THE ROLE OF FARMERS' GROUPS IN SUSTAINABILITY OF FARM ENTERPRISES: A CASE OF SMALL-SCALE BANANA FARMERS IN KIRINYAGA CENTRAL SUB COUNTY

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DEDICATION

To Mum and Dad,

My sisters Monica and Ednah,

My dear Son Liam,

For your constant support and encouragement to take this path, thank you very much and God bless you.

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ABSTRACT

This research sought to explore the role of farmers' groups on the sustainability of farm enterprises in Kirinyaga Central Sub-county. The variables used in examining the sustainability of farm enterprise included crop production, farmers' income, and employment opportunities. Exploring the role of farmers' groups on sustainability was done by comparing the demographics of member and non-member farmers; establishing and comparing the relationship between training role and sustainability among member & non-member farmers; establishing and comparing the relationship between input role and sustainability among member & non-member farmers and establishing &comparing the relationship between marketing role and sustainability among member & non-member farmers. This study was framed on the theory of access to resources and guided by the theory of social inclusion from the capability approach. This study employed quantitative research methods through the administration of questionnaires to sampled small-scale farmers in the study area. A total of 100 small-scale farmers were interviewed (50 were drawn from four sampled farmers' groups including Karinga Banana Growers, Kiamuruga Tissue Culture Banana Growers, Kimandi Banana Growers, and Kaitheri Banana Growers while the remaining 50 were administered to non-members within the study area.) The findings of this study showed that majority of both members and non-members have completed secondary education. The study showed a strong relationship between training and sustainability among member farmers compared to non-member farmers through a Cramer's V test that showed the P-value on crop production, farmer's income and employment opportunities being represented as 1.000, 1.000 and 0.685 respectively with a statistical significance of 0.000. The study also showed a strong relationship between marketing and sustainability among member farmers compared to non-member farmers through the Cramer's V test that showed a P value on crop production, farmer's income, and employment opportunities as1.000, 1.000, and 0.685 with a statistical significance of 0.000 respectively. None of the farmers' groups took up the role of accessing inputs to its members. Overall, farmers' groups are important to small-scale farmers for their growth and sustainability of their farm enterprises, improving their well-being, promoting farmers' empowerment, and enhancing their livelihoods.

CHAPTER ONE

1.0 INTRODUCTION

The Agricultural sector has played an important role especially for the African countries by contributing to food security, being a source of employment, and contributing to the country's GDP growth and this has been evident in its African development agenda namely, The Comprehensive African Agricultural Development Programme that seek to 'improve food and nutrition security, and increase incomes in Africa's largely farming-based economies' (OECD-FAO, 2016). However individual African countries have made strides in the formulation of agricultural policies including Kenya's agricultural policy that rotates around increasing agricultural productivity, increasing smallholder farmers' incomes, and enhancing food security (Alila & Atieno,2006).

A farmers' effort in their farm enterprises is geared towards achieving sustainability. Sustainability of any farm enterprises is viewed as when a farmer can achieve increased agricultural productivity, increased farm incomes, and create employment opportunities (Cauwenburgh et al. (2007), Herzog & Gotsch (1998), Rasul and Thapa (2003), Karami (1995). In theory, realizing their full potential prompts small-scale farmers to invest in ways that would give them high returns such as the use of high yield inputs, use of best farm practices, use of technological advancement, accessibility to high- end markets & buyers (Bernard et al.2010). However, farmers face constraints that impede them from actively participating to their full potential in agricultural production including market constraints, increased transaction costs, limited access to extension and credit services especially those in rural areas (Wiggins et al., 2010). Studies have shown that smallholder farmers can overcome these constraints they face through organizing themselves into collective action groups such as farmers' groups/ organizations or cooperatives (Narrod et al., 2009; Bernard et al.,2010).

Windapo and Afolayan (2005) define a group as a collection of individuals with whom a relationship is formed. Farmers groups therefore according to Ofuoku and Chukwuji (2012) are described as instrumental social groups that are formed to accomplish certain social and economic goals concerning farm activities. These groups are therefore a form of collective action that are geared towards achieving specific purposes and reducing the constraints faced by the farmers including reducing transaction costs, improving agricultural production, increasing

agricultural outputs, improving access to markets for farmers, and improving farmers' livelihoods (Francesconi & Heerink, 2011)

A farmers' group can be described as a collection of farmers who join voluntarily. They range from Informal small established groups to large established groups referred to as cooperatives. Farmers groups viewed in this study are informal small established groups in the rural areas. Despite their size in nature, entry is voluntary and is governed by the rules and laws of the group. A farmer upon entry registers by paying up a registration fee as stated within the group constitution. The groups in question are homogenous based on the crop grown and in this case, the study will look at banana farmers groups in Kirinyaga Central Sub-county. Farmers groups facilitate the attainment of sustainability of farm enterprises by taking up three important roles which include the training role, access to inputs, and marketing role. (Meinzen-Dick 2004; Fischer & Qaim 2012; Mukindia 2014 and Bosc et al. 2002)

Training role conducted in farmers' groups provides a platform to disseminate effective information and equips farmers with better farm practices & knowledge that improves the functionality of farmers and contributes to the sustainability of farm enterprises. Farmers through training are empowered to make effective decisions in their farms and invest in best practices that will lead to achieving sustainability in their farm enterprises that are accredited as increased crop production, creation of employment opportunities, and increased farm incomes (Davis,2009; Bosc et al.2009; Curtis,2013; Fischer & Qaim,2012)

Small scale farmers face the challenge of accessing better markets for their products and end up vending at the local markets at very low prices (Fischer & Qaim,2012). Therefore, farmers' groups take part in marketing through searching for customers & Trading partners, providing marketing information, and negotiating for better market prices for farmers that eases the weight of the farmer selling their products individually. Providing a marketing avenue for farmers creates an incentive for farmers to increase their output, their incomes increases as they can sell in bulk reducing losses from perishability and also creates employment opportunities in farm enterprises including transportation of produce, loading & offloading of produce to its destination, selection of the products according to the partners' specification among other on-farm job opportunities (Kariuki and Place, 2005; Barrett, 2008; Bernard & Spielman, 2009; Shiferaw et al., 2008).

Access to inputs is among the challenges that small-scale farmers face. Farmers groups, therefore, address this challenge by creating an avenue where farmers collectively purchase and distribute high yield inputs that would otherwise be costly if done individually (Chagwiza et al.2016). Through creating an avenue of access to inputs, farmers can invest in high yield inputs that promote the performance of farm enterprises through increased crop production and farm incomes. Moreover, purchase of inputs at low cost allows farmers to create job opportunities at no extra cost at their farm enterprises (Abebaw and Haile, (2013) and Verhofstadt and Maertens, (2014)

Therefore, Farmers' groups play an important role in enhancing farmer's livelihoods among many other benefits. In line with this, the Kenya government through its strategic plans such as The Agricultural Sector Transformation and Growth Strategy (GOK,2019), Kenya Organic Agriculture Sector Strategic plan (KOAS,2013), and Vision 2030 (GOK,2007) commits to supporting and empowering small-scale farmers into farmers' groups including poor small scale farmers in the rural areas. Even though farmers' groups have been prioritized as part of the National & County agenda in agricultural development, rural farmers' groups and their performance still face the challenge of minimal recognition and assessment leading to least data evidence and information that is appropriate in supporting the rural farmers' groups towards the achievement of sustainability. In addition to analyzing the role of rural farmers' groups in achieving sustainability, it is important for rural development. This forms the basis for the research.

Farmers' groups can be described as an important tool in achieving rural development and promoting the inclusion of poor & vulnerable people in rural areas. In Kenya, growth in agricultural development is driven by increased output production, making farmers' groups a dominant source in output production. (FAO,2017). Therefore, the role of farmers groups in Agricultural development in Kenya cannot be ignored. Rural farmer groups play a crucial role in agricultural development and improvement of farmers' livelihoods but lack the support, recognition, resources, and opportunities to be more productive and sustainable. This greatly cost the small-scale farmers in terms of low agricultural output, increased transaction costs, low agricultural income, and losses.

The empirical study findings on the role of farmers' groups on sustainability have showed a positive relationship between farmers' groups and sustainability. The assessment that farmers' group contribute to sustainability suggests that farmers' groups are necessary for supporting small scale farmers and they contribute to farmers' Income, Increased farm production and employment opportunities (Fischer & Qaim,2012; Mukindia, 2014; Shiferaw and Muricho, 2011and Bosc et al. 2002). Farmers groups therefore in addressing the constraints that face small-scale farmers which according to Ofuoko (2013), include access to credit, access to agricultural information, and access to extension services take up three important roles including training, marketing, and access to inputs. Moreover, addressing these constraints lead to the achievement of sustainability.

1.1 Background of Research

Globally and locally, small-scale farmers have faced constraints that impede them from actively participating in economies of scale. (Fischer & Qaim, 2012). One of the possible solutions to addressing these constraints is the formation of farmers' groups. Apart from their potential in solving the challenges, farmers' groups have also been considered as a viable approach to sustainable development (Kenya Human Rights Commission,2015). This is because farmers' groups are effective in carrying out their role and contributing to positive outcomes that lead to sustainability (Fischer & Qaim, 2012 & Mukindia, 2014).

In discussing the role of farmers' groups, farmers' groups carry out three main functions including marketing of produce, training of farmers, and input access. The study employs these variables in examining how farmers' groups lead to achieving sustainability. Small scale farmers in rural areas are more prone to constraints due to the high levels of poverty (Sinyolo & Mudhara, 2018). Moreover, rural farm enterprises are hindered by fewer assets, limited information, distance to physical infrastructure, and inaccessibility to inputs (Fischer & Qaim,2012). This has contributed to a high number of rural farmers engaging in farmers' groups.

Despite the increasing number of farmers in farmers' groups within the rural areas and the growing importance of rural farmers' groups, its development has been slow. The sluggish development of rural farmers' groups is attributed to the limited information and evidence that would facilitate policy adoption and support for these farmers' groups in Kenya and this is

echoed by the work done by Fischer (2014) that advocates for broadening the focus of farmers groups in Kenya.

The study focused on banana farmers' groups in Kirinyaga Central Sub-county. The banana sector in Kenya provided an interesting illustration in analyzing the role of farmers groups in promoting sustainability among smallholder farmers. Banana growing in Kenya is experienced across different counties including Meru, Tharaka Nithi, Embu, Kirinyaga, Muranga, Kisii, and Nyamira, and holds a significant share in the total market value. Moreover, banana-growing has become an income-generating activity for small scale farmers in Kenya, transforming into a cash crop and experiencing technological advances using tissue culture banana growing. As evident in Kenya's 2015/2016 Horticultural Crops Development Authority (HCDA) validated report indicates that bananas are among the major fruits grown in Kenya.

Moreover, the banana sector in Kirinyaga County has become a lucrative enterprise attaining leading positions in banana growing in the country. This is evident in Kenya's 2015/2016 Horticultural Crops Development Authority (HCDA) validated report that show the three leading counties in the production of bananas including Meru (17%), Kirinyaga (11%), and Muranga (9%). (See Annex)

To better understand the role of farmers groups in improving the performance of farm enterprises, the study examined and compared the farm performance- by looking at their crop production, incomes, and employment opportunities for banana farmers in the farmers' groups and those who are not part of any farmers' groups.

1.2 Situation of Farmers Groups in Kirinyaga Central Sub- County

Kirinyaga Central Sub-county is a rural area whose main economic activity is farming due to its rich fertile soils and favorable climatic conditions that makes it possible to produce different kinds of crops including tomatoes, coffee, and bananas. However, most farmers practice small-scale farming producing small marketable output that they sell in the local markets at low prices immediately after harvest. This in turn leads to minimum profits and often farmers incur losses. Moreover, the costs on the purchase of inputs, transport costs, and access to extension services become costly for these small-scale farmers. This was the basic idea behind the formation of farmers' groups across the Sub-county. The formation of these groups therefore acted as a

remedy for improvement in production and marketing of agricultural produce and increasing farmers' profitability.

In this sub-county, small-scale farmers have mainly formed farmers' groups which are distributed according to the crop variation and are mainly organized for marketing. Moreover, farmers' groups in the sub-county carry out different activities including training on best practices, access to inputs, group savings, and borrowing with minimal interests. Approximately, there are 20 banana farmers' groups within Kirinyaga Central Sub-county with each group comprising of up to 15- 80 members. Kirinyaga Central Sub county consists of a high number of banana farmers' group compared to other sub-counties in the county, making it a favorable study area.

Farmers' groups are homogeneous across the sub-county where there are grouped in crop variation and they carry out similar roles across the groups. However, the social-economic characteristics of members of the group are heterogeneous. The differences include factors such as gender, education level, farm size, occupation, age, and marital status.

With that in mind, the primary focus of this study was to identify and understand the role placed by farmers' groups in achieving sustainability among banana farmers' groups.

1.3 Problem statement

With small-scale farmers in Kenya facing challenges including high transactional cost, poor infrastructure, poor prices for their products that create a disincentive for farmers' participation (Fischer & Qaim,2012), farmers' organizations have emerged as an important pathway to cub these challenges faced by small scale farmers across the country. Farmers in Kirinyaga have not been left behind in this initiative as it home to many rural farmers' groups across the different crop value chain. This development is in line with the current drive across counties in Kenya to facilitate the strategic planning and promotion of agricultural transformation in Kenya.

