# IMPACT OF YOUTH ENTERPRISE DEVELOPMENT FUND ON PERFORMANCE OF SMALL SCALE IMPROVED INDIGENOUS CHICKEN ENTERPRISES IN SIAYA COUNTY, KENYA

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**A152/CE/21370/2012**

**A thesis submitted to School of Agriculture and Enterprise Development in partial fulfilment of the requirement for Master of Science degree in Agribusiness Management and Trade of Kenyatta University**

June 2022

## DECLARATION

This thesis is my original work and has not been presented for a degree in any other University.

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This thesis has been submitted with our approval as the University supervisors.

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## ACKNOWLEDGEMENT

I wish to acknowledge the Kenyatta University's Department of Agricultural Economics, for the immense support from its staff. Special appreciations to my supervisors Dr. Eric K. Bett and Dr. Newton Nyairo for offering guidance, critique and insight as they helped shape my research to its current form. Special acknowledgment to my employer County Government of Siaya, Department of Agriculture, Food, Livestock Fisheries and Irrigation; Staff from Youth Enterprise Development Fund; friends who supported me during the course, the Mango Family for urging me on; George, Jed and Jeffrey for the sacrifices they made as a family.

May the Almighty God shower you with abundant blessings.

## DEDICATION

To God, the Promise Keeper, to the late Reverend Kwegyir Aggrey Mango Ambwayah (Be honoured even in your resting place), and to Mama Neddy Einez Mango Ambwayah (The true woman of substance).

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## LIST OF ABBREVIATIONS AND ACRONYMS

| | | |
|---|---|---|
| AEZ | : | Agro- Ecological Zone |
| CIDP | : | County Integrated Development Plan |
| DSS | | Department of Social Services |
| IC | : | Indigenous chicken |
| IFC | : | International Finance Corporation |
| IIC | : | Improved indigenous chicken |
| KNBS | | Kenya National Bureau of Statistics |
| LM | : | Lower midland |
| MFIs | : | Microfinance Institutions |
| MSE | : | Micro and Small enterprises |
| NN | | Nearest Neighbour |
| PSM | : | Propensity Score Matching |
| SC | : | Sub County |
| SME | | Small and Medium Enterprise |
| UM | : | Upper Midland |
| YEDF | : | Youth Enterprise Development Fund |

**ABSTRACT**

Microfinance entails providing financial services and the management of money through a range of products and a system of support functions targeting low-income clients. Their primary objective is to provide an opportunity for their clients to access finances for investment in income-generating activities especially micro, small, and medium enterprises, for employment creation. The Youth Enterprise Development Fund (YEDF) is one of the most significant strategies established by the Kenyan Government to provide solutions that help create employment opportunities for young people through enterprise development. Sixty per cent of Kenyan youth are rural-based, meaning their livelihood and employment opportunities are mainly in agriculture. Poultry production, which constitutes 30% of the Agricultural Gross Domestic Product (GDP), is a high potential agribusiness value chain practiced by several youths who are entrepreneurship enthusiasts and have a drive to create employment for themselves and other young people. At the onset of the fund's services in the study area, 16 % of the beneficiaries invested the YEDF credit in poultry enterprises, but the impacts of the investment on the performance of the enterprise remains unknown. The aim of this research was to map out the impact of YEDF use on small scale improved indigenous chicken (IIC) enterprise performance. The study aimed at determining the factors influencing the use of YEDF credit by small scale farmers in IIC enterprises, to assess the level of use of improved management techniques in the improved indigenous chicken enterprises, and to analyse the impact of YEDF credit use in improved indigenous chicken enterprise income. A systematic sampling technique was employed to obtain study participants from all the wards in Gem Sub-County. Semi-structured questionnaires were used to collect primary data. Descriptive statistics were used to assess the level of use of management practices in IIC enterprises. The probit regression model was then employed to investigate factors influencing YEDF credit use in IIC enterprises. The impact of YEDF credit use on IIC enterprise income was then analysed using Propensity Score Matching. The outcomes of the analysis revealed that age group; source of income, farm size (hectares), and role in the enterprise had an influence on the use of YEDF in IIC enterprise at a 5% level of significance. It also revealed a significant correlation between use of YEDF and disease control and chick management practices in IIC enterprises. Farmers were found not to implement the full package of improved management practices. However, the use of YEDF credit in IIC enterprise had a statistically significant impact on enterprise income at a 5% level of significance. The study recommends development of innovative agribusiness credit packages that take into account the age and cushions risks for young farmers to enhance agribusiness enterprise development. It also recommends enhanced competence-based skills development to increase uptake of management practices among young agribusiness entrepreneurs. The study concludes that credit access has positive significant effect on agribusiness enterprises in Improved Indigenous chicken value chain

