricultural systems and in putting in place relevant PM&E measures to address challenges of high cost technologies.

Saa argued that the survey assessment that was conducted in West Africa using participatory rural appraisal (PRA) and participatory impact assessment (PIA) tools show the limitation of the purely technocratic and expert-oriented interventions on irrigation technologies. The technologies inadequacies forced some West Africa countries to shift to and adopt stakeholders-inclusiveness and participatory approach because it is more relevant and suitable to the local agricultural irrigation situation (Saa et al, 2010). Thus, Yahaya argued that the choice of technology use should be based on the farmers' socio-cultural considerations and the technology simplicity to enable majority of the farmers to minimize the total cost of production and to maximize profit (Yahaya, 2002). Saa shows that, in West Africa region, small irrigators regarded highly the micro irrigation technologies to macro-irrigation technologies because of high costs forced farmers to either use traditional technologies or combine traditional and modern technologies like bucket, manual pump and motorized pump systems to irrigate their crops.

Saa observed that irrigators regarded knowledge acquisition and subsidies on irrigation equipment and system as some factors that greatly influenced their decision to use drip irrigation technology. Hence, Saa calls for favorable technology intervention that enhances farmer's dissemination, targets their critical issues and influences their decisions to adopt it. Therefore, technology use advantage lies in the technical knowledge given to irrigators, the organization of the system with regard to technical support, irrigators' business orientation and the degree of innovativeness.

Since the existing PPPs models are expensive for smallholder irrigation, Saa advocates an adaptive form of micro PPPs for drip irrigation system. Saa proposed that PPPs be modified so as to be adopted and promoted by small-scale irrigation agriculture in Africa (Saa et al, 2010). This is because PPPs ventures have normally ignored agricultural sector in Africa, while World Bank sponsored PPPs ventures have not yet extended their activities to infrastructure in the agricultural sector claiming that African irrigation infrastructure is too expensive to invest. Hence, Saa posit that conventional PPPs models does not suit African irrigation development infrastructure and called for government policy-makers to come up with the modified form of PPPs model for smallholder farmers if it is to alleviate poverty.

In this regard, Saa proposes that PPPs model be modified into Public-Private (informal) - Private (formal) Partnership (PPI-PfP) to enable local farmers to benefits from such ventures. Saa adds that the government agencies and NGOs should include the local farmer groups in the formation of the modified micro-PPPs system and build their capacities to enable them to benefit from such irrigation technology ventures. Thus, Yahaya asserted that, it is proper to adopt the general technologies that are suited to the poor rural family's needs and conditions and are user-oriented to the needs and performance of rural families and national production goals. The model therefore, should start with a systematic process of scientific understanding of the rural poor families' situation in terms of their resources, needs and problems (Yahaya, 2002).

Yahaya opined that the model show that research problems and priorities be identified by the needs and opportunities of the farmers rather than by the development planner' preference. This is evident in Nigeria, Bakolori irrigation project where small-scale farmers adopted a mixture of traditional and modern technologies which are less sophisticated irrigation equipment such as shadoof, pumps, gravity or natural flow and calabash/bucket than the expensive irrigation technologies like surface, drip, corrugation and sprinklers. Therefore, Yahaya advocates for Agricultural technology that is applied specifically to promote and develop agriculture with a desire for peasant farmers using gadgets that unlock new resources, increase productivity and generate new capacities for productivity. Thus, Yahaya opined that the user's participation and their acceptance of the new technology depend largely on their involvement in the selection, design and construction of the project. However, Yahaya argued that, the most serious problem associated with irrigation development in Africa relate to the storage and delivery of water as

well as the success of irrigation programs. Yahaya says that, the best way to formulate appropriate technology that is adaptable to farmer's criteria and resource base is by analyzing the socio-economic and biophysical constraints of farmer's production. This requires both ecological and economic approach which formulates the body of complex relationship inherent in traditional farming system.

Saa observed that, in East Africa, the cost of establishing a viable, effective and sustainable smallholder drip irrigation system is high, yet there are simple systems that are much cheaper. Thus, Saa advocates for a systems that meets the development aspirations of countries that are threatened by dynamic food crisis and increased poverty trends (Saa et al, 2010). Hence, the choice of technology depends largely on the resources and equipment situation of each farmer, considering factors like water supply, labor, farm size and marketing. Unfortunate, Yahaya laments project planner's frequent introduction of new irrigation technologies while ignoring the traditional agricultural activities of the local people because they view them inferior to the imported technologies. So, Lynch observed that, the Kenyan government rejected the church and clan based irrigation scheme technologies terming them primitive (Lynch et al ,1987).

Ngigi evaluation of the irrigation system paints a grim picture of the current status of conventional irrigation technologies in Kenya (Ngigi, 1999). Ngigi aver that, the pace of advancement of irrigation technology has been persistently slow, while cultural persistence on growing low-value food crops and continued IDB emphasis on gravity-fed surface-irrigation systems seems cheap to implement. There is also less information on new technologies and collaboration with private sector and technology promoters. Thus, Saa observed that, the use of technologies that intensify agricultural production in the potential lands and which opens up new lands in the ASAL areas is possible when the right irrigation technologies are used (Saa et al, 2010). Ngigi adds that Kenya's small-scale farmers are adopting various innovative irrigation technologies like bucket and drum drip and the recent ones like low head Jua-kali sprinklers, small basins and super-money maker pumps which are less expensive and easily manageable with promising results to enhance food security than the expensive conventional irrigation systems. However, some of these innovative technologies though crucial, have not yet been evaluated to determine their technical and socio-economic performance under local conditions.

2.5 Participatory monitoring and evaluating and sustainability of WWIDP

This section assessed the impact of participatory monitoring and evaluation that enhance the role of project stakeholders as a critical factor that influence project sustainability.

Tango argued that the way a project is implemented can have considerable influence on its long term sustainability especially if participatory approaches are made flexible in the face of inevitable setbacks while stakeholders' capacities are strengthened to help them plan and manage future project actions (Tango International, 2010). The World Bank report (2008) indicated that, there has been significant increase in the use of participatory approach in planning and establishment of management for infrastructure and natural resources whose aim is to involve stakeholder in the monitoring and evaluation of project activities, outputs and outcomes. This observation is in line with UN (1987) report that defines participation as the process in which people express themselves, share, contribute and act with mutual responsibility to promote a common goal. Thus, participation is crucial for agriculture and rural development because it is one of the critical components for successful natural resource management. Alam observed that, in Pakistan irrigation planners and administrators realized that farmer's participation is very crucial as they implemented many projects of such nature in different irrigation zones, while the established Provincial and Drainage Authorities (PDA) initiated participatory irrigation management (Alam et al, 2012. Alam also stated that, Pakistan Integrated Management (PIM) recognized the usefulness of involving organized farmers (WUAs) in the operation, management and maintenance in order for irrigation projects to realize their full potential. Alam adds that, farmer's participation in decision-making is more likely to lead to a sustainable increase in food production and development. Thus, PIM realized that involving stakeholders in all aspect of irrigation management enhances farmer's satisfaction with the irrigation system.

However, Sugden observed that, it is lack of clarity on what makes project sustainable that led water aid program in Salima, Malawi to develop a participatory evaluation tool that helped project managers to focus less on the project implementation and more on the sustainability. So, Sugden say that any talk on sustainability is futile unless it can be measured and monitored through simple but user-friendly approaches that assess projects sustainability (Sugden, 2003). Therefore, water Aid development designed snapshot evaluation tool that measured

sustainability that ensured consistency in application for both the national and county level. However, such snapshot tool is effective if participatory monitoring and evaluation is used and where respondent are part of an existing multi-stakeholders network. Merrey adds that, use of monitoring and evaluation and feedback system help irrigation project management to assess the good measures for farmer organization structures and performance in the project (Merrey, 1997). Estrella asserted that, participatory monitoring and evaluation tool is useful because it uses informal local indicators which provide rich potential for developing innovative approaches to monitor and evaluate project change (Estrella et al, 2000).

Estrella states that participatory monitoring and evaluation was developed out of the need to manage projects towards performance-based accountability that emphasized the need for achieving results and objectives than the usual process of financial reporting. This participatory monitoring and evaluation process require greater accountability and demonstrated impact of projects towards devolving government responsibility and authority to lower level of government to enhance oversight, transparency and improve consistent support and responsive initiatives. Moreover, Estrella quoting Rubin (1995) observed that, in conventional monitoring and evaluation approaches, stakeholders have little or no say in evaluating the project activities that affect them directly. Hence, Estrella opined that, the international development developed participatory monitoring and evaluation because they were dissatisfied with the conventional monitoring and evaluation approaches which were characterized by the funding agencies and policy makers' needs to focus only on producing subjective, value free and qualitative information. In such approaches outside experts are contracted to carry out evaluation for the sake of maintaining objectivity while ignoring project beneficiaries' critical role and insights.

Thus, Estrella stated that, a new but innovative monitoring and evaluation interventions was developed with the aim of making monitoring and evaluation more participatory and effective by involving wide range of stakeholders at every stage of the project process. This new intervention mechanism emphasizes a shift away from externally controlled data seeking evaluation to locally negotiated relevant stakeholder-based process in data gathering, analyzing and interpreting information. Thus, participatory monitoring and evaluation, is a multi-sectoral process that ensures the projects measures gender mainstreaming. Participatory monitoring and evaluation ensure project stakeholders are fully involved in designing the monitoring system, collect and

compile the information gathered. True participation requires project stakeholders to be involved in negotiating what needs to be assessed and measure validity and reliability and selection of the appropriate methods. Hence participatory monitoring and evaluation is a multi-purpose process that ensure the projects and programs are made responsive to the genuine needs of the intended beneficiaries because it empowers stakeholders to take action, strengthen project institutions through better progress of accountability and transparency. It also determines the impact of the intended and unintended beneficiaries and stakeholders in the projects and so measures gender mainstreaming (Estrella et al 2000).

Ngigi observed that, the past National Irrigation Board (NIB) and the Irrigation Drainage Board (IDB) efforts to develop large and small-scale irrigation projects in Kenya were successful because they had initially shown positive trend in alleviating poverty and improving food security (Ngigi, 1999). However, later they declined in productivity and were abandoned due to lack of developed elaborate and clear participatory monitoring and evaluation framework to achieve sustainable irrigation agricultural projects. So, Ngigi aver that intensifying evaluation of innovative development and application of small-scale irrigation technologies provide the basis for the developing appropriate guidelines for future irrigation development which gives them a strong basis for developing participatory technologies. Such participatory monitoring and evaluation process focuses on the user-experiences in handling or applying the technologies to their local needs and situations rather than on technology specification. Ngigi observed that most past Agricultural Development Funded (ADF) furrow projects in Western Kenya and the rain-fed Horticultural Development rain-fed rice projects lacked effective monitoring and evaluation mechanism in their planning, design and implementation leading to funds cancellation after borrowers failed to repay the loan or met the loan repayment conditions even before project funds were disbursed.

Ngigi observed that irrigation development involves defining various stakeholders' roles and coordinating them well since they will either impact negatively or positively the irrigation development process. Project beneficiary is one key irrigation stakeholder who should be included in the project monitoring and evaluation process beside project initiators, implementers and those directly and indirectly affected by the irrigation project intervention (Ngigi, 1999). Ngigi adds that, though various stakeholders have realized the potential of diversifying their

crops due to active external agencies support whose impact is diminishing, they realized the need to evaluate their strategies with a view to develop an integrated approach for water resources management for irrigation projects to achieve sustainability.

Nevertheless, Ngigi argued that the most essential stakeholder is the farmer who should properly be integrated in the project development process to be able to play his/her role effectively; otherwise project sustainability will be jeopardized. This is because there has been less farmer integration in the projects initiation process and involvement in forming farmer's organizations to help address water user conflicts, sensitize them in funding irrigation activities and monitor and evaluate project activities. Likewise, in the past stakeholders coordination and collaboration has been inadequate thereby hindering sustainable irrigation development due to lack of participatory monitoring and evaluation leading to conflicts among stakeholders and poor water management, poor farmer's sensitization and limited funding and marketing.

Sugden observed that the community ability to keep the project facilities operational for a long period of time involve a complex mix of dynamic, inter-linked and inter-dependence managerial, social, economic, institutional and technical abilities. To achieve project sustainability, a sustainability tool for measuring project indicators is essential for project implementers to assess whether the community can access spare parts and requisite funds to actually repair them and access equipment necessary for project operations and maintenance (Sugden, 2003). Likewise, participatory monitoring and evaluation help project implementers to gauge technical skills available to ordinary farmer to carry out maintenance when needed within a reasonable timeframe. Sugden adds that, participatory monitoring and evaluation is required to guide the project planners and managers to ascertain whether the community has access to spare parts and whether they actually have the funds to carry out repairs and the necessary skills and expertise to repair the project equipment and be able to maintain them. They also have to assess whether there is technical skills available to the ordinary farmer within a reasonable cost and time frame for the project to be sustainable.

2.6 Theoretical Framework:

This section presented relevant theories which have bearing on the WWIDP irrigation project sustainability as shown below:-

2.6.1 The Theory of Self- Reliance (SR)

Njeri stated that the Kenya Harambee self-help development started as local initiatives before taking on national outlook and become a national slogan and a rallying call for collective efforts, community self-reliance, cooperatives enterprises and all forms of collective self-will for empowerment. Harambee self-help development effort is distinct from other development activities in Kenya since it is based on bottom-up rather than top-down development approach. Since its inception, the term was used and perceived as production oriented and existed as a concrete theme for joint work in many parts of Kenya before independence. It is grounded firmly in existing social ties, rights and duties which have existed and will exist beyond the requirement of specific project. Hence, Njeri adds that, projects were initiated, planned, designed, implemented and maintained by the local communities using local resources such as human labor, animal power and materials in project construction and donations. Chite observed that, participation of individuals in Harambee self-help was guided by the principle of collective good rather than individual self-interests which were organized in a way that enhance individual image and reinforced through public praise of each contributor (Chite, 1994). Chite stated that, the choice of the project is guided by the principle of satisfying the immediate needs of the participating members and the group while the critical aspect of Harambee is its collective principle of self-reliance at national and the local grass roots level.

Lynch observed that, the government Harambee policy was anchored on the Kenya's strong tradition of working together or pulling together slogan through which about 10% of national revenue was mobilized through self-help projects that the local communities identified, planned and implemented (Lynch et al, 1987). The Kenya leaders transformed traditional African values for cooperation in productive activities into a dynamic force for modern development while the farmer's willingness to work together was influenced by the Harambee cooperate tradition which enabled them to work willingly together with other stakeholders such as government and NGOs. Hence Lynch added that, the concept made farmer's organization presence a precondition for assistance and the decision to give all the responsibilities for operation and maintenance back to farmers at the project completion phase. This contrast sharply the government policy for public irrigation system which owns the system and runs all the operation and maintenance functions.

