

**FACTORS INFLUENCING PERFORMANCE OF IRRIGATION COOPERATIVES IN  
EMBU COUNTY, KENYA**

**BY**

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Award of the Degree of Masters in Arts in Project Planning and Management of the  
University of Nairobi**

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**DECLARATION**

This Research Project Report is my original work and has not been submitted for any award in any University.

Signature í í í í í í í í í í í í í í í í í Date í í í í í í í í í í í .

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This Research Project Report has been submitted for examination with my approval as the University Supervisor.

Signature í í í í í í í í í í í í í í í í í .Date í í í í í í í í í í ..

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## **DEDICATION**

I dedicate this Research Project Report work to my dear husband who has been very instrumental and supportive, last but not least my sons Adrian and Aidan for their moral support.

## **ACKNOWLEDGEMENT**

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## ABSTRACT

Irrigation cooperatives in the past years were seen as main source of income in communities. Members of these cooperatives depended entirely on cooperatives to cater for health, financial and education needs of their families. Currently people have shifted their focus from these cooperatives to other financial institution while a significant number of irrigation cooperatives have closed down. This study therefore sought to determine the factors that influence performance of irrigation cooperatives. The guiding objectives of the study were to assess how levels of education and training of members and organized marketing of irrigation cooperative produce on the performance of the cooperatives, assessing the influence of governance structure and the influence of technology application on existing cooperatives. Performance of irrigation cooperatives formed the dependent variable while the factors that influence the performance formed the independent variables. This study adopted a descriptive research design. The population of the study was 1552 members. Through random sampling a sample of 161 members was obtained and data was collected using questionnaires. Validity of the instruments was ensured through opinions and expert judgments of university experts. Reliability of the instruments was estimated using split half technique through a pilot study in Tharaka Nithi County. Data was analyzed using descriptive statistics and inferential statistics with the help of the Statistical Package for Social Sciences. The study found that Irrigation cooperatives offers scholarship for the staff and the response in the study indicates that 54.04% strongly agreed while 40.99% agreed. This concludes that 95.03% of the members of the irrigation cooperatives believe scholarship to staff has great impact on the performance. It is further revealed that Cooperatives offering Seminars, workshops and where conferences are open for all members of staff, out of 161 respondents who participated in the study 90.9% strongly agreed, 9.1% agreed. The findings showed that the influence of Product promotion through advertisement whereby out all respondents who participated in the study 64.59% strongly agreed, 27.32% agreed, and these provided a total of 91.92% of the total respondents who agreed that advertisements has great influence towards the performance of irrigation cooperatives. The study showed that governance structure met all legal requirements and out of 161 respondents who participated in the study 60.86% strongly agreed to this and 39.13% agreed. This concludes to a 100% of the respondents agreeing thus the study established that governance functions are very influential on the performance of irrigation cooperatives. The results on how technology influences performance of irrigation cooperatives in Embu County established that systems had been installed to enhance transaction processing, technology enhances accuracy, reliability of irrigation cooperatives and that information systems bring information timeliness, and technology allows for a reduction in transactions costs and timely communication. It is revealed that 78.26% said technology influence on systems enhancing transaction processing is very influential to performance and 21.73% agreed on it being influential. The study concluded that level of education and training, organized marketing for products, governance structure and technology significantly affects the performance of irrigation cooperatives in Embu County. The study recommended that irrigation cooperatives should continuously check on the levels of education and train their members, adopt new forms of organized marketing for products, enhance their governance structure and adopt new and the current forms of technology. This study will be of important to the government and policy makers because they will be able to determine how to sustain and improve operations of existing irrigation cooperatives. This study will also be of immense help to academicians and researchers in providing useful literature.

# CHAPTER ONE

## INTRODUCTION

### 1.1 Background of the Study

Cooperative is defined as an autonomous association of persons, united voluntarily to meet their common economic, social and cultural needs and aspirations through a jointly owned and democratically controlled enterprise (Najamudden et.al, 2012). It is a business driven by values which includes self-help, responsibility, democracy, equality, equity and solidarity (King & Ortman, 2007). The key principles of cooperatives act as great pillars for success of each and every cooperative whether internationally, in Africa, in Kenya as well as in Embu County. These principles include voluntary and open membership, democratic member control, economic participation by members, autonomy and independence, education training and information, cooperation among cooperatives and concern for the community in general (ICA, 2013).

As Hollis and Sweetman (1998) point out, referring to historic organizations is valuable as their long histories can provide guidance on issues that cannot be addressed in Institutions formed only a decade ago. Irrigation Cooperative movements begun in Europe in 19<sup>th</sup> century primarily in England and France. In Belgian cooperative development was marked by three distinct movements: Christian, socialist and non-aligned (Van Bekkum & Van Dijk; 1997). Because of ideological and political reasons linked to the development of the Belgian labor movement, producer cooperatives were virtually non-existent. Unlike France, where the cooperative movement is organized according to sectoral Groupings (producer, agricultural, consumer), in Belgium, as in Italy, the cooperative Movement is structured on an ideological and inter-cooperative basis (Ibid; 1997).

Irrigation cooperatives in Africa have their origins in foreign models that were largely designed to achieve exterior motives. In early human societies, people learnt to cooperate and work together to increase their success in hunting, fishing, gathering food, building shelter and meeting other individual needs as well as group needs. Traditional systems of cooperation, mutuality, reciprocity and solidarity existed in all African societies and have remained vibrant till today particularly in rural areas and in urban informal economy. Irrigation cooperatives in Africa have a common bond derived from ethnic origin, social class, income level, professional

occupation or a combination. Approximately seven per cent of the African population reportedly belongs to a cooperative, though some countries like Egypt, Senegal, Ghana, Kenya and Rwanda reports a higher penetration rate of over ten per cent.

Africa has promoted small-scale irrigated cooperatives as a means of ensuring food security as well as improving the standard of living of the rural people for many years (Hillel, 1997). Irrigation cooperatives help farmers increase their yields and incomes by pooling their resources to support collective service provisions and economic empowerment. They generate valuable benefit to members which includes marketing of produce as a cooperative, pooling of limited resources together, enjoying economies of scale, organized farming, shared responsibility, easier access to credit and maximization of returns. Given their primary remit to contribute to smallholder farmer production, agricultural cooperatives are seen as critical in achieving the government's development targets in the Performance and Transformation Plan, and focusing on other types of cooperatives requires an alternative framework for analysis (Crosby et al., 2000).

### **1.1.1 Irrigation cooperatives in Kenya**

Irrigation Cooperatives in Kenya started through spontaneous initiatives of individual Europeans settlers farming during colonial days. In the cooperative formation years (1908-1930s) the movement did not include Africa participation Societies. Hyden 2003 indicates that the first cooperatives in Kenya included KCC, KPCU and KFA which first started as companies and eventually in 1931 became cooperatives. Many cooperatives were later formed at the 20<sup>th</sup> century and these cooperatives were formed by smallholder's peasant farmers. Irrigation cooperatives in Kenya were formed out of existence of special need in the society. Though with challenges irrigation cooperatives have thrived well in Kirinyaga, Kitui and Nyeri just to mention a few. It was until 1970 when the Kenyan government acknowledged the important role cooperatives played in the national development and thus created a ministry of cooperative development. In 2007, the vision 2030 gave emphasis and recognized the importance of cooperatives sector in reduction of social exclusion and in the strengthening of agriculture sector and so reduction of poverty. Cooperatives were seen as community development tool. The promulgation of the constitution of Kenya, 2010 ushered devolution and schedule four fully assigned the functions of cooperatives to counties. Each county now manages the affairs of cooperatives under it.

Cooperatives in Kenya are broadly classified into different categories which include primary cooperatives, these are cooperatives that membership is restricted to individual persons, secondary cooperative societies these are cooperatives whose membership is comprised of primary cooperative societies whereas tertiary cooperative societies (Apex) these are cooperative unions being an association of primary cooperatives and other cooperative union (Andrew, 2006; Maini, 2002). Marketing societies are cooperatives that enable members to organize for collection, storage, processing and marketing of the produce or products from members. Other type of cooperatives are housing cooperatives which assists members in construction of housing while other saves and borrow loans to construct or purchase houses through mortgage scheme. Consumer cooperatives enable members to organize for acquisition and sale of goods and services required for need of members through a centralized place such as a shop restaurant. Fisheries cooperatives enable members to manage fish farming through purchase and maintenance of fishing equipment, marketing fish and enable fishermen to save money regularly and borrow loan as need arises (Andrew, 2006; Miami,2002).

### **1.1.2 Irrigation cooperatives in Embu County**

In Embu County there are different types of cooperatives among them marketing cooperatives, housing, multipurpose(irrigation) cooperatives, dairy cooperatives, rural cooperatives, urban(Saccoø) cooperatives, transport cooperatives (GOK, 2012) and these cooperatives are formed to meet different diversified needs of different groups. There are a total of twelve irrigation cooperatives in Embu County of which 8 are active and 4 are dormant. The performance of irrigation cooperatives depends on educating and training cooperative members, and enhancing their knowledge of cooperative principles and membersø rights (Ortmann& King, 2007). Birchall (2004) argues that irrigation cooperatives that lack capital and business management capacity have had a rather disappointing history in developing countries like Kenya. (Chambo,2007) notes that the major production constraints impeding development in the irrigation cooperative sub-sector among others are predominantly primitive nature of the overall existing production systems, lack of organized marketing systems, limited access to improved irrigation technologies and inadequate research support, lack of trained manpower and frequent staff turnover due to low motivation.

Therefore, considering the importance of the irrigation sub-sector in the overall performance of the agriculture sector, this study is giving special emphasis to irrigation cooperatives. This study thus seeks to determine the factors that are influencing performance of irrigation cooperatives in Embu County.

## **1.2 Statement of the Problem**

The cooperative movement plays an important role in wealth creation, food security and employment generation and hence participates in poverty alleviation. There have been international and national campaigns for the formation of cooperatives and with the devolution taking effect in 2013 the counties also have joined the campaign on the same. Many of the cooperatives which are well organized and managed have demonstrated the benefits that accrue from them which would help in achieving national development goals (Chekwony, 2008). The policy objective of Kenya cooperative movement is to spur sustainable growth by focusing on achievement of desired outcome through strengthening of the movement and improving cooperative extension service delivery in areas that the public and private sector have not ventured. Embu County faces numerous challenges which affect performance. Some of these cooperatives have recorded poor performance over the years. This poor performance is as a result of poor levels of education and training of members, lack of organized marketing, lack of governance structure lack of technology, diseases and pests, lack of member full participation in the operations of the cooperatives, initial capital among many others.

The study therefore sought to investigate these factors influencing performance of irrigation cooperatives in Embu County and come up with viable solutions and recommendations in order to address the problem hindering the success of the existing irrigation cooperatives.

## **1.3 Purpose of the Study**

The purpose of this study was to establish the factors influencing performance of irrigation cooperatives in Embu County, Kenya.

## **1.4 Objectives of the Study**

The study was guided by the following objectives:

- i. To assess how levels of education and training of the members influence performance of the irrigation cooperatives in Embu County.
- ii. To determine how organized marketing for products influences performance of irrigation cooperatives in Embu County.
- iii. To examine how governance structure influences the performance of irrigation cooperatives in Embu County.
- iv. To establish how application of technology influences performance of irrigation cooperatives in Embu County.

### **1.5 Research Questions**

The study sought to answer the following research questions

- i. How does levelsof education and training of the members influence performance of the irrigation cooperatives in Embu County?
- ii. How does organized marketing for products influences performance of irrigation cooperatives in Embu County?
- iii. How does the governance structure influence the performance of irrigation cooperatives in Embu County?
- iv. How does application of technology influences performance of irrigation cooperatives in Embu County?