# CHAPTER ONE: INTRODUCTION

## 1.1 Background of the study

The financial services available in an economy determine how the rural households choose to make long term investments which promise and ensure uninterrupted income throughout the year (Dallimore, 2013). Kenya`s poverty reduction initiative stipulated in its Poverty Reduction Strategy Paper highlights the significant role played by the financial institutions in stimulating and facilitating economic growth through the Small and Medium Enterprises. (Aduda & Kalunda, 2012). Many small scale farmers however, are reluctant to take credit from microfinance institutions because they are afraid of the possible inability to repay and also the risk of losing assets.(Mersha & Ayenew, 2018).

Smallholder livestock farming is one of the vital contributors to successful livelihood and incomes in Asian rural communities, however, the farming is more for subsistence and less for commercial purposes, as over 90% of poultry farmers live in traditional cultural systems (Channgakham *et al.*, 2010). The commercialization of poultry farming in the region is further affected by Highly Pathogenic Avian Influenza (HPAI) outbreak thus preventing the small-scale farmers from expanding their trade by joining the urban poultry supply, which has higher returns. In view of such challenges, microfinance services offer the small-scale farmers an opportunity to commercialize their enterprises in order to enhance their chances of getting higher returns. Increased access to credit services and products makes them able to restock and therefore control and overcome the effects of loss after disease outbreaks. (Changakham *et al.*2010).

Microfinance also provides farmers opportunity to increase their flock sizes thus provide more income and possible savings.

In entire Africa, for several generations, poultry keeping has majorly been practiced by village communities for subsistence (Akinola & Essien, 2011). The method referred to as Rural Family Poultry (RFP) is highly valued by the local populations as it significantly contributes to food security, promotion of equality and reduction of poverty, especially for the minority groups from marginalised rural regions. According to Ayele & Goshu (2018), inadequate finances for rural farm households is one of the leading limitations to poultry production and productivity in most African countries.

The Economy of Kenya is significantly dependant on agriculture. The Agriculture Sector Growth and Transformation Strategy (2019) states that; "Agriculture contributes 33% directly and 27% indirectly to the country`s Gross Domestic Product (GDP)". It further states that "the sector contributes 60% of the nation's total exports, is responsible for over 40% employment in the total population and close to 70% employment of the rural population". On the other hand, poultry farming is a significant contributor to the agriculture sector GDP, as it accounts for over 30% overall, and 55% to the livestock sub sector alone. This translates to at least 7.8% of the total GDP (Omiti & Laibuni, 2015). The poultry sector is a significant contributor to employment in Kenya, as it offers employment to about 2-3 million Kenyan youth. However, the small-scale poultry farmers face various problems on improving the productivity of their enterprise. The flock's productivity in terms of meat quantity, eggs and incomes generated from their sales do not measure up to researched standards. Western Kenya regions experience most of these challenges as the local chicken production leads to

low inputs and outputs. The low production levels limit their ability to commercialize the activity. (Justus *et al.*, 2013).

Despite its challenges, poultry production is identified as a high potential agribusiness venture, especially for the entrepreneurial youths aiming at creating employment opportunities. (McMichael,2013). The youth, in particular, are not finding agriculture and specifically poultry farming attractive or a profitable alternative to cure their vulnerable employment positions as they lack sufficient capital, access to credit, and lack land for their ventures (Afande, 2015). However, technological innovations present a potential for the agricultural sector to become more appealing for the youths who have high affinity and preference for technology. Significant progress will be made if sufficient investments on developing sustainable innovative methods which lower agricultural risks, increase productivity and enhance the growth of markets for agricultural products are made. (Afande, 2015; Irungu *et al.*, 2015).

