The Impact of Government Policies on Irrigated Farming in Tunyo Division of Marakwet District: Kenya

Richard Maiyo Yego[1] and Shadrack Kipkoech Sitienei[2]*

[1]MA in Public Administration and Policy, PhD Candidate (Political Science and Public Administration) Moi University, Kenya

[2]Lecture Department of Philosophy, History and Religion-Egerton University, Kenya

Submission: April 24, 2023; **Published:** May 09, 2023

***Corresponding author:** Shadrack Kipkoech Sitienei, Lecture Department of Philosophy, History and Religion-Egerton University, Kenya

Abstract

Irrigated agriculture has been practiced since time immemorial, especially in arid and semi-arid lands globally. This study seeks to unearth the impact of government policies on irrigated agriculture in Tunyo Division of Marakwet District in Kenya. The study location was chosen because of researcher's interest and being one of the areas which has been classified as arid and semi-arid lands (ASAL). The study adopted both qualitative and quantitative approach of data collection and analysis to reach a logical conclusion on the subject. Two objectives guided the study namely; to assess the impact of government policies on irrigated agriculture and to find out irrigational strategies applied to realize irrigational goals and objectives. The study found out that the impact of government policies in the area has been low hence low productivity; the irrigation goals and objectives are planned through teamwork, liaisons and motivations; and finally, it also appeared to the researcher that there was poor accomplishment of goals and objectives by farmers and an improvement was required in order to improve the situation. The researcher concludes that the farmers in Tunyo division should follow government policies to realize better outcomes especially when carrying out organizational planning and its pursuance of goals and objectives. That would help them in coming up with appropriate plans for implementation.

Keywords: Irrigation; Policies; Government; Planning; Organization

Introduction

All living things need water for growth and development on a daily basis. The practice of animal and plant husbandry has been ongoing since time immemorial in different parts of the world and required many factors such as water, optimum rainfalls, temperatures, moisture and good soils among others. Bazza [1] reports that before 8000 B.C., the prehistoric people hunted and gathered but farming dates to one of the first recorded civilizations in Mesopotamia (currently located in Iraq) whose people, the Sumerians, were the first to invent irrigation as their society settled at the base of the delta, formed by the Tigris and Euphrates rivers Water Resources Management Authority (2006) noted that there existed ground water and surface water which would be exploited for both domestic and industrial purposes. Thereafter, more societies widely practiced irrigation agriculture to expand the existing arable land, reduce overcrowding in high potential holdings as well as making crop farming possible throughout the year rather than relying on rain - fed agriculture which was sometimes unreliable.

Hussain, et al. [2] posit that access to reliable irrigation can enable farmers to adopt new technologies and intensify cultivation, leading to increased productivity, overall higher production, and greater returns from farming. This, in turn, opens up new employment opportunities, both on-farm and off-farm, and can improve income, livelihoods, and the quality of life in rural areas. Generally, access to good irrigation allows poor people to increase their production and income, and enhances opportunities to diversify their income base, reducing vulnerability caused by the seasonality of agricultural production as well as external shocks. Thus, access to good irrigation has the potential to contribute to poverty reduction and the movement of people from ill-being to well-being [2].

Rukuni, et al. [3] state that the largest number of food insecure households in Zimbabwe lives in natural regions IV and V, and accessing food through dry land production has been unsuccessful for most communal households given the prevailing agro-ecological factors for these regions. Populations have poor access to food because they generally lack the purchasing power that would otherwise enable them to purchase foodstuffs which they cannot cultivate. Furthermore, the incidence of food insecurity in the communal areas is largely caused by the agro ecological conditions beyond the farmers' control, high consumer prices for staple grain which erodes the household disposable income and the constraints they face in diversifying cropping patterns into higher valued cash crops.

The population densities in these natural regions IV and V have long exceeded the carrying capacity of the land, consequently leading to severe degradations of land resources in many areas, thus compromising on the efforts by smallholder farmers to break through the food insecurity trap. There are also high temperatures, lowest agricultural activities and highest incidences of agricultural failure due to frequent incidence of drought and low rainfall. The major limiting factor for the successful cultivation of crops in these regions is low rainfall and high incidence of drought. The low rainfall averages 600mm per annum, which is lower than the crop requirements for most food crops. Rukuni, et al. [3] advocated for the need to integrate rural development interventions so as to do away with higher incidences of transitory and chronic food insecurity in smallholder communal farming areas.