The Agricultural Sector Transformation and Growth Strategy- ASTGS 2019-2029 (GOK,2019), Kenya Organic Agriculture Sector Strategic plan -KOAS 2013-2017 (KOAS,2013), and Vision 2030 (GOK,2007) are among Kenya's strategic plans that advocates for the empowerment of farmers' associations for the adoption of new technology and agricultural production and are also among the government initiatives that acknowledge the significance of farmers group in

agricultural development. The County Government of Kirinyaga has also made strides in promoting the establishment of new farmers' groups and empowering new groups within the county through capacity building, organization of farmers groups into forming county associations within the value chain, and strengthening the extension service delivery within the county,

Theoretically, farmers' groups have a role to play in promoting sustainability. Empirically, investigation and research study carried out has shown the role of farmers groups in promoting sustainability through increased incomes, increased productivity, employment opportunities (Barret et al.2012; Barham & Chitemi,2008; Chirwa et al. 2005; Indimuli, 2013; Korir et al. 2015; Ma & Abdulai, 2016). However, Bernard & Spielman (2008) explains that numerous case studies are more elusive of the poor households in the communities where these farmers' groups exist and that the limited quantitative studies do not demonstrate the capacity of Rural farmers' groups to effectively reach these poor households. Moreover, Fischer & Qaim (2014) posit that there is a need to broaden the focus of farmers' groups especially in rural areas, and therefore recommends for further understanding on the role of farmers' groups in rural Kenya yet investigations on rural farmers' groups have been minimal bringing an additional gap that the study sought to address.

It was against this background that the study sought to do a comparison of farmers in groups and those not in groups to better understand how taking up their roles, farmers' groups facilitate the achievement of sustainability of farm enterprises in Kirinyaga Central Sub-county. In achieving a better understanding of the role of the farmers' groups, the study examined and did a comparison of the performance of farm enterprise within the farmers' groups and those which were outside the group model. This affirmed whether being in a farmers' group does improve the performance of a farm enterprise through increased crop production, increased incomes, and creation of job opportunities as compared to a farm enterprise working on its own. Moreover, results of the study would provide a comprehensive information base that can be relied on by development partners and authorities to support and enhance farmers' group role towards achieving sustainable agricultural development

1.4 Research Questions

The study sought to address the following three research questions:

1. What is the relationship between training and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central?
2. What is the relationship between input access and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central?
3. What is the relationship between marketing and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central?

1.5 Research Objectives

1. To determine the relationship between training and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central.
2. To determine the relationship between input access and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central
3. To determine the relationship between marketing and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central

1.6 Justification of the study

The National and county government have continually made deliberate investment under their National and county agricultural plans in enhancing the role of farmers' group as a major driver towards promoting agricultural development and as a medium towards empowering the poor and the vulnerable in the rural areas through facilitating easy access to inputs, markets, extension services, and credit facilities among others.

Achieving sustainability is pivotal in reducing poverty levels in the households and also in the communities to which these farmers' groups belong, increased incomes and farmers' bargaining power, reduces risks that farmers' face, and improves livelihoods and opens new job opportunities to community members due to an expanded business enterprise. Farmers' groups, therefore, can influence and contribute to changes within the households and the community as well.

However, the role of farmers groups towards achieving sustainability in rural areas is significant but remains an area that has inadequate evidence data. The study findings sought to contribute in providing further understanding on the importance of rural farmers' groups and also help researchers, National & County Officials, and development partners to appreciate the relevance

of the farmers' groups towards the achievement of sustainability and also seek ways to support these farmers' groups and address any challenges faced.

1.7 Scope of the study

The study targeted farmers' groups within Kirinyaga Central Sub-county which is a rich agricultural area in terms of banana farming. The focus was sustainability of farm enterprises for those farmers organized into groups This was a limited geographically area and results are not a representation all farmers in the county. Moreover, Kirinyaga Central sub-county famers have their own unique ways of organizing themselves which may be different from banana farmers in other parts of the county.

1.8 Limitation of the study

The study was limited to two wards in the Sub county which were Kerugoya and Inoi ward. The entire week of data collection had heavy downpour which made movement very difficult. Using motorbikes through the muddy roads was a very agonizing experience and at times slowed our movement to and from other locations during data collection.

Moreover, the study was conducted during the Covid 19 pandemic with a lot of movement restrictions and visitors were not received with open arms. There was fear renting the air and no one was sure who was safe around them.

CHAPTER TWO

2.0 LITERATURE REVIEW

2.1 Introduction

Studies including {Shiferaw and Muricho (2011), Fischer and Qaim (2012), Salifu et al} have shown that farmers' groups are a social unit that conducts different activities both marketing and Non-Marketing. Such activities include marketing, access to inputs, internal access to credit facilities, capacity building, and access to information. Such activities have led to these farmers' groups benefiting from immensely their organization into groups. Among the benefits that accrue include increased economies of scale, increased bargaining power, improved farmers' welfare as showed by different literature strands including Shiferaw and Muricho (2011), Bosc et al (2002), Mukindia (2014)}. Ofuoku (2013 and Bosc et al (2002) bring out the issue of sustainability as a benefit of participation in farmers' groups by bringing out the aspect of sustainable agricultural growth and having farmers able to make their own decisions. Markelova and Mwangi (2010) add that sustainability within farmers' groups refers to the steadiness of the group meaning farmers can cope with any stress they encounter and achieve longevity.

This section has three major sub-sections, the first discussed the theoretical literature review, the second covered the empirical literature, and lastly was the conceptual framework.

2.2 Theoretical Literature Review

2.2.1 Theory of Access to Resources

The lack of access to resources constrains rural farmers from reaching their full potential making them more vulnerable than others (Fischer & Qaim, 2012 & Mukindia,2014). According to Ribot & Peluso, (2003) the theory of access proposes that inequality in access to resources constrains the enjoyment of some kind of benefit. In theory, better access to resources such as access to inputs, access to marketing services, access to skills & capacity building, access to credit is vital for Rural farmers achieving benefits in terms of growth & sustainability. Lack of/limited farm resources create a disincentive for rural farmers to participate in high agricultural production leading to increased poverty levels (Shiferaw & Muricho, 2011)

Constraints in accessing resources which can either be brought by unavailability or unaffordability (high costs) within farming practices hold small-scale farmers with high transaction costs and agricultural losses that impede their opportunities (Fischer & Qaim,2012). Theoretically, studies point to a significant and a strong relationship between access to resources

and sustainability in farmers' groups as these groups are put in place to ease the constraints that small-scale farmers face leading to increased incomes, improved livelihoods, high educational level, increased agricultural productivity (Barret et al.2012; Fischer & Qaim,2012; Barham & Chitemi,2008; Chirwa et al. 2005; Indimuli, 2013; Korir et al. 2015; Ma & Abdulai, 2016). Data states that access to inputs, access to training services, and markets has a positive effect on rural farms and their households.

Access to resources is important for achieving sustainability of farm enterprises and farmers' groups as an institution take up the role in providing access to resources to the small-scale farmers. Ofuoku (2013) lack of credit, better market, inputs, information, access to the capacity building & better farm practices among the constraints that small-scale farmers face leading to low productivity among small-scale farmers. Small scale farmers, therefore, take up the decision to join farmers 'groups to enhance their capabilities in realizing economies of scale and high agricultural productivity (Fischer & Qaim,2012).

Nichter & Goldmark (2009) states that there is a need for individuals to enhance their capabilities through skills & resources to influence on existing opportunities to grow. Moreover, this paper pointed to the importance of accessing resources as a way of enhancing the capabilities and empowering farmers through these farmers' groups to grow and achieve sustainability.

The theory of access to resource provided a critical link in hypothesizing the relationship in this study. According to this theory, access to resources enhances capabilities that lead to some kind of benefit. The theory proposes the use of institutions in facilitating poor people's access to resources (Ribot & Peluso,2003). The theory was significant as it provided a link in hypothesizing the role of farmers' groups and related benefits of sustainability. However, enhancing the capabilities of small-scale farmers may not be sufficiently understood using this theory alone. An additional model which explained how livelihoods of small-scale farmers are constructed by enhancing their capabilities that may lead to the realization of benefits was needed. The model was applicable in linking the roles of farmers' groups on sustainability. The proposed model was social inclusion from the capability approach.

2.2.2 Theory of Social Inclusion

This model can be dated back to the 19th century by works of Sociologist Weber (Weber,1930). Amath (2015) indicates that social inclusion is important in supporting participation, education, employment, and creating connections between people and between people and resources. It also captures the idea that effective use of social inclusion leads to sustainability (World Bank, 2001). This model is conscious of the fact that understanding livelihoods in development includes the use of Non-economic indicators such as capabilities and equity and that expanding these capabilities by incorporating social inclusion will lead to the achievement of sustainable livelihoods (Chambers & Conway, 1991).

According to Storchi &Johnson (2016), capabilities can be defined as a combination of achievable opportunities that individuals have reasons to pursue since they are imperative. As the Capability approach highlights freedom of choice, Choices can be realized when constraints that impede growth are eradicated (Atkinson & Marlier,2010) bringing into focus the reason for farmers joining farmers' groups. The focus on social inclusion advocates for increased participation, access to information, access to resources, education, employment opportunities, and creating connectedness between person to person & person to resources for the vulnerable that will lead to the achievement of sustainability and improved well-being. Moreover, social inclusion through enhancing access to resources, participation, employment, and connectedness help people to achieve what they value in life.

This theory was therefore significant to this study in that, social inclusion theory supports the need to enhance people's capabilities towards achieving a set goal. It goes further in bringing into focus concepts such as education, employment, access to resources, participation, feeling of belonging, access to information, and advocacy as important factors in promoting one's capability. The concepts on education and access to resources are related to the roles of farmers groups that include training, marketing (Access to markets), and Access to inputs. Therefore, these roles of farmers' groups provide services from which people in these groups can make use of them in support of their valued life.

This theory added to the concept of sustainability where World Bank (2001) points out that social inclusion is a pillar of sustainability as it involves the process of improving the terms for the groups to take part in the society.

2.2.3 Summary of Theoretical Literature

The theory of Access to resources and the theory of Social inclusion was relevant to the study as it brought out different important concepts to the study. The theory of access to resources demonstrated the importance of enhancing accessibility of resources to farmers of which, lack thereof, would constrain a farmer's potential in achieving sustainability in their farms. A farmers' ability to Access resources including information, market avenues, financial support is an incentive for the farmer to participate in farming that would bring high returns to their farm enterprises. Moreover, easy access to resources ensures that farmers don't incur extra costs in sourcing for the resources which such finances can be invested back into the farm's activities to achieve growth and sustainability.

The theory of access to resources brought into perspective the role that institutions play in providing a platform for access to resources. It was relevant to this study, as it supported the role that farmers' groups as an institution play in providing accessibility of resources to small scale farmers. Through providing a training role, farmers can get resources such as information, financial support, and extension support.

Access to resources enhances farmers' capability to achieve their full potential. Moreover, the theory of social inclusion from capability approach expounded further on other different approaches to enhance farmers' capabilities apart from access to resources including increased participation, access to information, education, employment opportunities, and creating connectedness between farmer to farmer & farmer to resources that will lead to the achievement of sustainability and improved well-being. A farmers' group, therefore, enhances farmers' capabilities by increasing their participation in the marketing of their produce, providing information and education through farmers' training, creating connectedness through farmer to farmer extension during marketing.

Therefore, a farmers' group incorporates the different approaches advocated by the theory of social inclusion. Farmers groups provide a platform where small-scale farmers including the vulnerable can join. Moreover, by performing training to its members, farmers can access information, get an education, create connection between them and other farmers, and a connection between the farmers and other resources such as the facilitators and financial assistance. By performing access to inputs for their member farmers, farmers can access different

resources for their farm enterprise. By performing a Marketing role for its members, farmers can access market information, ready markets, access to large buyers, and creating a connection between the farmer and the buyers leading to an increased network base.

Therefore, by taking up these roles, farmers groups can enhance sustainability in their farm enterprise

2.3 Empirical Literature Review

This sub-section was divided into four distinct sections that tie farmers' groups and sustainability that is significant to this study.

2.3.1 Relationship between Training Role of farmers groups and sustainability

Rao & Qaim (2011) defines training role as a platform to which farmers' group provide capacity building to its members through carrying out lesson programs, best practice techniques, field visits in a bid to pass on relevant information, encourage best farm practices and improve farm production among small scale farmers.

Farmer training is an important tool widely utilized in developing countries in promoting small-scale farmers' participation in agricultural development (Birkhaeuser et al., 2011, Van den berg et al., 2007, Delia et al., 2008). In Kenya, government and privately owned extension services offer training packages to their farmers on different topics that are relevant to them. Training procedures vary from workshops and seminars, farm training and demonstration and, field visits. Training in best farm practices is desirable to farmers as they are often eager to improve their knowledge and practices and to have their knowledge affirmed by specialists. Training provides a platform for extension officers to pass on new information, correct misconceptions concerning crop management, and incorporate technological innovations to small scale farmers.

Studies done by Kelly et al. (2003) illustrate that farmers' organizations provide capacity-building activities such as carrying out literacy programs and training that facilitate the teaching of different agricultural practices. Bingen et al. (2003) add that capacity building carried out by farmers' groups helps them to function and contribute to sustainability. Training is done on important topics such as market knowledge, agricultural skills & best practices (Pearce and Reinsch, 2005).

Fischer and Qaim (2012) on the other hand in their study on banana farmers' groups in Kenya demonstrated that through training in farmers' groups, banana farmers have a high reception to the adoption of tissue culture technology, high use of chemicals, and use of proper farming management practices which promoted increased banana production and helped smallholder farmers remain relevant and competitive in the changing agricultural environment. Korir et al. (2015) add that provision of information and training enhances more productivity of farmers especially the disadvantaged small-scale farmers.