According to a study done by Ochanda (2014), the financial sector plays a significant role in stimulating and facilitating Kenya's economic growth through SMEs. The research further revealed that more than 50% of those engaged in entrepreneurial activities are the employable workforce. The Government of Kenya introduced the Youth Enterprise Development Fund (YEDF) in 2006 specifically targeting the youth, with a goal of "increasing economic opportunities for and participation by Kenyan youth through enterprise development and strategic performance". It is meant to attract and facilitate investment in youth-owned enterprises as a way of curbing unemployment among youth. (Kanyari & Namusonge, 2017).

Gem Sub-County, which has over 80% of homesteads already practicing subsistence poultry farming, presents viable opportunity for successful commercialization of poultry farming. The Sub County livestock office data puts total poultry practicing population in the sub-county at 79%. The breeds produced are mainly indigenous which have low productivity. Technological advances have been made in the sub-county to promote the production of Improved Indigenous Chicken (IIC) breeds, enhancing the possibility of commercializing the enterprise. These efforts undertaken by various stakeholders, who mostly target youthful poultry farmers, are meant to improve the poor lifestyles in the region which has high poverty levels averaging at 46%. Despite the efforts made, access by small-scale enterprises to formal credit has been quite a challenge, especially to low-income households. The situation is exacerbated by the rigid credit policies adopted by the established banks on lending (Kithinji, 2010).

### 1.2.Statement of the problem

There is a consensus among researchers that there exists a strong co-relation between poultry production and household income in Kenya. There is need to have sufficient resources for management and production practices to ensure meaningful sustainable improvement (Magothe *et al.*, 2012). Many youths have ventured into poultry farming, however majority practice subsistence poultry farming which has little financial returns and therefore low contribution to meaningful youth employment in the sector. The youth practicing improved indigenous chicken farming using modern production techniques in Kenya have had inadequate financial support to run the projects for optimum output. The Kenyan government intervened by disbursing loans through YEDF to both youth groups and individual enterprises in Gem Sub County.

Although majority of the youth invested the fund in non-agricultural enterprises, at the time of the study, approximately 16% of the groups, which received the disbursement, invested the money in commercial poultry farming, an indication of growing youth interest to embrace agribusiness enterprise development as a form of meaningful engagement. Despite this effort by the government since the inception of the fund in 2006, empirical literature on the performances of youth poultry enterprises that benefited from the YEDF credit still remains scanty. lack of information on performance of the YEDF loan on poultry and broadly on agriculture enterprises may attract less investment by youth in agricultural enterprise where lies immense opportunity for enterprise development along agricultural value chains and hence employment creation.

Majority of previous studies have focused on factors influencing the uptake of YEDF and factors affecting the repayment of YEDF both in enterprises that are not agriculture business oriented. The study assessed the impact of YEDF on the performance of small-scale enterprises dealing with commercial improved indigenous chicken in Gem Sub County, Kenya.

The results from the research will enable policymakers, agricultural experts, financial institutions, development partners, and other related stakeholders to develop sustainable practical strategies to improve youth participation in economic development through agribusiness entrepreneurship facilitated by the provision of appropriate financial services.

### 1.3. The Research questions

1. What factors influence the use of YEDF by improved indigenous chicken farmers in Gem Sub-County?
2. What is the level of use of improved management practices among IIC farmers in Gem Sub County?
3. What is the impact of the use of YEDF on improved indigenous chicken enterprises income in Gem sub-county?

### 1.4 Study Objectives

#### 1.4.1 General Objective

The study assessed the impact of the Youth Enterprise Development Fund on performance of small-scale agribusiness enterprises in Gem Sub- County, Kenya

#### 1.4.2 Specific objectives

1. To investigate the factors influencing the use of YEDF credit on improved indigenous chicken enterprise by small scale IIC farmers in Gem sub county.

2. To assess the level of use of improved management practices among small scale improved indigenous chicken farmers in Gem sub county.