### **1.6 Significance of the Study**

This study may be useful to the Ministry of Agriculture, livestock, fisheries and cooperative development in strengthening the development and performance of irrigation cooperatives especially in marginalized areas. The results of this study may form a basis for effective policy frameworks and decision making by the management of irrigation cooperatives thus promoting their performance. Finally, this study may contribute to knowledge that can be explored by scholars studying on irrigation cooperatives societies.

### **1.7 Delimitations of the study**

This study delimits itself to investigate factors influencing the performance of irrigation cooperatives in Embu County, Kenyan Co-operatives are distributed countrywide and share similar operating environment. The researcher acknowledged the fact that there are many other factors influencing performance of irrigation cooperatives. This research therefore focused on, levels of education and training of the members, organized marketing for products, governance structure, technology employed in the irrigation cooperatives, motivation of members and market forces. This study targeted the management and members of irrigation cooperatives who provide the information for the study. The study used a questionnaire to collect data because they are convenient. In addition, Embu County has a reasonable number of irrigation cooperatives hence the data obtained was representative and therefore the researcher was able to generalize the findings.

### **1.8 Limitation of the Study**

Respondents were reluctant to fill in questionnaires since they considered this information sensitive. To minimize this effect, the researcher assured the respondents of confidentiality in handling the data and that the data would be used for academic purpose only. Some of the members of management were engaged in other activities during the scheduled time leading to rescheduling of planned meetings.

### **1.9 Assumptions of the Study**

The study was based on the assumption that levels of education and training of members, organized marketing of products, governance structure and technology influences performance of irrigation cooperative in Embu County, Kenya. It also assumed that the respondents gave genuine, truthful and honest responses to the questionnaires.

### **1.10 Definition of Significant Terms used in the study.**

**Governance structure-** The running and management of irrigation cooperatives projects is dependent on three major distinctive categories of people in the governance structure, these includes the board of management, members and the employees. Well-functioning structure is



guaranteed when management have relevant qualifications, regular meetings for discussions as well as better improved communication system.

**Levels of education and training of members**-highest levels of education attained by leaders and members as well as members e.g. in-service training for members, increase in number of trained leaders and their influence in performance of irrigation cooperatives

**Motivation of members:** an incentive or a driving force that makes the members, employees and management to work better towards the performance of the irrigation cooperatives.

**Market forces:** Economic forces that are beyond the control of the researcher

**Organized marketing of products**-Collection, storage, processing and marketing of products for members together through common group which in return brings forth easier access to market, better prices, sales promotions and advertisement of products made easier

**Performance of irrigation cooperative** -Ability of irrigation cooperatives being transformed from just mere marketing tools to collection, storage, processing, marketing and value addition and at the end being able to involve in other diversified activities. Performance is evidenced by increase in capital; increased production increased membership as well as quality of products.

**Technology** may be used to assist irrigation cooperatives by providing the following among others; first, better access to market and other production technology information such as prices for their inputs and outputs. Its impact is measured in terms of improved incomes, profits and sales, lower costs for all business transactions, increased efficiency, competitiveness and market access, secondly, better understanding of the distribution systems, rights and policy enforcement mechanisms, the impact is measured in terms of improved access and quality of the services obtained.

### **1.11 Organization of the study**

This study is organized in five chapters as follows; chapter one giving background to the study and introducing the problem statement describing the specific problem to be addressed in the study, purpose of the study, objectives of the study, research questions that the study will seek to

answer, significance of the study, delimitations of the study, limitation of the study, assumptions of the study and definition of significant terms as used in the study.

Chapter two presents a review of literature and relevant research associated with the problem addressed in the study, performance of irrigation cooperatives, benefits of irrigation cooperative, level of education and training of members and performance of irrigation cooperative, organized marketing for products and performance of irrigation, governance structure and performance of irrigation , technology and performance of irrigation cooperatives theoretical foundations of the study, conceptual framework, knowledge gap and the summary of the literature.

Chapter three presents the research methodology. It highlights the research design, target population sampling procedure, research instruments, data collection procedure, data analysis techniques and operationalization of the variables.

Chapter four presents the results of the analyzed data, the interpretation of the results and finally a discussion of the findings.

Chapter five presents a summary of the findings, the study conclusions, recommendations and areas that may require additional research

## **CHAPTER TWO**

### **LITERATURE REVIEW**

#### **2.1 Introduction**

The chapter presents a review of literature and relevant research associated with the problem addressed in the study, performance of irrigation cooperatives, benefits of irrigation cooperative, levels of education and training of members and performance of irrigation cooperative. The chapter also reviews organized marketing for products and performance of irrigation, governance structure and performance of irrigation, technology and performance of irrigation cooperative theoretical foundations of the study, Previous studies conducted on similar objectives have being reviewed and theories discussed, conceptual framework, knowledge gap and the summary of the literature.

#### **2.2 Performance of Irrigation Cooperatives**

Irrigation cooperatives were formed to serve its members with the guidance of cooperative principles like voluntary contributions and open membership, these principles have seen some cooperatives performing and others facing challenges to the point of closing business. For irrigation cooperatives to perform there are many factors that contribute to that and they include; good governance, organized marketing of products and services, level of education and training of leaders, members motivations and market forces. These factors if well guided make irrigation cooperatives to give high return to members contributions and this assist to reduce poverty to the community through proper investment from members. This study has considered some of these factors to investigate to what extent they influence the performance of irrigation cooperatives that through the findings proper measures can be taken to improve the performance of irrigation cooperatives in the country (Kenya).

##### **2.2.1 Benefits of Irrigation Cooperatives**

Irrigation Cooperatives play an important role in the life of farmers because they enable farmers get standardized quality agriculture inputs for farming through a common bargaining power. They help provide training and education to farmers as an extension service to improve their products. They have also succeeded in instilling a culture of saving into their members by

encouraging and helping them do bulk sell and being paid at ago, unlike the current piecemeal payment at times done for unripe products in gardens. As a result, members have improved their welfare by building better houses using their savings or end of season payments. Irrigation cooperatives have provided grounds and space for social cohesion, platform for exchange of ideas, counsel for communities, a stabilizing element in society and a means for building social capital. These intrinsic but invisible achievements are celebrated by merrymaking festival seasons at charismas, independence, New Year, Irrigation Cooperatives contribute to the national good through provision of employment opportunity for people.

### **2.3 Levels of Education and Training of Members and Performance of Irrigation Cooperatives**

Levels of education refers to the academic credentials or the degree an individual has obtained (Thomas and Daniel, 2009) Most of the organizations use education as an indicator of person's skill or level of productivity. There is direct correlation between the level of education and economic performance (Miami2002). According to Chibada et al (2009) the performance of irrigation cooperative projects depends on the level of education and training of both leaders and members therefore this enhances their knowledge of irrigation cooperatives projects. The informal learning that takes place in groups through sharing of knowledge, skills, attitudes and behaviors, are likely going to shape irrigation cooperatives differently (Hyden,2003) Kenya has many providers of co-operative education, training and information. Apart from the Co-operative College of Kenya, all national co-operative organizations, the Co-operative Bank, the National Co-operative Housing Union, Kenya Union of Savings and Credit Co-operative Organization, KCC and all provincial co-operative unions provide organized education and training programmes. Through these, the leaders learn how to make decisions, to recognize the significance of accountability, transparency, democracy and aa variety of business concepts and practices. Thus, co-operatives contribute in serving as agents of economic and social change.

Research by Machethe (2009) on poor performing and failed cooperatives in the former homelands of South Africa suggests that members did not clearly understand the purpose of a cooperative, their obligations and rights, or how to manage their business. This could have resulted from members's ignorance, a lack of education and skills training and/or poor extension advice (Machethe, 2009).According to the GOK (2007), many problems facing irrigation

cooperative projects in Kenya is lack of relevant and necessary management skills and knowledge among members and the employees of irrigation cooperative projects. This lowers the management capacity in irrigation cooperative projects leading to losses of funds.

#### **2.4 Organized Marketing for Products and Performance of Irrigation Cooperatives**

Management of irrigation cooperatives has tended to stick to old ways and means of marketing and developing their products even when the environment has clearly changed. The need is great, to introduce improved marketing approaches in order to enhance performance of irrigation cooperatives. Far too many cooperatives societies in Kenya remain with traditional produce and have done little in value addition through processing. They need to diversify, add value and become aggressive marketing organizations to succeed and grow in today's competitive environments. They need to become proactive, responsive and quick in adapting to market demands nationally and internationally. Many of the irrigation cooperatives have no organized methods of marketing their produce after harvest whereby they sell their produce individually instead of selling as a common group; as a result, the returns of the cooperatives are low. Other cooperatives use their traditional methods to produce and do little if any of value addition through processing (ILO, 2004). Also bylaws of the cooperatives pose a challenge because they are available in English which many members do not understand. In Kenya and Uganda the bylaws are in English, in Tanzania they are in Kiswahili whereas in Rwanda they are in Kinyarwanda and English (MoCD, 2012). With access to market being one of the most difficult challenges, the role of co-operatives in helping them to exercise economies of scale is increasingly important. Through co-operatives, farmers can attract traders and institutional buyers, and increase their negotiating power (Birchall, 2003).

#### **2.5 Governance Structure and Performance of Irrigation Cooperatives**

A growing literature stresses that governance, broadly defined as the process whereby societies or organizations determine how power is exercised, whom they involve and how they render account (Graham et al., 2003; Saner & Wilson, 2003), is important for economic performance. In this study, governance includes a cooperative's decision-making processes and its capacity to implement its decisions (Landell-Mills & Serageldin, 1992), and is characterized by transparency

(openness), accountability and participation. Together with good institutions; good governance promotes an organization's performance (North, 1990; Olson, 1965).

According to Jorgen and Bindslev (2006), organization structures are different for different organizations with different functions. The running and management of irrigation cooperatives is dependent on three major distinctive categories of people in the governance structure, these includes the board of management, members and the employees (Weihrich et al., 2010). Members/shareholders are the founders of cooperative. They are fully involved in the running of the cooperatives through their democratic control. They vote in the board of management and out if need be. Critical decisions are only made with their concession (Caroline, 2009). The members elect board of management through voting which is vested with legal authority to transact on behalf of the members. The board is entrusted with the overall wellbeing of the cooperative (Radel&Zeuli, 2005). Employees are hired by the management board to run the activities of the cooperative on their behalf and implement its policies, vision and missions.

According to Banishree and Kumar, (2006), cooperative structure affects then performance of irrigation cooperatives. Members join cooperatives with different intentions such as working together for development, benefit from trainings, marketing of their product and therefore this diversion of objectives contribute to free ride and lack of cooperative specification which is a major challenge that hinders the performance of irrigation cooperatives. Widstrand (1970) argues that the cause of effective or ineffective performance is to a greater extent assumed to be good or bad management. Kobia (2011) points out that the weak ethics are a challenge that leads to poor corporate governance. Van der Walt's (2005) study on cooperative failures in Limpopo province indicated that poor governance structure contributed greatly to the low performance during the period of study. Van Niekerk (1988) also blamed the poor performance of irrigation cooperatives in South Africa's communal areas largely on poor governance structure.

Othma and Kari (2008) carried out research on factors influencing cooperative membership and share increment and considered factors that affect and influence members decisions to increase share capital contribution such as capital ownership in a cooperative, members shopping habits at cooperative store, the duration of membership, attendance at annual general meetings (AGM), familiarity with board of directors (BOD), involvement in other cooperative activities, and involvement in other voluntary activities. In their findings, they agreed that cooperative success

not only relied on membership commitment but more importantly on the strength and efficiency of board of governance and management and this is the area the researcher wants to explore on how the board of governance and management influence the performance irrigation cooperatives.