Manzungu, van der Zaag [4] postulate that one of the strategies to reduce the incidence of food insecurity in smallholder communal areas which was also advocated for by the aid organizations, policymakers, academics, and lay people is a production technology appropriate for low rainfall environments. The technology is in the form of smallholder irrigation schemes. Development of smallholder irrigation schemes increases the potential for more production by counteracting mid-season dry spells and some periodic dry spells. This means that the household can grow crops more than once a year in low risk associated areas than under the rain fed production. Increased production ensures high food availability at the household level due to intensification of crop production. Intensified crop production ensures increased incomes; hence, households can purchase food, ensuring household access to food. The Kenyan economy relies on agriculture although 80% of the country is arid and semi - arid in which sustainable agriculture would only be achieved through well planned and operated irrigation.

Statement of the Problem

Rain fed farming is practiced in those regions with good soils and receive well distributed rains throughout the year as well as other necessary weather conditions. On the other hand, irrigation agriculture is carried out in those regions which receive erratic rains but blessed with plenty of good soil. In Kenya both rain fed and irrigated farming are both carried out in different parts of the country. Tunyo Division of Marakwet District is a semi - arid region with plenty of land with good soil, water, and labour. Through appropriate designation and implementation of effective irrigation agricultural practices, one would expect serious engagement of irrigation practices for adequate accomplishment of national development plans.

To effectively succeed in the practice of irrigation agriculture and realize food security and other Millennium Development Goals (MDGs), some factors such as government policies on irrigation, nature and availability of land, government funding and other stakeholder support, availability of water, training and community participation needed to be carried out appropriately. Effective irrigation agricultural practices are dependent on several factors within and without the respective institutions. The study therefore sought to determine factors which affected irrigated farming in Tunyo Division. Determination of such factors would enable top managements in the respective institutions to understand how they affected irrigation agricultural practice, hence making an appropriate response to address such situations.

Significance of the Study

The findings of the study will assist the academic world on the role of irrigation and in enhancing food security. Irrigation agriculture will be an essential component of any strategy to increase the global food supply. The findings will also assist all the stakeholders involved in food production to project the future of irrigation in our country.

Any study on irrigated agriculture would be of great importance to governments, societies, communities, organizational managements, and practitioners. It would enable those groups of people to understand how irrigation agriculture contributed to promoting greater acreage of land under crops and greater production in the country. Determining the factors which promoted or hindered irrigation agricultural practices in the division and country would enable policy makers, planners, and managers to have an insight of them, hence making of efforts to either reinforce or eliminate them respectively. Any delay in carrying out the study would therefore be detrimental to irrigated farming principles and practices in Tunyo Division, hence the urgency. The findings of the study would also be of great use in other similar regions of Kenya. The research study was expected to contribute to a pool of knowledge critical to agricultural policy makers and policy think tanks among others. It would also be a source of reference to future researchers, academicians, and scholars in addressing problems related to food shortages in other parts of the country.

Scope of the Study

The extent and intensity of any research undertaking is defined by its scope. The scope of this research is on the following dimensions;

Geographical: the research study mainly focused on Tunyo Division in Marakwet district in Kenya, which is an ASAL (Arid and Semi- Arid Lands) area.

Contextual: the study will focus on irrigation agriculture in the said geographical zone.

Time scope: The study covered a period of time spanning from 2018 to 2020.

Study Area

The study was conducted in Tunyo Division of Marakwet District in Elgeyo Marakwet County. The district was created on August 14, 1994, and borders West Pokot to the North, Trans Nzoia to the West, Uasin Gishu to the Southwest, Keiyo to the South and Baringo to the East. The district is about 61.6 kilometers long and 53 Kilometers wide. It covers a total area of 1709 square kilometers (Marakwet District Development Plan, 2015-2020. The district is divided into 29 locations and 88 sub-locations. Politically, it had two Parliamentary constituencies; Marakwet East and West which shared Tunyo Division, the main focus of the study. The total population in the district was projected at 177, 705 in 2008 with female population of 90,428 and 87, 277 males. The population under the age of 15 formed 30% of the total population in the district. The dependents (below 15 years and above 65 years) formed more than 50% of the total population. A deliberate move to increase income generating activities and employment activities therefore became very necessary in order to support that population. That would be achieved by harnessing the district's irrigation potential, especially in the fertile Kerio valley amongst others.