Rao & Qaim (2011) state that farmers' groups provide a platform for members to receive capacity building through training. According to Bosc et al. (2009), farmers' groups can improve members' access to resources through training on best practices that contribute to increased production. Therefore, farmers' groups are highly favored for the dissemination of information & skills (Davis,2009)

Curtis (2013) in a research report on powering up small-scale farmers recommends the use of training by stating that members of groups can call upon professionals and experts to provide advice and support. Moreover, such advice and capacity building can be received from other farmers in the same position or within the same agricultural activity.

It is important to note that studies on the training of farmers groups bring out factors such as improved productivity, increased skills, dissemination of information, increased incomes from high yield productivity that come into play when looking at training and sustainability (Davis,2009; Bosc et al.2009; Curtis,2013; Fischer & Qaim,2012).

2.3.2 Relationship between Marketing Role of farmers groups and sustainability

Fischer & Qaim (2012) defines the marketing role of farmers' groups as collective access & selling of products by small-scale farmers which would be costly if done individually. Farmers' groups hereby take part in marketing by searching for customers & trading partners, providing marketing information, and negotiating for better market prices. Studies by Fischer & Qaim (2012), Korir et al. (2015), Rao & Qaim (2011) Bernard & Spielman (2009) study volumes traded, number of market transactions, availability & accessibility of markets in examining the marketing role of farmers' groups. Rao & Qaim (2011), adds that when small-scale farmers experience an increased number of the market transaction then collective action is likely to improve marketing for small scale farmers.

Small scale farmers face constraints that impede from actively taking advantage of market opportunities. Improving their access to markets for small scale farmers has become a key development strategy in promoting rural development (Barret,2008). One way of improving access to markets for small scale farmers is to reduce transaction costs that significantly reduce their incentive for market participation (Barret, 2008). Moreover, farmers groups and other forms of collective action provide an avenue to reduce high transaction costs for small scale farmers. (Markelova& Meizen-Dick,2006). Roy & Thorat (2008) study findings on the role of grape farmers' groups in India in facilitating Market access show that small scale farmers enjoy reduced transaction costs and better bargaining power. Wollni & Zeller (2007) study findings on the role of coffee farmers' groups in Costa Rica in facilitating Market access show that coffee farmers participate in high-end markets with high prices.

Bachke (2019) in their study on farmers' group and farmers' welfare in Mozambique demonstrates that membership in farmers' groups contributes to farmers accessing better markets and marketing information thus promoting market participation by small-scale farmers. Shiferaw and Muricho (2011) study on farmers organization and collective action in improving market access, points out that members within the farmers' groups carry out commercial activities which include; collective marketing of produce grown by its members. The study adds that through active marketing within the groups the small-scale farmer profits from shared costs of marketing, enhanced ability to negotiate for better prices, and improved bargaining power. Katungi et al. (2007) study on the determinants of social capital formation in rural Uganda provides evidence on the role of farmers' groups in Uganda demonstrating that farmers groups influence access to markets by enhancing coordination and cooperation making marketing easier.

One way for smallholders to overcome market failures and retain their place in the market may be through organizing into farmer groups (Markelova et al., 2009; Markelova & Meinzen-Dick,2006; Poulton & Lyne, 2009). When participating collectively, smallholders may be in a better position to benefit from: Reduced transaction costs of their market exchanges, access to credible market information, and tap into the high-value markets, which would give them an advantage when competing with large farmers and agribusinesses (Kruijssen et al.2009 and Stockbridge et al.2003). Farmers' groups assist indirectly connecting smallholders to markets

bypassing various marketing intermediaries such as brokers and negotiate for better terms of trade (Barrett, 2008; Bernard & Spielman, 2009; Shiferaw et al., 2008).

According to Chagwiza et al. (2016) farmers group play the role of enhancing market access and helps farmers avoid the pressure associated with perishability and agricultural losses. Shiferaw & Muricho (2011) adds that farmers' groups promote large market access to small scale farmers as it allows contractual arrangement between large buyers and small-scale producers, linking small producers directly to large customers in the urban centers removing intermediaries such as brokers.

Bernard & Spielman (2009) in their study on reaching the rural poor through rural producer organizations state that through membership into farmers' groups, small-holder farmers can pool their resources together and market their produce correctively leading to reduced transaction costs that they would incur if they marketed individually. Therefore, farmers' groups are highly favored for marketing agricultural products (Davis,2009)

Farmer groups are considered a proficient tool to increase the marketing performance of smallholder farmers, help farmers cope with production & marketing challenges, and also assist farmers to seize new opportunities at the local & regional markets which are considered essential to improve farmer welfare, food security, rural employment and sustainability (Kariuki and Place, 2005; Poulton et al., 2010).

It is important to note that increased crop production, increased incomes, increased marketing performance, increased farmers' welfare, rural employment are among the factors that come to play when looking at market access and sustainability (Kariuki and Place, 2005; Barrett, 2008; Bernard & Spielman, 2009; Shiferaw et al., 2008).

2.3.3 Relationship between Input access role of farmers groups and sustainability

Chagwiza et al. (2016) describe access to inputs as the provision of farm inputs such as fertilizer& seeds that would otherwise be costly or unavailable to small-scale farmers. Moreover, the role of farmers' groups in input access as defined by Fischer & Qaim (2012) is where farmers collectively purchase and distribute farm inputs at low transaction cost that would otherwise be costly if a farmer purchases were individual.

One major barrier to improved smallholder agricultural productivity in Africa has been limited access to essential inputs such as improved seed varieties and fertilizer. This problem is aggravated by adverse poverty among the vulnerable households that impair their effectiveness in market participation. The immediate need is the basic provision in the form of seed and fertilizer to produce food for the household. Once this need is met, small scale farmers can increase their output to be more productive and enter commercial markets to generate income and improve their livelihoods (Jayne and Muyanga, 2006).

In rural Kenya, Inputs such as seeds & fertilizers are either unavailable or too costly for small scale farmers, contributing to high transaction costs for farmers, a disincentive to rural farmers. Farmers groups, therefore, play an important role in facilitating input disbursement thus promoting commercial activities and rural agricultural development (Shiferaw et al.2008)

Studies done by Kelly et al. (2003) in Sub-Saharan Africa describes the role of farmer's groups in providing agricultural assistance to farmers through the provision of improved seeds. Moreover, a study that was done by Bachke (2019) on farmers' groups and welfare in Mozambique provides empirical evidence on the role of farmers' groups in input distribution by indicating that member farmers have better access to inputs such as fertilizers and seeds.

Shiferaw and Muricho (2011) study on farmers organization and collective action in improving market access, points out that members within the farmers' groups carry out commercial activities which include collective access of inputs needed for farming. By collectively purchasing inputs & supplies, farmers' groups contribute to a decrease in price risks and enhance the bargaining power of small-scale farmers (Chagwiza et al.2016). Additionally, farmers' groups are believed to improve member's access to resources inclusive of inputs such as fertilizers and improved seeds (Bosc et al. 2009). Therefore, farmers' groups are highly favored for the dissemination of agricultural inputs to the small-scale farmer (Davis,2009).

Abebaw and Haile, (2013) and Verhofstadt and Maertens, (2014) studies in analyzing the impact of input access by small scale farmers in farmers' groups illustrate that group membership allow farmers to access high yield inputs such as fertilizers leading to increased crop yield and agricultural production. Additionally, these studies explain that membership into farmers' groups enhances the use of pesticides that also increases crop yields.

From a study of farmer organizations in East Africa, Abaru et al. (2006) found out that if farmers are organized in groups, they can assist each other to access inputs and adapt to technology. Salifu et al. (2012) in a study of farmer-based organizations in Ghana found out that among the common collective action activities conducted by group members include input purchase.

Baah (2008) in a study of cocoa farmers' association in Ghana found out that membership to a farmers' association enables farmers to access inputs which is a major challenge for cocoa farmers and also makes the process cost-effective, enhances bulk purchases of inputs of which facilitates the timely distribution of inputs at a reduced cost.

Shiferaw et al. (2006) studied farmer marketing groups in Kenya and found out that farmers' groups facilitate farmer access to production inputs such as fuel, seed, and machinery at fair and affordable prices. Procurement of inputs collectively enables farmers to attain economies of scale and improves the quality and quantity of their produce.

It is important to note that increased crop production (both in quantity and quality), reduced expenses of inputs since the purchase is done collectively rather than individually, Access to high-end inputs, Generation of income are among the factors that come to play when looking at input access and sustainability.

2.3.4 Summary of Empirical Literature Review

The Literature on farmers' groups highlights three distinctive roles including training of farmers, marketing of their produce, and access to inputs on behalf of its members. Further investigation in the studies shows a pattern of how these 3 roles contribute to farm enterprise including increasing farm productivity, increasing farm incomes, and contributing to employment opportunities. Moreover, Training of farmers enhances access to information, knowledge on best farm practices, correction on best farm practices which through the usage of such relevant information in their farm, farmers can improve and increase their crop production which will, in turn, improve their farmers' incomes, and create job opportunities in their farm enterprises. Access to inputs through farmers' groups lowers the transaction cost and reduces the stress of a farmer in sourcing the inputs thereby creating an incentive for farmers to increase their production which will result also to increase farm incomes and the creation of job opportunities. Marketing through farmers' groups enhances increased marketing transaction as compared to working alone, promotes negotiation ability, provides ready markets at favorable prices,

enhances sharing of market information across members, and promotes access to new and high-end markets.

The literature built onto my study by highlighting the 3 important roles of farmers' groups and how these roles lead to the achievement of sustainability. Studies on farmers' groups across different regions showed that performing training, access to inputs, and marketing of produce lead to sustainability which is analyzed as increased productivity, increased farmers' incomes, and creation of job opportunities. Moreover, Rao & Qaim (2011) adds that Internal governance within the farmers' groups have can influence whether or not sustainability can be achieved. A study by Ram et al. (2017) on management performance of farmers' groups; a prerequisite of sustainability illustrates that management functions within the farmers' groups have an effect on the satisfaction of group members and in the achievement of sustainability.

2.4 Conceptual Framework

This study was framed within the theory of access to resources and modeled around social inclusion from the capability approach. According to the World Bank (2001), effective use of social inclusion leads to sustainability. The theory of Social inclusion supports factors such as participation, education, access to resources, access to information, creating connectedness for vulnerable persons. The study employed these concepts to illustrate the relationship in the study.

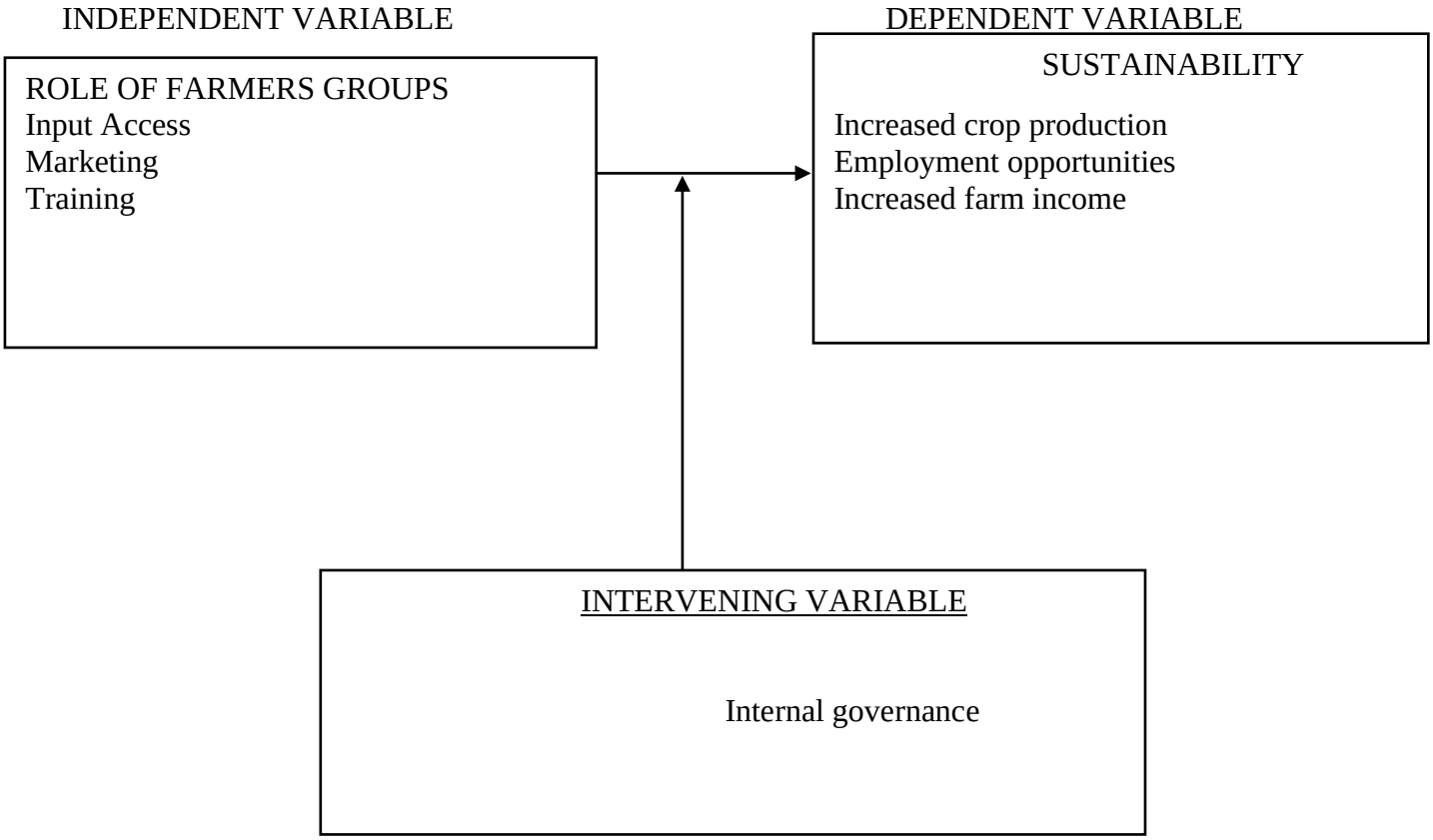

Figure 2. 1: Conceptual Framework

Source: Own compilation of conceptual framework

CHAPTER THREE

3.0 RESEARCH METHODOLOGY

3.1 Introduction

This section illustrated the methodology that was used in conducting the study. The organization of this section was as follows: Study area description; study area selection; research design, target population; sampling techniques and sample size; data collection techniques & procedures, instrument validity & reliability, data processing & analysis techniques, and ethical issues.