Thus, Njeri stated that Harambee development fills the gaps in terms of project choice and scale where education projects seem more popular than others reflect its greater demand with population increase and also society value for knowledge (Njeri). Such awareness Njeri suggested that, education has been proved to be directly and positively associated with social development. In planning Harambee focuses on contributing to increasing individual participation and span of control in matters affecting their own situation, welfare and future. In terms of project scale, grassroots Harambee introduced small project suitable to local consumption with reasonable investment costs and use of locally affordable materials which is intended to avoid ivory tower or white elephant projects which have characterized most national government projects that were planned with the use of hired labor or imported technical expertise in water and irrigation schemes.

2.6.2 The Theory of Self-Empowerment

Freire stated that empowerment is the process of increasing the marginalized individuals/groups capacity to make choices and to transform them into desired actions and outcomes for their own good. Here, empowerment for Freire is an ongoing process that takes time but which is best achieved through self-reliance (Freire, 1973). For Mulwa, empowerment is the ability to manage one's own life both individual and community and influence public policy towards desired destiny that enable the poor and powerless to controls their lives and secure better livelihoods. It is devolving responsibilities to the local people to ensure they are innovative and creative in finding home-grown solutions to address their own challenges (Mulwa, 2008). Freire see it as a practical self-empowerment that ensures that groups actually get involved in their own development and self-liberation in which the poor and the oppressed are able to break through the culture of silence and apathy. For Mulwa, It is the process that ensures local people develop new knowledge and skills which serves their specific needs and ability to adopt appropriate exotic technology so that it serves the people as per their priorities within their specific cultural setting and experience. Moreover, Freire believed in the people's ability and willingness to do things for themselves rather than being coerced because they have the potential and purpose of being the changing agents for change. For Freire empowering people see themselves as cultural actors for change is the basis for their liberation.

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Mulwa argued that empowerment efforts ensure local people builds relationships among the people through social, kinships or associational networks which rest on recognising the strength, gifts, talents and assets of individuals and communities. This is not about token participation and ownership which are cherished and maintained by M&E adopted management agencies but rather is about awakening and activating people to take responsibilities of ownership to manage their future through the initiated projects. Local community empowerment therefore works against the spirit and ethical development process of centralized project agencies who takes over local people projects with the misguided view to transfer later on when they feel the local people are ready. Mulwa warns against such views which are premised on a quick-sand since any idea that change agents can decide when to transfer the project to the local ownership, puffs the local people and makes them more reluctant accept responsibilities. So, Mulwa argued that, community empowerment creates a sense of local ownership and responsibilities within the local context leading to project sustainability.

Hence, Mulwa opines that empowerment is about releasing people from the trapping cycle of poverty and deprivation trap by addressing all the manifesting forms of poverty. It calls for improving their living conditions through a radical change that does not involves amelioration of poverty (relieving suffering) among the poor or starting welfare services but by ensuring quality project developments. So, project initiatives that call for relief make people increasingly dependent on their donors by treating the symptoms of the problems, which tends to perpetuate poverty itself. Therefore, Mulwa opines, the remedy is to develop a radical PM&E approach that calls for liberating the local people to freedom from want, dependence, fear, powerlessness, isolation, discrimination, prejudices, clanism, apathy and paternalism and fatalism which holds people captives. Hence, Mulwa argues that we need PM&E helps address the root causes of poverty and impoverishment and ensure project sustainability. However PM&E require a change of mind set and calls for stakeholder participatory willingness to lean and plan irrigation projects that is built on local people experience. This requires replacing M&E methodologies with PM&E which are open to learning innovative and experiments with the local cultural values, knowledge, management and experience.

Therefore, the two theories above fits well in this study because WWIDP needs the combination of both theories for strategic planning, design, implementation and in participatory monitoring and evaluation to achieve its sustainability objective.

2.7 Conceptual Framework

This section provides a structural narrative description of the relationship between the variables forming the concepts of the study on sustainability. In this study, the framework below illustrates possible underlying factors influencing sustainability of Wei Wei Integrated Development project (WWIDP) beyond the donor support as shown below.

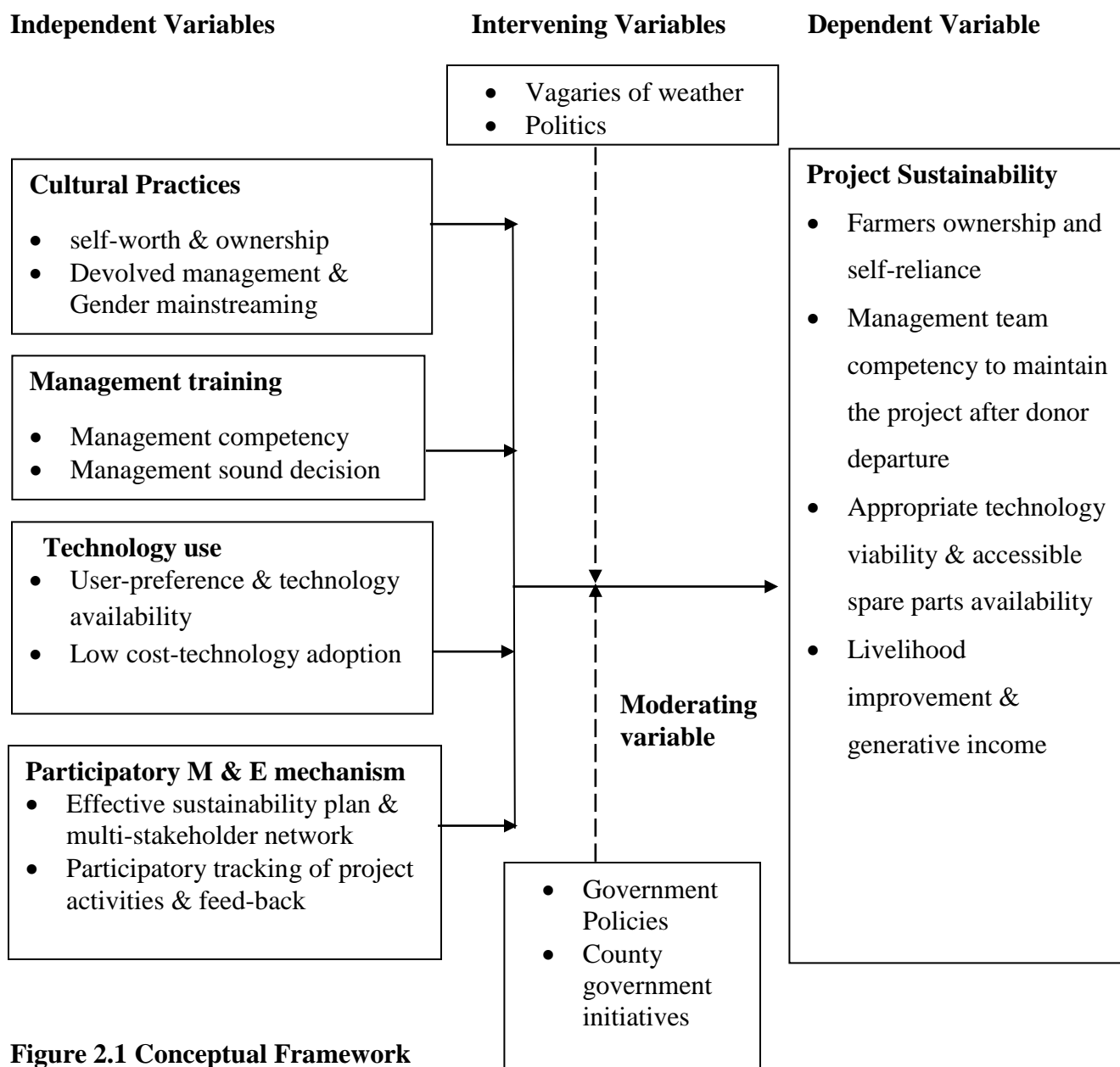


Figure 2.1 Conceptual Framework

2.8 Explanation of variables

In this study the factors listed in the conceptual framework are assumed to greatly influence WWIDP sustainability. Therefore, critical factors such as cultural practices, management training, appropriate technology use and participatory monitoring and evaluation are treated as independent variables, while WWIDP sustainability as dependent variable. A manifestation of such independent variables and their respective indicators in the case of WWIDP are an indication that the project outcomes, services and benefits are likely to be sustainable after

external support is terminated. This concept is premised on the fact that project sustainability is the process of maintaining the outcomes and outputs of the WWIDP over a long period of time after the original donor support is withdrawn. In the event that such independent variables or their respective indicators are missing, then we can assume that WWIDP outcomes and outputs will not be sustainable

Therefore, sustainability of WWIDP in Wei Wei, West Pokot (y) is a product of many factors such as cultural practice (X_1), management training (X_2), appropriate technology use (X_3), and participatory monitoring and evaluation (X_4).

Therefore $Y = a + b_1 x_1 + b_2 x_2 + b_3 x_3 + b_4 x_4$

Where a is constant other factors $b_1 b_2 b_3 b_4$ as coefficients.

So sustainability of WWIDP was measured by the number of target beneficiaries who have achieved significant livelihood improvement and have actively participated in the successful project implementation of participatory monitoring and evaluation process.

Cultural practices are associated in the way local initiatives, project design, local knowledge and resources were adopted and initiated by the target beneficiaries to be involved in the project implementation and enhancing gender mainstreaming. Training is clearly linked to management in that the project management team is efficient in sustaining the project if they are well trained. Management training on the project is necessary for the sustainability of the WWIDP. However, project management team lack of relevant training and experience means incompetency in scanning and analyzing the environmental factors and other market forces that determine the continuous sustenance of WWIDP. Moreover, training enhances the project management team competency and improves efficiency in resource utilization to ensure WWIDP sustainability. Project financial management was gauged by the project management term efficiency in making sound decision and ensured the project is sustained by having a viable budget, maintaining proper financial records and reports of all the cash flows in the project.

The management team was gauged on how they carried out participatory monitoring and evaluation and ensure they receive regular feedback since it is a prerequisite for WWIDP sustainability. Also project indicators for effective WWIDP sustainability include accessing

appropriate technology that is locally available, with ease of repairs and maintenance. A constant participatory project monitoring and evaluation has a positive correlation with project sustainability since regular tracking of the project activities ensure that the project progresses as scheduled and the benefits are maintained even after the external support has stopped.

2.8 Knowledge gap

Baker observed that despite billions of dollars spent on development assistance each year, there is very little impact of the project on the poor since donor supported projects are aimed at achieving two objectives of satisfying the donor and providing beneficial outcome to the targeted communities. However, little has been done to consolidate the gains made by the previous projects to ensure continuity of benefits beyond the period of the donor support (Baker, 2000).

The concept of culture is a complex phenomenon which takes time and efforts to understand and be used in a meaningful way. The problem lies in the way culture is viewed by different people since cultural concepts such as meaning, symbols, rituals, rules and values tend to be interpreted in various different ways. So, culture is dynamic and can be used to mean many things by many people most of which are not measurable in a quantifying manner. Hence, it is impossible to describe it in absolute terms because cultural practices that may be harmful to some communities may be useful and best for other communities.

There is also lack of knowledge as a result of inadequate training of actual facts that influence sustainability of such activities, which could be useful in planning development initiatives by incorporating project beneficiaries and key stakeholder's views in every aspect and stages of the project life cycle. From the literature review it is assumed that several factors influence WWIDP sustainability. Foxand observed in a study of sustainability of project in rural areas of Limpopo in South Africa that community participation is important in sustainability of project (Foxand, 2004). The study by Tango International (2008) in Philippines and Vietnam revealed that, failure to manage risks is a major constraint of project sustainability. However, none of those studies have taken an in-depth study of most of the practices such as cultural practices, management training, appropriate technology use and participatory monitoring and evaluation and how they influence WWIDP sustainability. Likewise, there is no substantial study that has been carried out

on Wei Wei, West Pokot County relating to the influence of such factors on WWIDP. Therefore, this study seeks to bridge this gap.

2.9 Summary of the literature review

This chapter reviewed literature relevant to the research topic under this chapter giving an insight on the factors influencing sustainability of WWIDP. The first part of the chapter reviewed literature on the background to WWIDP goals and objectives, concept of sustainability, cultural practices, management training, appropriate technology use and participatory monitoring and evaluation, theoretical framework, conceptual framework, knowledge gap and summary of literature review.

From the literature review, it is assumed that WWIDP is likely to play a critical role in the mitigating and ameliorating food security and poverty eradication, while its impressive outcomes and benefits will improve the living standards of the beneficiaries and the general local population. However, there is need to consolidate the project gains to ensure a lasting impact in the lives of the targeted WWIDP beneficiaries to achieve sustainability. The study assumed that participatory monitoring and evaluation would be instrumental in the development of the WWIDP intervention since the study conceptualized that WWIDP impact on the food security, poverty reduction and livelihood improvement can only be successful when beneficiaries participates in tracking the project inputs, outputs and the outcomes beyond the donor support.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

This chapter deals with the methodology on research design that was used in this study. It describe the research design, population, sample design and sample size and the sample procedures, data collection methods- validity and reliability, data collection, analysis and presentation.

3.2 Research design

In this section, the study employed descriptive survey which attempts to describe a subject by creating a profile of a group problems, people or events, through collection of data and tabulation of the frequencies on research variables. Orodho (2003) define research design as the plan that is used to generate answers to research problem. This approach was appropriate for this study because it helped describe the state of affairs to be addressed without manipulation of the variables for this study. Churchill (1999) states that descriptive study is appropriate where the study sought to describe the characteristics of certain groups, estimate the proportion of people which have certain characteristics to make predictions. Orodho (2004) argued that the choice of the descriptive survey was made based on the fact that in the study, the research is interested on the state of affairs already existing in the field and no variable would be manipulated. The choice of descriptive design for this study was based on the fact that the study wants to establish the factors that influence sustainability of WWIDP in Wei Wei, West Pokot County.

Mugova (1999) observed that the WWIDP project was started with the funds from the Italian government through bilateral trade for co-operation that was signed with the Kenya government through directorate for foreign Affairs, ministry of regional development and the Kerio Valley Development Authority. The project was initiated in 1986 in phases with the 1st and the 2nd phase already completed in 1992 and handed over to the KVDA and the farmers in 2001 under the supervision of the KVDA and technical advice from the Italian government team representative, while the third phase was envisaged to start ten months from the completion and handing over of the two phases but which started in 2017. Therefore, the sustainability issues that were looked

into and addressed in his study were explained using both qualitative and quantitative data focusing on wide cross section of characteristics including cultural influence, management skills, technological use and stakeholder's participation in monitoring and evaluation influencing WWIDP sustainability. The data collected and analyzed was used to make generalization with regard to the sustainability factors for WWIDP.

3.3 Target population

The study population constituted the farmers of the project in Wei Wei who are involved in WWIDP project development, use of management skills and expertise. The respondents were reached through household survey and purposive identification of the subject matter or key informants across relevant local institutions. The population targeted were 225 farmers, 8 WWIDP (5 WWIDA & 3 KVDA) employees, 8 WWIDA committee, 2 Italian technical experts, 2 County government agricultural officers, 3 local leaders and 5 community elders involved in the allocation of plots to the individual farmers.