## **2.6 Technology and Performance of Irrigation Cooperatives**

Technology has enabled countries to make substantial improvements in both productivity and quality in agriculture, manufacturing, infrastructure, public administration and services such as finance, trade, distribution, marketing, education and health Production sector foreconomic performance and an enabler for social development (The Ministry of Information & Communications 2006).. The Government's key objective is to transform the Kenyan economy through technology by promoting and facilitating the private sector to serve as the driver for economic development through innovation in the ICT sector. The strategic focus of Kenya's ICT Strategy for Economic Performance is to simultaneously target the development of technology and to use it for employment creation, poverty reduction as well as a broad-based enabler for economic recovery and the achievement of national developmental goals (Duncombe&Heeks 2005). More specifically, technology can provide reliable access to markets (local, regional and international) through increased use of affordable communications (Stiglitz 1989; Romer 1993; World Bank 2007). Technology broadly, allows for a reduction in transactions costs, improved access to timely and usable knowledge, improved communications with markets and within the supply chain, acquisition of appropriate skills for enhancement of productivity and improved information about new opportunities.

Technology may be used to assist irrigation cooperatives by providing the following among others; first, better access to market and other production technology information such as prices for their inputs and outputs. Its impact is measured in terms of improved incomes, profits and sales, lower costs for all business transactions, increased efficiency, competitiveness and market access, secondly, better understanding of the distribution systems, rights and policy enforcement mechanisms, the impact is measured in terms of improved access and quality of the services obtained.

## **2.7 Motivation and Performance of Irrigation Cooperatives**

The term motivation is derived from the word *ōmotiveō* which means a reason for action. Motivation is defined as a set of processes concerned with the force that energizes behavior and directs it toward attaining some goal (Mitchell, 2002). It is a continuous process which starts with needs, continues with goal-oriented behavior and ends with the satisfaction of needs. The challenge for the organization is to find out what its employee values and goals are and where they overlap with the organization. According to Patrick Lumumba (2012) in his research about an assessment of the effectiveness of non-monetary incentives in motivating Sacco society staff : A case study of Front office savings account workers in Nairobi county had the following objectives; to establish the influence of promotion on employees, to establish the extent to which teamwork motivates staff, to determine the extent to which career development motivates staff and to assess the effect of fringe benefits in motivating staff. In his research he used questionnaire to collect data for front office staff and the motivating factors were for staff and included promotion, teamwork, career development and fringe benefits.

## **2.8 Theoretical Framework**

A theory is a system of explaining phenomenon by stating constructs and laws that iterate constructs to each other (Mugenda & Mugenda, 2003). Theories that relate to the study include the homeostasis theory which maintains that, in any activity, people accept a certain level of subjectively estimated risk to their health, safety, and other things they value, in exchange for the benefits they hope to receive from that activity. In other words, individuals adjust their level of risk-taking behavior depending on the safety measures that are in place (Wilde, 2014). Thus, if the level of subjectively experienced risk is lower than is felt acceptable, people tend to engage in actions that increase their exposure to risk. If, however, the level of subjectively experienced risk is higher than is acceptable, they make an attempt to exercise greater caution. In either case, people will choose their next action so that the subjectively expected amount of risk associated with that next action matches the level of risk accepted. In other words, individuals adjust their level of risk-taking behavior depending on the safety measures that are in place (Wilde, 2014).

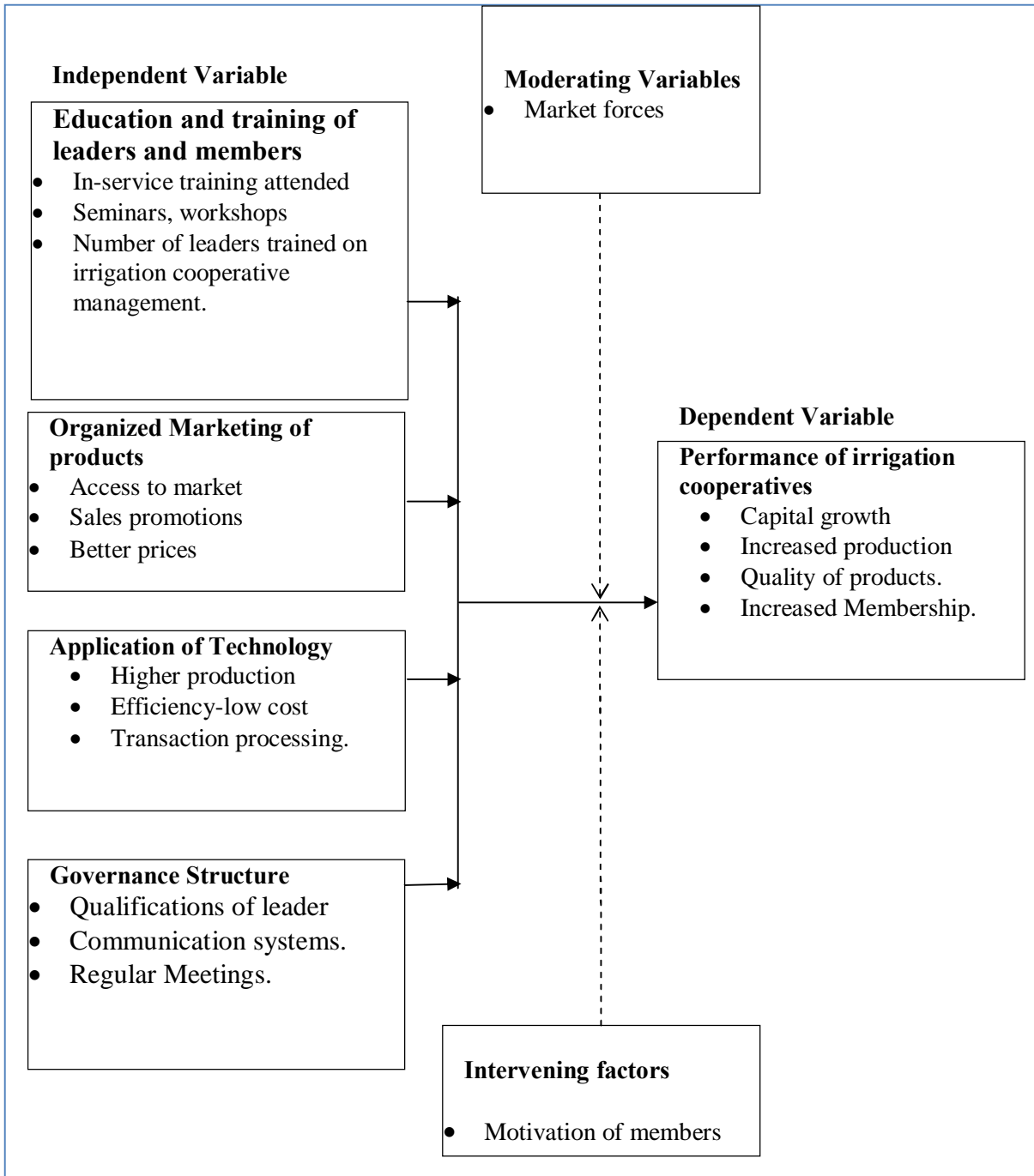
Evidence obtained from the literature shows that the social capital theory is relevant to this study. This study considered the theory and adopted it as theoretical framework, useful for our



understanding of the role of cooperative societies in economic development. The social capital theory emanates from social capital which the World Bank (1998: 2) defined as "the institutions, the relationships, the attitudes and values that govern interactions among people and contribute to economic and social development". The social capital theory postulates that when people act or function in a group as in a cooperative society or self-help group, it leads to the economic and social development of the group, individuals in the group and the immediate community where such group operates from (World Bank, 1998; Anderson et al., 2002). Social development is the improvement in relationship between people while the economic development is divisible into two parts as improvement in financial condition and physical progress such as material acquisition. This is significant because economic development does not take place without increase in physical material acquisition and financial resources (Jainabaetal., 2005; Holmgren, 2011). The economic development in social capital includes improvement in economic condition of the people which may be physical and financial. Relating to this the assets acquisition is physical economic development while enterprise profit, living is an indication that participation in an association such as a cooperative can lead to physical capital and financial capital (Anderson et al., 2002).

## **2.9 Conceptual Framework**

Conceptual framework involves forming an idea about the relationship between variables in the study and showing relationship graphically or diagrammatically (Mugenda&Mugenda, 2003). This study considers performance as the dependent variable while the independent variables comprise of education and training of members, organized marketing of products, technology in farming and governance structure. The conceptual framework is shown by figure 2.1



**Figure 2.1: Relationship between factor influencing performance of irrigation cooperatives and the performance of irrigation cooperatives**

The conceptual frame work of this study was based on an idea that performance of irrigation cooperatives indicated by capital performance, increased production in terms of quality and quantity and increased membership is influenced by education and training of leaders and

members, organized marketing of products and governance structure. This performance is also moderated by members motivation while the researcher has no control over market forces. The conceptual frame above portrays the relationship between the independent and the dependent variables.

## 2.10 KnowledgeGap

Irrigation cooperatives play an important role in wealth creation, food security and employment generation and hence participate in poverty alleviation (Chekwony, 2008). The policy objective of Kenya cooperative movement is to spur sustainable performance by focusing on achievement of desired outcome through strengthening of the movement and improving cooperative extension service delivery in areas that the public and private sector have not ventured. Over the past years, irrigation cooperatives have recorded poor performance. This poor performance is as a result of education levels and training, lack of organized marketing, governance structure lack of technology, diseases and pests, lack of member full participation in the operations of the cooperatives, initial capital among many others. This study seeks to fill this gap by establishing the factors that influence the performance of irrigation cooperative project in Embu County.

**Table 2.1: Knowledge gap**

variable	Author and year	Title of study	Findings	Knowledge gap
Level of education and training of leaders and members	Machethe (2009).	Factors contributing to poor performance of agricultural cooperatives in less developed areas.	Members did not clearly understand the purpose of a cooperative, their obligations and rights, or how to manage their business.	Method of eradicating ignorance and lack of education and skills training and/or poor extension advice
Governance structure	Othman & Kari (2008).	The role of co-operatives in sustaining development and fostering social responsibility, Riva del Garda, Trento, Italy.	cooperative success not only rely on membership commitment but more importantly on the strength and efficiency of board of governance	How to determine the strength and efficiency of board of governance and management
Organized	Birchall(2004)	Cooperatives and	Over reliance of	The author did not

marketing of products		millennium development goals	irrigation cooperatives on old methods of production and low bargaining power.	mention that with organized marketing of products there is exercise of economies of scale and easier access to market, better prices and therefore sales promotions..
Technology	Haile Tesfay(2008)	Impact of irrigation development and poverty reduction	Installation of the farm with irrigation systems for connection with water for irrigation and for quality production	The author did not mention that an organized farm outlay would lead to higher production as well as low cost and therefore efficiency

## 2.11 Summary of Literature

This chapter has provided comprehensive and detailed information in relation to the area of study organized into various sections and subsections. This was guided by the objectives of the study which included assessing how levels of education and training of the members influence performance of the irrigation cooperatives in Embu County, determining how organized marketing for products influences performance of irrigation cooperatives in Embu County and examination of how governance structure influences the performance of irrigation cooperatives in Embu County and lastly establishing how application of technology influences performance of irrigation cooperatives in Embu County.

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.1 Introduction**

The chapter outlines the research methodology that was followed in completing this study. Aspects covered included the research design, target population, sample size and sampling procedure, data collection methods, validity, reliability, data analysis techniques and data presentation.