3.2 Study Area Description

3.2.1 Kirinyaga Central Sub-county

Kirinyaga Central sub-county is among the five sub counties within Kirinyaga County. Other Sub-counties within this region include Kirinyaga East, Kirinyaga West, Mwea East, and Mwea West. Kirinyaga county. The sub-county is further divided into 4 wards including Inoi, Mutira, Kerugoya, and Kanyekiene. Each of these wards have their own registered farmers' groups. Although there are 20 banana farmers' groups registered under the county agricultural records, those that are currently active within the Kirinyaga Central sub-county are nine.

3.3 Study Area selection

Kirinyaga Central sub-county was selected for this study for three main reasons:

a. Being located in the highlands of the Mt. Kenya region makes it suitable for farming as the main economic activity due to its conducive climate and its fertile soils.

b. Kirinyaga County is among the counties in Kenya that are known for Banana production taking up top positions in the country. As shown in the Horticultural Crops Development Authority Validated Report within different periods as demonstrated below:

- 2016/2017 validated Horticulture Data Report shows Kirinyaga County taking the 5th Position.
- 2015/2016 validated Horticulture Data Report shows Kirinyaga County taking the 2nd Position.
- Horticulture Validated Report 2014 shows that in the period 2012-2014, Kirinyaga county took up the 2nd position among the selected counties.

c. Kirinyaga Central Sub-county being part of the 4 sub-counties within Kirinyaga County has recorded several registered farmers' groups including Banana farmers'

groups. It also registered a high number of active groups compared to other sub-counties as shown below:

Table 3. 1 Number of Active Registered Banana Farmers groups across different sub-counties in Kirinyaga County

Sub-counties	Number of Active Banana Farmers' Groups
Kirinyaga Central	**9**
Kirinyaga East	7
Kirinyaga West	3
Mwea East	5
Mwea West	2

Source: Kirinyaga county records, 2019

3.4 Research Design

Orodho (2014), described a research design as a plan or a scheme that is applied to answer questions that arise from a study's research problem. Bryman (2012 p.g.45) in his book on social research Methods defined research design as a "structure that guides the execution of a research method and the analysis of the subsequent data." The appropriate design that was applied in this study was descriptive research design. Descriptive research involves collecting data to answer questions concerning the present status of the area of the study. It, therefore, describes the facts as they are within a certain area or population. In this study, the focus was on understanding the role played by farmers' groups towards achieving sustainability.

The study used quantitative research methods. The quantitative research method was significant in the generalization of the findings through computation.

3.5 Target Population

The target population refers to the entire group of individuals to which the researcher is interested. For this study, the target population comprised a total of 300 participants organized as follows:

Table 3. 2: Active Farmers groups and the total number of its members within Kirinyaga Central Sub-county.

WARD	NAME OF FARMERS GROUP	TOTAL NUMBER OF MEMBERS
Inoi	Karinga Banana Growers	30
	Kiamuruga Banana Growers	15
Mutira	Njata ya Njumbe Banana Growers	25
Kerugoya	Kimandi Banana Growers	40
	Kaitheri Banana Growers	23
Kanyekiene	Njegas Banana Growers	16
	4k Banana Growers	31
	Ramini Banana Growers	105
	Nduine Gitwe Banana Growers	15

Source: Kirinyaga County Records 2019

3.6 Sampling and Sample size

The study employed a multi-stage sampling technique which was about taking smaller and smaller samples in stages in a hierarchical manner. In this case, it began with a sampling of the wards in stage one before proceeding to subsequent stages until the final sample was achieved. Purposive sampling was first employed to select two wards out of the four from which data collection was undertaken. Purposive sampling is a non-probability sampling in which the researcher relies on his/her judgment. Based on the distance proximity and the budget constraints,

the study used Inoi and Kerugoya wards as the study areas. This was followed by the next stage of sampling from which respondents were sought. In this stage, sampling was done for the farmers' groups from the two selected wards. Proportionate sampling was used at this stage of selection. Proportionate sampling was used at this stage since the participants were part of sub-groups and the sample size from each group was derived relative to the population. The study used a sample size of 60 farmers that was within the researchers' budget and time limit. The 60 farmers were distributed among members of the four farmers' groups- Karinga Banana Growers, Kiamuruga Banana Growers, Kimandi Banana Growers, and Kaitheri Banana Growers.

The study also employed an additional 60 farmers who were not members of farmers' groups as a counterfactual in comparing the performance of the farm enterprises, making the total sample size of 120 farmers. The additional 60 who made up the counterfactual were selected from the farmers' training that were organized by the County government. Large numbers of farmers usually attend farmers training conducted by the county government and it's with the researcher's discretion that the sample for both wards was attained through the time of arrival basis. Therefore, the counterfactual farmers were selected from the first 25 farmers who attended the farmers training in Inoi ward and the first 35 farmers who attended the farmers' training in Kerugoya ward.. Therefore, the sample of the counterfactual equaled the sample of farmers within the banana farmers' groups which included 25 farmers from Inoi ward and 35 from Kerugoya ward. Moreover, farmers that were examined as a counterfactual were Banana farmers who represented the two wards in the study which were Inoi and Kerugoya. In each of the two wards (Inoi and Kerugoya), the total sample size of the farmers in farmers' groups equals the sample size of the counterfactual- those who are not in farmers' groups.

Table 3. 3: Results of the sample size after further sampling

WARD	FARMERS GROUPS	Number of Members	Calculation	Group Sample size	Counterfactual Sample size
Inoi	Karinga Banana Growers	30	30*60/108	17	25
	Kiamuruga Banana Growers	15	15*60/108	8	
Kerugoya	Kimandi Banana	40	40*60/108	22	35

	Growers				
	Kaitheri Banana Growers	23	23*60/108	13	
Total sampling size		108		60	60
Total sample size				120	

3.7 Data collection techniques & procedures

The study relied on primary data. This primary data was collected through the administration of questionnaires to the respondents. Mugenda & Mugenda (2009) stipulated that questionnaires provide a fast way in attaining data. The questionnaires enabled the researcher ask uniform questions that provided comprehensive data on the various variables within the study. In regards to the administration of these questionnaires, the researcher personally distributed the questionnaires to the respondents and personally collected the questionnaires as soon as they were duly filled.

3.8 Data processing & analysis techniques

The questionnaires once received from the respondents were thoroughly examined and cross-checked to ensure no inconsistencies. Coding of the answered questions then followed before the analysis of the data was carried out. The study went ahead to employ descriptive and inferential statistical methods to analyze the quantitative data that was collected. This was done with the use of a statistical software known as the statistical package for social sciences (SPSS). Descriptive statistics included distribution of frequency, percentages, measures of central tendencies (mean) while inferential statistics included Chi squared test and Cramer's V.

The study used a 95% confidence level. A 95% confidence interval indicated a significance level of 0.05. The results were presented in tables and figures such as bar charts and pie charts.

3.9 Ethical issues

The study revolved around four ethical principles as illustrated by Diener & Crandall (1978) in their 'ethics in social and behavioral research' book which included:

- ✔ Ensured No Harm to the participant
- ✔ Attained informed consent from the respondents
- ✔ Ensured there was no invasion of privacy

✔ Ensured there was no deception involved.

The researcher also went ahead to acquire the permission slip from National Commission for Science, Technology and Innovation (NACOSTI)

Table 3. 4: Data Needs Table

Research Question	Data Needed	Source	Type of Data	Instrument
What is the relationship between Training role and sustainability among banana farmers' groups in Kirinyaga Central?	Received farmers' training	Member of the farmers' group Non-member farmers	Ordinal	Questionnaire
	Authority in charge of organizing training	Member of the farmers' group Non-member farmers	Scale	Questionnaire
	Changes in crop production for trained farmers	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
	Changes in farm incomes for trained farmers	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
	Creation of employment opportunities for trained farmers	Member of the farmers' group Non-member farmers	Nominal	Questionnaire

What is relationship between input access role and sustainability among banana farmers' groups in Kirinyaga Central?	Source of inputs	Member of the farmers' group Non-member farmers	Scale	Questionnaire Questionnaire
	Changes in Crop production	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
	Changes in farm incomes	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
	Creation of employment opportunities for trained farmers	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
What is the relationship between marketing role of and sustainability among banana farmers' groups in Kirinyaga Central?	Commercially sell	Member of the farmers' group	Ordinal	Questionnaire
	Market avenues	Member of the farmers' group	Scale	Questionnaire
	Changes in crop production for farmers who commercially sell	Member of the farmers' group Non-member farmers	Nominal	Questionnaire
	Changes in farm incomes for farmers who	Member of the farmers' group	Nominal	Questionnaire

	commercially sell	Non-member farmers		
	Creation of employment opportunities for farmers who commercially sell	Member of the farmers' group Non-member farmers	Nominal	Questionnaire

CHAPTER FOUR

4.0 FINDINGS AND DISCUSSIONS

4.1 Introduction

A pre- test was first carried out among 4 respondents from Kanyekeine Ward which was outside the study area. The pre-test was carried out on two members of farmers' group and two non-members in the ward. Among the respondents from the farmers' groups in the pre-test study were members from Njega Banana Growers and 4K Banana Growers Self-help Group. The questionnaire was found to be relevant to the farmer and therefore led to the researcher conducting the actual field survey.

During the actual field survey, a total of 100 respondents out of 120 respondents sampled were provided to the questionnaires by the researcher which they duly filled. The 100 respondents consisted of 50 farmers within the farmers' groups sampled which consisted of Karinga Banana Growers, Kaitheri Banana Growers, Kiamuruga Banana Growers and Kimandi Banana Growers and 50 farmers outside the farmers' groups but within the sampled wards. The Non- members were identified through participation by the researcher on farmers' meeting that were organized by the County government across the two wards. The first 25 farmers who arrived at the farmers training conducted by the County government on the 16th September 2020 were selected as the Non-member in Inoi ward. Also a farmers' training conducted at Kerugoya ward on the 18th September saw the first 35 farmers being selected as the Non-members. This was 83% of the farmer respondent that was sampled in the Methodology. The reason for the difference of 10 was the challenge of locating all members of Kaitheri Banana Growers sampled and hence the number of non-members had also to be reduced from 35 as sampled to a 25 actual respondents to equal the number of member farmers in Kerugoya ward within the actual field study. Inoi ward had a total of 50 respondents that comprised of 25 member farmers and 25 non-member farmers which was the same as those sampled in the methodology. However, Kerugoya ward having located 3 out of the 13 member farmers from Kaitheri Banana Growers, the number of non-member farmers from the ward had also to be reduced from 35 to 25 to make up for the 10 farmer difference. The field survey respondents included Members of Banana Farmers' Groups and non-member banana farmers as shown:

Table 4. 1: Actual Data collected

			Respondent Sampled Size	**Actual Data Collected**
Wards			Number of respondents =120 Percentage =100%	Number of respondents =100 Percentage =83%
INOI	Member Farmers	Karinga Banana Growers	17	17
		Kiamuruga Banana Growers	8	8
	Non-Member farmers		25	25
KERUGOYA	Member Farmers	Kimandi Banana Growers	22	22
		Kaitheri Banana Growers	13	3
	Non-Members Farmers		35	25

Source: (Field Survey data, 2020)

4.1.1 Background information of Respondents

The field survey had 100 respondents, 50 of whom were members of banana farmers' groups while 50 were non-member banana farmers. Non-member farmers were derived from the two wards: Inoi and Kerugoya wards. Member respondents were derived across four banana farmers' groups in Both Inoi and Kerugoya wards including: Karinga Banana Growers, Kiamuruga Tissue Culture Banana Growers, Kimandi Banana Growers and Kaitheri Banana Growers.