3.4 Sample size and sampling procedure-

The section dealt with data collection from the targeted farmers using a mixture of both probability and none probability sampling technique.

3.4.1 Sample frame/size

Cooper and schindler (2002) defines sampling frame as the list of element from which the samples is actually drawn. This complete listing of the sampling units with the accuracy of the sample depends largely on the sampling frame. Every aspect of the sampling design- the population covered, the stages of sampling frame influences the actual selection process. Therefore, the sample for this study was drawn from the farmers, WWIDP employees, government officers, Italian technical team and the local leaders.

The study collected data from WWIDA farmers in the WWIDP project using a mixture of both probability and non-probability sampling method which was combined to achieve maximum reliable responses for triangulation of themes. A sample of household was identified because a household that was picked in this study as an appropriate unit provided reliable information regarding the objectives of the study.

3.4.2 Sampling procedures

The study used a combination of probability sampling and non-probability sampling technique. The probability sampling technique includes cluster sampling procedure, simple random sampling and systematic sampling procedure. To collect qualitative data, cluster sampling procedure was applied where the farmers were not evenly distributed but settled in clusters to randomly identify or pick the first household for administration of questionnaire. Once the first household was randomly identified, systematic sampling procedure was used to collect data through questionnaire in the subsequent household within the cluster. The systematic procedure was continuously applied where settlement exist in some linear order.

Kerry & Bland (1998) states that cluster sampling is cheaper than other methods because it involves fewer travel expenses and administration cost and consumes less time. Cluster sampling takes into account large population. The administration of systematic sample is really fast, very simple to use, saves time and cost and checks bias in subsequent selections. It is convenient when the researcher has a list of units in population and allows the researcher to add a degree of system or process into the random selection of subjects and has the assurance that the population is evenly sampled. The non-probability sampling technique of the study was purposive sampling. The procedure applied to collect qualitative data was in identifying and reaching the key informants on particular themes. Purposive sampling procedure involved selection of sample and the nature of the research objective. This was used to identify and conduct informants' interviews for various government departments, non-government organizations (NGOs) and the local leaders. The purposive sampling was also used in selection of participants for group discussions. Purposive sampling is appropriate when informants have specific type of knowledge and skill required in the study. It was also used together with qualitative and quantitative methods of data collection and statistical analysis such as regression methods.

3.5 Rresearch instruments-

This section deals with the research instruments used to collect data like questionnaire since it was the most convenient way of collecting information and finally pre-test the instruments to determine their validity and reliability.

3.5.1 Data collection method

Cooper & Schindler (2000) states that data collection method is based on questionnaire which is important instruments of research because it affords effective way of collecting information from a large literate sample in a short span of time and with a minimum cost compared to other methods. All questionnaires facilitate easier coding and analysis of the data collected. The questionnaires used both closed and open ended questions. Closed ended questions ensure the respondents are restricted to certain categories in their responses, while open ended questions were used where research objective explored other possible responses that differ from respondents to respondents. Rating questions dealt with demographic statistics such as age, gender, experience and the position at the WWIDP. The first section sought to determine the cultural factors influencing WWIDP project to achieve sustainability. The second part asked the respondents to show how managerial and financial skills influence WWIDP project to achieve sustainability, while the third part asked them to show how technological factors influenced WIDDP project sustainability. Finally the fourth part asked them to show how stakeholder's participation in monitoring and evaluation influenced WWIDP project to achieve sustainability.

3.5.2 Pre-testing of the instruments

Before the research instruments were finally administered to the respondents, pre-testing was conducted to ensure that the questions are relevant, clearly understandable and make sense. The pre-testing aimed at determining the validity and reliability of the research tools including the wording, structure and sequence of questions. The questionnaire was developed by the researcher and a pilot test was carried out. The pilot test was administered on 4 employees and 10 farmers. The instruments were revised on the findings that were reported. The result from the pre-test groups was not included in the final findings.

3.6 Validity of the instrument

Bridget & Edwin (2005) stated that validity is the degree by which the sample of the test items represents the content that is designed to measure. Saunders et al (2007) indicated that the content validity is a measure of the degree in which data is collected using a particular instrument that represent a specific domain or content of a particular concept as intended. Lacety & Jensen (1994) define validity as making common sense and being persuasive and seeming right to the reader, while Cronbach (1971), states that validity refers to results that have the appearance of truth or reality. A pilot study was conducted to define the research instrument so that results obtained from the field would be a true representation of the situation on the ground. So, validation of the research instruments was important to this study as it ensured that the study collected relevant information to answer the several questions.

Mugenda & Mugenda (2003) stated that the usual procedure in assessing the content of validity of a measure is to use the professional or expert in a particular field. Therefore in order to establish the validity of the research instrument, the researcher sought the opinion of expert in the field of study especially the researcher's supervisor and lecturer. This facilitated the necessary revision and modification of the research instruments to enhance instrument validity.

3.7 Reliability of the instrument

This is the consistency of measurement that is frequently assessed using the pre-test reliability method. Reliability is increased by testing diverse sample of individuals or by using uniform procedures. Reliability gives the internal consistency of data to be collected to ensure the data has certain internal consistency pattern. When no pattern is found in the responses it will indicate that probably the test is too difficult and as a result the respondent gives the answers randomly. Cooper & Schindler (2003) stated that, reliability of the research instrument was entered through a pilot study that was done in the pre-test as a pilot group of 45 respondents. The respondents in this study were conveniently selected since statistical conditions were necessary in the pilot study. However the pilot test was not included in the actual study.

3.8 Data collection procedure

The data collected in this section were done through a self-administered questionnaire for the respondents. The researcher obtained approval from the university and a permit from the National Council for Science and Technology to conduct the study. The researcher then explained to the respondents the purpose of the study and offered guidance to the way the respondents filled the questionnaire before administering the questionnaire. For those respondents with difficulties in reading and filling questionnaire, the research interviewed and filled their information in the questionnaire for them.

The questionnaires were personally administered by the researcher with the help of the research assistants who were trained in research methods. This method of administration is justified as opposed to the pick and drop method of administration. Personal administration of the questionnaire helped in carrying out data cleaning while on the field which ensured that data collected was adequate for the purpose of the research. A letter introducing the purpose of the research and copies of the questionnaire were given to the respondents, where necessary the researcher and the assistants discussed the questionnaire with the respondents to further clarify their answers to ensure that the data collected were adequate for the research.

3.9 Data analysis

The data analysis was based on qualitative approach using descriptive statistics, cross tabulation and frequency distribution. Hopkins (2006) stated that cross tabulation and frequency distribution are descriptive statistics that are used to describe the distribution of one variable or the distribution between two or more variables. Cooper & Schindler (2003) stated that frequency distribution and cross tabulation provided a simple method for conveying data. Pearson correlation analysis was used to determine factors that have casual relationships. The findings were presented using tables for further analysis and to facilitate comparison. This generated quantitative reports through tabulation, percentages and measures of central tendency.

The data analysis tool used were statistical package for social science (SPSS) since versatility was afforded by the statistical package. The raw data was cleaned in order to correct errors and omissions to ensure accuracy of the data and questionnaire was then coded individually and inputted into the statistical package for social science (SPSS) for analysis. Correlation analysis

was also carried out to determine the variable that had causal relationship. The result was presented in form of tables for ease of interpretation.

3.10 Ethical considerations

For the purpose of the study, the researcher sought approval from the University of Nairobi and a letter granted from National Council of science and Technology to allow the researcher to carry out the research. The researcher obtained approval from the National council of science and technology to conduct the study. The researcher used the two approval letters for self-introduction to the county government and the local administration and the WWIDP management to conduct the research. The researcher then explained the purpose of the study to the respondents and assured them of confidentiality of their responses and identities. The researcher adhered to the appropriate behavior in relation to the right of the respondents. A verbal consent was sought from sample respondents before being interviewed.

3.11 Operational definition of variables

Objective	Variable	Indicators	Measures	Measurement	Data collection	Measurement Tools
To establish the influence of cultural practice on the WWIDP sustainability	Local knowledge & resources use. Gender mainstreaming	Presence of social network in the project. Presence of local leaders in project decision making. Share of proved benefits. Ratio of men to women involved in project management	Number of local initiatives undertaken. Composition of project beneficiaries. Actual number of household allotted plots/farm. Composition of clans with farm plots. Number of women in the leadership position	Ordinal	Descriptive	frequencies percent tabulation
To assess the influence of management skills & training on WWIDP project sustainability	Technical skills & training Financial record keeping & marketing	Level of education & training for project management Availability of training on project management. Frequencies of trainings or education tours on beneficiaries/stake holders undertaken by project management. Availability of financial system used & records kept. Availability of storage	Academic qualification of project management team, Number of years the project manager has served in other relevant projects. Actual number of those trained Level of management skills possessed by management team. Number of financial reports	Ordinal	Questionnaire Key informants Interviews Focused group discussion	Frequency Percentage Tabulation

		facilities/marketing infrastructure	made. Records of financial cash flows kept. Actual number of storage facilities in the project.			
To examine the influence of the appropriate technology use on WWIDP sustainability	User-preference & technology use Low cost/micro irrigation technologies PPPS models adopted	Availability of innovative technologies adopted Type of irrigation technologies adopted in the project Qualification & number of trainers Availability & accessibility of spare parts. Type equipment & number of stores.	Number of locally available technologies. Number of technical experts to repair irrigation infrastructure. Number of spare parts store / warehouses Number of meters installed to monitor water	Ordinal	Questionnaire Key informants Interviews Focus group discussion	Frequent Percentage Tabulations
To determine the influence of participatory monitoring and evaluation on the WWIDP sustainability	Shared decision making Shared performance/result based management Participatory tracking of project inputs & outcomes	Availability of participatory monitoring & evaluation Availability of P M & E tools in the WWIDP project Stakeholders involved in the project P M & E process	Number of P M & E carried out Composition of the shareholders involved in the P M & E process Number of feedback reports received by project management	Ordinal	Questionnaire Key informants interviews Focused group discussion	Frequency Percentage Tabulations

CHAPTER FOUR

DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSION

4.1 Introduction

This chapter presents data that was collected from the field. Clarifications which incorporate exchanges are then made accessible in this section in order to clarify and promote the discoveries in connection to the study goals. The Broad objective of the study was to assess factors influencing project sustainability of Wei Wei Integrated Development Project (WWIDP) in West Pokot County, Kenya. The reliability of the data collected for the study was determined through ascertaining the reliability of the questionnaires and interview schedules.

4.2 Response rate

The target population was 225 farmers, 8 WWIDP (5 WWIDA & 3 KVDA) employees, 8 WWIDA committee, 2 Italian technical experts, 2 County government agricultural officers, 3 local leaders and 5 community elders involved in the allocation of plots to the individual farmers. According to Mugenda and Mugenda (2003), a 50 percent response rate is adequate, 60 percent good and above 70 percent is rated very well. This also concurs with Kothari (2004) assertion that a response rate of 50 percent is adequate, while a response rate greater than 70 percent is very good. This implies that based on this assertions; the response rate in this case of 83.3 percent is very good. The results are shown in table 4.1below

Table 4.1: Response rate

Response Rate	Frequency	Percent
Filled and returned	210	83.3
Unreturned	43	16.7
Total	253	100

4.3 Social and Demographic Characteristics

The study sought to ascertain the background information of the respondents involved in the study. The background information points at the respondents' suitability in answering the questions.

4.3.1 Resident of Wei Wei Ward

The respondents were requested to indicate whether they are residents of Wei Wei ward. The findings were as shown in the table 4.2 below

Table 4.2: Resident of Wei Wei Ward

	Frequency	Percentage
Yes	202	96
No	8	4
Total	210	100

From the figures above, the findings indicate that 96% of the respondents are residents of Wei Wei Ward, while 4% are non-residents. This implies that the respondents have a good knowledge of the ward and the information given is relevant to the study.

The study further wanted to find out how long the respondents have stayed in Wei Wei ward. The findings are shown in table 4.3 below.

Table 4.3: Number of years lived in the area

	Frequency	Percentage
less than 5 years	6	3
10-20 years	13	6
20-30 years	26	12
31 years and above	165	79
Total	210	100

From the figures above, 79% of the respondents have lived in Wei Wei ward for 31 years and above, 12%, for 20-30 years, 3% less than 5 years, while 6% have lived there between 10-20 years. The findings indicate that more than 50% of the respondents have lived in Wei Wei for more than 25 years. This implies that they have a well understanding of the area and the information given by them is relevant to the study.

4.3.2 Gender of the Respondents

The study sought to find out the gender of the respondents in the area of study. The findings are shown in table 4.4 below.

Table 4.4: Gender of the Respondents

	Frequency	Percentage
Male	151	72
Female	59	28
Total	210	100

From the figures above, 72% of the respondents were male, while 28% were female. This implies that men are dominant and active participants in decision making than women. This concurs with Yahaya observation in Northern Nigeria that women were culturally secluded from participating actively in the economic and agricultural irrigation project activities (Yahaya, 2002). Ngigi observation in western Kenya show how gender bias and discrimination has hindered women from actively participating in and contributing more on the project development than men who are the dominant and active decision makers in the community (Ngigi, 1999).

4.3.3 Age of the respondents

From the study respondents were asked to indicate their age. The age distribution of the respondents is shown in Table 4.5 below

Table 4.5: Age of the respondents

	Frequency	Percent
26-40 years	45	21.4
41-55 years	25	11.9
56 and above years	140	66.7
Total	210	100

The study found out that 66.7% of the respondents were above 56 years of age, 21.4% of the respondents were 26-40 years, while 11.9% of the respondents were 41-55 years.

4.3.4 Position in WWIDP

The study sought to find out the positions of the respondents in WWIDP and presented the results as shown in table 4.6 below.

Table 4.6: Position in WWIDP

	Frequency	Percent
Manager	2	1.0
Employee	8	3.8
Farmer	187	89
Technical expert	5	2.4
Committee member	8	3.8
Total	210	100

From the figures, 89% of the respondents are farmers, 3.8% committee members, 3.8% employees, 2.4% technical experts, while 1.0% managers. This implies that farmers occupy central place in the project, so they have knowledge and are suitable in contributing more to the study about the factors influencing WWIDP sustainability.

4.3.5 Level of education

The respondents were requested to indicate their level of education. The findings were as shown in table 4.7 below.

Table 4.7: Level of education

	Frequency	Percentage
Never went to School	83	39.5
Primary	99	47.1
Secondary	16	7.6
College	8	3.8
University	4	2
Total	210	100

From the table, 47.1% of the respondents are primary holders, 39.5% never went to school, 7.6% secondary school holders, 3.8% are college holders, while 2% are university holders. The findings indicate that the majority of the respondents hold primary education and those who never went to school. The low rate of WWIDP farmer's education relates to Sishula (2005) observation in Tyhefu Irrigation scheme in South Africa those farmers had limited training capacity and skills required to run the project. Hence they require various skills through training to enable them to achieve independence for sustainability.