#### **3.2 Research Design**

The study sought to investigate factors that influence the performance of irrigation cooperatives in Embu County. Therefore, a descriptive research design was used in the study. Cooper and Schindler (2005) observed that a research design is a plan for selecting the sources and the type of information used to answer the research question and a framework for specifying the relationship among the study variables. The choice of descriptive research design is because it is enabled to reveal and measure the strength of the target group's opinion, attitude and behavior with regards to the factors influencing performance of irrigation cooperative projects in Embu County, Kenya.

#### **3.3 Target Population**

The study focused on members of the eight irrigation cooperatives of Embu County as provided for by Embu county cooperative commissioner. The target population was 1552 members from all the eight active irrigation cooperatives.

**Table 3.1: Irrigation Cooperatives in Embu County**

No.	Name of Cooperative	Membership
1	Kiaga irrigation	184
2	Ena Irrigation	202
3	NthamariGachichori	231
4	KirukiKiende	180
5	GatunduriKamavindi	248
6	Mweria	230
7	Evurore	110
8	Mbenwom	167
9	Totals	<b>1552</b>

Source :( Embu county annual report, 2015)

### 3.4 Sample Size and Sampling Procedure

This section describes the sample size and sampling procedure.

#### 3.4.1 Sample size

The study employed Random sampling. Members were selected through random sampling. Random sampling was preferred because it gives each subject an equal chance of taking part in the study (Calmorin, 2007). The random sampling was necessitated by guidelines given by Nasiuma (2003).

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

Where n=population

c=coefficient of variation which is <30% - >20%

e=standard error which is fixed between 2-5%

Taking a coefficient of variation of 26.8% and a standard error of 0.02 out of a target population of 1552 members, a sample of 161 is obtained.

### 3.4.2 Sampling procedures

The researcher employed random sampling to come up with the required and appropriate sample size

**Table 1.2: Sample size**

<b>Irrigation cooperatives</b>	<b>Target population sample size</b>	
Kiaga irrigation	184	26
Ena Irrigation	202	36
NthamariGachichori	231	11
KirukiKiende	180	20
GatunduriKamavindi	248	20
Mweria	230	20
Evurore	110	20
Mbenwom	167	8
<b>Totals</b>	<b>1,552</b>	<b>161</b>

The advantage of employing random sampling is accuracy since all objects have equal chances of being selected from the whole population and in detail also reliable statistics about the whole population obtained (Kathuri& Pals, 2003).

### 3.5 Research Instruments

Primary data was obtained from irrigation cooperative through use of a questionnaire. Questionnaires were preferable because they enable the researcher to establish rapport with the respondents while at the same time get accurate information. This also eases the standardization of responses and solicits for similar information from the respondents capturing both dependent and the independent variables. The questionnaire had sections on personal information, education levels and training of members, organized marketing of products, governance structure, technology in farming and performance of irrigation cooperatives as per the objectives of the study.

The questionnaires were organized into the following sections in which the respondent had to answer. General information on which irrigation cooperative a member belonged to as well as the number of years a person has been a member of the irrigation cooperative, Level, influence and employment of levels of education and training, Level, influence and employment of organized marketing of products, Level, influence and employment of governance structure and the Influence of technology application.

### **3.5.1 Piloting of instruments**

A pilot survey was carried in irrigation cooperatives in TharakaNithiCounty because they have similar characteristics with the target population. This was done to assess the clarity of the instrument so that an item found to be inadequate were discarded or modified to improve on validity (Mulusa, 2008). The researcher piloted the questionnaire out on a small sample of 33 respondents consisting of 33 members which was 15 % of the sample. Mugenda and Mugenda, (2003) recommends a pre-test of between 10% to 20% of the study population.

### **3.5.2 Validity of Instruments**

Kombo and Tromp (2006) define validity as the degree to which results obtained from the analysis of the data actually represent the phenomenon under study. In other words, validity helps to infer how accurately the data obtained in the study represents the variables of the study. To test the validity of the research instruments, the questionnaires were prepared and submitted to the supervisor and other experts for cross checking and also to assess the reliance of content. The questionnaires were then pre-tested through a pilot study which was done a week earlier before the commencement of the actual study to free the findings from ambiguity.

### **3.5.3 Reliability of Instruments**

According to Mugenda and Mugenda (2003) reliability is the degree by which a research instrument gives consistent results or data even with repeated trials. The instruments were prepared and a pilot test administered into two parts using split half technique. The pilot study enabled the researcher to assess the clarity of the questionnaires so that, those found to be inadequate or vague were modified to improve their quality hence increasing reliability. In addition, the Cronbach alpha was used to test the reliability and consistency of the measures in



the questionnaire. Cronbach alpha is the most commonly used co-efficient of internal consistency. A Cronbach alpha coefficient of 0.6 was considered an indication of reliability.

The Cronbach alpha was used to check for the reliability of the questionnaire. Table 4.1 shows the obtained results

**Table 4.2 Reliability**

<b>Variable</b>	<b>Cronbach's Alpha</b>	<b>No of items</b>
Levels of education and training	.771	17
Organized marketing for products	.858	14
Governance structure	.797	18
Technology	.756	4

### **3.6 Data Collection procedure**

The population of the study was 1552 people. Through random sampling a sample of 161 members was obtained and data was collected using questionnaires. Validity of the instruments was ensured through opinions and expert judgments of university experts.

### **3.7 Data Analysis Technique**

Data analysis is the process of systematically arranging filed notes, data and other materials obtained from the field with the aim of increasing one's own understanding and to enable one to present them to others (Orodho, 2013). Data was cleaned by being checked for logical consistency and any unnecessary data removed. It was then being refined and analyzed using statistical package for social sciences (SPSS) version 23 for windows. Martin and Acuna (2002) observe that, SPSS is able to handle large amount of data given its wide spectrum of statistical procedures purposefully designed for social sciences, it is also quite efficient. Descriptive and inferential statistical data analysis methods were used to analyze the collected data. Descriptive statistics included the mean, frequency and percentages and they were used to summarize the data into a meaningful form. Correlation analysis and regression analysis were adopted as the major inferential statistical data analysis tools where correlation was used to show the strength of the relationship among the variables while regression was used to show the relationship between

the dependent and independent variables. The results of data analysis were then be presented in frequency tables and percentages

### **3.8 Ethical Considerations**

To ensure the maintenance of ethical standards, from the beginning to the completion of the study, the researcher obtained informed consent from the respondents and ensured that all the respondents participated voluntarily in the study. Privacy and anonymity of the respondents was maintained throughout the study. Openness and honest disclosure of information concerning the purpose and the benefits of the research to the respondents was also maintained.

### 3.9 Operationalization of Variables

**Table 3.3: Operation Definition of Variables**

Objective	Variable	Indicators	Measurement	Measurement scale	Research approach	Tools of analysis
To assess how levels of education and training of the members influence performance of the irrigation cooperatives in Embu County	Independent Education level and training	In service training Seminars, workshops and conference attended	Number and type of training attended.	Ordinal ratio	Descriptive	Frequencies mean Correlation Regression
To determine how organized marketing for products influences performance of irrigation cooperatives in Embu County	Organized marketing for products	Access to markets Product advertisement, Better prices	Number of available markets, Methods of product advertisement Price Benchmark	Ordinal ratio	Descriptive	Frequencies Mean Correlation Regression
To examine how governance structure influences the performance of irrigation cooperatives in Embu County	Governance structure	Presence of supervisory committee Communication system Regular meetings	Availability of minutes, Number of years Flow of communication	Ordinal ratio	Descriptive	Frequencies Mean Correlation Regression
To establish how technology influences performance of irrigation cooperatives in Embu County	Technology	Higher production Efficiency-low cos Firm outlay	Availability of systems, technology training, technology integration	Ordinal ratio	Descriptive	Frequencies Mean Correlation Regression
Factors influencing the performance of irrigation cooperatives	Dependent Performance of irrigation cooperatives	Capital performance, Increased production Increased membership	Percentage change in capital, production and membership	Ordinal ratio	Descriptive	Frequencies Mean Correlation Regression

## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION, INTERPRETATION AND DISCUSSIONS

#### 4.1 Introduction

This chapter presents the results which has been analyzed and interpreted based on the thematic areas.

#### 4.2 Questionnaire return rate

This study carried out a census of 161 respondents and obtained data from all the 161 respondents hence a 100% response rate. The 100% response rate was adequate for the study since complete data was obtained from all the respondents. The results are shown by table 4.1 as follows

**Table 4.1 Questionnaire returns Rate**

	Frequency	Percent
Questionnaires issued	161	100.0
Questionnaires returned	161	100.0
Questionnaires not returned	0	0

The researcher used various techniques to realize high response rate. The techniques include Prior individual meeting with every irrigation cooperative's executive members to enquire the members meeting dates. The researcher then met with the respondents prior to the distribution of questionnaires and mulled over issues pertaining to the research. The researcher then issued questionnaire to every member and discussed with them during the next scheduled meeting of the members. This gave the researcher an advantage of collecting all the questionnaires thus having a hundred percent response.

#### 4.3 General Information of respondents

The general information covers section 4.2.1 on the number of respondents from each of the irrigation cooperatives and section 4.2.2 which covers the respondents' year of membership.

The study was interested in capturing general knowledge of irrigation cooperative members belonged to and also in terms of the years they were in their irrigation cooperative. The results on the number of respondents from each irrigation cooperative are shown by table 4.3 as follows.

#### 4.2.1 Irrigation Cooperatives

The study sought to establish how the members are distributed alongside irrigation cooperatives. The respondents were asked to state the irrigation cooperative they belonged to. The results are as shown in the table below.

**Table 4.2: Irrigation Cooperatives**

<b>Responses</b>	<b>Frequency</b>	<b>Percent</b>
Kiaga	26	16.1%
Ena	36	22.4%
NthamariGachichori	11	6.8%
KirukiKiende	20	12.4%
GatunduriKamavindi	20	12.4%
Mweria	20	12.4%
Evurore	20	12.4%
Mbenwom	8	5.0%
<b>Total</b>	<b>161</b>	<b>100.0</b>

The results presented in table 4.2 shows that out of 161 respondents who participated in the study 26(16.1%) registered with Kiaga irrigation cooperative,36( 22.4%)registered with Ena and 11 ( 6.8% )with NthamariGachichoriirrigation cooperatives while 20(12.4%) of the respondents were from KirukiKiende, GatunduriKamavindi, Mweria and Evuroreirrigation cooperatives respectively. The results also show that 8(5%) respondentswere from the Mbenwom irrigation cooperatives, which indicates that all the irrigation cooperatives were covered. This registration implies that a well-managed irrigation cooperative led to higher number of members.

#### 4.2.2 Years of Membership

The study sought to establish the years that one has been a member of irrigation cooperative. To acquire this membership, respondents were asked to state the number of years they have been members.

The results of the respondents' years of membership are shown by table 4.4 as follows

**Table 4.3: Years of Membership**

<b>Years of membership</b>	<b>Frequency</b>	<b>Percent</b>
Below 2 yrs	28	17.4
2-5 yrs	40	24.8
over 5 yrs	93	57.8
<b>Total</b>	<b>161</b>	<b>100.0</b>

Table 4.3 shows that 28 (17.4%) of the respondents were members of the irrigation cooperatives for a period of less than 2 years while 40 (24.8%) were members for a period of 2-5 years whereas 93 (57.8%) had been members of the irrigation cooperatives for more than 5 years. This indicates that most of the respondents have been members of the irrigation cooperatives for more than 5 years and due to the level of experience and expertise within the course of their operation their contributions on performance would be of great importance.

#### 4.4 Levels of Education and Training and Performance of irrigation cooperatives

One of the objective that the study sought to achieve was to establish how level of education and training influence performance of irrigation cooperatives.