Topographically, Republic of Kenya (1987) noted that, ''the district is divided into three (3) zones, namely the highland plateau, Marakwet escarpment and the Kerio Valley. The highland rose gradually from an altitude of 2800m above the sea level on the Charangany hills to the North.'' Marakwet District Development Plan (2008 - 2012) and District Statistics Office (2009) pointed out that, the average temperature in the district was 24°C during the wet season with a maximum of 30°C during the hot season. February was considered the hottest month while July was the coldest month. The highland plateau area had the lowest temperatures while the highest temperatures were recorded in the Kerio Valley; an ASAL area where irrigation farming was practiced. Rain - fed agriculture in the Kerio Valley was unreliable owing to erratic rains and harsh weather conditions.

Methodology

The study adopted a mixed research design. According to Todd Jick, mixed methodologies or triangulation can be broadly defined as 'the combination of methodologies in the study of the same phenomenon' (1978). This researcher advanced the argument that more than one method should be employed in the validation process to ascertain that the variance in the operationalization of the data reflects that of the trait and not of the method. There must be an element of truth in the two methods used [5]. Relevant data and information on the study was collected and analyzed quantitatively and qualitatively interpreted to give a logical conclusion in the subject.

Study Site

The study was conducted in Tunyo Division of Marakwet District in Elgeyo Marakwet County. The district was created on August 14, 1994 and borders West Pokot to the North, Trans Nzoia to the West, Uasin Gishu to the South West, Keiyo to the South and Baringo to the East. The district is about 61.6 kilometers long and 53 Kilometers wide. It covers a total area of 1709 square kilometers (Marakwet District Development Plan). The district is divided into 29 locations and 88 sub-locations. Politically, it had two Parliamentary constituencies; Marakwet East and West which shared Tunyo Division, the main focus of the study. The total population in the district was projected at 177, 705 in 2008 with female population of 90,428 and 87, 277 males. The population under the age of 15 formed 30% of the total population in the district. The dependents (below 15 years and above 65 years) formed more than 50% of the total population. A deliberate move to increase income generating activities and employment activities therefore became very necessary in order to support that population. That would be achieved by harnessing the district's irrigation potential, especially in the fertile Kerio valley amongst others.

Topographically, Kenya Republic [6] noted that, ''the district is divided into three (3) zones, namely the highland plateau, Marakwet escarpment and the Kerio Valley. The highland rose gradually from an altitude of 2800m above the sea level on the Charangany hills to the North.'' Marakwet District Development Plan (2008 - 2012) and District Statistics Office [7] pointed out that, the average temperature in the district was 24°C during the wet season with a maximum of 30°C during the hot season. February was considered the hottest month while July was the coldest month. The highland plateau area had the lowest temperatures while the highest temperatures were recorded in the Kerio Valley; an ASAL area where irrigation farming was practiced. Rain - fed agriculture in the Kerio Valley was unreliable owing to erratic rains and harsh weather conditions.

Target Population

Target population is defined as all the members of a real or hypothetical set of people, events or objects to which a researcher wishes to generalize the results of the research study (Borg & Gall, 2003). The target population was 400 farmers in Tunyo Division, who have been practicing irrigated farming system for the last 10 years and have the experience in doing food crop farming.

Sampling Procedures

Sampling means selecting a given number of subjects from a defined population as representative of that population. Any statements made about the sample should also be true of the population [8]. Cochran [9] pointed out that, where a population of interest was not homogenous, then it had to be divided into parts, such that each part, (stratum) was as homogenous as possible. Since the target population of the study was not homogeneous; as it was composed of different elements, divided into sub - populations (strata). The selection of the study sample was done using stratified random sampling, simple random sampling and purposive sampling. Farmers were stratified into the locations of residence and were proportionately sampled. Simple random sampling was used to select 120 farmers from the entire Tunyo division.