4.3.6 Occupation of the respondents

The study sought to find out the occupation of the respondents. The findings are shown in table 4.8 below.

Table 4.8: Occupation of the respondents

	Frequency	Percentage
Farmer	182	86.7
Livestock owner	15	7.1
Government employee	5	2.4
WWIDA employee	8	3.8
Total	210	100

From the table, 86.7% of the respondents were farmers, 7.1% livestock owners, and 2.4% are WWIDA employees, while 2.4% are government employees. The findings indicate that majority of the respondents are WWIDP farmers. This implies that the respondents have the right knowledge to give relevant information on the factors influencing WWIDP sustainability.

4.3.7 Average level of income of the respondents

The respondents were requested to indicate their average level of income. The findings are as shown in the table 4.9 below

Table 4: 9 Average level of income of the respondents

	Frequency	Percentage
Less than 2500	27	12.9
2,501 – 5,000	120	57.1
5,001 - 10,000	21	10
10, 001 - 15,000	18	8.6
15,001 - 20, 000	16	7.6
20,001 and above	8	3.8
Total	210	100

From the table, 57.2% of the respondents average level of income is between 2,501-5,000, 12.9% is less than 2,500, 10% is 5,001 - 10,000, 8.6% is 10,001 – 15,000, 7.6% is 15,001 – 20,000, while 3.8% is 20,001 and above.

The findings indicate that majority of the respondents’ average level of income ranges between Kshs, 2,500-5,000. This implies that the WWIDP target of raising the beneficiaries’ livelihoods has not yet been achieved. This finding is contrary to Lonyangapuo (2007) assertion that, WWIDP has raised the farmer’s income substantially, yet Tango International (2010) observed that sustainability of a particular project depends largely on its overall impact on participant’s households.

4.4 Cultural Practices Influence on WWIDP Sustainability

The study sought to find out the cultural practices influence on WWIDP sustainability. The findings are shown in table 4.10 below.

Table 4.10: Statement on cultural Practices Influence on WWIDP Sustainability

	Mean	Std. Deviation
People from different cultures/clans in the area benefited from the irrigation	4.22	1.10
Farming united people from different cultural/clans in the area	3.80	1.34
Irrigation scheme used social network amongst the farmers and local residents	2.20	1.17
Irrigation farming has enhanced partnership between the local farmers, the government agencies, county government and NGOs	2.33	1.40
WWIDP builds community identity	4.16	1.25
Through irrigation farming cultural norms/values are upheld in the surrounding community	2.71	1.43
The WWIDP has positively enhanced gender equity to ensure increased crop production and household income	2.73	1.56
WWIDP has improved food security by reducing dependency on relief food supply in the area	4.31	1.16

WWIDP has facilitated participation of local farming community	2.49	1.51
WWIDP has encouraged local farmers to conserve soil and water resource and other natural resources	2.20	1.30
The local farming community has gained substantial knowledge and technical skills from the WWIDP	2.41	1.30
Gender participation/involvement is critical for the sustenance & productivity of the WWIDP	4.04	1.28

From the table, the majority of the respondents strongly agreed that, people from different cultures/clans in the area benefited from the irrigation, WWIDP builds community identity, WWIDP has improved food security by reducing dependency on relief food supply in the area, and gender participation/involvement is critical for the sustenance & productivity of the WWIDP. This is supported by the means of 4.22, 4.16, 4.31, and 4.04 respectively. From the findings, some respondents were neutral as to the cultural practices that influence the sustainability of WWIDA. They were neutral that, farming united people from different cultural/clans in the area with the means of 3.80.

From the table, the majority of the respondents strongly disagreed that the irrigation scheme used social network amongst farmers and local residents, Irrigation farming enhanced partnership between the local farmers, the government agency (KVDA), county government and NGOs, through irrigation farming cultural norms/values are upheld in the surrounding community, the WWIDP has positively enhanced gender equity to ensure increased crop production and household income, WWIDP has facilitated participation of local farming community, WWIDP has encouraged local farmers to conserve soil and water resource and other natural resources, and the local farming community has gained substantial knowledge and technical skills from the WWIDP. This is supported by the means of 2.20, 2.33, 2.71, 2.73, 2.41 & 2.49 respectively.

The findings that indicate people from different cultures/clans in the area benefited from the irrigation, while WWIDP builds community identity concur with UNESCO (2006) assertion that project sustainability ensure the project restores and cultivate a strong sense of community self-worth and dignity. The finding that WWIDP has improved food security by reducing dependency

on relief food supply in the area agree with Matthew and Herbert (2004) observation that sustainable project contribute towards improving the quality of life of the local people for the project to achieve sustainability. Lonyangapuo (2007) adds that, WWIDP has raised the farmer's income substantially while reducing dependency on government and NGOs supplied relief food. Likewise the finding that gender participation/involvement is critical for the sustenance & productivity of the WWIDP agree with Peter (2004) assertion that gender mainstreaming and equity reduces the risks of gender bias. Involving women in the project grass root economic activities provide them the basic forum for creating awareness on critical issues of health and hygienic and empower them to be proactive in promoting children education and resolve social ills like excessive alcohol consumption prevalent in the project area.

The respondent's neutrality on the cultural practice that influence project sustainability that has not enhanced awareness among the beneficiaries is contrary to Ledwith (2005) observation that the community development goal depends largely on people's ability to express their values, self-reliance, satisfy their basic needs and greater participation and accountability in the project. The respondents disagreement that WWIDP encouraged local farmers to conserve soil, water resource and other natural resources is contrary to Tafara (2013) assertion that sustainable development involves developing local and self-reliant economy that does not damage the social wellbeing of communities but ensure they employ integrative and holistic home-grown solutions and strategies when combined with government policies and programs designed to bring about multiple objectives of sustainability.

The finding that majority of respondents strongly disagree that irrigation scheme used social network among the farmers is contrary to Tango International (2009) observation that for a project to contribute to sustainable development and improve sustainability, the project implementers must draw on and promote local knowledge and practice in farming. Regarding respondents' disagreement that Irrigation farming enhanced partnership between the local farmers, the government agencies (KVDA), county government and NGOs working in the area is contrasted by Tango International (2009) observation in South Asia where IFAD established strong collaborative mechanism with NGOs working in the region and used social mobilization strategy to enhance farmers training, rural finance and direct project supervision. Hence Shediak-Rizkallah (2010) observed that, cultural values must be used as building blocks in the best

interest of organization rather than imposing structural frameworks that are at not in line with the local people aspirations. Thus, Ngigi (1999) decried poor and deteriorating relationship between local farmers and the government managed irrigation agencies as the case of NIB managed Mwea Irrigation scheme that adopted centralized management system to the detrimental relationship with its stakeholders. Hence, Ngigi calls for a paradigm shift in large scale irrigation schemes management to design participatory management strategy that enhances service delivery and accountability of smallholder irrigations for sustainability in Kenya.

The majority of respondent's disagreement that the local farming community has gained substantial knowledge and technical skills from the WWIDP corresponds to Tango International (2009) observation that, for the project to contribute to sustainable management and improve sustainability, project implementers should draw on and promote local knowledge and practice in farming. Also unlike WWIDP, Lynch et al (1987) observed that, the WARDA irrigation project in Senegal, West Africa used local mobilization strategies that enhanced irrigation system economic viability and sustainability. However, the like WWIDP, WARDA strategies failed because they were planned and built with imported technologies, engineers, designers and agronomic experts to supervise construction and manage the irrigation system, while ignoring the people's knowledge, values and contribution.

4.5 Management training and Sustainability of WWIDP

4.5.1 Managers of WWIDP

The study sought to find out who manages WWIDP. The findings are shown in table 4.11 below

Table 4.11: Managers of WWIDP

	Frequency	Percentage
Project Committee	54	25.7
Elected leaders	21	10
Politician	7	3.4
Project Manager	120	57.1
Farmers	8	3.8
Total	210	100

From the table, 57.1% of the respondents indicated that WWIDP is managed by project managers, 25.7% indicated project committee, 10% indicated elected leaders, 3.4% indicated politicians, while 3,8% indicated farmers. The findings indicate that majority of the respondents agree WWIDP project is managed by the project managers.

The study further wanted to find out whether those who manage respond adequately to the concerns whenever raised. The findings are shown in table 4.12 below.

Table 4: 12: Managers response to the concerns raised

	Frequency	Percentage
Yes	48	23
No	162	77
Total	210	100

From the table, 77% of respondents indicated that managers don't respond to the concerns raised, while 23% indicated that they do respond to the concerns when they are raised. The finding implies that the failure of managers to respond to the concerns raised has influenced negatively WWIDP sustainability. This finding is contrary to Gitonga (2013) assertion that communication is one of critical leadership component for sustainability that ensures sustainable organization maintains positive relationship with its stakeholders and responds to the farmers felt needs appropriately and timely.

The study wanted to find out whether the appointed people to manage the irrigation scheme are effective in meeting the expectations of the people. The findings are shown in table 4.13 below.

Table 4.13: Effectiveness of appointed managers to meet peoples' expectations

	Frequency	Percentage
Yes	30	12
No	180	88
Total	210	100

From the table, 88% of the respondents indicated that the managers are not effective enough to meet the peoples' expectations, while 12% indicated that they are effective enough. The findings indicate that for WWIDP sustainability, the project managers need to be effective towards the concerns raised by the people.

From the findings, the farmers agreed that to address manager's ineffectiveness, managers need proper training to enable them respondent effectively to their concerns. This finding concurs with Tango International (2009) observation that, one of the critical factors to project sustainability is the availability of trained personnel. Consequently, Karanja (2014) observed that, for the project to be successfully implemented and sustained, the project management team must be offered quality training on the necessary tasks identified during planning and post implementation phases of the project that matches effectively and efficiently project post implementation requirement.

The study wanted to find out about the management skills that affect the sustainability of the WWIDP. The findings are shown in table 4.14 below.

Table 4.14: Statement on management training influence on sustainability of WWIDP

	Mean	Std. Deviation
There is sufficient technical expertise offered to manage the project	2.37	1.37
Project managers have adequate knowledge & experience to manage the project/farm	2.92	1.52
There is sufficient human resources for irrigation sustainability	2.25	1.37
Advice for technical engineering was made available to the irrigation scheme during & after project design and implementation	2.43	1.54
There are clear and achievable estimates in the project schedules & budget	3.24	1.48
Risk management is satisfactorily planned	2.39	1.43
The leadership skills of the manager is satisfactory	2.92	1.40
The farmers/beneficiaries are satisfied with the overall management of the WWIDP through the government agency (KVDA)	2.14	1.46
Cordial relationship exist between the beneficiaries (farmers), the	2.49	1.49

government irrigation agency KVDA and the Italian experts

WWIDP management has increased the livelihoods of the farmers and general economic wellbeing of the local people 2.84 1.39

The WWIP is complex and require multifaceted management skills to operate & manage it 3.75 1.37

There is inadequate financial management in the project 3.59 1.47

From the findings, the respondents were in agreement that, there are clear and achievable estimates in the project schedules & budget, the WWIP is complex and require multifaceted management skills to operate & manage it and there is inadequate financial management in the project. This is supported by means of 3.24, 3.75 and 3.59 respectively.

The majority also disagreed that, there is sufficient technical expertise offered to manage the project, project managers have adequate knowledge & experience to manage the project/farm, there is sufficient human resources for irrigation sustainability, advice for technical engineering was made available to the irrigation scheme during & after project design and implementation, risk management is satisfactorily planned, the leadership skills of the manager is satisfactory, the farmers/beneficiaries are satisfied with the overall management of the WWIDP through the government agency (KVDA), cordial relationship exist between the beneficiaries (farmers), the government irrigation agency KVDA and the Italian experts, and WWIDP management has increased the livelihoods of the farmers and general economic wellbeing of the local people. This is supported by means of 2.37, 2.92, 2.25, 2.43, 2.39, 2.92, 2.14, 2.49 and 2.84 respectively.

The respondent's agreement about project complexity and multi-faceted skills is contrary to Yahaya (2002) assertion that, the multifaceted project management is hampered by lack of human centered approach with implication for sustainability and relevance to the people affected by the project change directly or indirectly. Though, WWIDP had clear and achievable project estimates, schedules and budget, however, the Daily Nation (Saturday August 3, 2013) report shows that, its leadership has been very poor, making the project to experience myriads of challenges that affected its overall sustainability. In this regard, Lam et al (2006) added that, in spite of the Italian Development cooperation (IDC) investing huge amount of money in funding WWIDP in Sigor, the project sustainability has been questioned because the farmers do not have adequate funds to carry out farm operation and maintenance. Hence, Ngigi (1999) lamented

financial mismanagement which has contributed to the collapse of most irrigation projects in Kenya leading to irrigation project sustainability disappointments.

In regard to the respondents' disagreement on sufficient technical expertise offered to manage the project, project managers have adequate knowledge & experience to manage the project/farm and that there is sufficient human resources for irrigation sustainability. These findings are in line with Karanja (2014) observation that, to increase the chances of project sustainability success, the management team should be trained on the present project financing, accountability and participatory monitoring and evaluation process. Concerning respondent's disagreement that there is sufficient technical expertise offered to management the project, Karanja observed that generally small-scale irrigation schemes in Kenya lack financial capacity to train their project management team on essential skills needed to effectively implement and sustain the projects. This is because smallholder irrigation developments, unlike large scale irrigation schemes have less formal trainings for their farmers because they rely mainly on informal trainings. Moreover, Karanja cited the case of Limpopo irrigation scheme in South Africa which lacked education and skills to run the irrigation scheme and affected negatively their project productivity and hampered its sustainability.

Likewise, the finding that, there is lack of technical engineering advice offered to the irrigation scheme, concur with Lynch et al (1987) observation that, in Sub-Sahara Africa various irrigation agencies failed to make irrigation system sustainable because they imported technologies, engineers, designers and agronomic experts to design and supervise the schemes construction and ignored the local people's involvement, knowledge, values and contribution. The beneficiaries dissatisfaction with government irrigation agency (KVDA) and the less cordial relationship existing among the WWIDP stakeholders is largely attributed to the WWIDP adoption of centralized management system (top-down system) which Karanja (2014) asserted has proved unsustainable making farmers to be uncomfortable with such system overexploitation and lack of control in marketing their produce. Also farmers have not realized the benefits of such irrigation interventions though its aim was to improve their living standards, leaving them to wallow in abject poverty.

4.6 Technology use and project Sustainability of WWIDP

In this section, the study looked at how technology use influences the WWIDP sustainability. The findings are discussed below.

The study wanted to find out how the respondents use water supplied to irrigate their plots. The findings are represented in table 4.15 below.

Table 4.15: Means of water Supply to the farm

	Frequency	Percentage
Drip/Surface Irrigation	7	3
Use of sprinkler	203	97
Total	210	100

From the table, 97% of the respondents indicated that they use sprinkler means to supply water to the farm, while 13% use drip/surface irrigation to supply water to their plots. This implies that most farmers are more comfortable with the use of sprinkler for irrigation. This means WWIDP farmers were oriented to more than one type of irrigation technology enable them assess various technology adoption and viability.