To achieve this the respondents were requested to give opinions on the level of agreement or disagreement on the statements provided in a scale of 1-5 where 1=strongly disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree

The results on levels of education and training are shown by table 4.5 as follows and discussed thereafter

**Table 4.5: Levels of Education and Training and performance of irrigation cooperatives**

<b>Statement</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>	<b>Std. Dev</b>
The irrigation cooperatives offer scholarships for staff	87	66	8	0	0	1.51	.593
Seminars, workshops and conferences are open for all members	133	28	0	0	0	1.17	.380
The irrigation cooperatives benchmarks with the best performing cooperatives	134	27	0	0	0	1.19	.375
Cooperatives conduct and sponsors research aimed at improving its operation.	121	40	0	0	0	1.25	.433
Cooperative participates in agricultural show/fares to show case its produce	75	77	9	0	0	1.59	.597
<b>Composite mean and standard deviation</b>						<b>1.34</b>	<b>.475</b>

The findings on table 4.5 shows that In irrigation cooperatives offering scholarship for staff out of 161 respondents who participated in the study 87(54.04%) strongly agreed, 66(40.99%) agreed, and 8(4.97%) were neutral and these provided a mean score of 1.51 and standard deviation of 0.593. This against composite mean of (1.34) and standard deviation of .475 this means that scholarships offered to staff influences the performance of irrigation cooperatives positively.

Similarly in irrigation cooperatives offering Seminars, workshops and where conferences are open for all members of staff out of 161 respondents who participated in the study 133(90.9%)

strongly agreed, 28(17.39%) agreed, these provided a mean score of 1.17 and standard deviation of 0.380. This against composite mean of (1.34) and standard deviation of .475

In irrigation cooperatives which benchmarks with the best performing cooperatives out of 161 respondents who participated in the study 134(83.2%) strongly agreed, 27(16.77%) agreed, these provided a mean score of 1.19 and standard deviation of 0.375. This against composite mean of 1.34 and standard deviation of .475

In irrigation cooperatives which conduct and sponsors research aimed at improving its operations, out of 161 respondents who participated in the study 121(75.15%) strongly agreed, 27(24.84%) agreed, these provided a mean score of 1.25 and standard deviation of 0.433. This against composite mean of 1.34 and standard deviation of .475

In irrigation cooperatives which participates in agricultural show/fares to show case its produce out of 161 respondents who participated in the study 75(46.58%) strongly agreed, 77(47.8%) agreed and 9(5.59%) were neutral, these provided a mean score of 1.59 and standard deviation of 0.597. This against composite mean of 1.34 and standard deviation of .475

This finding is similar to those of Chibada et al (2009) who supports that the performance of irrigation cooperative projects depends on the level of education and training of both leaders and members therefore this enhances their knowledge of irrigation cooperatives projects.

#### **4.3.2 Level of Employment of Education and Training Activities**

Table 4.6 shows the findings on the level of employment of education and training activities





**Table 4.6: Level of Employment of Education and Training Activities**

<b>Statements</b>	<b>Very Low</b>	<b>Low</b>	<b>Moderate</b>	<b>High</b>	<b>Very High</b>	<b>Mean</b>	<b>Std. Dev</b>
Level of application of staff scholarships	0	0	48	113	161	3.70	.459
Level of application of seminars	0	0	45	116	0	3.72	.450
Level of application of workshops	0	0	0	64	97	2.60	.491
Level of application of conferences	0	0	34	116	11	3.86	.511
Level of application of exhibition	0	0	39	104	18	3.87	.582
Level of application of show fares	0	0	0	36	125	2.78	.418
<b>Composite Mean and standard deviation</b>						<b>3.39</b>	<b>0.485</b>

The above findings show that the mean score for staff scholarships, seminars, conferences and exhibitions is greater than the composite mean of 3.39. This shows high level of influence to irrigation cooperatives performance by the listed variable

In irrigation cooperatives the level of application of scholarship for staff out of 161 respondents who participated in the study 48(29.81%)were moderate, 113(70.18%)was high, and these provided a mean score of 3.70% and standard deviation of 0.459.This against composite mean of 3.39 and standard deviation of .485

In irrigation cooperatives which Seminars, workshops and conferences are open for all members of staff, the level of application out of 161 respondents who participated in the study 45(27.95%)moderate, 116(72.04%)was high, these provided a mean score of 3.72% and standard deviation of .450.This against composite mean of 3.39 and standard deviation of .485

In irrigation cooperatives which carry out workshops, the Level of application of workshops out of 161 respondents who participated in the study64(39.75%)was high, 97(60.24%)was very high, these provided a mean score of 2.60 and standard deviation of 0.491.This against composite mean of 3.39 and standard deviation of .485

In irrigation cooperatives Level of application of conferences, out of 161 respondents who participated in the study 34(21.11%)moderate, 116(72.04%)high, and 11(6.8%) was very high these provided a mean score of 3.86% and standard deviation of 0.511.This against composite mean of 3.39 and standard deviation of .485

In irrigation cooperatives Level of application of exhibition, out of 161 respondents who participated in the study 39(24.22%) moderate, 104(64.59%) high, and 18(11.18%) was very high these provided a mean score of 3.87 and standard deviation of 0.582.This against composite mean of 3.39 and standard deviation of .485

In irrigation cooperatives Level of application of show fares out of 161 respondents who participated in the study 36(22.36%) moderate, 125(77.63%) high, and these provided a mean score of 2.78 and standard deviation of 0.418.This against composite mean of 3.39 and standard deviation of .485

This finding conforms to that of Hyden (1973) who supports that the informal learning that takes place in groups through sharing of knowledge, skills, attitudes and behaviors, are likely going to shape irrigation cooperatives differently.

### 4.3.3 Influence of Levels of Education and Training Activities on performance

**Table 4.7: Influence of Levels of Education and Training Activities**

Statements	Very Influential	Influential	Moderately Influential	Not Influential	Not Sure	Mean	Std. Dev
Level of education influence on Staff scholarships	93	68	0	0	0	1.42	.495
Level of education influence on Seminars	103	58	0	0	0	1.36	.482
Level of education influence on Workshops	124	37	0	0	0	1.23	.422
Level of education influence on Conferences	116	45	0	0	0	1.28	.450
Level of education influence on Exhibition	110	51	0	0	0	1.32	.467
Level of education influence on Show fares	118	43	0	0	0	1.27	.444
<b>Composite Mean and standard deviation</b>						<b>1.31</b>	<b>.460</b>

Table 4.7 shows that the influence of levels of education on staff scholarship In irrigation cooperatives where out of 161 respondents who participated in the study 93(57.69%)was very influential, 68(42.23%)was influential, and these provided a mean score of 1.42 and standard deviation of 0.495.This against composite mean of 1.31 and standard deviation of .460

In irrigation cooperatives the influence of levels of education and training on Seminars, out of 161 respondents who participated in the study 103(63.97%) was very influential, 58(36.02%) was influential, these provided a mean score of 1.36and standard deviation of 0482.This against composite mean of 1.31 and standard deviation of .460

In irrigation cooperatives the influence of levels of education and training on workshops out of 161 respondents who participated in the study 124(77.01%) was very influential, 37(22.98%) was influential, these provided a mean score of 1.23 and standard deviation of 0.422.This against composite mean of 1.31 and standard deviation of .460

In irrigation cooperatives the influence of levels of education and training on conferences, out of 161 respondents who participated in the study 116(72.04%)was very influential, 45(27.95%)was influential, these provided a mean score of 1.28% and standard deviation of 0.450.This against composite mean of 1.31 and standard deviation of .460

In irrigation cooperatives the influence of levels of education and training on exhibition, out of 161 respondents who participated in the study 110(68.32%) was very influential, 51(31.67%)was influential, and these provided a mean score of 1.32 and standard deviation of 0.467.This against composite mean of 1.31 and standard deviation of .460

In irrigation cooperatives the influence of levels of education and training on show fares out of 161 respondents who participated in the study 118(73.29%)was very influential, 43(26.70%)was influential, and these provided a mean score of 1.27 and standard deviation of 0.444.This against composite mean of 1.31 and standard deviation of .460on staff scholarships. According to the GOK (2007), many problems facing irrigation cooperative projects in Kenya is lack of relevant and necessary management skills and knowledge among members and the employees of irrigation cooperative projects.

The finding indicates that the level of education influence on staff scholarship, seminars and exhibition was very influential and this in return would affect the performance of irrigation cooperatives positively.

#### **4.4 Organized Marketing for Products and Performance of irrigation cooperatives**

This section provides the results on influence of organized marketing of products, level of employment of organized marketing techniques and influence of marketing techniques.

#### 4.4.1 Influence of Organized Marketing of Products

The results on the influence of organized marketing of products are depicted in table 4.8 as follows

**Table 4.8: Influence of Organized Marketing of Products Influence**

<b>Statements</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>	<b>Std. Dev</b>
Product promotion through advertisement	104	44	0	0	0	1.35	.480
The target market for the produce has been segmented into groups	117	44	0	0	0	1.27	.447
The marketing department conducts market intelligence to establish economy change	9	118	34	0	0	2.16	.494
Marketing department conducts market survey to determine the prevailing market prices	92	69	0	0	0	1.43	.496
<b>Composite Mean and standard deviation</b>						<b>1.55</b>	<b>0.479</b>

Table 4.8 shows that the influence of Product promotion through advertisement whereby out of 161 respondents who participated in the study 104(64.59%) strongly agreed, 44(27.32%) agreed, and these provided a mean score of 1.35 and standard deviation of 0.480. This against composite mean of 1.55 and standard deviation of .479

In irrigation cooperatives the target market for the produce has been segmented into groups out of 161 respondents who participated in the study 117(72.67%) strongly agreed whereas 44(27.32%) agreed, these provided a mean score of 1.27 and standard deviation of 0.447. This against composite mean of 1.55 and standard deviation of .479

In irrigation cooperatives the marketing department conducts market intelligence to establish economy change out of 161 respondents who participated in the study 9(5.59%) strongly agreed,

11(6.83%) agreed and 34(21.11%) were neutral these provided a mean score of 2.16 and standard deviation of 0.494. This against composite mean of 1.55 and standard deviation of .479

In irrigation cooperatives Marketing department conducts market survey to determine the prevailing market prices, out of 161 respondents who participated in the study 92(57.14%) strongly agreed, 69(42.85%) agreed, these provided a mean score of 1.43 and standard deviation of 0.496. This against composite mean of 1.55 and standard deviation of .479

ILO (2004) supports that the need is great, to introduce improved marketing approaches in order to enhance performance of irrigation cooperatives.