Sample Size of the Population

According to Prewitt [10] the size of the sample depended upon many factors among them, financial and time restrictions and homogeneity of population. In determining the sample size of the target population each stratum was randomly selected. Gay [11] recommends that when the target population is small (less than 1000 members), a minimum sample of 20% is adequate for educational research. From the target population of 400 farmers, the researcher used proportionate sampling to select 120 participants. This formed 30% of the target population, which is in line with Gay's [11] recommendation.

Data Collection Method

A questionnaire is a research instrument that gathers data over a large sample [12]. The questionnaire used in this research contained structural items. Structured questions are those which are accompanied by a list of all possible alternatives from which the respondents select the answer that best describes their situation. Unstructured or open-ended questions on the other hand refer to those questions which give the respondent complete freedom of response. This permits a respondent to respond in his own way [13].

Relevant questions based on the research problem were formulated, typed and printed on set of forms. In the forms, spaces for filling in the answers to the questions put to the respondents were provided. Questionnaires were given to the respondents in which they were expected to read, understand, provide answers and then return them to the researcher. The questionnaire enabled the researcher to cover a wide area and to minimize biases.
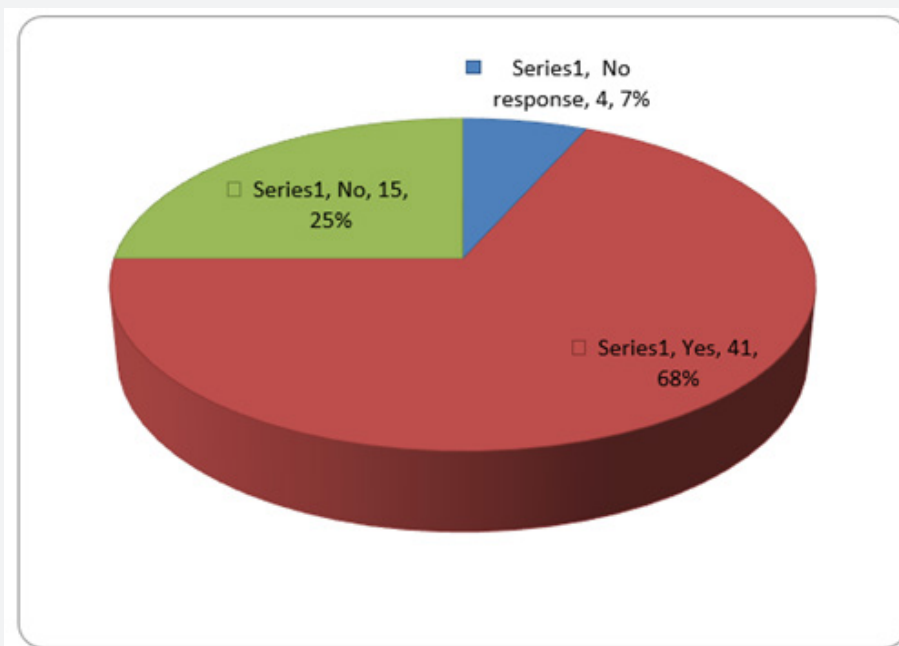
Government Policies and Irrigation Agriculture

Figure 1: Overall cloud computing process.

Government policies always affect how irrigation agriculture in any country will be carried out. Therefore, sound policies automatically result in successful agricultural practices and so the most appropriate ones must be put in place and implemented. Figure 1 shows that 82 (68.33%) of the respondents reported that farmers in Tunyo Division were guided by agricultural policies in their processes such as planning, organizing, directing, and many others. Only 30 (25.0%) of them noted that the organization was not guided by policies whereas 8 (6.66%) gave no response. Organizations which were always guided by policies had the advantage of deriving the most appropriate organizational aims and objectives for effective realization of performances [14,15].

Figure 2 shows that 62 (51.66%) of the respondents reported that organizational planning was being carried out by farmers in Tunyo Division. Those who did not report that such a process was being carried out by 58 (48.32%). It appeared to the researcher that it was through the process of organizational planning that farmers in Tunyo Division derived irrigation goals and objectives. Then, afterwards institutional managers and community leaders had to make sure that such plans were appropriately implemented.

Figure 2: Organizational Planning.