3. To determine the impact of YEDF credit use on IIC enterprise income in Gem sub-county.

## 1.5 Scope of the study

The study was conducted in Gem Sub-County, Kenya because of the number of focused interventions by the Department of Livestock and its partners on promotion of commercialisation of improved indigenous chicken enterprises. 247 sampled farmers who practiced improved indigenous chicken enterprises were subjected to the study out of a population drawn from a data base of livestock farmer groups in the Sub County. The study confined itself to the three objectives of; investigating the influencing factors on YEDF credit use on improved indigenous chicken (IIC) enterprises using the Probit regression model; determining the impact of YEDF credit on IIC enterprise income using the propensity score-matching model and assessing the frequency of use of management practices in IIC enterprises using the likert scale. The idea of the study was grounded on micro-finance theory which related the aspects of the model of lending of microfinance institutions and the impact of microfinance lending to small scale business. This was related to the Youth Enterprise Development Fund and how it influenced performance of youth led indigenous chicken enterprises.

## 1.6 Justification of the study

Policy makers and development agencies are placing a lot of emphasis on youth engagement in the agribusiness sector as a means of generating employment, raising incomes and improving youth livelihoods. Youth access to capital is perceived as one of the "game changing" interventions towards youth self-employment through enterprise development.

This study`s findings sought to provide sufficient knowledge and sustainable strategies to help the policy makers and their collaborators in making strategic plans and interventions towards value chain financing for youth led agribusinesses.

Specifically, the findings sought to enhance the identification of training needs, and suggest skills-based training and extension programmes meant to aid increased uptake of management practices. Microfinance institutions are set to improve the targeting of their clients by innovating financial packages that consider age, gender and related services for agribusiness entrepreneurs. The study findings provide them with new knowledge on how to integrate various parameters necessary for sustainable growth of indigenous chicken enterprises, rather than only concentrating on the provision of credit.

Youth entrepreneurs are likely to make decisions to invest the Youth Fund in more agribusiness enterprises thus finding employment in the agrifood sector after considering the financial benefits that accrue from investment of the fund in poultry enterprises. Finally, the study findings are likely to be helpful to other IIC farming enterprise researchers, consultants, and business students, as it provides necessary research resources for their studies.

### 1.7 Limitation of Study

The researcher observed that some of the farmers did not keep good records on IIC enterprise production, chicken treatment and vaccination, culling and mortality, price records, and feed consumption. This made it hard for the researcher to obtain some of the information regarding IIC enterprises from the farmers. The study also noted that there were possibilities of the existence of inconsistencies in the data given by the

farmers regarding production cost and gross margins. The researcher mitigated the above hurdles by calling back respondents for verification and also ensuring that the data entered for analysis did not have gaps in required information

## 1.8 Theoretical framework

This section presents the theories, showing the existing ideas on which, the study is grounded. The concept of microfinance has generated various theories, which can be separated into two sections. One part deals with the issue that those with low incomes are more likely not to be given credit by the lenders due to a lack of collateral and therefore lenders need to be innovative in the products they develop for their clients; while the second part addresses the impact pathways of microfinance on enterprises, individuals, and households.

### 1.8.1 Microfinance and imperfect financial market

The theory deals with the problems that those with low incomes have in accessing monetary needs and products at affordable costs, more so due to of a lack of security. The prospective lenders are also demotivated by the high costs of collecting reliable information on these borrowers' incomes which they may be able to lend against, especially for clients with low creditworthiness (Von Pischke, 1991). As the key innovation of microfinance, the idea of collective lending is widely heralded and claims to provide a response to the vulnerabilities of imperfect credit markets, in particular to the challenge of overcoming knowledge asymmetries (Armendáriz & Morduch, 2010; Armendariz de Aghion & Morduch, 2005).

Adverse selection and moral hazard are correlated with knowledge asymmetry. The lender lacks knowledge on the riskiness of its creditors in the case of adverse selection and in the case of moral hazard the lender cannot be assured that a loan is used for its intended purpose once disbursed (Ghatak & Guinnane,1999). In relation to the Youth Enterprise Development Fund, the Youth are considered high risk clients due to their lack of collateral, being a mobile target therefore risk diverting the loans to other uses. Investing in Poultry enterprises is also considered risky due to disease incidence. Microfinance institutions, YEDF included, uses a model of lending to groups so that members can serve as guarantors to one another in the absence of fixed collaterals and also to reduce the risks of adverse selection due to information asymmetry and moral hazards. This would then make youth who were considered a risky target have better access to credit for enterprise development.