#### 4.4.2 Level of Employment of Organized Marketing Techniques

The findings of the level of employment of organized marketing techniques are show under table 4.9

**Table 4.9: Level of Employment of Organized Marketing Techniques**

<b>Statements</b>	<b>Very low</b>	<b>Low</b>	<b>Moderate</b>	<b>High</b>	<b>Very High</b>	<b>Mean</b>	<b>Std. Dev</b>
Marketing technique by promotion	0	0	0	45	116	2.72	.450
Marketing technique by segmentation	0	0	0	53	108	2.67	.471
Marketing technique by intelligence	0	0	0	57	104	2.65	.480
Marketing technique by surveys	0	0	0	36	125	2.78	.418
<b>Composite Mean and standard deviation</b>						<b>2.71</b>	<b>0.455</b>

Table 4.9 shows the composite mean of marketing to be 2.71. The Promotion and survey marketing techniques shows to be more influential in affecting the irrigation cooperatives performance positively by having a mean greater than the composite mean

It is further revealed that the level of employment of Marketing technique by promotion out of 161 respondents who participated in the study 45(27.95%) was high, 116(68.32%) was very high, and

these provided a mean score of 2.72% and standard deviation of 0.450. This against composite mean of 2.71 and standard deviation of .455

In irrigation cooperatives the level of employment of Marketing technique by segmentation out of 161 respondents who participated in the study 53(32.91%) was high whereas 108(67.08%) was very high, these provided a mean score of 2.67 and standard deviation of .471. This against composite mean of 2.71 and standard deviation of .455

In irrigation cooperatives the level of employment of marketing technique by intelligence out of 161 respondents who participated in the study 57(35.40%) was high, 104(64.59%) was very high and these provided a mean score of 2.65% and standard deviation of 0.480. This against composite mean of 2.71 and standard deviation of .455

In irrigation cooperatives level of employment of Marketing technique by surveys, out of 161 respondents who participated in the study 36(22.36%) was high, 125(77.63%) was very high, these provided a mean score of 2.78 and standard deviation of 0.418. This against composite mean of 2.71 and standard deviation of .455. The results are supported by ILO (2004) whom indicates that cooperatives use their traditional methods to produce and do little if any of value addition through processing.

#### **4.4.3 Influence of Marketing Techniques**

The results on the influence of marketing techniques are shown under table 4.10 as follows



**Table 4.10: Influence of Marketing Techniques**

<b>Statements</b>	<b>Very Influential</b>	<b>Influential</b>	<b>Moderate</b>	<b>Not Influential</b>	<b>Not Sure</b>	<b>Mean</b>	<b>Std. Dev</b>
Marketing technique by branding	119	42	0	0	0	1.26	.440
Marketing technique by packaging	132	29	0	0	0	1.18	.385
Marketing technique by pricing	104	57	0	0	0	1.35	.480
Marketing technique by advertisements	134	27	0	0	0	1.17	.375
Marketing technique by Product distribution	127	34	0	0	0	1.21	.409
Marketing technique by Target marketing	120	41	0	0	0	1.25	.437
<b>Composite Mean and standard deviation</b>						<b>1.24</b>	<b>0.421</b>

Table 4.10 shows that the composite mean of marketing technique to be 1.24 whereby branding, pricing and target marketing positively influences the performance of irrigation cooperatives.

In irrigation cooperatives out of 161 respondents who participated in the study 119(73.9169%) was very influential, 42(26.08%) was influential, and these provided a mean score of 1.26 and standard deviation of 0.440. This against composite mean of 1.24 and standard deviation of .421

In irrigation cooperatives the influence of Marketing technique by packaging, out of 161 respondents who participated in the study 132(81.98%) was very influential, 29(18.01%) was influential, these provided a mean score of 1.18% and standard deviation of .385. This against composite mean of 1.24 and standard deviation of .421

In irrigation cooperatives the influence of Marketing technique by pricing out of 161 respondents who participated in the study 104(64.59%) was very influential, 57(35.40%) was influential, these provided a

mean score of 1.35 and standard deviation of 0.480. This against composite mean of 1.24 and standard deviation of .421

In irrigation cooperatives the influence of Marketing technique by advertisements, out of 161 respondents who participated in the study 134(83.22%) was very influential, 27(16.77%) was influential, these provided a mean score of 1.17 and standard deviation of 0.375. This against composite mean of 1.24 and standard deviation of .421

In irrigation cooperatives the influence of Marketing technique by Product distribution, out of 161 respondents who participated in the study 127(78.88%) was very influential, 34(21.11%) was influential, and these provided a mean score of 1.21 and standard deviation of 0.409. This against composite mean of 1.24 and standard deviation of .421

In irrigation cooperatives the influence of Marketing technique by Target marketing out of 161 respondents who participated in the study 120(74.53%) was very influential, 41(25.46%) was influential, and these provided a mean score of 1.25 and standard deviation of 0.437. This against composite mean of 1.24 and standard deviation of .421 ILO (2004) suggests that cooperatives need to diversify, add value and become aggressive marketing organizations to succeed and grow in today's competitive environments.

#### **4.5 Governance Structure and Performance of irrigation cooperatives**

This section presents findings on influence governance structure, level of employment of governance structures and the influence of governance functions in promoting performance.

##### **4.5.1 Governance Structure Influence on performance of irrigation cooperatives**

The results on influence governance structure are depicted by table 4.12 as follows

**Table 4.11: Governance Structure Influence**

<b>Statements</b>	<b>Strongly Agree</b>	<b>Agree</b>	<b>Neutral</b>	<b>Disagree</b>	<b>Strongly Disagree</b>	<b>Mean</b>	<b>Std. Dev</b>
That the governance structure has met all legal requirements	98	63	0	0	0	1.39	.490
That there is clear delegation of authority and responsibilities	112	49	0	0	0	1.30	.462
There is clear flow of communication in the cooperative project	119	42	0	0	0	1.26	.440
All stake holders participate in decision making	104	57	0	0	0	1.35	.480
The management continuously conducts monitoring and evaluation	114	47	0	0	0	1.29	.456
There is transparency on accountability	123	38	0	0	0	1.24	.426
<b>Composite Mean and standard deviation</b>						<b>1.31</b>	<b>0.459</b>

The results on table 4.11 shows that the governance structure has met all legal requirement out of 161 respondents who participated in the study 98(60.86%) strongly agreed and 63(39.13%) agreed, these provided a mean score of 1.39 and standard deviation of 0.490. This against composite mean of 1.31 and standard deviation of .459 and this shows that out of the findings of the research that a governance structure that has met all legal requirement influences performance of irrigation cooperative positively.

In irrigation cooperatives where there is clear delegation of authority and responsibilities out of 161 respondents who participated in the study 112(69.56%) strongly agreed, 49(30.43%) agreed, these provided a mean score of 1.30 and standard deviation of 0.462. This against composite mean of 1.31 and standard deviation of .459

In irrigation cooperatives which benchmarks with the best performing cooperatives out of 161 respondents who participated in the study 134(83.2%) strongly agreed, 27(16.77%) agreed, these provided a mean score of 1.19 and standard deviation of 0.375. This against composite mean of 1.31 and standard deviation of .475

In irrigation cooperatives There is clear flow of communication in the cooperative project, out of 161 respondents who participated in the study 119(73.91%) strongly agreed, 42(26.08%) agreed, these provided a mean score of 1.26 and standard deviation of 0.440. This against composite mean of 1.31 and standard deviation of .459

In irrigation cooperatives all stake holders participate in decision-making out of 161 respondents who participated in the study 104 (64.59%) strongly agreed, 57(35.40%) agreed these provided a mean score of 1.35 and standard deviation of .480. This against composite mean of 1.31 and standard deviation of .459. This indicates that an irrigation cooperative that involves all stakeholders in decision making is likely to influence the performance positively.

In irrigation cooperatives the management continuously conducts monitoring and evaluation out of 161 respondents who participated in the study 114 (70.80%) strongly agreed, 47(29.19%) agreed these provided a mean score of 1.29 and standard deviation of .456. This against composite mean of 1.31 and standard deviation of .459

In irrigation cooperatives there is transparency and accountability out of 161 respondents who participated in the study 123 (76.39%) strongly agreed, 38(23.60%) agreed these provided a mean score of 1.24 and standard deviation of .426. This against composite mean of 1.31 and standard deviation of .459. The results indicate that the respondents strongly agreed that various governance structures affect the performance of irrigation cooperatives. This finding is similar to that of North (1990) who supports that together with good institutions; good governance promotes an organization's performance.

#### **4.5.2 Level of Employment of Governance Structures**

The findings on the level of employment of governance structures is depicted by table 4.12 as follows

**Table 4.12: Level of Employment of Governance Structures**

<b>Statements</b>	<b>Very High</b>	<b>High</b>	<b>Moderate</b>	<b>Low</b>	<b>Very Low</b>	<b>Mean</b>	<b>Std. Dev</b>
Level of employment of governance by top level management	126	35	0	0	0	1.78	.414
Level of employment of governance by middle level management	74	87	0	0	0	1.46	.500
Level of employment of governance by low level management	134	27	0	0	0	1.83	.375
Level of employment of governance by supervisory committee	133	28	0	0	0	2.83	.380
Level of employment of governance by government representatives	133	28	0	0	0	1.83	.380
Level of employment of governance by public participation	127	34	0	0	0	2.79	.409
<b>Composite Mean and standard deviation</b>						<b>2.09</b>	<b>0.41</b>

Table 4.13 shows a composite mean of 2.09. The level of employment of governance by public participation and level of employment of governance by supervisory committee surpass the composite mean thus has high influence towards the irrigation cooperatives performance. It is further revealed that the level of employment of governance by top level management out of 161 respondents who participated in the study 126(78.26%)was very high, 35(21.73%)was high, and these provided a mean score of 1.78 and standard deviation of 0.414.This against composite mean of 2.09 and standard deviation of .41

In irrigation cooperatives Level of employment of governance by middle level management out of 161 respondents who participated in the study 74(45.96%)was very high whereas 87(54.03%)was

high, these provided a mean score of 1.46 and standard deviation of .500. This against composite mean of 2.09 and standard deviation of .41

In irrigation cooperatives Level of employment of governance by low level management out of 161 respondents who participated in the study 134(83.22%) was very high, 27(16.77%) was high and these provided a mean score of 1.83 and standard deviation of 0.375. This against composite mean of 2.09 and standard deviation of .41

In irrigation cooperatives Level of employment of governance by supervisory committee, out of 161 respondents who participated in the study 133(82.60%) was very high, 28(17.39%) was high, these provided a mean score of 1.97 and standard deviation of 0.380. This against composite mean of 2.09 and standard deviation of .41

In irrigation cooperatives Level of employment of governance by government representatives, out of 161 respondents who participated in the study 133(82.60%) was very high, 28(17.39%) was high, these provided a mean score of 1.97 and standard deviation of 0.380. This against composite mean of 2.09 and standard deviation of .415. Wehrich et.al (2010) postulates that the running and management of irrigation cooperatives is dependent on three major distinctive categories of people in the governance structure, these include the board of management, members and the employees.

#### **4.5.3 Influence of Governance Functions in Promoting Performance**

The findings on the influence of governance functions in promoting performance as shown in table 4.13.

**Table 4.13: Influence of Governance Functions in Promoting Performance**

<b>Statements</b>	<b>Very Influential</b>	<b>Influential</b>	<b>Moderate</b>	<b>Not Influential</b>	<b>Not Sure</b>	<b>Mean</b>	<b>Std. Dev</b>
Governance functions in promoting performance by planning	134	27	0	0	0	1.17	.375
Governance functions in promoting performance by organizing	106	55	0	0	0	1.34	.476
Governance functions in promoting performance by staffing	116	45	0	0	0	1.28	.450
Governance functions in promoting performance by leading	125	36	0	0	0	1.22	.418
Governance functions in promoting performance by coordination	106	55	0	0	0	1.34	.476
Governance functions in promoting performance by controlling	87	74	0	0	0	1.46	.500
<b>Composite Mean and standard deviation</b>						<b>1.30</b>	<b>0.449</b>

Table 4.13 shows a composite mean of 1.30. The influence of governance functions in promoting performance by organizing, coordination and controlling surpass the composite mean of 1.30 thus has high influence towards the irrigation cooperatives performance

Governance functions on promoting performance of irrigation cooperatives by planning out of 161 respondents who participated in the study 134(83.22%)was very influential, 27(16.77%)was influential, and these provided a mean score of 1.17 and standard deviation of 0.375.This against composite mean of 1.30 and standard deviation of .449

In irrigation cooperatives the influence of organizing on promoting performance, out of 161 respondents who participated in the study 106(65.83%) was very influential, 55(34.16%) was influential, these provided a mean score of 1.34 and standard deviation of 0.476. This against composite mean of 1.30 and standard deviation of .449.