This finding contrast sharply Saa et al (2010) observation that, there are simple irrigation technology that cost much less than US\$ 15-200 which can be adopted and used to meet development aspirations of countries threatened by dynamic food crisis and increased poverty. There are also some low cost micro-irrigation technologies that have shown considerable success in countries like India, China and Nepal which can be useful for micro-irrigation system in Africa. Yahaya (2000) advices that, research be conducted on the problems and identify priorities that are in line with the needs and opportunities of the farmers rather than those directed by the development planners preference. Unlike WWIDP, Yahaya observed that Bakolori irrigation scheme in Nigeria, adopted and used a mixture of both traditional and modern technologies for small-scale irrigation enterprises with a desire for peasant farmers which are less sophisticated and expensive.

The study also wanted to find out whether the water that is supplied to the farm/plot through one of the above means is measured to be monitored for distribution and use. The findings are shown in table 4.16 below.

Table 4.16: Whether the water that is supplied to the farm/plot through one of the above means is measured to be monitored for distribution and use

	Frequency	Percent
Yes	12	6
No	198	94
Total	210	100

From the findings, 94% disagreed that the water that is supplied to the farm/plot through one of the above means is measured to be monitored for distribution and use, while 6% agreed it is measured. This implies that the water that is supplied to the farm/plot through one of the above means is not measured to be monitored for distribution and use.

The study further asked the respondents to indicate how the water is measured to be monitored. The findings are represented in table 4.17 below.

Table 4.17: How is the water measured to be monitored

	Frequency	Percentage
Freely distributed through equal hydrant & lateral pipes to each individual farm plot	166	79
Through meter installed	44	21
Total	210	100

From the figures above, the study found out that 79% of the respondents noted that the water is freely distributed through equal hydrant and lateral pipes to each individual farm plot, while 21% indicated that it is done through meter installed. From the above findings, it is clear that water distributed and supplied to the individual farmer plot is not measured for monitoring. This means the project beneficiaries were not involved in the initial project initiation phase to make informed

choice regarding the technology design and use. This is contrary to Yahaya (2002) observation that, the user participation and their acceptance of the new technology depend largely on their involvement in the project selection, design and construction. Therefore, Yahaya laments that the most serious problems associated with irrigation development in Africa relate to storage and delivery of water as well as the system of irrigation programs adopted and used.

The researcher wanted to establish whether the respondents do pay for water that they use on their farms. The findings are shown in table 4.18 below.

Table 4.18: Paying for water

	Frequency	Percentage
Yes	162	77
No	48	23
Total	210	100

The findings indicated that, 77% of the respondents pay for water, while 22% don't pay. This implies that the water used for irrigation is not free as shown in table 4.19 below.

Table 4.19: Payment for water in Kshs

	Frequency	Percentage
Kshs 100 - 500	9	4
Kshs 501 – 1,000	22	11
Kshs 1,001 – 1,500	49	23
Kshs 1,501 – 2,000	126	60
Kshs 2,001 and above	4	2
Total	210	100

From the figures above, the findings indicate that 60% of the respondents pay between Kshs. 1501 – 2,000, 23% pay between Kshs. 1,001 – 1,500, 11% pay between Kshs. 501 – 1,000, 4% pay Kshs. 101 – 500, while 2% pay Kshs. 2001 and above. The findings indicate that majority of the respondents 60% pay Kshs. 1,501 – 2,000 for the water that they use for irrigation.

This low water payment for irrigation use corresponds to the Sunday Nation Newspaper November 22, 2005 report that, Kenya’s irrigation development system is not economically and environmentally viable. Ngigi (1999) concurs that, in Kenya high interest rate for the loans offered to small-scale farmers with low repayment period has made farmers reluctant to cost-share irrigation construction activities with government irrigation agencies due to low yields and poor food prices. However, farmers are willing to pay higher water fee for the irrigation services offered, if it results in better services with high production and income returns.

The study wanted to find out how often they do pay water fee. The findings are shown in table 4.20 below.

Table 4.20: How often do you pay water fee charges?

	Frequency	Percentage
Monthly	9	25
Quarterly/season	148	71
Annually/yearly	53	4
Total	210	100

From the figures above, 71% of the respondents indicated that they pay for water per season/quarterly, 25% pay annually/yearly, while 4% pay monthly. This implies that most farmers are more comfortable with paying the water per season/quarterly. This seasonal water fee payment correspond to Ngigi observation that, in Kenya irrigation systems experience limited funding which has disadvantaged poor farmers, while, financial mismanagement has caused projects to perform poorly leading to irrigation systems collapse and it is the reason irrigation sustainability in Kenya is discouraging and disappointing venture.

The study further wanted to find out the mode of payment through which the respondents make their payments. The results are represented in table 4.21 below.

Table 4.21: Mode of payment

	Frequency	Percentage
Mobile money payment (M-pesa)	10	4.8
YU cash	1	0,5
Airtel money	2	0.9
Bank accounts	8	3.8
Cash	12	5.7
Farm produce payment deductions	177	84.3
Total	210	100

From the table, 84.3% of the respondents indicated that, they make their payments through farm produce payment deductions, 5.7% through cash, 3.8% through bank accounts, 4.8% through mobile money payment (M-pesa), 0.5% through YU cash, while 0.9% through Airtel money. The findings indicate that majority of the farmers make their payments through farm produce deductions than through other modes of payments. This imply that WWIDP financial management system is poor, which correspond to Sishula (2005) observation that, in the Western Cape Province, South Africa, small-scale farmers have limited business management skills to keep proper farm account and records because they only possess general farming skills without innovative specialized skills and practical training suited to their local needs and situations. Ngigi (1999) observed that, the Kenyan government should build farmer's capacity to prepare them assume irrigation management responsibilities adequately since irrigation management schemes lack reliable databases that provided farmers with proper information to make informed decisions and practical orientation provided by graduates and extension services to the farmers.

The researcher wanted to find out the challenges that affect the irrigation scheme infrastructure. The findings are shown in table 4.22 below.

Table 4.22: The challenges affecting the irrigation scheme infrastructure

	Frequency	Percentage
Breakages	86	40.9
Vandalism	43	20.5
Negligence	53	25.2
hydrant pipes blockages	14	6.7
Sprinkler breakdown	9	4.3
Stealing	5	2.4
Total	210	100

From the findings, 40.9% of the respondents noted that breakages is one of the challenges affecting irrigation scheme infrastructure, 25.2% noted lateral pipes negligence, 20.5% vandalism, 6.7% hydrant blockages, 4.3% sprinkler breakdown, while 2.4% noted stealing. The findings show that the major challenges affecting irrigation scheme infrastructure are breakages and hydrant pipes blockages.

Therefore, the management needs to look unto that to ensure smooth operation of the scheme infrastructure. In this regard, Ngigi (1999) observed that, intensifying evaluation of innovative development and application of small-scale irrigation technologies provide irrigation management with the basis for developing appropriate guidelines for future irrigation development and help give a strong basis for developing participatory technologies that focuses wholly on the user experience in handling and applying technologies to their local needs and situations.

The researcher wanted to find out whether the spare parts are available. The findings are shown in table 4.23 below.

Table 4.23: Spare parts availability

	Frequency	Percentage
Yes	46	22
No	164	78
Total	210	100

From the table, 78% of the respondents noted that there are no spare parts, while 22% said there are spare parts. This implies that the management needs to take good care of the scheme for sustainability of farming in Wei Wei ward. This can be done by adopting participatory management as Estrella et al (2000) observed that P M & E empowers stakeholders to assess and determine the impact of the risks encountered in the project and be able to take the necessary remedial actions required appropriately and timely.

The study further wanted to find out where the spare parts are gotten from if they are available. The findings are shown in table 4.24 below.

Table 4.24: Source of WWIDP spare parts

	Frequency	Percentage
at the WWIDP project warehouse	42	20
nearby farmers' store	8	4
nearby trading center's kiosk/auto spare shops	23	11
other far towns	93	44
imported from outside	44	21
Total	210	100

From the findings, 44% of the respondents noted that the spare parts are from other far towns, 21% noted are imported from outside, 20% noted at the WWIDP warehouse, 11% noted from nearby farmer's store, while 4% from nearby trading center's kiosk/auto spare shops. The findings indicate that though the higher percentages of the spare parts are found within the country, they are not within the reach of the local farmers.

The study sought to find out who repairs the facilities when they breakdown. The results are represented in table 4.25 below.

Table 4.25: Who repairs the facilities when they breakdown

	Frequency	Percentage
Government agency (KVDA) artisan	105	50
Ministry of agriculture and irrigation (county government works officer)	5	2.4
Italian technical team technicians	12	5.7
WWIDA farmers artisan	33	15.7
Local trading center artisan	55	26.2
Total	210	100

From the findings, 50% of the respondents noted that the facilities are repaired by the government agency (KVDA) artisan, 26.2% noted that they are repaired by local trading center artisan, 15.7% noted WWIDA farmer’s artisan, 5.7% noted the ministry of agriculture and irrigation (county government works officer), while 2.4% noted Italian technical team technician. The findings indicate that the repairs are majorly done by the government irrigation agency (KVDA), which is contrary to Sugden (2003) observation that, for the project to achieve sustainability, project stakeholders should be involved through developing sustainability tool that help them to access spare parts and requisite funds to actually operate, repair and maintain them.

The study also sought to know whether the people who do repairs have relevant management training. The findings are shown in table 4.26 below.

Table 4.26: Whether the people who do repairs have relevant management training.

	Frequency	Percentage
Yes	63	30
No	147	70
Total	210	100

From the study findings, 70% said that they don't have appropriate training, while 30% noted that they do have. This implies that WWIDP management needs to do a lot in terms of training the people responsible for the scheme repairs. This lack of WWIDP appropriate training relates to Sugden (2003) observation that, the community ability to keep project facilities operational for long time, involve possessing a blend of complex managerial, social, economic, institutional and technical abilities that are often dynamic, inter-linked and inter-dependence. However, Yahaya (2002) opines that the user participation and acceptance of the new technology depend largely on their involvement in the selection, design and project construction.

The study further wanted to know those who trained WWIDP trainees. The findings are shown in table 4.27 below.

Table 4.27: Trainers of WWIDP trainees

	Frequency	Percentage
Government technical training institute	9	4.3
On-site training by Italian expert team	87	41.4
Government irrigation agency (KVDA) trainer	50	23.8
WWIDA management	27	12,9
Own training from other training institutions	37	17.6
Total	210	100

From the figures above, 41.4% noted that the repairers were trained on-site training by Italian expert team, 12.9% noted were trained by WWIDA management, 23.8% noted were trained by government irrigation agency (KVDA) trainer, and 4.3% noted were trained by government technical training institute, while 17.6% have their own training from other training institutions.

The findings indicate that most of the training was initially done by the Italian training experts which implies that most of the training was done by the outside experts since the irrigation equipment's were imported from outside the country. However, Sugden (2003) observed that P M & E mechanism is required to guide project planners and managers to assess whether the ordinary farmers have the technical skills available within reasonable cost to repair and maintain them than depend on outside help. In addition, Geijer (1996) observed that, in Asia local farmers

relied heavily on external support to train their farmers than on the local trainers. This scenario is a true replica in Kenya where Karanja (2014) aver that, donor syndrome on small-scale irrigation schemes is the cause of lack of financial capacity to train project management team on essential skills needed for effective implementation and sustainability of the project thereby forcing them to rely heavily on informal training for the farmers.

The study wanted to find out how technology affects WWIDP sustainability. The findings are shown in table 4.28 below.

Table 4.28: statement on technology use influence on WWIDP sustainability

	Mean	Std. Deviation
The project uses modern technology	4.10	1.31
Use of modern technology has helped to curb poor management & accountability of the project	3.57	1.44
The advantages of technology in farm to enhance productivity depend upon its integration into the project objective	4.14	0.87
Sustainability of project infrastructure facilities depends on factors controlled by the project like training, technology viability & profitability & cost of the project construction quality?	3.65	1.39
Adoption of the technology is key to WWIDP sustainability as it eases operation & maintenance	3.80	1.27
Irrigation project that embrace technology exhibits better performance & sustainability	4.02	1.13
Sustainability driven by technology depend largely on the effective management & innovation process	3.78	1.25
Irrigation farm workers can provide information extracted from the records to improve members' satisfaction to project management?	3.31	1.29
Sustainability of WWIDP water distribution depend on factors controlled by project technology like cost of project construction quality	3.10	1.62
Enhancing productivity does not depend on its integration into the project objectives	2.90	1.33

As per the findings of the study, majority of the respondents strongly agreed that the project uses modern technology; the advantages of technology in farm to enhance productivity depend upon its integration into the project objective, and irrigation project that embrace technology exhibits better performance & sustainability. This is supported by means of 4.10, 4.14, and 4.02 respectively.

The results further indicates that majority partially agreed that the use of modern technology has helped to curb poor management & accountability of the project, sustainability of project infrastructure facilities depends on factors controlled by the project like training, technology use viability & profitability & cost of the project construction quality, adoption of the technology is key WWIDP sustainability as it eases operation & maintenance, sustainability driven by technology depend largely on the effective management innovation process, irrigation farm workers can provide information extracted from the records to improve members' satisfaction to project management, and sustainability of WWIDP water distribution depend on factors controlled by project technology like cost of project construction quality. This is supported by the means of 3.57, 3.65, 3.80, 3.78, 3.31, and 3.10 respectively. However few of the respondents disagreed with the findings of the study that enhancing productivity does not depend on its integration into the project objectives, with a mean of 2.90.

Though the above findings shows that project technology is very necessary for WWIDP sustainability, must be in line with Saa et al (2010) observation that any technology to be employed must first target the needs of the majority smallholder farmers to ensure equity, alleviate poverty and address food security in the area. On the advantages of technology to enhance productivity agree with Saa observation that technology technical viability alone is not enough to ensure irrigation sustainability to serve small-scale farmers, it must be technically economic and socially acceptable and adoptable to them. Saa asserted that, the African Maker Garden (AMG) version of technology adopted by the Sahel region in West Africa combined water management with improvement of crop production. Unfortunately, AMG technology is suited for the rich farmers since it is expensive which is out of the reach of poor smallholder farmers and yet is not water use efficient. Regarding the finding on project infrastructure facilities that depend on factors like training, technology viability and profitability and construction cost, is in line with the World Bank (1987) report that, major infrastructure facilities

should be intertwined with technical, social and economic factors to ensure projects success. Moreover, the finding that technology adoption is key to project sustainability, is in line with Saa assertion that, there is need for a favorable technology intervention that target the farmers needs and influence their decision to adopt it.