Figure 3 shows that 74 (61.66%) of the respondents noted that an organizational structure existed, 46 (38.33%) reported that such a structure never existed. Farmers should therefore prioritize the accomplishment of tasks that relate and contribute towards the realization of greater success in their irrigated farming endeavours. They should be inspired by their leaders that the organization as a macro unit takes precedence than any one of its units. Organizations which pursued such philosophy always did better than those which did not.

Asked about the pursuance of irrigation goals and objectives, table 1 above shows that 90 (75.0%) of the respondents agreed that they pursued irrigation goals and objectives, 30 (24.66%) of them said they did not pursue while 10 (8.33%) of them gave no response about such pursuance of goals and objectives. It appeared to the researcher therefore that farmers in Tunyo Division of Marakwet district mostly pursued irrigation goals and objectives despite the low success of it in the region and the country. Policy makers should therefore make efforts to find out why irrigation agriculture has not been successful despite the high degree of pursuance as indicated in the preceding table 1. It seemed that there were other factors apart from organizational pursuance of goals and objectives which undermined irrigation agriculture in the area of study.

Table 1: Pursuance of Irrigation Goals and Objectives.

	Frequency	Percent
Yes	90	75
No	30	24.66
Total	120	100

Strategies Applied to Realize Irrigation Goals and Objectives

Table 2 below shows respondents response on the inquiry on the strategies used by farmers to realize the irrigation goals and objectives. About strategies applied to realize irrigation goals

and objectives, table 2 above shows that 60 (50.0%), 42 (35.0%), and 18 (15.0%) of the respondents noted that farmers in Tunyo Division accomplished irrigation goals and objectives as planned through teamwork, liaisons, and motivations. It seems therefore, that teamwork and liaisons as strategies were employed in the pursuance of irrigation goals and objectives. Management should instead devise other strategies for effective realization of organizational plans.

**Table 2:** Strategies Applied to Realize Irrigation Goals and Objectives.

	Frequency	Percent
Teamwork	60	50
Liaisons	42	35
Motivations	18	15
Total	120	100

Regarding the rating of irrigation goals and objectives, Figure 4 shows how the accomplishment of irrigation goals and objectives were rated by respondents who were involved in the study. Inadequate accomplishment of such plans was reported by 64 (53.33%) of the respondents, 24 (20%) noted that such goals and objectives were fairly adequate while 32 (26.66%) reported that they were adequate whereas 12 (10.0%) gave no response. It appeared to the researcher that there was poor accomplishment of goals and objectives by farmers and an improvement was required in order to improve the situation.