### 1.8.2 Impact pathways of microfinance:

This model suggests that borrowers are the primary controllers of a single income-generating operation, the output of which, in relation to its marginal returns, is motivated either by a shortage of finance or by high marginal loan costs. The reduction of constraints in accessing finance encourages the operator to increase production, net earnings, returns and thus their personal welfare. (De Mel *et al.*, 2008). In relation, the small scale IIC farmers were considered credit constrained in their enterprises. Access to the YEDF unlocked the opportunity for increased investment in their enterprises which is envisaged to impact on performance of their enterprises by improving the enterprise incomes.

## 1.9 Conceptual framework

The model is a modification of the conventional impact chain model (Hulme, 1999) to fit this study. The conventional Impact chain model assumes that when an agent who is an individual, an enterprise, household, population or policy maker receives a programme intervention, their behaviours and practices will change leading to achievement of some outcomes. The impact of the intervention is then measured by assessing the difference between outcomes of agents that received an intervention against those that did not (Hulme, 2009).

This model is modified using existing literature, which informed the possible factors that influence the use of YEDF in IIC enterprise, the effects of YEDF financing on IIC enterprise income, and the level of use of management practices in IIC enterprises. The model depicts the assumption that the use of YEDF credit in IIC enterprise (treatment) modifies the household economic practices, leading to improved management of the indigenous poultry enterprises. The performance indicator (outcome variables) in the study is measured by the income of the indigenous chicken enterprise. The framework also illustrates the variables that determine treatment decisions i.e. the socio-economic characteristics and the presence of unobserved variables e.g. entrepreneurial spirit that can determine whether a farmer chooses to invest the YEDF credit or not. These variables, according to Caliendo and Kopeinig (2008) may also determine the outcome variable of interest depicted by the dotted arrows. The difference between the modified outcomes of exposure to treatment or lack of it, after the control of confounding variables, relates to the impact of the treatment.