The study findings on irrigation project that embrace technology exhibit better performance and sustainability, sustainability driven technology depend on management effectiveness and innovation, and irrigation workers can provide information extracted from records to improve members satisfaction with project management agree with Saa observation that technology use lies in the technical knowledge offered to irrigators, system organization with regard to technical and extension support, irrigator’s business orientation and the degree of innovativeness. Alam et al (2012) also observed that in Pakistan, the integrated management (PIM) realized the essence of involving stakeholders in all aspect of irrigation management because it enhances farmers’ satisfaction with irrigation system. The finding on the sustainability of WWIDP water distribution that depend on factors controlled by project technology like cost of construction, quality and enhancing productivity does not depend on its integration into project objective. This finding agree with Yahaya (2002) observation that research should be done to identify problems and priorities that are in line with the needs and opportunities of the farmers which cannot be dictated by the preference of the development planners.

4.7 Stakeholders Participation in the Project Monitoring & Evaluation Influence on WWIDP Sustainability

4.7.1 Respondents participation in the initiation/start of the WWIDP

The study sought to find out whether the respondents were involved in the initiation/start of the WWIDP. The findings are shown in table 4.29 below

Table 4.29: Respondents participation in the initiation/start of the WWIDP

	Frequency	Percentage
Yes	38	18
No	172	82
Total	210	100

The findings show that, 82% of the respondents did not participate in the start of the WWIDP, while 18% of the respondents noted they participated. This implies that majority of the respondents were not engaged at the start of the WWIDP irrigation. This finding is contrary to Alam et al (2012) observation in Pakistan that irrigation planners and administrators recognized the usefulness of involving organized farmers in the irrigation project operation, management and maintenance for the irrigation project to realize its full potential.

The study further wanted to find out the area of beneficiaries participation-consultation at the start of the WWIDP. The findings are shown in table 4.30 below.

Table 4.30: Area of beneficiary’s participation/consultation at the start of WWIDP

	Frequency	Percentage
Contributed materials	140	66.7
As community leader/part of committee	40	19
Involved in the tracking of the project inputs and out puts	30	14.3
Total	210	100

From the table above, 66.7% of the respondents participated through in kind material contribution, 19% participated as local leaders (chiefs), while 14.3% were involved in tracking of the project inputs and out puts.

The findings indicate that majority of the respondents were not ready for the project though they coercively contributed materials in kind towards project construction. This finding is contrary to Tango International (2009) observation that project ownership by poor rural farmers is a critical social factor that contribute to project sustainability which ideally entails project beneficiaries involvement at all stages of the project cycle and ensure that it engages potential participants and other stakeholders prior to project design by supporting on-going local innovations.

The researcher further wanted to find out whether the respondent are aware of other partners/stakeholders involved in the WWIDP monitoring and evaluation. The results are shown in the figure in table 4.31 below.

Table 4.31: Other stakeholders involved in the WWIDP monitoring and evaluation

	Frequency	Percentage
Yes	67	32
No	143	68
Total	210	100

From the study findings, 68% of the respondents indicated they were not aware of other stakeholders involved in the WWIDP project monitoring and evaluation, while 32% noted that they were aware. This implies that majority of the farmers were not aware of other stakeholders involved in the WWIDP monitoring and evaluation. This finding is contrary to Ngigi (1999) observation that irrigation development involves defining clearly stakeholder roles and coordinating them well since it can impact negative on the irrigation development process. Ngigi states that, in Kenya, there has been less farmer integration in the project initiation phase and involvement in forming farmer's organization, in making decisions, resolve conflicts and active in project implementation activities. Therefore, in Kenya previous stakeholder's coordination and collaboration mechanism has been ineffective which hindered sustainable irrigation development from achieving their intended sustainability.

The study wanted to find out the extent to which the stakeholder's participation positively enhanced sustainability of the WWIDP. The findings are shown in table 4.32 below.

Table 4.32: Extent to which the stakeholder's participation positively enhanced WWIDP sustainability

	Frequency	Percentage
To a very low extent	94	45
To a low extent	56	27
To moderate extent	30	14
To a great extent	26	12
To a very great extent	4	2
Total	210	100

The findings shows that, 45% of the respondents were to a very low extent involved in the participation, 27% were involved to a low extent, 14% to the moderate extent, 12% to the great extent, while 2% to a very great extent.

The findings denote that most of the respondents were lowly involved positively in the project participation to enhance sustainability of the WWIDP. This is contrary to Sugden (2003) observation that lack of clarity on what makes project sustainable made Salima water aid program to develop participatory evaluation tool which helped them to focus less on project implementation and more on sustainability. Water aid also realized that there is no need of talking about sustainability if it cannot be measured and monitored using simple but user-friendly approaches to enable project management to assess project sustainability.

The study wanted to find out the benefits of the stakeholder’s participation towards participatory monitoring and evaluation of the WWIDP. The results are represented in table 4.33 below.

Table 4.33: Benefits of the stakeholder’s participation in the participatory monitoring and evaluation of the WWIDP

	Frequency	Percentage
Strong ownership	58	28
Timely infrastructure maintenance	41	19
Timely intervention/corrective measures undertaken	26	12
Proper mitigating measures put in place	22	11
Continuity of project	17	8
Expansion of the project	23	11
Better service delivery	7	8
Harmonious management relationship/conflict resolutions	6	3
Total	210	100

From the table, 28% of the respondents noted that P M & E has a benefit of strong ownership, 19% has a benefit of timely infrastructure maintenance, 11% has a benefit of proper mitigating measures put in place, 12% has a benefit of timely intervention/corrective measures put in place,

8% has a benefit of continuity of project, 11% has a benefit of expansion of the project, 8% has a benefit of better service delivery, while 3% noted that it has a benefit of harmonious management relationship/conflict resolutions. The findings indicate that, the stakeholder's participation in WWIDP P M & E has all the benefits which are very essential in the development ownership of the Wei Wei ward. These findings are collaborated by Alam et' al (2012) observation that, involving farmers in P M & E especially in decision making is likely to lead to sustainable increase in food production and development just as Pakistan PIM realized the importance of involving stakeholder's farmers in all aspect of irrigation management as it enhanced farmer's satisfaction with irrigation system.

The study further wanted to find out the extent to which the factors that relate to stakeholders participation in the project monitoring and evaluation affects WWIDP project sustainability. The findings are tabulated in table 4.34 below.

Table 4.34: Statement on the extent to which the factors that relate to stakeholders participation in monitoring and evaluation influence WWIDP sustainability

	Mean	Std. Deviation
Involvement of the project beneficiaries in the project monitoring & evaluation is critical for WWIDP sustainability	4.35	1.13
Stakeholder's are effectively involved in the project design, planning & implementation has enhanced WWIDP operation & maintenance facilities continuity	2.33	1.51
Stakeholder's participation in project monitoring & evaluation has enabled them to clearly understand their roles	1.92	1.24
Stakeholder's support has ensure the success of the collective designing through the project monitoring & evaluation mechanism	2.16	1.34
Stakeholder's involvement ensure WWIDP activities are managed effectively, monitor waste efficiently and so ensure financial sustainability	2.27	1.38
Stakeholder's involvement through strengthening networking ensure farmers assume responsibilities to own the project	2.20	1.35
Stakeholder's involvement in project monitoring & evaluation influence the directive and execution of the WWIDP development activities rather than merely being information and project benefits receivers	2.41	1.40
Local farmers involvement in the project monitoring & evaluation has increased project efficiency in repairing project facilities	2.35	1.41

Building partnership with other stakeholders through participatory monitoring & evaluation has improved relationships and enhanced problem solving capacities in the project	2.45	1.42
Through participatory monitoring & evaluation WWIDP has facilitated the local farming community to take development initiatives in the area	2.49	1.40
Through participatory monitoring & evaluation WWIDP has enabled local farmers to conserve soil and water resources and other natural resources	1.96	1.41
The local farming community has gained substantial technical knowledge & experience from participating in the WWIDP monitoring & evaluation process	2.39	1.30
Availability of participatory monitoring and evaluation in WWIDP	1.82	1.17
Regular monitoring with interval evaluation of project programs	1.78	0.98
Establishment of working project evaluation team with feedback	1.92	1.32

According to the findings, majority of the respondents strongly agreed that involvement of the project beneficiaries in the project monitoring & evaluation is critical for WWIDP sustainability which is represented by the mean of 4.35. However, majority disagreed that stakeholder's participation in project monitoring & evaluation has enabled them to clearly understand their roles, through participatory monitoring & evaluation WWIDP has enabled local farmers to conserve soil and water resources and other natural resources, availability of participatory monitoring and evaluation in WWIDP, regular monitoring with interval evaluation of project programs, and establishment of working project evaluation team with feedback. This is represented by the means of 1.92, 1.96, 1.82, 1.78 and 1.92 respectively.

Also a number of the respondents partially agreed that, the local farming community has gained substantial knowledge, technical skills & experience from participating in the WWIDP monitoring & evaluation process, through participatory monitoring & evaluation. WWIDP project has facilitated the local farming community to take development initiatives in the area, building partnership with other stakeholders through participatory monitoring & evaluation has improved relationships and enhanced problem solving capacities in the project, local farmers involvement in the project monitoring & evaluation has increased project efficiency in repairing project facilities, stakeholder's involvement in project monitoring & evaluation influence the directive and execution of the WWIDP development activities rather than merely being information and project benefits receivers, stakeholder's involvement through strengthening

networking ensure farmers assume responsibilities to own the project, stakeholder's involvement ensure WWIDP activities are managed effectively, monitor waste efficiently and so ensure financial sustainability, stakeholder's support has ensured the success of the collective designing through the project monitoring & evaluation mechanism and stakeholder's are effectively involved in the project design, planning & implementation has enhanced WWIDP operation & maintenance facilities continuity. This is evident with the representation of means of 2.39, 2.49, 2.45, 2.35, 2.41, 2.20, 2.27, 2.16 and 2.33 respectively.

The above findings indicate that for WWIDP sustainability to be achieved, stakeholders should make sure that the local farming community has gained substantial knowledge, technical skills & experience from participating in the WWIDP project monitoring & evaluation process. This is supported by Sugden (2003) observation based on a research report conducted on sustainability of water hand pump in Africa show that the facilities were basically failing due to large gaps in knowledge and understanding of the projects' design and management at all level of stakeholders' organizations. To address such knowledge gaps, Tango international (2009) observed that project implementers should draw on and promote local knowledge and practice in farming just as IFAD in South Asia did by promoting local participation that contributed to building grass root institutions that helped establish proper collaborative mechanism with other NGOs working in the region to enhance training and direct project supervision. The findings that through participatory monitoring & evaluation WWIDP has facilitated the local farming community to take development initiatives in the area is in line with Tango International (2009) observation that, project ownership by poor rural farmers is critical social factor to project sustainability as it entails involving project beneficiaries at all stages of project cycle and ensure project engages potential participants and other stakeholders prior to project design in supporting on-going local initiatives.

On the aspect of WWIDP failure to build partnership with other stakeholders through participatory monitoring & evaluation to improve relationships and enhance problem solving capacities in the project. This finding is in line with Gitonga (2011) observation that Kenya's irrigation project has adopted centralized management system which caused exploitation and loss of control in marketing farmer's produce. It also denied them opportunity to reap the benefits of the previous irrigation interventions, robbing them the intended improved living standard leaving

farmers to wallow in abject poverty. The finding on lack of local farmers' involvement in the project monitoring & evaluation to increase project efficiency in repairing project facilities, is contrary to Sugden (2003) assertion that, involving farmers in P M & E enable the stakeholder to carry out effective and timely repairs and access equipment that are necessary for project to operate effectively and efficiently. On the finding that stakeholder's involvement in project monitoring & evaluation influence the direction and execution of the WWIDP development activities rather than being mere information and project benefits receivers. This finding is in line with Estrella et al (2000) observation that, adopting PM&E ensures the project and programs are responsive to the genuine needs of the intended beneficiaries as it empowers stakeholders to take action and strengthen the project institutions through better progress of accountability and transparency. Moreover, PM&E ensure project accountability that demonstrate impact achievement where management responsibilities and authority enhance project oversight, transparency and improved consistent local support and responsive initiative-taking rather than the usual M & E process where farmers have little or no say in monitoring and evaluating project activities that directly affect them. Such conventional M & E system are dictated by the needs and aspirations of the funding agencies and policy makers and which are conducted by outside experts for the sake of maintaining objectivity while ignoring the project beneficiaries' critical role and insights. The findings on the stakeholder's involvement through strengthening networking to ensure farmers assume responsibilities to own the project is contrary to Sugden (2003) observation that effective PM&E ensure that project farmers are part of an existing multi-stakeholders network. This is also affirmed by Tango International (2009) observation that, the principle of stakeholder's project ownership through PM&E ensures that farmers are engaged in the project before the project is designed through supporting on-going local initiative. This finding is quite evident in India NERCORMP company approach which used local innovative to implement and promote long-term project sustainability to achieve a lasting impact by enjoining several self-help groups (SHGs) with the help of national resource management groups (NRMGs) to form clusters, federations and Apex bodies into sustainable strategy.

The findings on respondent's partial agreement on the stakeholder's involvement to ensure WWIDP activities are managed effectively, is contrary to Merrey (1997) observation that, using participatory monitoring and evaluation and feedback system help irrigation project management to assess the good measure for farmers' organization structures and performance in the project.

On the WWIDP lack of stakeholder’s involvement to manage WWIDP activities effectively, monitor waste efficiently and ensure financial sustainability is in sharp contrast to Karanja (2014) observation that, to increase chances of successful project sustainability, the management team needs to be trained on the present mitigating measures to enable project management to assess the challenges that cause projects to fail and to take the necessary action to address them, while anticipating proactively future drawbacks in the project planning. In regard to WWIDP lack of stakeholder’s support to ensure the success of the collective designing through the project monitoring & evaluation mechanism and stakeholder’s effective involvement in the project design, planning & implementation to enhance WWIDP operation & maintenance facilities continuity is contrary to Alam et al (2012) observation that, the Pakistan government through its irrigation agency PIM realized that involving stakeholders in all aspect of irrigation management in planning, design, construction and supervision, policy and decision-making, operation and maintenance, monitoring and evaluation will enhance farmer’s satisfaction with the irrigation system.

4.8 Availability of WWIDP Sustainability plan

The study wanted to find out whether there is sustainability plan. The findings are shown in table 4.35 below.

Table 4.35: Availability of WWIDP Sustainability plan

	Frequency	Percentage
Yes	80	38
No	130	62
Total	210	100

From the findings, 62% of the respondents indicated that there is no sustainability plan, while 38% noted there is. This implies that for the development of Wei Wei ward, there has to be a WWIDP sustainability plan to improve and better the lives of the residents. This lack of WWIDP sustainability plan is due to conventional M & E process it adopted. This finding is in line with Estrella (2000) observation that, conventional monitoring and evaluation approaches are dictated

and driven by the needs of the funding agencies and their policy makers and experts at the expense of beneficiaries role and insights which has dissatisfied the international community.

The study also wanted to find out whether the plan is effective. The findings are shown in table 4.36 below.