Conclusion and Recommendation

The following conclusions in view of the study undertaken were made as presented below. The study revealed that farmers in Tunyo Division were guided by government and institutional policies as they carried out their farming endeavours. They also carried out organizational planning where goals and objectives were derived and pursued. This paper recommends that; farmers in Tunyo Division and other parts of the country should be guided by government policies at all times especially when carrying out organizational planning and its pursuance of goals and objectives. That would help them in coming up with appropriate plans for implementation.
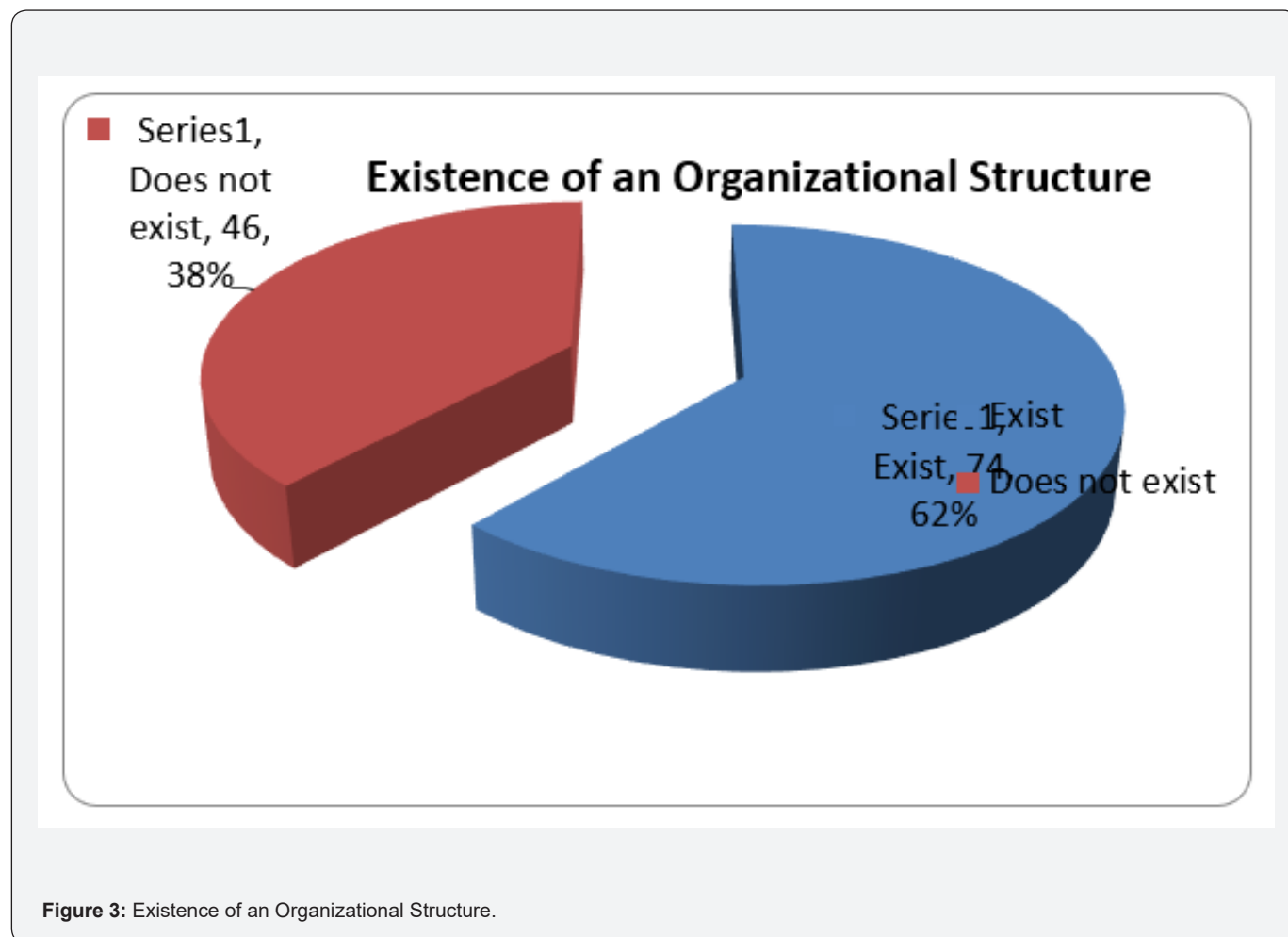
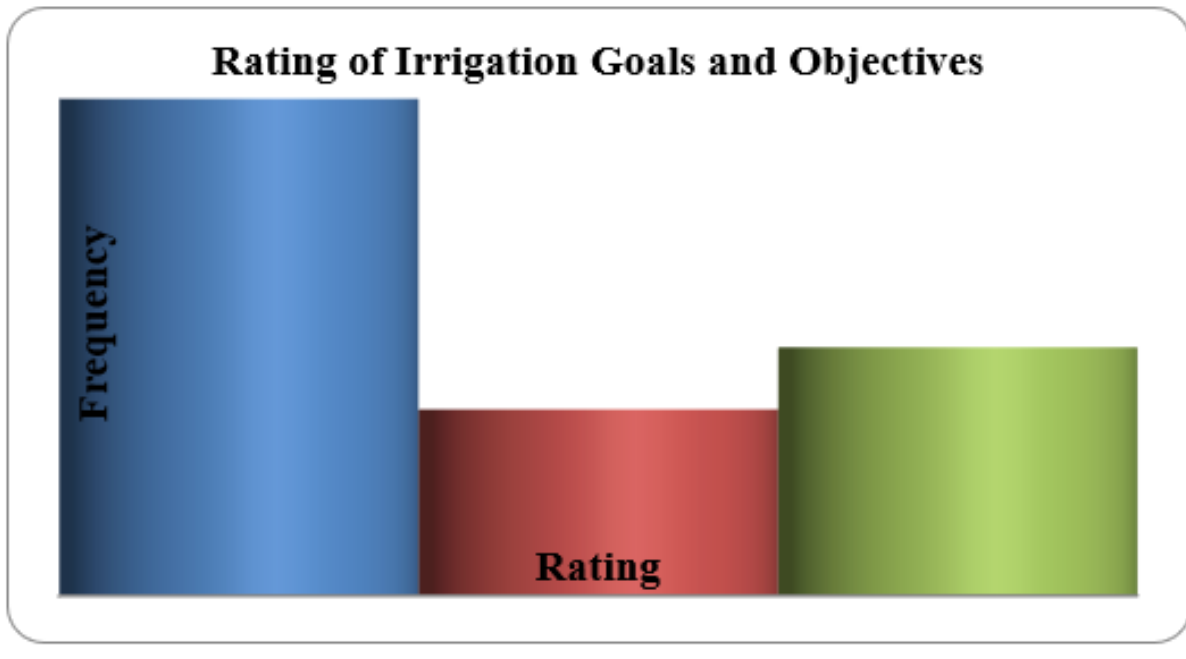**Figure 3:** Existence of an Organizational Structure.