A. Member Farmers

1. Kiamuruga Tissue Culture Banana Growers

Kiamuruga Tissue Culture Banana Growers is an active banana Farmers' group based in Inoi Ward. They are a mixed group that have been in existence for seven years. The group was formed by the group members due to the challenge faced by farmers on marketing of their produce. The group organizes for trainings for its members which has consisted both field visits to Meru and Muranga and In-house trainings. In regards to access to inputs, the group in the initial stage saved money to purchase inputs which they distributed among its members. However, over the period of its existence members access inputs individually. Members have sold their produce as a group through one company called the Twiga Foods. This company visit individual member farms to purchase bananas but record keeping on the sales is done in the group. Despite that, the effects of Covid-19, a prevalent epidemic led to members of the group looking for other alternatives since Twiga foods partly halted the purchase of bananas from the group but resumed the purchase on October 2020.The group sell their produce in kilos with a kilo being priced from Ksh. 12-20 depending with the market

2. Karinga Banana Growers

Karinga Banana Growers is an active banana Farmers' group based in Inoi Ward. They are a mixed group that have been in existence for 10 years. The group was formed by the group members due to the challenge faced by farmers on marketing of their produce. The group through their chairlady organizes for trainings and call upon different facilitators including the county government. In regards to access to inputs, the group once during the initiation stage received banana suckers from a Non-Governmental Organization, however over the period of its existence, members access inputs individually. Members sells their produce as a group at a central place after careful negotiations done by the group's chairlady to different buyers. The selected buyer specifies on the amount of produce in tones prior to the visit and the price is set. Once the purchase is done, the payment is set to the group's bank account and the chairlady distributes to individual members according to their kilos. The group sell their produce in kilos with a kilo being priced from Ksh. 12-21 depending with the market

Picture 4. 1: Members of Karinga Banana Growers weighing their bananas during one of its market days (*Source: Field Survey data, 2020)*

3. Kimandi Banana Growers

Kimandi Banana Growers is an active banana Farmers' group based in Kerugoya Ward. They are a mixed group that have been in existence for four years. The group was formed by the group members due to the challenge faced by farmers on marketing of their produce. The group organizes for trainings and call upon different facilitators including the county government and Non-Governmental Organizations. In regards to access to inputs, the group members access inputs individually. The group's chairman solicits for buyers on behalf of its members and marketing is done at a central location. Once the purchase is done the payment is set to the group's account and the chairman distributes to members own accounts according to their individual kilos sold. The group sell their produce in kilos with a kilo being priced from Ksh. 14-20 depending with the market It is suggested by one of the respondents from the group that Marketing through the groups has improved her life by stating that

“Once I have marketed my bananas in the farmers’ group and my money has got into the account, am able to get easy loan from the bank.” (Member Kimandi farmers group, Questionnaire 5)

Picture 4. 2: A Member of Kimandi Banana Growers offloading his bananas during the group’s market day (*Source: Field Survey data, 2020)*

4. Kaitheri Banana Growers

Kaitheri Banana Growers is a farmers’ group in Kerugoya ward. It was formed in the year 2010 by the farmers. The group organizes for their training and calls upon different facilitators including the county government and the financial institutions including Kenya Commercial Bank. In matters of access to inputs, this is done individually and the group has no part to play in the purchase and distribution of inputs. Members of Kaitheri Banana Growers used to sell their produce as a group but with the Post-election clashes of 2017 left the group disinterested and un-motivated to market within the group. Therefore, currently since 2017, members sell their groups individually. Despite that, the group is still active in supporting its members through training and financially with the merry go round. They have also set up an avocado nursery through a sponsorship by the County government and the World Bank.

B. Non-Member Farmers

Non-member farmers who were the counterfactual respondents in the study were identified from farmers' meetings organized by the County government that were attended to by the researcher. The Non-members were 50 farmers who consisted of both male and female. Training among the Non-members is facilitated by the County government, however their attendance is depended on the awareness and information passed to by the county. Moreover, training is tailored by the County government and is not necessarily tailored to the needs of the farmer.

Non-member farmers mostly market their produce in their farm enterprise or in the local market. Search of markets are mainly through brokers who contribute to low market prices. Regardless of the weight of a bunch, a bunch goes for sh.120-300 which is a disadvantage to the Non-member farmer.

4.1.2 Banana Growing in Kirinyaga Central Sub-county

The study revealed that banana growing is rampant in the sub-county. Banana farmers moreover calculate their production on the number of bunches of bananas harvested in a season. A bunch is an entire stalk of bananas that is harvested in a farm and the number of bunches harvested do differ from farmer to farmer. The difference between a member and non-member farmer is how they sell their bunches to the market demand. For a member farmer, the bunches harvested are measured in kilos and each kilo is sold between Ksh. 14-Ksh 20 giving them a niche in making high income and profits especially for farmers with high bunch weight while non-member farmers sell their bunch at sh.180-sh 350 regardless of the bunch weight. The availability of the markets and favorable prices for member farmers provide a niche for these farmers to improve the quality and increase the quantity of the banana production to suit the market demand.

4.2 General Demographics of Respondents

Although general demographics was not among the research objectives, respondents' demographics was analyzed to give a clear picture of the respondents and have a comparison between member and Non-member farmers

4.2.1 Age of Respondents

The age of respondents was analyzed for the 100 farmers who were both members of farmers groups and Non-Members. The age of the farmers was analyzed to be at a mean of 54.25 years.

The median age was 54 years while its mode was 50 years. When comparison was done further on the ages of member farmers against non-member farmers, members' minimum age was 35years and their maximum age was 94 years with a mean age of 57.92 years while non-members minimum age was 25 years and their maximum age was 79 years with a mean age of 50.58 years.

Table 4. 2: Age of Respondents

	Member farmers (In years) (Number of respondents =50)	Non-member Farmers (In years) (Number of respondents =50)
Minimum Age	35	25
Maximum age	94	79
Mean age	57.92	50.58

Source: (Field Survey data, 2020)

4.2.2 Gender of Respondents

On gender of the 100 farmers, 59% of all farmers were female while 41 % were male. The necessity in providing for the family including food provision, education and basic day to day life provisions is an incentive for female to take up farming in Kirinyaga Central Sub-County.

When membership status is cross tabulated against gender of respondents, 52% of member farmers were female while 48% were female. For non- members, 66% of non-member farmers were female while 34% were male.

Table 4. 3 Gender of respondents

	Member Farmers (Total Number of respondents =50)		Non-member Farmers (Total Number of respondents =50)	
	Number of respondents	Percentages (%)	Number of respondents	Percentages (%)
Male	24	48	17	34

Female	26	52	33	66

Source: (Field Survey data, 2020)

4.2.3 Highest Level of Education

Majority of farmers have had some kind of education. When data was split and frequency of education analyzed on Member farmers, it shows the minimum level of education was a No education while the maximum level of education was the college level and the education level frequently stated was completed secondary education. When data was also split and frequency of education for non-members was analyzed, it shows the minimum level of education was completion of primary education while the maximum level was the post-graduate level. Moreover, the most stated education level was having completed secondary education as shown below

Table 4. 4: Education Level of Respondent

	Member farmers (Total Number of respondents =50)		Non-member farmers (Total Number of respondents =50)	
	Number of respondents	Percentage (%)	Number of respondents	Percentage (%)
None	1	2	0	0
Some primary education	6	12	8	16
Primary completed	9	18	8	16
Some secondary	4	8	5	10
Secondary completed	19	38	21	42
College	11	22	5	10
Undergraduate	0	0	2	4
Post graduate	0	0	1	2

Source: (Field Survey data, 2020)

4.2.4 Source of Income

When data was split and frequency analyzed on the source of income on member farmers, 80% of member farmers suggested farming as their main source of income, 8% suggested full time employment & farming while 6% suggested business & farming and pension & farming as their

main source of income. Among the reasons suggested by members on their decision to concentrate on farming was the benefits they incur from being in a farmers' group including continuous flow of income, guarantee of marketing produce and reduced stress by farmer to source for buyers. When data was also split and frequency analyzed on the source of income for the non-members, 62% Non-member farmers suggested farming as their main source of income. 16% suggested Casual labor & farming,2 % suggested Part time employment & farming, 6% suggested Full time employment & farming while 14% suggested Business & farming as their main source of income as shown below:

Table 4. 5 : Respondent's Source of Income

	Member farmers (Total Number of respondents =50)		Non-member farmers (%) (Number of respondents =50)	
	Number of respondents	Percentages (%)	Number of respondents	Percentages (%)
Farming only	40	80	31	62
Full time employment & farming	4	8	3	6
Part time employment & farming	0	0	1	2
Casual labor & farming	0	0	8	14
Business & farming	3	6	7	14
Pension & farming	3	6	0	0

Source: (Field Survey data, 2020)

4.2.5 Farmers' Production/income and Employment for years 2018/2019/2020

Each farmer calculates their Banana production on the number of bunches harvested in their farm. A bunch is an entire stalk of bananas that is harvested from a farmers' farm enterprise. A bunch is a common factor that is used by farmers to measure their production and it is also a basis on marketing their bananas into the market avenues. A member farmer gains their farm income on the sale of bananas by the amount of weight of the bunches harvested in the farm with a kilo going for sh.12- sh.21 while Non- member sells their bunch depending on the market demand regardless of the weight of the bunch with a bunch going for sh.120-sh. 300.

All farmers including those in groups and not in groups stated an increase in their production and incomes in their farm enterprise for the year 2018,2019 and 2020.However, the number of employees including those in groups and the Non-members remained constant across the 3 years. However, crop production, Incomes and employees of member farmers was higher than the Non-member farmers as showed in the table below:

Table 4. 6 : Comparison of Total Production of bananas harvested according to the number of banana bunches between member and non-member farmers (2018 -2020)

	Total production 2018 (Number of bunches harvested)	Total Production 2019 (Number of bunches harvested)	Total Production 2020 (Number of bunches harvested)
Member Farmers (50 Farmers)	21980	23500	25145
Non-Members (50 farmers)	944	1129	1365

Source: (Field Survey data, 2020)

When Total income of sale of bananas is tabulated across the three years, it shows that farmers' incomes including member and non-member farmers have increased across 2018-2020.However, despite the increase, member farmers attained higher incomes as compared to the Non-members as showed in the table below

Table 4. 7: Comparison of Total Income between member and non-member farmers (2018-2020)

	Total income 2018 (Sh.)	Total income 2019 (Sh.)	Total income 2020 (Sh.)
Member Farmers (50 farmers)	19,599,000	20,462,000	22,447.000
Non-Members (50 Non-farmers)	442,700	503,900	598,700

Source: (Field Survey data, 2020)

When the total number of employees is tabulated across 2018-2020, the number of employees across the farm enterprises is constant. However, the number of employees among the member farmers is higher than Non-member as showed in the table below.

Table 4. 8: Comparison of Total Number of Employees between Member and Non-Member farmers (2018-2020)

	Total Number of employees 2018	Total Number of employees 2019	Total Number of employees 2020
Member Farmers (50 farmers)	124	124	124
Non-Members (50 Non-farmers)	16	16	16

Source: (Field Survey data, 2020)

4.3 The relationship between Training role and sustainability in Banana Farm Enterprises

When a farm enterprise achieves sustainability, it means that it has experienced increased crop production, increased farm incomes and able to create employment opportunities into the farm. Training of farmers is important in disseminating information, skills, best farm practices that improves a farmer's farm performance leading to increased crop production, increased farm incomes and creation of employment opportunities.

4.3.1 Frequency of farmers trained against those not trained

When data was split and frequency analyzed on member farmers trained and not trained as well as that of Non-members, 96% of member farmers stated having received farmers training that was organized by their respective farmers' groups.4% of the members suggested they have not received training citing reasons such as their unavailability and distance from the training location. 30% of Non-members suggested having received training that was organized by the County government of Kirinyaga while 70% of Non-members suggested that they have never received training citing reasons such as that they are not aware when and where the training gets conducted.

Table 4. 9 : Frequency of farmers trained against not trained

	Member farmers (Total Number of respondents =50)		Non-member farmers (Number of respondents =50)	
	Number of respondents	Percentages (%)	Number of respondents	Percentages (%)
Trained	48	96	15	30
Not trained	2	4	35	70

Source: (Field Survey data, 2020)

4.3.2: The role of farmer' group in facilitating Training of farmers

When a Pearson Chi test of association was done to examine the relation between membership status (that is being a Member or Non-member of farmers group) and the farmers' training (that is being Trained or Not trained). The relation between these two variables was significant. The Chi square statistical value is 46.718 with a p value of 0.000 which is less than 0.05(i.e. 0.000<0.05). Therefore, there is an association meaning, there is more likelihood of a farmer in a group to receive training as compared to a farmer working outside a group as showed below:

Output 4. 1: Pearson Chi-Square Tests output on membership by training

	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	46.718[a]	1	.000		
Continuity	43.930	1	.000		

Correction[b]					
Likelihood Ratio	53.910	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	46.251	1	.000		
N of Valid Cases	100				

Source: (Field Survey data, 2020)

Moreover, when Phi and Cramer's performance on the relationship between membership status and training show a 0.684 value which illustrates a strong relationship between being a member of a farmers' group and receiving a farmers' training.

Output 4. 1: Phi and Cramer's V Output on Membership by Training

		Value	Approximate Significance
Nominal by Nominal	Phi	.684	.000
	Cramer's V	.684	.000
N of Valid Cases		100	

Source: (Field Survey data, 2020)

4.3.3: A comparison of farmers' training by changes in crop production for member farm enterprises against Non-member farm enterprises

When the relationship of training and crop Production is examined through comparison of means, average production of trained member farmers was a mean of 479.27 bunches harvested

(number of trained member farmers was 48 out of 50) while average production of trained Non-member farmers was a mean of 47.98 bunches harvested (Number of trained non-member was 15 out of 50). This shows that average mean production of trained member farmers was higher than the average production of non-member farmers. The minimum average production for trained member farmers was 343 bunches harvested while the maximum average production was 1083 bunches harvested. The minimum average production of trained non-member farmers was 10 bunches harvested while the maximum average production of trained non-member farmers was 68 bunches harvested. The reasons for the variance is due to factors that place member farmers at an advantage over Non-member farmers such as the: training model where group training is based on demand driven grounded on the farmers' needs, high rate of attendance among members due to information passed on prior to the training and therefore members are able to prepare on time and the frequency of the training since group members have the control to organize the training whenever it best suits them.