Table 4.36: Effectiveness of WWIDP sustainability plan

	Frequency	Percentage
Not very effective	95	45
Less effective	63	30
Effective	42	20
Very effective	10	5
Total	210	100

The findings indicate that 45% of the respondents noted that the plan is not very effective, 30% noted that its less effective, 20% said it is effective, while 5% noted it's very effective. The findings suggest that the sustainability plan is supposed to be made effective for better use of the WWIDP irrigation. Also some of the respondents suggested that if they were involved in the project planning phase, they could have contributed immensely toward sustainability plan of the WWIDP to ensure that the project serves the people of Wei Wei ward effectively and increase their production.

Regarding soil conservation mechanism, the study finding shows that there is urgent need for the project management to stabilize all existing erosion sites to stem the rate of soil degradation and loss of lands and forest resources. Likewise, there is need to restore all the badlands and gullies that are amenable to restoration with the Wei Wei ward towards WWIDP sustainability. To address this aspect of ineffective soil conservation in WWIDP, Karanja (2013) noted that project management team need to be trained on the present mitigating (risk assessment) measures through participatory monitoring and evaluation mechanism to enable them assess the challenges that cause projects to fail and to take the necessary remedial steps and action to address them. To deal with any deviation from the laid down policies and regulations in WWIDP, the project management team should continuously improve the performance of its entire operation activities

for the benefits of the residents of Wei Wei ward. This should be done by assessing all the identified risks to its users and to the environment and to establish appropriate safeguards that ensure that no unacceptable or avoidable risks are undertaken.

The study asked the respondents to indicate whether the WWIDP is sustainable. The following are the findings.

Table 4.37: Sustainability of WWIDP

	Frequency	Percentage
Yes	59	28
No	151	72
Total	210	100

From the findings, 72% of the respondents noted that the WWIDP is not sustainable, while 28% noted that it's sustainable. Those who pointed that the project is sustainable argued that there is existence of active farmers committee formed through WWIDA democratic elections and the growth of WWIDA farmers' organization financially. Those who noted that the project is not sustainable asserted that there is no existence of active WWIDP P M & E plan put in place to ensure the project sustainability.

From the study findings, the respondents noted that the main factors that contributed to lack of WWIDP sustainability are failure to bring on board competitive and development focused farmer's leadership through instituted Project Management Unit (PMU) as the critical component for the stakeholder project engagement. Failure by KVDA to enhance PMU mechanism in WWIDP runs contrary to Lynch et al (1987) observation that, involving farmers in the project system in planning and maintenance increases the attention of project planners to social factors that are likely to affect the system performance. These factors according to Sishula (2005) observation are the cause of many irrigation project management failures in Africa since quite often projects were implemented by consultants oriented towards technical engineering and agronomic aspects while ignoring/neglecting the human aspect that is very critical to the project sustainability. In this regard, Yahaya (2002) observed that though development is a multi-faced, it must be human centered with sustainability implication and relevance to the people affected by

the project change directly and indirectly. So, Yahaya aver that any development strategies employed to bring about total transformation in the quality of people's lives must be enhanced because people are the most essential means of achieving development and are the ultimate goal of the project development.

Likewise, for those respondents who strongly agreed that WWIDP is not sustainable noted that there is inflation of the sectarian politics by the WWIDP irrigation project management which has thwarted the sustainability of the project. They also pointed that there are weak WWIDP linkages with other stakeholders and poor transition from KVDA irrigation scheme management to WWIDA farmers' management for ownership. This corresponds to Tango International (2009) observation that, government politics and policies are some of the moderating factors that can compromise and influence either positively or negatively project management and sustainability. However, without the government support and commitment through proper policy formulation and implementation, the local project success and sustainability will be jeopardized. Hence Tango International opined that, the local project implementers must seek to utilize both the local and technical capacity to assist project management team to implement the project, while the government irrigation agencies must offers technical assistance and financial resources to help the community groups during implementation and after project phase-out.

The respondents were requested to suggest what should be done to achieve WWIDP sustainability. The following are the discussions of the findings. Culturally the respondents suggested that cultural practices should be incorporated into the project planning, organization and control. They argued that management skills should be regular and there should be regular training and monitoring of the project. Plans should be carried out by the WWIDP management team. Technology should be employed and people get trained about it. This will make the management effective towards the sustainability of the project. The stakeholders participation in the project monitoring and evaluation should be done in a scheduled manner (for instance quarterly, annually etc.) to exchange ideas among stakeholders and encourage continuity on project sustainability.

4.9 Inferential Statistics

4.9.1 Descriptive Statistics

This section looked at effects of the factors that influence sustainability of WWIDP as shown in table 4.38 below

Table 4.38: Descriptive Statistics

	Mean	Std. Deviation
Cultural Practices	3.78	0.509
Management training	3.61	0.803
Technological Influence	3.45	0.850
Stakeholder's participation in project monitoring and evaluation	3.55	0.827

The results indicated that Cultural Practices has a high influence to the sustainability of WWIDP having a mean of 3.78, others with high influence are Management training, Stakeholder's participation in project monitoring and evaluation and Technology use influence having a mean of 3.61, 3.55 and 3.67 respectively. From the findings the respondents indicated that cultural practices, Management training, Stakeholder's participation in project monitoring and evaluation and Technology use has a great effect on the project sustainability of Wei Wei integrated development project.

4.9.2 Correlational Analysis

In this section, Pearson correlation coefficient was used to examine if there is any correlation in the sustainability of the WWIDP. The table below presents the findings.

Table 4.39: Correlations Results of WWIDP

		Y	X1	X2	X3	X4
Pearson Correlation	Project Sustainability	1				
	Cultural Practice	0.775	1			
	Management training	0.822	0.916	1		
	Technological use influence	0.885	0.828	0.909	1	
	Stakeholder's participation in project monitoring and evaluation	0.915	0.898	0.938	0.958	1

The study findings in table 4.39 show a significantly strong positive correlation between Stakeholder's participation in project monitoring and evaluation and WWIDP sustainability having correlation coefficient 0.915. The results also revealed that Technological use influence is positively related to WWIDP sustainability having a correlation coefficient of 0.885. This implies that the lesser the technological influence the lesser effective is the WWIDP sustainability. The results revealed that Management training is positively related to WWIDP sustainability having a correlation coefficient of 0.822. This implies that the more users feel the Management training, the higher the performance of WWIDP. There was a positive significant relationship between cultural practices and WWIDP sustainability having a correlation coefficient of 0.775. This means that cultural practices positively influence the WWIDP sustainability in Wei Wei. This implies that the more effective the cultural practices, the higher WWIDP sustainability level.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Introduction

This chapter provided discussion on the findings derived after the analysis of the independent variable against the factors influencing the variable. Further, the chapter also gave the findings and conclusion and also provides recommendations on how the findings of this project can be utilized to enhance sustainability of the WWIDP.

5.2 Summary of findings

The study focused on establishing the factors influencing sustainability of Wei Wei integrated development project in West Pokot County. West Pokot County was selected as the area of study since the researcher had observed that, despite WWIDP being implemented in West Pokot County for a long period of time, the assets created from project are unsustainable.

From the study conducted, the researcher observed that the people from different clans in the area benefited from WWIDP, a finding which is correlated with Matthew & Herbert (2004) observation that sustainable project is the one which designs and utilizes essential cultural identity by involving the local people in the project design. UNESCO adds that it contribute towards improving people quality of life, restores and cultivate a strong sense of community self-worth and dignity for the project to achieve sustainability UNESCO (2006). The finding that WWIDP has improved food security by reducing dependency on relief food supply in the area agree with Ngigi (1999) observation that, Kenya's smallholder irrigation schemes depended more on donor diminishing support making the future of irrigation projects in the country look bleak. Likewise the finding shows that gender participation/involvement is a critical factor for the sustenance & productivity of the WWIDP. This finding corresponds to Peter (2004) observation that involving gender at the project grass root economic activities creates awareness that is critical for women empowerment. Hence gender mainstreaming and equity help to reduce the risks of gender bias in the irrigation project

The study findings in table 4.11 & 4.14 show that WWIDP managers do not respond to the concerns because it is complex to operate and manage it, hence Karanja (2014) observed that project management team require proper and quality training on present mitigating measures (risks) through participatory monitoring and evaluation mechanism so as to increase the chances of project sustainability success.

The findings in table 4.16 show that the farmers are more comfortable with the use of sprinkler irrigation technology. Unfortunately, they were oriented to one type of irrigation technology namely, sprinkler, yet there are other types of irrigation technology that WWIDP farmers could have been exposed to that Saa et al (2010) observed are simple and less costly which meets the aspirations of counties threatened by dynamic food crisis and increased poverty and enable them assess their viability for adoption and use. Moreover, the Sunday Nation Newspaper, November 22, 2005 report that, Kenya's irrigation development system is not economically and environmentally viable which agree with Yahaya (2002) observation that the user participation and their acceptance of the new irrigation technology depend on their involvement in the project selection, design and construction. Therefore most serious problem associated with irrigation development in Africa relates to storage and delivery as well as the system of irrigation programs adopted.

Moreover, the findings in table 4.21 show major challenges affecting WWIDP infrastructure are breakages and hydrant pipes blockages. So, WWIDP management needs to look unto these infrastructure challenges by taking good care of them to ensure smooth operation of the scheme and achieve WWIDP sustainability. In this regard, Estrella et al (2000) observed that multi-purpose participatory monitoring and evaluation (P M & E) mechanism must be adopted to ensure the project programs are responsive to the genuine needs of the intended beneficiaries. The findings in table 4.23 show that though the higher percentage (44%) of spare parts are sourced locally within the country, the ordinary farmer cannot access them since they are either imported or gotten from far towns. This finding relates to Lynch et al (1987) observation that the development of large scale irrigation system in Mauritania, West Africa used strategies that failed to make irrigation system sustainable and economically viable because they were planned and built with the imported technology, agronomic and designers experts in total disregard to the local people's knowledge, value contribution and involvement. Hence, Lynch advises that the

best way to succeed in technology use is to involve farmers in the project planning and maintenance and increase attention of the planners to social factors that are likely to affect system performance. Therefore, WWIDP management team is required to carry out more training for the local people responsible for the repairs of the scheme infrastructure. Likewise, Sugden (2003) observed that, PM&E is a prerequisite mechanism that guides project planners and managers to ascertain whether the beneficiaries actually have the capacity, skills and expertise necessary to repair irrigation infrastructure and be able to maintain them within reasonable cost without depending on donor for help. Hence, for WWIDP sustainability to be realized, technology use adoption is very necessary since any irrigation project that embraces technology exhibits better performance & sustainability. Therefore, WWIDP management team needs to intensify more training for the local scheme infrastructure repairers to minimize dependence on KVDA and Italian experts.

The findings in table 4.27 & 4.29 show that beneficiaries were not ready to implement and own WWIDP because they were not involved from its inception or aware of other partners/stakeholders involved in its monitoring and evaluation process. This finding is contrary to Lam et al (2006) observation of Tende and Kibuon irrigation scheme design which was based on experiences of the beneficiaries and was built on their local knowledge, customs and capacity that enhanced farmer's ownership. Thus, Ngigi (1999) adds that, in Kenya there has been less farmer integration in the project initiation phase and involvement in farmer organization for decision making, conflict resolution and project implementation activities.

The findings from table 4.33- 4.36 indicate that since stakeholder's participation in the WWIDP monitoring and evaluation has all the benefits that are very essential in the development of the Wei Wei ward , then WWIDP should make sure that the local farming community has gained substantial knowledge, training & experience from participating in the WWIDP P M & E process. This will be in line with Sugden (2003) observation that, in Africa water facilities are basically failing due to large gaps in knowledge and understanding of the project design and management at all level of stakeholder's organization.. Tango International (2009) advices that, for the project to contribute to sustainable management and improve sustainability, project implementers should draw and promote local knowledge and practice in farming just as IFAD did in South Asia when it built grass root institutions and helped establish networking

mechanism with other NGOs working in the region to enhance local training. Likewise, WWIDP failed to build partnership with other stakeholders through participatory monitoring & evaluation to help improve relationships and enhance problem solving capacities in the project. However, Tango International (2009) observed that, project ownership by poor rural farmers entails involving project beneficiaries and engage potential stakeholders prior to project design in order to support on-going local initiatives. Thus, Sugden (2003) observed that, effective PM&E ensure the beneficiaries are made part of the existing multi-stakeholders network.

These findings further show that for the development of Wei Wei ward to be achieved, WWIDP must have a sustainability plan through participatory process in order to increase production and better lives for the residents. This is because 62% of the respondent strongly agreed that WWIDP has no sustainability plan as a result of using conventional M & E. This finding agrees with Estrella et al (2000) observation that, the international community have become dissatisfied with M & E approaches because they are driven and dictated by the needs of the funding agencies whose policy makers and experts focused mainly on producing value result and qualitative information seeking for the sake of maintaining objectivity while ignoring the project beneficiary's critical roles and insights. Therefore, Karanja (2013) observed that, to increase the chances of successful project sustainability, project management team must be trained on the present mitigating measures (risks assessment) to enable them assess the challenges that cause projects to fail and take the necessary remedial measure to address them, while proactively anticipate future setbacks in the project planning.

The finding also show that WWIDP is not sustainable because of some moderating and intervening factors such as inflation of local politics and government policies, weak linkages with other stakeholders and poor transition from KVDA management to WWIDA management which has impacted negatively its sustainability. Thus Tango International (2009) asserted that government politics and poor policy formulation can compromise and influence negatively project sustainability. Therefore, P M & E should be enhanced, built and carried out at the WWIDP periodically for sustainability right from the initial project phase to phase-out. Therefore, this finding is in line with Merrey (1997) observation that use of monitoring and evaluation and feedback system help irrigation project management to assess the good measures for farmer organization structures and performance in the project.

5.3 Conclusion of the study

From the finding of the study the researcher infers that sustainability of the WWIDP was influenced by all the factors of the study. The findings of the study in table 4.13 and 4.14 show that in order to achieve sustainability of the WWIDP, the manager's need proper training and offered sufficient technical expertise so as to address the challenge of inadequate knowledge & experience as well as insufficient human resource management in the WWIDP. The study findings also shows that despite technical advice and engineering was offered to the WWIDP during & after project design and implementation ,risk management was not satisfactorily planned because the farmers/beneficiaries were not satisfied with the overall management through the government agency (KVDA). Therefore, WWIDP management has neither increased the production and the livelihoods of the farmers nor enhanced the general economic wellbeing of the Wei Wei people.

The findings from tables 4.21, 4.22, 4.23, 4.24 & 4.25 shows that WWIDP management needs to look unto the major challenges affecting WWIDP irrigation infrastructure by ensuring availability of spare parts within the reach of the local farmers for the smooth operation of the project. This should be done by intensifying more training of the local people responsible for the repairs of the scheme than depend on the foreigners.