Figure 4: Rating of Irrigation Goals and Objectives.

References

1. Bazza M (2006) International Symposium on Water and Wastewater Technologies in Ancient Civilizations, Iraklion, Greece.

2. Hussain I, Regassa N, Deeptha W, Samad M (2002) Water, Health and Poverty Linkages: Conceptual Framework and Empirical Evidence. Paper prepared for the National Workshop on Water, Health and Poverty Linkages in Sri Lanka. GWP Colombo Advisory Center, Sri Lanka.

3. Rukuni M, Benstern RH (1990) Major Issues in Designing a Research Programme on Household Food Insecurity in Southern Africa. Food Security Policy Option. UZ/MSU, Africa.

4. Manzungu E, Van der Zaag P (1996) The Practice of Smallholder Irrigation. Case Studies from Zimbabwe. University Of Zimbabwe Publication Office, Harare, Zimbabwe.

5. Jick Todd D (1979) Mixing Qualitative and Quantitative Methods: Triangulation in Action. Administrative Science Quarterly 24(4): 602-611.

6. Republic of Kenya (1987) Elgeyo Marakwet District Development Plan 1984 - 1988: Ministry of Finance and Planning. Government Printer, Nairobi, Kenya.

7. District Statistics Office (2009) Elgeyo Marakwet District Development Plan 1984 - 1988: Ministry of Finance and Planning. Government Printer, Print, Nairobi, Kenya.

8. Orodho AJ, Kombo DK (2002) Research Methods: Nairobi: Kenyatta University Open and E-Learning Module, Nairobi, Kenya.

9. Cochran J (1998) Sampling Techniques (3rd Ed.) Wiley Eastern limited, New York.

10. Prewitt K (1995) Introduction of Research Methodology. In Mwiria K, Sheila, P Wamahiu (Eds.) Issues in Educational Research in Africa. East African Educational Publishers. Print, Nairobi, Kenya.

11. Gay LR, Airasian P (2003) Educational Research: Competencies for Analysis and Application (7th ed.) NJ: Pearson Education, New Jersey.

12. Kombo DA, Tromp DL (2006) Proposal and Thesis Writing: introduction. Pan lives Publications Africa, Nairobi, Kenya.

13. Mugenda OM, Mugenda AG (2003) Research Methods: Quantitative and Qualitative Approaches, Acts Press, Nairobi, Kenya.

14. Republic of Kenya (1995). District Focus for Rural Development. Government Printer, Nairobi, Kenya.

15. Rukuni M, Benstern RH (1987) Major Issues in Designing a Research Programme on Household Food Insecurity in Southern Africa. Food Security Policy Option. UZ/MSU, Africa.

Your next submission with Juniper Publishers will reach you the below assets

- Quality Editorial service
- Swift Peer Review
- Reprints availability
- E-prints Service
- Manuscript Podcast for convenient understanding
- Global attainment for your research
- Manuscript accessibility in different formats
  (Pdf, E-pub, Full Text, Audio)
- Unceasing customer service

Track the below URL for one-step submission
https://juniperpublishers.com/online-submission.php