In irrigation cooperatives the influence of staffing on promotion of performance out of 161 respondents who participated in the study 116(72.04%) was very influential, 45(27.95%) was influential, these provided a mean score of 1.28 and standard deviation of 0.450. This against composite mean of 1.30 and standard deviation of .449

In irrigation cooperatives the influence of leading on promotion of performance, out of 161 respondents who participated in the study 125(77.63%) was very influential, 36(22.36%) was influential, these provided a mean score of 1.22 and standard deviation of 0.418. This against composite mean of 1.30 and standard deviation of .449

In irrigation cooperatives the influence of coordination on promotion of performance, out of 161 respondents who participated in the study 106(65.83%) was very influential, 55(34.16%) was influential, and these provided a mean score of 1.34 and standard deviation of 0.476. This against composite mean of 1.30 and standard deviation of .449

In irrigation cooperatives the influence of controlling on promotion of performance in irrigation cooperatives out of 161 respondents who participated in the study 87(54.03%) was very influential, 74(45.96%) was influential, and these provided a mean score of 1.46 and standard deviation of 0.500. This against composite mean of 1.30 and standard deviation of .449

According to Banishree and Kumar, (2006), cooperative structure affects then performance of irrigation cooperatives. Members join cooperatives with different intentions such as working together for development, benefit from trainings, marketing of their product.

#### **4.6 Technology and Performance of irrigation cooperatives**

The findings on the influence of technology are shown by table 4.14 as follows



**Table 4.14: Influence of Technology**

<b>Statements</b>	<b>Very Influential</b>	<b>Influential</b>	<b>Moderate</b>	<b>Not Influential</b>	<b>Not Sure</b>	<b>Mean</b>	<b>Std. Dev</b>
Systems are installed to enhance transaction processing	126	35	0	0	0	1.78	.414
Technology enhances accuracy and reliability of irrigation cooperatives	74	87	0	0	0	1.46	.500
Information systems bring information timeliness	134	27	0	0	0	1.83	.375
Technology allows for a reduction in transactions costs and timely communication	133	28	0	0	0	1.97	.380
To integrate technology cooperatives require training of staff	127	34	0	0	0	2.14	.409
<b>Composite Mean and standard deviation</b>						<b>1.84</b>	<b>0.416</b>

Table 4.14 shows a composite mean of 1.84 and all the sub variables technology showed a weak influence on the performance of the irrigation cooperatives. However, the respondent indicated that systems had been installed to enhance transaction processing, technology enhances accuracy, reliability of irrigation cooperatives and that information systems bring information timeliness, and technology allows for a reduction in transactions costs and timely communication as indicated by mean values of 1.78, 1.46, 1.83 and 1.97 which indicate agree. The results also show that the respondents indicate that to integrate technology cooperatives require training of staff as shown by a mean value of 2.14, which stands for influential. This finding indicates that technology is very influential towards enhancing the performance of irrigation cooperatives. Stiglitz (2009) states that technology can provide reliable access to markets (local, regional and

international) through increased use of affordable communications. The World Bank (2007) also supports that technology broadly, allows for a reduction in transactions costs, improved access to timely and usable knowledge, improved communications with markets and within the supply chain, acquisition of appropriate skills for enhancement of productivity and improved information about new opportunities.

## **CHAPTER FIVE**

### **SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.1 Introduction**

This chapter presents a summary of the findings, the study conclusions, recommendations and areas for further research.

#### **5.2 Summary of Findings**

The study sought to investigate the factors influencing the performance of irrigation cooperatives guided by four objectives as discussed.

##### **5.2.1 Levels of Education and Training and Performance of irrigation cooperatives**

Irrigation cooperatives offers scholarship for the staff and the response in the study indicates that 54.04% strongly agreed while 40.99% agreed. This concludes that 95.03% of the members of the irrigation cooperatives believe scholarship to staff has great impact on the performance. It is further revealed that Cooperatives offering Seminars, workshops and where conferences are open for all members of staff, out of 161 respondents who participated in the study 90.9% strongly agreed, 9.1% agreed. This indicates that all the respondents believe that seminars and workshops are of great impact towards good performance of the irrigation cooperatives.

The finding further revealed on how levels of education and training of the members influence performance of the irrigation cooperatives in Embu County established that the irrigation cooperatives offer scholarships for staff, seminars, workshops and conferences are open for all members and that the irrigation cooperatives benchmarks with the best performing cooperatives. The findings also found that cooperatives conduct and sponsors research aimed at improving its operation and that cooperative participate in agricultural show/fares to show case its produce. The findings also revealed that the level of application of staff scholarships, the level of application of seminars, the level of application of conferences and the level of application of

exhibition was very high and that the application of education and training activities was very influential on the performance of irrigation cooperatives.

### **5.2.2 Organized Marketing for Products and Performance of irrigation cooperatives**

The findings showed that the influence of Product promotion through advertisement whereby out all respondents who participated in the study 64.59% strongly agreed, 27.32% agreed, and these provided a total of 91.92% of the total respondents who agreed that advertisements has great influence towards the performance of irrigation cooperatives. In irrigation cooperatives the target market for the produce was 72.67% of respondents who strongly agreed whereas 27.32% agreed; these provided a 100% of the respondents agreeing that target marketing has great influence towards the performance of irrigation cooperatives.

The findings on how organized marketing for products influences performance of irrigation cooperatives in Embu County found that product promotion through advertisement and the target market for the produce has been segmented into groups and that the marketing department conducts market survey respectively and that marketing department conducts market intelligence to establish economy change in that order. These findings further revealed that the levels of application of organized marketing techniques by irrigation cooperatives were high.

### **5.2.3 Governance Structure and Performance of irrigation cooperatives**

The results on how governance structure influences the performance of irrigation cooperatives in Embu County revealed that various governance structures affect the performance of irrigation cooperatives and that the level of employment of various government structure by irrigation cooperatives was very high.

The study showed that governance structure met all legal requirements and out of 161 respondents who participated in the study 60.86% strongly agreed to this and 39.13% agreed. This concludes to a 100% of the respondents agreeing thus the study established that governance functions are very influential on the performance of irrigation cooperatives.

### **5.2.4 Technology and Performance of irrigation cooperatives**

The results on how technology influences performance of irrigation cooperatives in Embu County established that systems had been installed to enhance transaction processing, technology enhances accuracy, reliability of irrigation cooperatives and that information systems bring information timeliness, and technology allows for a reduction in transactions costs and timely communication. It is revealed that 78.26% said technology influence on systems enhancing transaction processing is very influential to performance and 21.73% agreed on it being influential.

The results revealed that to integrate technology cooperatives require training of staff and that technology is very influential tool for enhancing the performance of irrigation cooperatives.

### **5.3 Conclusions**

The findings of the study found that level of education and training influences the performance of irrigation cooperatives. Based on these finding the study concludes that levels of education and training of irrigation cooperatives members influences the performance of irrigation cooperatives in Embu County.

The results further established that organized marketing for products influences performance of irrigation cooperatives in Embu County. These findings further revealed that the levels of application of organized marketing techniques by irrigation cooperatives were high. Based on the finding the study concludes that organized marketing for products influences the performance of irrigation cooperatives in Embu County.

The results on how governance structure influences the performance of irrigation cooperatives in Embu County revealed that various governance structures affect the performance of irrigation cooperatives and that the level of employment of various government structure by irrigation cooperatives was very high.

The findings established that technology influences performance of irrigation cooperatives in Embu County established that systems had been installed to enhance transaction processing, technology enhances accuracy, reliability of irrigation cooperatives and that information systems bring information timeliness and technology allows for a reduction in transactions costs and

timely communication. As per this finding, the study concludes that governance structure influences the performance of irrigation cooperatives in Embu County.

#### **5.4 Recommendations**

The study concludes that levels of education and training of irrigation cooperatives members influences the performance of irrigation cooperatives in Embu County. The study therefore recommends that irrigation cooperatives in Embu should constantly check on the levels of education and carry out training activities as such training would help enhance their cooperatives performance.

The study concluded that organized marketing for products influences the performance of irrigation cooperatives in Embu County. The study therefore recommends that irrigation cooperative in Embu County should enhance the level of application of organized marketing for products activities so that they enhance the performance of their irrigation cooperatives.

The study concluded that governance structure influences the performance of irrigation cooperatives in Embu County. Thus, the study recommends that irrigation cooperatives in Embu county should enhance their governance mechanisms as such would enhance transparency and accountability which would improve performance of their irrigation cooperatives.

The study also concluded that technology influences the performance of irrigation cooperatives in Embu County. Hence, the study recommends that the management of irrigation cooperative in Embu County should embrace technology and use the current forms of technology to enhance the performance of their irrigation cooperatives.

#### **5.5 Suggested Areas for Further Research**

This study found that the considered independent variables (levels of education and training, organized market for products, governance structure and technology) influenced performance of irrigation cooperatives; nevertheless, there are other factors, which influence the performance of irrigation cooperatives in Embu County. This study thus recommends an additional study on the other factors both financial and non-financial, which determine the irrigation cooperatives financial performance.

In addition, the study measured performance using non-financial measures like capital base of the irrigation cooperative, the production trend of the irrigation cooperative products and the trend of membership and did not incorporate financial performance measures like return on assets, return on equity and other profitability ratio. The study therefore recommends an additional research, which uses financial performance measures to evaluate the performance of the irrigation cooperatives in Embu County.

## REFERENCES

- Andrew, M. (2006). *Types of Cooperatives*. Northwest Cooperative Development Centre. Accessed on 29<sup>th</sup> May, 2017.
- Arcus, G. (2004). *Principle, approaches and guidelines for participatory revitalization of smallholder irrigation schemes*. Year 1 Progress Report, WRC Project No. K5//1463/4. Arcus Gibb, East London.
- Backeberg GR, Bembridge TJ, Bennie ATP, Groenewald JA, Hammes PS, Pullen RA, & Thompson, . (1996). *Policy proposal for irrigated agriculture in South Africa*. WRC Report KV96/96. Water Research Commission, Pretoria.
- Bembridge, T. J. (2000). *Guidelines for Rehabilitation of Small-scale Farmer Irrigation Schemes in South Africa*. WRC Report No. 891/1/00, Water Research Commission, Pretoria.
- Birchall, J. (2004). *Cooperatives and the Millennium Development Goals*. International Labour Office (ILO), Geneva, Switzerland [Online]. <http://www.ilo.org/> (Accessed 15/10/2017).
- Caroline, G. (2009). *Cooperative Stakeholders. Who Counts in Cooperatives and How, Working paper on Social and Cooperative Entrepreneurship*; HIVA-Catholic University of Leuven. Accessed on 15th Jan, 201
- Chambo, S. (2007). *An Analysis of Socio-economic impact of Co-operatives in Africa and their institutional context*; ICA and CCA, Nairobi 2007.
- Chepkwony, C. (2008). *The Role of Harames in Social-Economic Development in Kenya: A Case of The Education Sector*-A Master's Thesis in International Studies in Philanthropy and Social Entrepreneurship; Bologna .University-ô Accessed on 17 Feb, 2017.
- Chibanda, M., Ortmann, G. F & Lyn, M.L, (2009) Institutional and Governance Factors Influencing the Performance of Selected Smallholder Agriculture Cooperatives in Kwazulu-Nato; *Agrekonvol* .48 no. 3 accessed on 9/6/17. <http://www.ageconsearch.umn.edu/>
- Cooper, D. R. & Schindler, P.S. (2006). *Business Research Methods (9th Edn)* McGraw-Hill: New York