The study findings in table 4.27, 4.28 & 4.29 respectively show that, farmers need to be aware of other partners/stakeholders by establishing WWIDP PM&E mechanism that ensure that there is enough involvement and positive participation of the beneficiaries in order to enhance WWIDP sustainability. To enhance and achieve development of Wei Wei ward, the findings of table 4.34 shows that, there has to be a sustainability plan for the WWIDP in Wei Wei ward so as to ensure there are more yields and better lives of the residents.

The findings of the study in table 4.36 show that some of the challenges which have negatively influenced WWIDP sustainability are inflation of the sectoral politics, weak linkages with other stakeholders and poor transition from KVDA management to WWIDA management. Therefore, there is need to bring on board competitive and development focused leadership that will contribute to WWIDP sustainability. WWIDP management should also enhance its instituted PMU mechanism in order to delineate its stakeholder's roles and their relationships. Though

WWIDP management is good, its financial mismanagement system is poor which require its management team to initiate microfinance enterprise through full participatory planning with the farmers before implementation of any kind of activities is undertaken.

5.4 Recommendations

- i. From the findings of this study, the researcher recommends that to ensure sustainability, the project implementers should ensure that the participation of the community is integrated in the project from the project design phase, implementation, monitoring and evaluation. To ensure that this is achieved, capacity of the implementing partner's staff in participatory facilitation methodologies needs to be built. With the full participation of the community in the full phase of project management, there is enhanced project ownership and sustainability is also expected.
- ii. Further, the researcher also recommends that the project should also seek to build the capacity of the beneficiary community in management of the assets that are created as a result of the food for work projects. Capacity building in this case not only entails training but walking with the community to the extent where there is behavior and attitude change.
- iii. For the implementing partners and the funders, there is a need to delink relief from development because it creates dependency syndrome and explore avenues for initiating microfinance enterprise which ensure local farmers generate income and diversify sources of income. Given the short-term nature of relief projects there needs to have a seamless transition of the relief services to creating entrepreneur skills that ensure local development builds on the gains of irrigation project.
- iv. Finally given that all the factors discussed above work in complementarity to create synergy towards sustainability, the researcher recommends that all of them should be factored into project management in the same measure to ensure that sustainable development is achieved.

5.5 Suggested areas for further research

Irrigation continues to be a preferred model of implementation of farming where it is hoped that the communities benefiting from irrigation would create community assets that improve the security of their living standards. As such the researcher proposes the following areas for further studies.

1. Given that the researcher observes that, there is need to explore whether irrigation projects increase the labor demand on productivity.
2. There is need to explore other models of irrigation especially in West Pokot. The researcher proposes a comparative study of irrigation of food crop and cash crop to determine whether cash crop would act as an incentive to women to ensure that more of the women are involved in the projects.

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APPENDICES

Appendix I: Letter of transmittal of data collection instruments

Dear respondent

I am a student at the school of continuing and distance education, University of Nairobi, in the fulfillment of the requirement for a ward of degree of Arts in project planning and management. I am conducting a research study titled, factors influencing sustainability of Wei Wei Integrated Development Project in West Pokot County, Kenya.

You have been selected to participate in the study and I am kindly requesting you to assist by completing the questionnaire attached to the best of your knowledge. The information sought will be used for academic purpose only and your responses will be treated with utmost confidentiality and this includes not publishing your name anywhere. The questionnaire is for the WWIDP beneficiaries.

Your assistance is highly appreciated.

Thank you in advance.

Yours

James Rapiss Nakirerio

Student

Prof. Harriet Kidombo

Supervisor

Appendix II: Questionnaire

SECTION A: Background information-

Your feedback to this questionnaire will help WWIDP project to achieve self-sustainability, therefore your honest view is crucial in this exercise.

Note- please answer all the questions as required to the best of your knowledge.

Do not indicate your name as all feedback will be anonymous.

Information provided will not be disclosed to any other party within the organization.

This research is for academic purposes only, so your co-operation will be highly appreciated.

I) PROJECT IDENTIFICATION INFORMATION

- 1) **Sub-county:** _____ **Ward** _____
- 2) **Village** _____ **Project Area/Block** _____
- 3) **Name of the project** _____ **Year started** _____

II) SOCIO-DEMOGRAPHIC CHARACTERISTICS

To be answered by a farm/plot owner head of the household,

Please tick where is appropriate in the box.

1. RESIDENCE: Are you a resident of Wei Wei Ward?

Yes [] No []

i) If yes how long have you lived in the area?

Less than 5 year [] 10-20 years [] 20-30 years [] 31 years and above []

2. GENDER:

Male [], Female []

3. AGE:

25 years and below [], 26-40 years [], 41-55 years, 56 and above years []

4. What is your position in WWIDP project?

Manager [], Employee [], Farmer [], Technical expert [], Committee member []

5. EDUCATION: What is your Level of education?

Never went to school [], Primary [], Secondary [], College [], University []

6. OCCUPATION: What is your occupation?

Farmer [], Livestock owner [], Vegetable vendor [], charcoal seller [], Carpentry [],
Casual labor [], Government Employee [], WWIDA employee [], NGO employee []

7. INCOME: What is your average income level?

Less than 2500 [], 2500- 5,000 [], 5,000-10,000 [], 10,000 – 15,000 [],
15,000 - 20,000 [], 20,000 and above []

SECTION B: CULTURAL PRACTICES INFLUENCE ON WWIDA SUSTAINABILITY

The following statement relates to how cultural practices affect WWIDP sustainability.

To what extent are they reflected in your farm operation/activities? Use scale where 1- strongly Agree, 2- Disagree, 3 – Neutral 4- Agree 5 – Strongly Agree

Statement	1	2	3	4	5
People from different cultures/clans in the area benefited from the irrigation					
Farming united people from different cultural/clans in the area					
Irrigation scheme used social network amongst the farmers and local residents					
Irrigation farming has enhanced partnership between the local					

farmers, the government agencies, county government and NGOs					
WWIDP project builds community identity					
Through irrigation farming cultural norms/values are upheld in the surrounding community					
The WWIDP project has positively enhanced gender equity to ensure increased crop production and household income					
WWIDP project has improved food security by reducing dependency on relief food supply in the area					
WWIDP project has facilitated participation of local farming community					
WWIDP has encouraged local farmers to conserve soil and water resource and other natural resources					
The local farming community has gained substantial knowledge and technical skills from the WWIDP project					
Gender participation/involvement is critical for the sustenance & productivity of the WWIDP project					

SECTION C: MANAGEMENT SKILLS INFLUENCE ON WWIDP SUSTAINABILITY

1. Who manages WWIDP project?

- (i) Project Committee [] (ii) elected leaders [] (iii) politician []
 (iv) Project manager [] (V) Irrigation agency –KVDA [] (vi) Farmers []

2. Others specify.....

3. What major concerns arise from irrigation project? Do those who manage respond adequately to the concerns whenever raised? Yes [] No []

4. Do you think that people appointed to manage the irrigation scheme/farmers Association are effective in meeting your expectations? Yes [] No []

Explain your answer.....

The following statement relates to how management skills affect the sustainability of the WWIDP project. To what extent do you think they are reflected in the WWIDP project? Use scale 1 – 5 where 1- Strongly Disagree, 2-Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree

Statement	1	2	3	4	5
There is sufficient technical expertise offered to manage the project					
Project managers have adequate knowledge & experience to manage the project/farm					
There is sufficient human resources for irrigation sustainability					
Advice for technical engineering was made available to the irrigation scheme during & after project design and implementation					
There are clear and achievable estimates in the project schedules & budget					
Risk management is satisfactorily planned					
The leadership skills of the manager is satisfactory					
The farmers/beneficiaries are satisfied with the overall management of the WWIDP project through the government agency (KVDA)					
Cordial relationship exist between the beneficiaries (farmers), the government irrigation agency KVDA and the Italian experts					
WWIDP management has increased the livelihoods of the farmers and general economic wellbeing of the local people					
The WWIP project is complex and require multifaceted management skills to operate & manage it					
There is inadequate financial management in the project					

SECTION D: TECHNOLOGY INFLUENCE ON WWIDP SUSTAINABILITY

How do you get/receive water supply to your farm plot?

1. Use of sprinkler 2. Drip irrigation 3. Canal water supply

If water is supplied to your farm plot through one of the above means is the water measured in order to be monitored for distribution and use Yes No

If yes, how is the water measured for monitoring? Through meter installed freely distributed through equal lateral pipes to each individual farm plot

Do you pay your water to your farm plot? Yes No

If yes how much do you pay? 100-500 500-1000 1000-1500
1500 – 2000 2000 & above

How often do you pay water fee charges- Monthly , quarterly/season ,
Annually/yearly , Not at all

If so what is the mode of payment? Mobile money payment (M-Pesa) , Yu cash , Airtel money ,
Bank account , Cash , Farm produce payment deduction

What challenges affect your irrigation scheme infrastructure- breakages Vandalism
Negligence , hydrant & lateral pipes blockages , sprinkler breakdown , Stealing

Are the infrastructure spare parts available to you? Yes No

If available where do you get them? At the WWIDP project warehouse , nearby farmer's store ,
nearby trading center's kiosk/auto spare shops , other far towns , imported from outside

If the facilities breaks down who normally repairs/fixes and maintain them?

Government agency (KVDA) artisan , ministry of Agriculture & irrigation (county government) works artisan ,
Italian technical team technician , WWIDA farmer's artisan , Local trading center artisan

Whoever fixes the problem do you think they have the have the appropriate/relevant training according to your knowledge? Yes [] No []

If yes who trains them? Government technical training institute [], on-site training by the Italian technical expert team [], government irrigation agency (KVDA) trainer [], WWIDA management committee [], Own training from other training institutions []

The following statement relates to how technology affects WWIDP project sustainability. To what extent are they reflected in your scheme/farm, use scale where 1- Strongly Disagree, 2- Disagree, 3- Neutral, 4 – Agree, 5- Strongly Agree

Statement	1	2	3	4	5
The project uses modern technology					
Use of modern technology has helped to curb poor management & accountability of the project					
The advantages of technology in farm to enhance productivity depend upon its integration into the project objective					
Sustainability of project infrastructure facilities depends on factors controlled by the project like training, technology viability & profitability & cost of the project construction quality?					
Adoption of the technology is key WWIDP project sustainability as it eases operation & maintenance					
Irrigation project that embrace technology exhibits better performance & sustainability					
Sustainability driven by technology depend largely on the effective management innovation process					
Irrigation farm workers can provide information extracted from the records to improve members' satisfaction to project management?					
Sustainability of WWIDP water distribution depend on factors controlled by project technology like cost of project					

construction quality					
Enhancing productivity does not depend on its integration into the project objectives					

SECTION E: STAKEHOLDERS PARTICIPATION IN THE PROJECT MONITORING & EVALUATION INFLUENCE ON WWIDP PROJECT SUSTAINABILITY

Have you ever participation in the initiation/start of WWIDP irrigation project?

Yes [] No []

If yes what was your area of participation- consulted through a meeting

Contributed materials []

As a leader/part of the committee []

Involved in tracking of the project inputs and outputs []

Others specify.....

Are there other partners/stakeholders involved in the WWIDP project monitoring and evaluation?

Yes [] No []

If yes, name them.....

In which way were you involved in the project design?

- Resource contribution(finance, in kind) []
- In management/training of the project activities or facilities repairs []
- Consulted []
- Not involved/consulted []

In your opinion, to what extent has the stakeholder’s participation positively enhanced sustainability of the WWIDP project?

- To a very low extent [] To a low extent []
- To moderate extent [] To a great extent []
- To a very great extent []

Name at least four main benefits of stakeholder’s participation in monitoring and evaluation of WWIDP project?

- Strong ownership []
- Timely infrastructure maintenance []
- Timely intervention/corrective measures undertaken []
- Proper mitigating measures put in place []
- Continuity of project []
- Expansion of the project []
- Better service delivery []
- Harmonious management relationship/conflict resolutions
- Others specify.....

The following factors relate to what extent stakeholder’s participation in the project monitoring and evaluation affects WWIDP sustainability. Use scale below where 1- Strongly Disagree, 2- Disagree, 3- Neutral, 4- Agree, 5- Strongly Agree

Statement	1	2	3	4	5
Involvement of the project beneficiaries in the project monitoring & evaluation is critical for WWIDP sustainability					
Stakeholder’s are effectively involved in the project design, planning & implementation has enhanced WWIDP project operation & maintenance facilities continuity					
Stakeholder’s participation in project monitoring & evaluation has enabled them to clearly understand their roles					
Stakeholder’s support has ensure the success of the collective designing through the project monitoring & evaluation mechanism					
Stakeholder’s involvement ensure WWIDP activities are managed effectively, monitor waste efficiently and so ensure financial					

sustainability					
Stakeholder's involvement through strengthening networking ensure farmers assume responsibilities to own the project					
Stakeholder's involvement in project monitoring & evaluation influence the directive and execution of the WWIDP development activities rather than merely being information and project benefits receivers					
Local farmers involvement in the project monitoring & evaluation has increased project efficiency in repairing project facilities					
Building partnership with other stakeholders through participatory monitoring & evaluation has improved relationships and enhanced problem solving capacities in the project					
Through participatory monitoring & evaluation WWIDP project has facilitated the local farming community to take development initiatives in the area					
Through participatory monitoring & evaluation WWIDP has enabled local farmers to conserve soil and water resources and other natural resources					
The local farming community has gained substantial knowledge, technical skills & experience from participating in the WWIDP project monitoring & evaluation process					
Availability of participatory monitoring and evaluation in WWIDP					
Regular monitoring with interval evaluation of project programs					
Establishment of working project evaluation team with feedback					

Appendix III: WWIDP employee (Technical expert, KVDA & WWIDA workers and county government ministry of agriculture officers) Questionnaire

1) Do you have a sustainability plan in place?

Yes [] No []

i) If yes, how effective is it?

Very effective [] effective [] Less effective [] Not effective []

ii) If No, is there any way you could contribute to sustainability of WWIDP project?

.....
.....

2) State (if any) the policies or measures either initiated or undertaken by your organization/ministry to ensure proper utilization, conservation, planning of WWIDP management?

.....
.....

3) How do you deal with any deviation from the laid down policies and regulations you have?

.....
.....

4) Do you consider WWIDP project to be sustainable?

Yes [] No []

i. If yes, what are the indicators of sustainability?

.....
.....

ii. What main factors do you think has contributed to this sustainability?

.....
.....

iii. If no, what are the indicators of poor or lack of sustainability?

.....
.....

iv. What main factors do you think have contributed to lack of sustainability?

.....
.....

5) In your own assessment, how do you rate the effect of cultural practices in WWIDP project sustainability

Excellent [] Good [] Fair [] Poor [] Very poor []

6) Comment on the WWIDP management

.....
.....

7) What would you suggest should be done to achieve WWIDP project sustainability above?

Give your suggestion under the following key areas)

i) Cultural practices

.....
.....

ii) Management skills

.....
.....

iii) Appropriate technology

.....
.....

iv) Stakeholder's participation in project monitoring and evaluation

.....
.....

Thank you for your time and participation