Table 4. 10 : Comparison of average production of Trained Member farmers against Trained Non-member farmers

	Member farmers Trained (Number of bunches harvested) (Number of respondents =48) (Percentage =96%)	Non-member farmer Trained (Number of bunches harvested) (Number of respondents =15) (Percentage =30%)
Minimum Average Production	343	10
Maximum Average Production	1083	68
Mean Average production	479.27	47.98

Source: (Field Survey data, 2020)

When data was split and Phi and Cramer's V was performed on the relationship between training and average production of member farmers, a strong perfect association of 1.00 was showed

between the two variables with a significance of 0.000 < 0.05. This showed that training within farmers' groups is significant to the average production of Member Owned Farm enterprise. When Phi and Cramer's V was performed on the relationship between training and average production of Non-member farmers, a weak association of 0.295 with a p value of 0.631>0.05. This shows that there is no significance in the relationship of farmers' training of Non-members and their crop production. It can be concluded that there is a strong relationship on training and average farmers' production for member farmers compared to Non-Members

4.3.4 A comparison of farmers' training by changes in farmers' Income for member farm enterprises against Non-member farm enterprises

When the relationship of training and farmers' incomes is examined through comparison of means, average farmers' income of trained member farmers had a mean of sh.422,931 (Number of trained member farmers was 48 out of 50) while the average farmers' income of trained Non-member farmers was a mean of sh.23,644. (Number of trained Non-member farmers was 15 out of 50). Trained member farmers had a high farmers' income compared to the trained Non-member farmers. The minimum average income of trained member farmers was sh.313,333 while the maximum average farmers' income was sh. 1,034.000. The minimum average farmers' income of trained Non-member farmers was sh.0 meaning even though some of the members were trained, they don't sell their produce. The maximum average income of trained Non-member farmers was sh. 45,000.

Table 4. 11: Comparison of average farmers' income of trained member farmers against trained non-member farmers

	Member farmers Trained (Sh.) (Number of respondents =48) (percentage, %) = 96%)	Non-member farmer Trained (Sh.) (Number of respondents =15) (Percentage% = 30%)
Minimum Average Farmers' Incomes	313,333	0

Maximum Average Farmers' incomes	1,034,000	45,000
Mean Average Farmers' incomes	422,931	23,644

Source: (Field Survey data, 2020)

Moreover, when data was split and Phi and Cramer's V was performed on the relationship between training and average farmers' income of member farmers, a perfect association of 1.000 was showed between the two variables with a significance of 0.000 < 0.05. This showed that training within farmers' groups is significant to the average farmers' income of member owned farm enterprise. When Phi and Cramer's V was performed on the relationship between training and average farmers' income of non-member farmers, a weak association of 0.202 with a significance of 0.603< 0.05. This shows that there is no significance in the relationship of farmers' training of Non-members and their incomes. It can be concluded that there is a strong relationship on training and average farmers' income for member farmers compared to non-members**.**

4.3.5 A comparison of farmers' training by changes in employee number for member farm enterprises against Non-member farm enterprises

When the relationship of training and number of employees is examined through comparison of means, average number of employees of trained member farmers was a mean of 2.50 (Number of trained member farmers was 48 out of 50) while the average number of employees of trained Non-member farmers was a mean of 1.00. (Number of trained non-member farmers was 15 out of 50). Trained member farmers had a high number of employees compared to the trained non-member farmers. The minimum average number of employees of trained member farmers was two while the maximum average number of employees was also four. The minimum average number of employees of trained Non-member farmers was one while the maximum average number of employees of trained non-members was also one. The reason for the variance that places members of a farmers' group in an advantage is the increased production and increased incomes in their farm that enables farmers to employ more employees as compared to non-member farmers.

Table 4. 12 : Comparison of average number of employees of trained member farmers against trained non-member farmers

	Member farmers Trained (Number of respondents =48) (Percentage %= 96%)	Non-member farmer Trained (Number of respondents =15) (Percentage %= 30%)
Minimum Average Number of employees	2	1
Maximum Average Number of employees	4	1
Mean Average Number of employees	2.50	1.00

Source (Field Survey data,2020)

When data was split and Phi and Cramer's V was performed on the relationship between training and average number of employees of member farmers, a strong association of 0.685 was showed between the two variables with a significance of 0.00 <0.05. This showed that training within farmers' groups is statistically significant to the average number of employees of member owned farm enterprise. When Phi and Cramer's V was performed on the relationship between training and average number of employees of non-member farmers, a weak association of 0.111 with a significance of 0.000< 0.05. This shows that there is significance in the relationship of farmers' training of non-members and the number of employees. It can be concluded that there is a strong relationship on training and average number of employees for member farmers compared to Non-Members farmers

In summary on the Analysis of farmers' training and sustainability and examining sustainability in the lens of crop production, farmers' income and employment opportunities, the study showed that farmers within farmers' groups have a high crop production, high farmers' income and number of employees compared to farm enterprise owned by non-member farmers. Moreover, analysis of Cramer's V also shows a strong relationship between members trained and crop production, farmers' income and employment opportunities compared to non-member farmers.

This shows that, the role of training in farmers' group in enhancing sustainability of farm enterprises is significant.

4.4 The relationship between Input access role and sustainability in Banana Farm Enterprises

Access of inputs for farmers is essential in reducing the transaction costs for small scale farmers. Use of high yield inputs also promotes increased production, increased incomes and create employment opportunities in farm enterprises.

4.4.1 Farmers' Source of Inputs

When farmers including members and Nonmembers of farmers' groups were asked where they source their inputs,17% stated that Local retailers was they go to for their banana inputs, 74% stated that they access their inputs from their own farm through use of farm manure and retrieving suckers from matured banana stems, 2% stated that they borrowed from family and friends while 7% stated that their source of income was from both local retailers and own farm enterprise. None of the farmers especially those in farmers' groups stated that they sourced their inputs through the farmers' groups. Therefore, none of the farmers' group: Kimandi Banana Growers, Kiamuruga Tissue Culture Self Help Group, Karinga Tissue Culture S.H.G and Kaitheri Banana Growers took up the role of supply of inputs to its members.

Table 4. 13 : Farmers' source of Inputs

Source of Inputs		Frequency (Number of respondents=100)	Percentage (%)
	Local retailers	17	17.0
	Inputs from the farm (Manure)	74	74.0
	Neighbors and Friends	2	2.0
	Both local retailers and own farm Enterprise	7	7.0
	Total	100	100.0

Source: (Field Survey data, 2020

4.4. 3 A comparison of farmers' source of inputs by changes in crop production, farmers' income and employee numbers for member farm enterprises against non-member farm enterprises

Member and non- member farmers source their inputs from different avenues including from local retailers, from their own enterprises through use of farm manure and from neighbors and friends. However, Farmers' group don't play the role of accessing inputs to its member farmers and therefore they don't make any contribution directly in changing the farm enterprises of its members through input access. Farmers, both non-members and member farmers acknowledge that trainings organized by Local government and farmers' groups respectively have played the role of their choice and usage of inputs leading to increased production, increased incomes and have created employment opportunities within their farm enterprise as shown in the computation of means in the table below:

Table 4. 14 : Computing of means of Source of inputs against average incomes, average production and average employees for trained member and trained Non-member farmer

Membership Status	Mean Average production	Mean Average income	Average number of employees
Trained Member Farmers (Number of respondents= 48)	479.27	422,931	2.50
Trained Non-member farmers (Number of respondents =15)	47.98	23,644	1.00

Source: (Field Survey data, 2020

As shown above, indirectly through training on best use of inputs and the lessons on quality and quantity of farm inputs has an impact on achieving increased production, incomes and employment opportunities. With a high number of member farmers having attended farmers' training contributed to high mean average income, mean average production and high mean average employment compared to non-member farmers. However, there is no direct relationship on input access role of farmer's groups and sustainability (which is productivity, incomes and employment opportunities) since farmers' group don't play the role of provision of inputs to its members.

4.5 The relationship between Marketing role and sustainability in Banana Farm Enterprises

A farm enterprise achieving sustainability means that it has experienced increased crop production, increased farm incomes and able to create employment opportunities into the farm. A farmers' group role in marketing of produce involves searching and negotiating with buyers, negotiating for market prices, collective selling of produce and disbursing of payment to farmers' account.

4.5.1 Farmers' choice of Market avenues

When data was split and frequency analyzed on member and non-member farmers who sell their produce, 94% of member farmers stated selling their produce through their farmers' groups .82% of the non-members suggested selling their produce through local markets and known customers.

Table 4. 15 : Frequency of Respondents' choice of Market Avenues

	Member farmers (%) (Number of respondents who sell their produce commercially =50)	Non-member farmers (%) (Number of respondents =41)
Commercially sell their produce	Through their farmers' groups Number of respondents= 47 Percentage (%) =94%	Through local Markets and Known customers Number of respondents =41

	(Through Known Customers) Number of respondents = 3 Percentage (%) =6%	Percentage(%)= 82%

Source: (Field Survey data, 2020).

4.5.2 The role of farmer' group in facilitating Marketing for member farmers

Moreover, when a Chi test of association was done to examine the relation between membership status (i.e. Member or Non-member of farmers group) and the Marketing. The relation between these two variables was significant. The person Chi square statistical value is 88.818. with a p value of 0.000 which is less than 0.05(i.e. 0.000<0.05). Therefore, there is an association meaning, there is more likelihood of a farmer in a group to commercially market their produce as compared to a Non-member as showed below:

Output 4. 2: Chi-Square Tests output on membership by training

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	88.818[a]	2	.000
Likelihood Ratio	116.725	2	.000
Linear-by-Linear Association	20.432	1	.000
N of Valid Cases	100		

Source: (Field Survey data, 2020)

Phi and Cramer's performance on the relationship between membership status and marketing show a 0.942 value which illustrates a strong relationship between the variables which is also significant of 0.000<0.05 as showed in the table below:

Output 4. 3 Phi and Cramer's V Output on Membership by Marketing

		Value	Asymptotic Standardized Error[a]	Approximate T[b]	Approximate Significance
Nominal by Nominal	Phi	.942			.000
	Cramer's V	.942			.000
Interval by Interval	Pearson's R	.454	.111	5.048	.000[c]
Ordinal by Ordinal	Spearman Correlation	.568	.110	6.839	.000[c]
N of Valid Cases		100			

Source: (Field Survey data, 2020

4.5.3 A comparison of farmers' marketing avenues by changes in crop production for member farm enterprises against non-member farm enterprises

When relationship of Marketing and crop production is analyzed through comparison of means, Member farmers who marketed their produce through farmers group showed a high average production of a mean of 473.76 bunches harvested (The Number of member farmers marketing through farmers' groups was 47 out of 50) while non-member farmers who marketed their produce through their choice of market avenues was a mean of 25.45 bunches harvested (The number of non-member farmers selling their produce was 41 out of 50). The minimum average production of member farmers who sold their produce through their respective farmers' groups was 268 bunches while the maximum average production of member farmers who sold their produce through market groups was 1083 bunches. The minimum average production of Non-member farmers who sold their produce was 6 bunches while the maximum average production of non-member farmers who sold their produce was 68 bunches.

Table 4. 16 : Comparison of average production of members selling produce through farmers' groups against non-member farmers selling produce through avenues of choice

	Member farmers selling in farmers' groups (Number of	Non-member farmer selling through avenues of choice (Number of bunches

	bunches harvested) (Number of respondents =47) (Percentage % = 94%)	harvested) (Number of respondents =41) (Percentage %= 82%)
Minimum Average Production	268	6
Maximum Average Production	1083	68
Mean Average production	473.76	25.45

Source (Field Survey data,2020)

When data was split and Phi and Cramer's V was performed on the relationship between marketing and average production of member farmers, a strong perfect association of 1.000 was showed between the two variables with a significance of 0.000 < 0.05. This showed that marketing within farmers' groups is significant to the average production of member owned farm enterprise. When Phi and Cramer's V was performed on the relationship between marketing and average production of Non-member farmers, a weak association of 0.207 with a significance of 0.001 <.05. This shows that there is a significance in the relationship of marketing of non-members and their production. It can be concluded that there is a strong relationship on marketing and average farmers' production for member farmers than that of non-Members

4.5.4 A comparison of farmers' marketing avenues by changes in Farm Incomes for member farm enterprises against Non-member farm enterprises

When the relationship of marketing and farmers' incomes is examined through comparison of means, average farmers' income of member farmers who sold their produce through farmers' groups had a mean of sh.420, 837 (Number of member farmers who sold their produce in farmers' groups was 47 out of 50) while the average farmers' income of non-member farmers who sold their produce was a mean of sh.13, 214. (Number of Non-member farmers was 41 out of 50). Member farmers had a high farmers' income compared to the Non- member farmers. The minimum average income of member farmers was sh.267, 667 while the maximum average farmers' income was sh. 1,034.000. The minimum average farmers' income of the Non-member

farmers was sh. 2500 while The maximum average income of Non-member farmers was sh. 45,000. The reason for the variance is suggested as ready markets, favorable market prices, lack of brokers that puts members of farmers groups at an advantage over Non-member farmers.

Table 4. 17: Comparison of average farmers' income of member farmers selling produce in farmers' groups against Non-member farmers selling their produce through avenue of choice

	Member farmers selling in farmers' groups (Sh.) (Number of respondents =47) (Percentage %=94%)	Non-member farmer selling through avenues of choice (Ksh) (Number of respondents =41) (Percentage %= 82)
Minimum Average Farmers' Incomes	267,677	2500
Maximum Average Farmers' incomes	1,034,000	45,000
Mean Average Farmers' incomes	420,837	13,214

Source: (Field Survey data, 2020)

When data was split and Phi and Cramer's V was performed on the relationship between marketing and average farmers' income of member farmers, a strong perfect association of 1.000 was showed between the two variables with a significance of 0.000 < 0.05. This showed that marketing within farmers' groups is significant to the average farmers' income of Member Owned Farm enterprise. When Phi and Cramer's V was performed on the relationship between marketing and average farmers' incomes of Non-member farmers, a weak association of 0.203 with a significance of 0.001 <.05. This shows that there is a significance in the relationship of marketing of Non-members and their incomes. It can be concluded that there is a strong relationship on marketing and average farmers' productivity for member farmers than that of non-members

4.5.5 A comparison of farmers' marketing avenues by changes in employee number for member farm enterprises against Non-member farm enterprises

When the relationship of marketing role and number of employees is examined through comparison of means, average number of employees of member farmers who sell their produce through farmers' groups was a mean of 2.51 (Number of member farmers was 47 out of 50) while the average number of employees of Non-member farmers was a mean of 1.00. (Number of Non-member farmers was 41 out of 50). Member farmers had a number of employees compared to the Non- member farmers. The minimum average number of employees of member farmers who commercially sell their produce through farmers' group was two while the maximum average number of employees was four. The minimum average number of employees of Non-member farmers who commercially sell their produce was one while the maximum average number of employees of non-members was also one. The reason for the variance that places members of a farmers' group in an advantage is the increased production and increased incomes in their farm that enables farmers to employ more employees as compared to Non-member farmers.