- Crosby CT, De Lange M, Stimie CM, & Van Der Stoep I. (2000). *A review of planning and design procedures applicable to small-scale farmer irrigation projects*. WRC Report No. 578/2/00. Water Research Commission, Pretoria. p. 241
- GOK, (2007). *Renewed Performance through the Cooperative Movement*: Sessional Paper no. 4, Ministry of cooperative Development (Kenya).
- GOK, (2007). *Kenya Vision 2030: The Popular Version*
- GOK, (2015). *Annual Report 2015*. Ministry of Cooperative Development (Kenya).
- Hendrikse, G. & Veerman, C. (2001). Marketing cooperatives and financial structure: a transaction cost economics analysis. *Agricultural Economics*, 26:205-216
- Hollis A., & Sweetman A. (1998) ó Microcredit: What Can We Learn From the Past? *World Development*, 26(10), 1875-1891
- Hyden, G. (2003). *Efficiency versus Distribution in East African Cooperatives; study in Organizational Conflicts*, EALB: Nairobi.
- ICA, (2005). *Cooperative Identity, Values and Principles*. Accessed on 13<sup>th</sup> Feb. 2017.
- ICA. (2013). *International Cooperative Alliance Blueprint for a Cooperative Decade*-Issued 7<sup>th</sup> Feb, 2017-Accessed on 29<sup>th</sup> May, 2017
- Jorgen, L. & Bindslev, M. (2006). *Organizational Theory*, Ventus Publishing ApS: ISBN 87-7681-169-7-Accessed on 27<sup>th</sup> May, 2017.
- Kathuri, N.J., & Pals, D. A. (2003). *Introduction to Educational Research*. Educational Media Centre .Egerton University.
- Kimberly, A. & Cropp, R. (2004). *Cooperatives: Principles and practices in the 21st century*. - University of Wisconsin- Madison, WI: Cooperative Extension Publishing. www.uwcc.wisc.edu. Accessed on 4th Feb, 2017.

- Kimberly, Z. & Radel, J. (2005). *Cooperatives as Community Development Strategy: Linking Theory and Practice; The Journal of Regional Analysis and Policy*, University of Wisconsin-Madison USA, [www.uwcc.wisc.edu](http://www.uwcc.wisc.edu) Accessed on 29<sup>th</sup> May, 2017.
- King, R.P & Ortmann, G.F., (2007). *Agricultural Cooperatives I: History, Theory and Problems; Agrekon* vol.46.no 1. Accessed on 9/12/2013. [http://www. ageconsearch.umn.edu/](http://www.ageconsearch.umn.edu/)
- Kobia, S.K. (2011). *The Co-operative Movements in Kenya: Challenges and Opportunities*, Lukiko Consulting Trust: Nairobi
- Kombo, D.K & Tromp, L.A. (2006). *Proposal and Thesis Writing: An Introduction* .Nairobi: Pauline publications Africa.
- Kothari, C. (2004). *Research Methodology: Methods and Techniques* (2nd ed.). New Delhi: Age International (p) Ltd
- Machethe, C. L. (2009). Factors contributing to poor performance of agricultural cooperatives in less developed areas. *Agrekon* 29(4):305-309.
- Miami, M. (2002). *Cooperatives and Law; With Emphasis on Kenya*, EALB: Nairobi.
- Mugenda, O & Mugenda, A. (2009). *Research Methods: Qualitative and Quantitative Approaches*. Acts press: Nairobi.
- Najamuddeen, G. Abubakar, B.Z. Kebbe, M.G, Magaji, A.S. & Ukashatu S. (2012). Role of Cooperative-Societies in Community Development in Sokoto Metropolis, Sokoto State, Nigeria. *Scientific Journal of Review*, 1(3), 105-110
- Nassiuma, D. K. (2003). *Survey sampling: Theory and methods*. University, Fort Collins, Colorado, USA.
- Orodho, J. (2013). *Techniques of Writing Research Proposals and Reports in Education and Social Sciences*. Nairobi: Masola Publishers.
- Ortmann, G. F. & King, P. (2007). Agricultural cooperatives I: history, theory and problems. *Agrekon*, 46:40-68

- Othman, A. & Kari, F. (2008). *Enhancing Co-operative Movement to Achieve Malaysias Development Goals. Conference proceeding. Research Conference: The Role of Co-operatives in Sustaining Development and Fostering Social Responsibility*, Riva del Garda ,Trento, Italy.
- Podmore, C. A. (2003). *Diagnostic Analysis of Irrigation Systems.Vol.1. Concepts and Methodology*.Water Management Synthesis Project, Colorado State
- Rafael, V. B. J, (2010).Governance Structure and Supply Chain Management Practices in the *Dairy Value Chain: A Comparative Study between New-Zealand and Brazil*, A Master's thesis; Massey University: Auckland, New Zealand. Accessed on 15<sup>th</sup> Jan, 2017.
- Schwettmann, J. (2011),*Capacity Building for Africa's Cooperatives and Social Economy Organizations: A contribution to the Expert group meeting: Cooperatives in Social Development Beyond 2012*,Ulaanbaatar, Mongolia. Accessed on 12<sup>th</sup> July 2017.
- Tesfay, H. (2008). *Impact of irrigation development on poverty reduction in Northern Ethiopia*, PhD thesis.
- Thomas, W.H.N.G & Daniel, C.F (2009).*How Broadly Does Education Contribute to Job Performance?*.At-<http://mdc.itindia.com/library/> -Accessed on 9<sup>th</sup> June, 2017.
- Van Bekkum O.F & Van Dijk G. (Eds.) (1997).*Agricultural Co-operatives in the European Union, Trends and Issues on the Eve of the 21st Century*; Van Gorcum; the Netherlands.
- Weihrich, H., Cannice, M. & Koontz, H. (2010), *Management: A Global and Entrepreneurial Perspective*, Tata McGraw Hill: New Delhi
- Widstrand, G. (1970). *Cooperatives and Rural Development in East Africa*, the Scandinavian Institute of African Studies: Uppsala
- Wilde, G. J. S. (2014). *Target Risk: Dealing with the Danger of Death, Disease and Damage in Everyday Decisions*. Toronto, Canada: PDE Publications

## APPENDIXES

### Appendix I: Letter for Request of Authority to Collect Data

**The County Cooperative Commissioner**  
Embu County Government  
P.O Box 61  
Embu

**Emily Njiru**  
P.O Box 115  
**Embu.**  
**0727724172**  
05/01/2018

Dear Sir,

**RE: AUTHORITY TO COLLECT DATA AND RELEVANT INFORMATION FOR  
PROJECT REPORT WRITING**

I am a student at the University of Nairobi conducting a research study under the title factors influencing the performance of irrigation cooperatives. Am writing seeking for permission to be allowed to collect data under the area of study kindly accord the necessary support on the same.

Thank you

Yours Faithfully

Emily Njiru  
Reg No L50/83754/2016

## Appendix II: Irrigation Cooperative Leaders/Members Questionnaire

### Introduction

The information provided will be treated with utmost confidentiality and will only be used for intended purpose. You are strongly advised to tick or fill in the blank spaces for each question appropriately. Please do not indicate your name.

### Part 1. Background Information

1. Kindly indicate your irrigation cooperative

Name of irrigation cooperative	Tick appropriately
Kiaga irrigation	
Ena Irrigation	
NthamariGachichori	
KirukiKiende	
GatunduriKamavindi	
Mweria	
Evurore	
Mbenwom	

2. Kindly tick the number of years that you have been a member of the irrigation cooperative

years of membership	Below 2 years	2-5 years	Over 5 years
tick appropriately			

**Part 2: levels of Education and training**

1. The study sought to examine how Education levels and training influences performance of irrigation cooperatives in Embu County. Kindly give your opinion on your level of agreement or disagreement of the statement in a scale of 1-5 where,1= strongly disagree,2= disagree,3=neutral,4=agree and 5= strongly agree

Statement	Strongly agree	Agree	neutral	Disagree	Strongly disagree
The irrigation cooperatives offer scholarships for staff to further their study.					
Seminars, Workshops and Conferences are open for all members					
The irrigation cooperatives benchmarks with the best performing cooperatives					
The irrigation cooperatives conduct and sponsors research aimed at improving its operation.					
The irrigation cooperative participates in agricultural \show fares to show case its produce					

2. Kindly indicate the level of employment of education and training activities by the irrigation cooperatives?

Education and training activities	Very low	Low	moderate	High	Very high
Staff scholarships					
Seminars					
Workshops					
Conferences					
Exhibition					
Show fares					

3. What level of influence do education and training activities have on performance of irrigation cooperatives? 1=Very influential, 2=influential, 3=moderately influential, 4=Not influential, 5=Not sure

Education and training activities	1	2	3	4	5
Staff scholarships					
Seminars					
Workshops					
Conferences					
Exhibitions					
Show fares					

### Part 3: Organized marketing of products

1. The study sought to examine how organized marketing of products influences performance of irrigation cooperatives in Embu county. Kindly give your opinion on your level of agreement or disagreement of the statement in a scale of 1-5 where,1= strongly disagree,2= disagree,3=neutral,4=agree and 5= strongly agree

Statements	Strongly agree	Agree	neutral	Disagree	Strongly disagree
That the irrigation cooperative conducts Product promotion through advertisement and creating product aware.					
The target market for the produce has been segmented into groups based on their needs and wants.					
The marketing department conducts market intelligence in order to establish changes in the economy that may affect the produce					
Marketing department conducts market survey to determine the prevailing					



market prices, emergence of new markets etc					
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2. Kindly indicate the level of employment of organized marketing techniques by irrigation cooperatives?

Marketing techniques	Very low	Low	Moderate	High	Very high
Product promotion					
Market segmentation					
Market intelligence					
Market surveys					

3. What is the influence of marketing techniques on performance of irrigation cooperatives? 1=Very influential, 2= Influential, 3=Moderately Influential, 4=Not influential, 5=Not Sure

Marketing techniques	1	2	3	4	5
Product branding					
Product Packaging					
Product pricing					
advertisements					
Product distribution					
Target marketing					

**Part 4 Governance Structure**

1. The study sought to examine how governance structure influences performance of irrigation cooperatives in Embu County. Kindly give your opinion on your level of agreement or disagreement of the statement in a scale of 1-5 where,1= strongly disagree,2= disagree,3=neutral,4=agree and 5= strongly agree

Statement	Strongly agree	Agree	neutral	Disagree	Strongly disagree
That the governance structure has met all legal requirements, e.g. a third rule					
That there is clear delegation of authority and responsibilities among different levels of management					
There is clear flow of communication in the cooperative project					
All stake holders participate in decision making					
The management continuously conducts monitoring and evaluation on the progress of the irrigation cooperatives.					
There is transparency on					

accountability					
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2. Kindly indicate the level of employment of governance structures by the irrigation cooperatives.

Governance structure	Very low	Low	Moderate	High	Very high
Top level management					
Middle level management					
Low level management					
Supervisory committee					
Government representatives					
Public participation					

3. What is the influence level of governance functions in promoting performance of irrigation cooperatives 1=Very influential,2 = influential,3=moderately influential, 4=Not influential, 5=Not Sure

Governance function	1	2	3	4	5
Planning					
Organizing					
Staffing					
Leading					
Coordinating					

Controlling					
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**Part 5: Technology**

1. Kindly tick where appropriate

	Very Influential	Influential	Moderate	Not Influential	Not Sure
Systems are installed to enhance transaction processing					
Technology enhances accuracy and reliability of irrigation cooperatives					
Information systems bring information timeliness					
Technology allows for a reduction in transactions costs and timely communication					
To integrate technology cooperatives require training of staff					