Table 4. 18: Comparison of average number of employees of Member farmers selling produce in farmers' groups against Non-member farmers selling their produce through avenue of choice

	Member farmers selling in farmers' groups (Number of employees.) (Number of respondents =47) (Percentage% = 94%)	Non-member farmer selling through avenues of choice (Number of employees) (Number of respondents =41) (Percentage %= 82%)
Minimum Average Number of employees	2	1
Maximum Average Number of employees	4	1
Mean Average Number of	2.51	1.00

employees		

Source: (Field Survey data, 2020)

When data was split and Phi and Cramer's V was performed on the relationship between marketing and average number of employees of member farmers, a strong association of 0.945 was showed between the two variables with a significance of 0.000 < 0.05. This showed that marketing within farmers' groups is significant to the number of employees of Member Owned Farm enterprise. When Phi and Cramer's V was performed on the relationship between marketing and average number of employees of non-member farmers, a strong association of 0.545 with a significance of 0.001 <.05. This shows that there is a significance in the relationship of marketing of non-members and their number of employees. It can be concluded that there is a strong relationship on marketing and average number of employees for member farmers compared to non-members

In summary, the Analysis on marketing and crop production, farmers' income and employment opportunities show that farmers within farmers' groups have a high crop production, high farmers' income and number of employees compared to farm enterprise owned by non-member farmers. Moreover, analysis of Cramer's V also shows a strong relationship between members selling their produce through farmers' groups and crop production, farmers' income and employment opportunities compared to non-member farmers. This shows that, the role of marketing in farmers' group in enhancing sustainability of farm enterprises is significant.

4.6 Discussion of the findings

From the findings of this study, the role of farmers' groups in enhancing sustainability was seen in the relationship that training and Marketing have in crop production, employment opportunities, and Farmers' incomes. The relationship between training and crop production showed a strong perfect association of 1.000 with statistical significance on member farmers' farm enterprise. The Relationship between training and farmers' income showed a strong perfect association of 1.000 with statistical significance while relationship between training and the number of employees also showed a strong association of 0. 685.

In regards to the relationship between marketing and crop production, the number of employees and farmers' incomes among member farmers. The relationship between marketing and crop

production showed a strong perfect association of 1.000 with statistical significance. The Relationship between marketing and farmers' incomes also showed a strong perfect association of 1.000 with statistical significance while the relationship between marketing and the number of employees also showed a strong association of 0.945. In regards to input access, farmers' groups had no direct role in supporting their members with the accessibility of inputs. Among the 2 main roles that farmers' groups take up, a strong association was seen across all the 3 variables of sustainability.

In regards to non-member farm enterprise, the relationship between training and crop production showed a weak association of 0.295 with no statistical significance, the relationship between training and farmers' income also showed a weak association of 0.202 with no statistical significance while the relationship between training and number of employees also showed a weak association of 0.111.

Moreover, for the non-member farm enterprises, the relationship between marketing and crop production, the number of employees and farmers' incomes showed a strong association across two variables of sustainability and one strong association on one variable. The relationship between marketing and crop production showed a weak association of 0.207 with statistical significance. The relationship between marketing and farmers' incomes also showed a weak association of 0.203 with statistical significance while the relationship between marketing and the number of employees showed a strong association of 0.545.

Farmers' groups, therefore, are an important tool in enhancing the sustainability of member farm enterprises. Farmers' groups are critical for the farmers in the following ways: by taking up training role they provide a platform for demand-driven lessons according to the farmers' needs, enable the majority of farmers to participate in training, and increases the usage of information in their farm enterprises. By also taking up the marketing role, there is the farmer to farmer extension where farmers share information, farmers enjoy favorable prices and ready markets and farmers sell their produce in bulk and kilos. As an extension to the advantages of farmers' group as suggested by members include the following: lump sum money from the produce, no brokers involved, payment follow-up, loan access, corporate social responsibility(CSR), addition of assets, improved education for family, enhancing food security and in meeting the demands of family & friends.

The findings of this study revealed that the role of farmers' groups is in line with the studies by Fischer & Qaim (2012) and Bernard & Spielman (2009) that Farmers' groups play major roles in boosting farm enterprises including training farmers on best farm practices and marketing their produce hence reducing farmers' stress over scouting for buyers. The study by Bachke (2019) and Shiferaw & Muricho (2011) was an additional confirmation to the study where through farmers' groups, farmers can enjoy benefits such as the ability to negotiate for prices, linking small scale farmers to large customers such as Twiga foods and large buyers, getting support from the government & other institutions and improving farmers' livelihood. However, this study also revealed that access to inputs as one of the major roles of farmers' groups was not carried out as studies of Chagwiza et al. (2016) and Bachke (2019) suggested.

The motive of farmers to join farmers' groups is to address the challenges that small-scale farmers face. Fischer & Qaim (2012) posits that farmers' groups are a means to an end. This study concurred with their study and supported the notion that challenges faced by farmers including lack of information, unavailability of markets, poor prices, lack of bargaining power for farmers are met by these farmers' groups. Therefore, farmers' groups provide a unique platform for farmers to achieve their full potential and take advantage of opportunities that will favor the growth of their farm enterprises.

Farmers groups ensure social inclusion for small-scale farmers whose capabilities are enhanced through training and marketing of their produce to enhance the sustainability of their farm enterprises. Majority of non-members in the study have suggested that they would recommend farmers to join farmers' groups and they would also want to join a farmers group. Moreover, member farmers suggest that being in a farmers group is very important to them. This showed that majority of small-scale farmers have understood the importance of farmers' groups to better enhance their farm performance.

Farmers' groups complement attaining other essential benefits for the farmers including financial support through the 'merry go round' and easy access to loan, government support e.g. being part of government projects such as irrigation schemes thus enabling small scale farmers to cope with other challenges of demand for working capital, unfavorable climatic conditions such as during the drought seasons or meeting other challenges faced by the small-scale farmer.

The notion of social capability which captures the idea of effective use of institutions that enhance people's capabilities by advocating for increased participation, access to information, access to resources and creating connectedness between person to person will lead to sustainability and improved well-being (Atkinson & Marlier, 2010) is also achieved through farmers' groups bringing into focus the reason for farmers joining farmers' groups. The focus on social inclusion advocates for increased participation, access to information, access to resources, education, employment opportunities, and creating connectedness between person to person & person to resources for the vulnerable that will lead to the achievement of sustainability and improved well-being is also achieved through farmers' groups as suggested by a member farmer.

Farmers' groups have a social significance as well among the small-scale farmers. Some of the member farmers have taken upon themselves to conduct Corporate Social Responsibility (CSR) in their communities as a way to give back. Community members visit their farms where they can learn the different farming techniques that the members were taught during the different farm training as suggested by member farmers.

CHAPTER FIVE

SUMMARY, CONCLUSIONS & POLICY IMPLICATION AND RECOMMENDATIONS

5.1 Summary of the Study

This project came from the background that there are three main roles of farmers' groups which included training, access to inputs, and marketing of farmers' produce which contribute to the sustainability of farm enterprise. Moreover, farmers' groups are a social tool that ease constraints faced by small-scale farmers that exclude them from gaining opportunities and empower them towards achieving sustainability in their farm enterprises. Sustainability is achieved when a farmer enjoys increased crop production, increased farmers' incomes and create job opportunities in their farm own enterprises.

The study was framed on the basis of addressing a gap to further investigate the role of farmers' groups in promoting sustainability in farm enterprises focusing on the rural setting. The study was further based on the recommendations provided to by works of Bernard & Spielman (2008) and Fischer & Qaim (2014) that posit the need to broaden the investigation of rural farmers' groups where there is limited quantitative studies to demonstrate the capacity and the roles of these rural farmers' groups.

The study sought to address three main objectives which included: Firstly, determining the relationship between training role and crop production, employment opportunities & Farm incomes among banana farmers' groups in Kirinyaga Central; secondly, determining the relationship between Input access role and crop production, employment opportunities & Farm incomes among banana farmers' groups in Kirinyaga Central and lastly, determining the relationship between marketing role and crop production, employment opportunities & farm incomes among banana farmers' groups in Kirinyaga Central

The research study was framed on the theory of access to resources that proposed that lack of access to resources constrain rural farmers from reaching their full potential making them more vulnerable than others (Fischer & Qaim, 2012 & Mukindia,2014) The theory of access to resources also proposed the use of institutions in facilitating access to resources. Therefore, access to resources by small scale farmers that is facilitated by farmers' groups helps farmers reach sustainability in their farm enterprises and enhancing their well- being. With their

participation in farmers' groups, small-scale farmers can benefit from increased production, improved farmers' incomes, and the creation of employment opportunities.

The application of the social inclusion from the capability approach model by Weber (1930) was also important in this study in explaining farmers' decision to join a farmers' group and the application of these groups by the small-scale farmers. Using farmers' groups to access resources such as ready markets, access to information, financial support among others points to farmers' groups empowering a farmers' capability to take advantage of new & existing opportunities and improve their farm enterprises towards sustainability.

The study's methodology was based on the use of descriptive research design with the use of primary data through the administration of questionnaires. Moreover, the study employed Multi-stage sampling technique with stage one being the use of Purposive sampling that involved selection of two out of four wards within Kirinyaga Central Sub-county. The two wards selected included Inoi and Kerugoya Wards leaving behind Kanyekeini and Mutira wards. The second stage was sampling of the population which was based on proportionate sampling. Through proportionate sampling, a sample size from each group was derived relative to the population which included a sample size of 60 member farmers. The 60 member farmers were distributed across the four farmers' groups within the two sampled wards that included Karinga Banana Growers, Kiamuruga Banana Growers, Kimandi Banana Growers and Kaitheri Banana Growers. The study further sampled 60 Non-member farmers that performed as a counterfactual to the study within the two sampled wards. Data analysis incorporated use of Statistical Package for Social Science (SPSS) with use of deferential statistics including frequencies, percentages, means & standard deviation as well as inferential statistics including Correlation Analysis and Multivariate Regression Analysis.

During the actual field study, the findings showed that a majority of member and Non-member farmers have had some kind of education having completed secondary education. On the age factor, the minimum age of member farmers was 35 years while the maximum age of the respondents was 94 years while the minimum age of non-members was 25 years and the maximum age was 79 years.

When it came to gender, 48% of member farmers represented male while 52% of member farmers were female while 34% of non-members represented male while 66% represented female non-members.

The minimum level of education among member farmers was a lack of education while the maximum level of education was college level. For the mon-members, the minimum level of education was the primary level completed while their maximum level of education was post-graduate education.

Member farmers suggested farming as their main source of income at 80% , while 8% suggested full-time employment & farming while 6% suggested business & farming and pension & farming as their main source of income. For non-member farmers, 62% of non-member farmers suggested farming as their main source of income. 16% suggested casual labor & farming,2 % suggested part-time employment & farming, 6% suggested full-time employment & farming while 14% suggested business & farming as their main source of income

A majority of the farmers including member and non-member farmers stated an increase in productivity and farmers' incomes for years 2018, 2019, and 2020. When it came to the number of employees, employment opportunities remained constant for the farmers though member farmers stated a high number of employees compared to Non-members for the years 2018, 2019 and 2020. Between 2018-2020, Members registered an average crop production of 21980 bunches, 23500 bunches and 25145 bunches in the respective years while Non-members within the same 3 years registered an average crop production of 944 bunches, 1129 bunches, and 1365 bunches. In regards to farmers' incomes for the year 2018, 2019 and 2020, members registered an average income of Ksh.19, 599,000, Ksh. 20,462,000 and Ksh.22, 447, 000 in their respective years' while non-members registered an average income of Ksh. 442700, Ksh. 503, 900 and Ksh.598,700.While the number average number of employees across the 3 years was 124 of each year while for the non-members was 16 in each consecutive year. The gap difference between member and non-member showed the critical role that farmers groups play in enhancing sustainability in farm enterprises.

While looking at the training attendance of farmers, 96% of member farmers stated having received farmers training that was organized by their respective farmers' groups.4% of the non-members suggested they have not received training. 30% of non-members suggested having received training that was organized by the County government of Kirinyaga while 70% of Non-members suggested that they have never received training.

There is a strong relationship between being a member of a farmers' group and farmers' training. The relation between these two variables was significant with the Chi-square statistical value of 46.718 with a p-value of 0.000 which is less than 0.05(i.e. 0.000<0.05). This showed that there is more likelihood of a farmer in a group to receive training as compared to a farmer working outside a group. This is attributed to demand-driven training organized by farmers' groups.

There is also a strong relationship between being a member of a farmers' group and farmers' commercially selling their produce. The relation between these two variables was significant with the Chi-square statistical value of 88.818 with a p-value of 0.000 which is less than 0.05(i.e. 0.000<0.05). This showed that there is more likelihood of a farmer in a group to commercially sell their produce as compared to a farmer working outside a group. This is attributed to a guarantee of ready markets within a farmers group.

On the relationship between training and crop production, the number of employees and farmers' incomes among non-member farmers, the relationship between training and crop production showed a strong perfect association of 1.000 with statistical significance on member farmers' farm enterprise. The relationship between training and farmers' income of member farmers also showed a strong perfect association of 1.000 with statistical significance while the relationship between training and number of employees for member farmers also showed a strong association of 0. 685.

On the relationship between training and crop production, the number of employees and farmers' incomes among Non-member farmers, the relationship between training and crop production showed a weak association of 0.295 with no statistical significance, the relationship between training and farmers' income also showed a weak association of 0.202 with no statistical

significance while the relationship between training and number of employees also showed a weak association of 0.111.

On the relationship between marketing and crop production, the number of employees and farmers' incomes among member farmers. The relationship between marketing and crop production showed a strong perfect association of 1.000 with statistical significance. The Relationship between marketing and farmers' incomes also showed a strong perfect association of 1.000 with statistical significance while the relationship between marketing and the number of employees also showed a strong association of 0.945

On the relationship between marketing and crop production, the number of employees and farmers' incomes among Non-member farmers. The relationship between marketing and crop production showed a weak association of 0.207 with statistical significance. The Relationship between marketing and farmers' incomes also showed a weak association of 0.203 with statistical significance while the relationship between marketing and the number of employees also showed a strong association of 0.545

Despite the active role farmers' group play in training and marketing, farmer groups still fail to provide access to inputs to their members. Member farmers have to sort for other alternative sources for their inputs such as through their farm enterprise and purchase from local retailers. The burden that comes with sourcing for inputs outside the farmers' groups while some incur extra costs in purchasing and transporting these inputs to their farm enterprises.

Therefore, the roles that farmers' groups play i.e. training and marketing have a significant contribution to crop production, farmers' income and the creation of employment opportunities for member farmers. Therefore, farmers' groups have attributed to increasing production, increase in incomes, ability to offer employment to community members alongside other changes such as investment in assets, education for family, exercising corporate social responsibility, Access to information and control among others.

With the statistical evidence provided to by the results of the study, the analysis found out that group membership led to significant increase in farm production, farm incomes and creation of job opportunities. This can also be said about non-member farmers since there have also registered an increased farm production, increased incomes and creation of job employment. This underlined that it is not group membership per se that matters but the degree of information flow that farmers' groups provided as they take up the role of training and marketing. While this may seem obvious, it was not always considered in the previous studies. As farmers' groups facilitate training for their members and facilitate market access to its members, what stands out is the information exchange that took place from the onset that puts a member farmer into an advantage compared to the non- member. Information sharing on matters such as the training module, training venue, training schedule, selling price prior to the market day, date of marketing, group's buyer, marketing venue and the date of payment are provided to by a farmers' group. Such information helps a farmer to adequately plan and reduces the stress that is heavily felt by the non- member.

The findings from the study also offered some broader lessons including the need to focus group efforts on better linking farmers directly to emerging information and increasing knowledge exchange as it seems to be one of the promising avenues to increase farmers' benefits and make farm enterprises more sustainable. Findings also suggested that beyond mere conducting training and facilitating market access, farmers' groups function as an important catalyst in promoting efficient information flow among small scale farmers. Additionally, effective information flow provides a vital condition for small scale farmers to remain competitive in the rapid changing environment.

5.2 Policy Implication & Conclusion

Important to note is the trickle-down effect that is caused by the roles carried out by farmers' groups where apart from Increased production, increased incomes, and creation of employment opportunities caused by being part of a farmers group, other effects include Corporate Social responsibility, improved education, financial assistance through 'merry go round', Purchase of assets and investments. Supporting farmers' groups and creating opportunities such as the provision of startup capitals for farmers and creating favorable agricultural projects such as water projects for the groups can be a way of helping small scale farmers reach to their full potential.

Overall, Farmers' groups are important to small scale farmers both for the growth of their farm enterprises and their personal /family growth. Farmers' groups are important in improving the well-being and enhancing sustainability of farm enterprises among member farmers. These groups help one in building an agricultural & social foot print thus developing their farming capabilities as well as their social capabilities through interactions. With the government and non-governmental institutions favoring to support beneficiaries within groups, farmers' groups help to empower Small scale farmers by taking up new opportunities presented to them. Through the incentives brought by training of farmers and marketing their produce within a farmers' group, small scale farmers enjoy increased crop production where the number of harvested bunches increases within a period of time, they also enjoy increased income due to the favorable prices and ready markets and also able to provide employment opportunities for the community.

Findings on farmers' groups have revealed that farmers' groups have the potential to exist for many years with the years of the four farmers' groups in the study ranging from 4 years to 11 years. Such a commitment to shared goals and activities is important for the achievement and sustainability of farm enterprises. However, despite the longest period of existence, Kaitheri Banana Growers ceased to collectively market their produce bringing into focus the need for continuous motivation that fuels the group's commitment.

With the results differ somewhat in comparing members of farmers groups and non-members, there a number of interesting similarities. In terms of training and sustainability, both members and non- members who indicated having received farmers training registered an increased crop production, increased incomes and created job employment in their farm enterprises. However, with the numbers of members trained being higher compared to non-members shows that those in farmers' groups are more likely to participate in training compared to Non-members, thus enjoying higher productivity, higher incomes and creation of more job employment opportunities. The high numbers can be attributed to the intensity of information flow within a farmers' group that is a miss in the activities carried out by Non-member farmers. Through facilitating training, a farmers' group provides a niche in information exchange including member farmers communicating on their needs that is tailor-made to the group's training

manual. Among other information passed include training date prior, training venue, information on what will be learnt, what time it's going to be and who will be facilitating the training. Such information provides an incentive for farmers in farmers' groups to participate in training and since such trainings are tailor-made to their specific needs, their benefits on increased productivity, increased incomes and creation of job employment is higher compared to Non-member farmers.

In terms of marketing and sustainability, both members and non-members who indicated commercially selling their produce registered an increased crop production, increased incomes and created job opportunities within their farm enterprises. However, even with high numbers, that is 47 member farmers out of 50 commercially selling in farmers' group and 41 out of 50 non- members selling in their market avenue of choice, farmers' groups give an advantage to the member farmers and hence a farmer who is part of a farmers' group has a high likelihood of selling commercially compared to a non-member. Such an advantage can be attributed to information flow that farmers' group provides. Information flow within a farmers' group in facilitating access to markets include continuous exchange and negotiations between the buyer and the group's representative, provision of information to members on matters such as who the buyer will be, the set price prior to the selling date, the market venue, marketing date and time and transparency through farm records that are accessible to all members. Information sharing provides an incentive for farmers to commercially sell their produce and benefit in increased incomes, increased productivity and creation of job opportunities

These findings have several policy implications. First, years of existence should not provide an overall indication on the commitment of the farmers' groups, because a farmers' group can cease to fully participate in their various activities even with a long period of existence. Moreover, if a group focus on motivating its members, coordination and commitment within the group increases and encourages more serious participation in group activities. Second, farmers' groups should consider improving and strengthening communication and information systems as they take up their roles. Acquisition of information is critical for farmers to improve their yields and ensures they are competitive with the changing environment. Farmers' groups therefore provide a platform where such information can be shared across small scale farmers. Focusing on

improving the information systems within and outside the farmers' groups should be of important in supporting these farmers' groups. Our findings therefore show that building strong information systems is important and further suggests that this focus should be broadened. Third, constraints that impede farmers' groups from taking up an active role should be avoided such as inadequate finances in facilitating field visits and invitation of well-equipped training facilitators. Sometimes, this may be made possible internally through group saving or the merry go round. In other cases, outside support such as bank loans and grants may be required to bridge the short-term financial gap within a farmers' group.

5.3 Recommendations

This research would like to recommend the following:

Firstly, Small scale farmers through farmers' groups are empowered and their agricultural & social capabilities is enhanced thus the government & other stakeholders should acknowledge the importance of farmers' groups and continue rendering their support to the groups. Secondly, the County government of Kirinyaga should also do more research beyond registration of these farmers' groups to examine on the challenges faced by the members of farmers' groups and how best to provide assistance according to their needs and thirdly, there is need to examine Ways of addressing exclusion especially for Non-member farmers that are involuntary excluded on the basis of lack of awareness of what farmers' groups are and how one can join should be addressed. This can be done through inviting member farmers to speak on engagements & forums organized and have the non-members voluntary decide on whether to join a farmers' groups

Further research on the following areas is recommended:

Firstly, what other roles do farmers' groups play apart from marketing role, input access and Training in enhancing sustainability of farm enterprises and lastly, what other variables can you use to measure the role of farmers groups on sustainability of farm enterprises apart from crop production, farmers' incomes and employment opportunities. Thirdly, how information channels are critical in promoting sustainability of farm enterprises.

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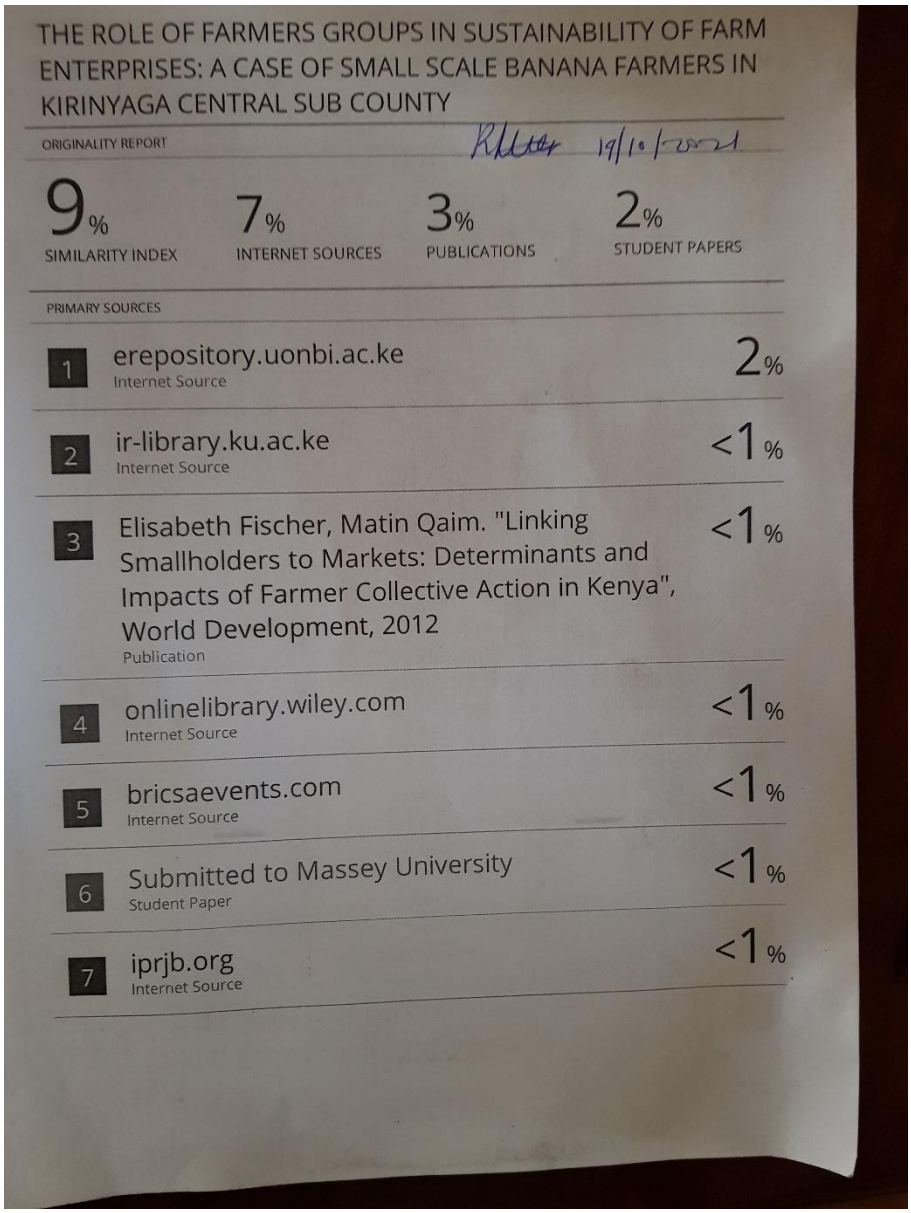

THE ROLE OF FARMERS GROUPS IN SUSTAINABILITY OF FARM ENTERPRISES: A CASE OF SMALL SCALE BANANA FARMERS IN KIRINYAGA CENTRAL SUB COUNTY

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	information systems among farmers and that years of experience should not be an overall indicator of farmer groups' performance.
5. Description of what training entails within a farmers' group- Specific content which a non- member does not get	See Page 62 Identifies the advantages of training within a farmers' group including ✓ . Information sharing on matters such as the training module, training venue, training schedule, ✓ Training module is tailor-made according to the needs of the member farmer.
6. Description of what marketing entails within a farmers' group- Specific content which a non- member does not get	See Page 62 ✓ Information sharing on matters such as theselling price prior to the market day, date of marketing, group's buyer, marketing venue and the date of payment are provided to by a farmers' group. ✓ Ability to negotiate with buyer ✓ farm records maintained ✓ Disbursement of sales to member farmers' account
7. Points on further research	See Page 65 ✓ Other roles that farmers' groups play apart from marketing role, input access and Training in enhancing sustainability ✓ How information channels are critical in promoting sustainability of farm enterprises of farm enterprises.

Prof. Rosemary Atieno

19/10/2021

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