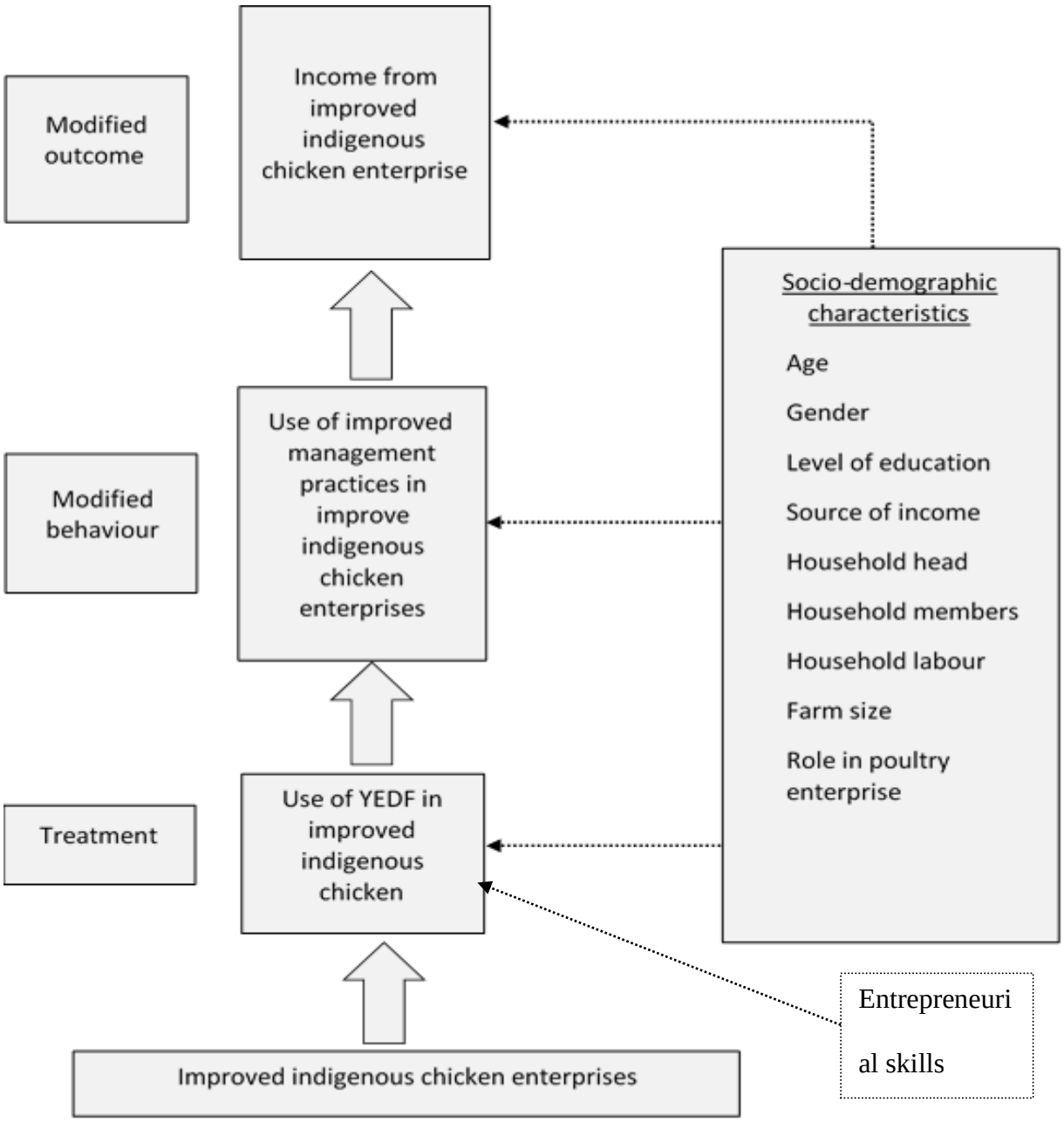



*Figure 1*. Impact chain model adopted and modified from a conventional model of the impact chain (Hulme, 1999).

# CHAPTER TWO: LITERATURE REVIEW

## 2.1 Overview of Microfinance

Microfinance services involve providing small amounts of money through various products and a system of functions targeting low income customers and other partners (Ngugi & Kerongo, 2014). The monetary products and services provided by microfinance include designed small scale savings, insurance, credit, leasing, and monetary transfers in relatively small transactions which can be easily accessed by SMEs and low-income households (Ul-Hameed et al., 2018). The non-financial services or what is called in the MFIs parlance, the Enterprise Development Services provide the micro-entrepreneur with development skills, business management, marketing training as well as exposure to the benefits of technology (Ul-Hameed et al., 2018).

Microfinance institutions fundamentally provide financial services to persons or businesses that were otherwise not reached by formal lenders due to their vulnerability in terms of low, irregular and unpredictable incomes. Such households are able to access affordable credit to inject capital in their small businesses, build assets through savings, provide for their family needs and gain protections from daily life risks like sicknesses. (Teeboom,2019). Financial institutions worldwide are however finding challenges in reaching the remote small-holder farmers and community-based organizations that hinder the ability to upgrade their financial services (Oostendorp et al, 2019). The reality of the rural areas with agricultural based economies is characterized by weather, risks associated with agricultural production and fluctuations in incomes. (Hamp et al, 2015).

The Youth have been grouped among the financially excluded due to reluctance by formal lending institutions to service youth-run enterprises. The young people have traditionally been perceived as high risk clients with insufficient assets for collateral, lack accounting records, and have inadequate financial statements. Emerging evidence now shows that young people have need for finances shown by their demand for the same. They can handle money, save money to acquire assets, use money and show willingness to repay. (Master card foundation, 2018). These young people, especially the rural based youth where entrepreneurship activities are limited to agriculture related opportunities, require innovative interventions to improve their access to appropriate financial tools. (Hamp et al, 2015).

The Youth Enterprise Development Fund (YEDF) in Kenya was established through the Public Financial Management Act (The Youth Enterprise Development Fund) Regulations (2006), and became a state corporation in 2007. It is one of the major solutions adopted by Kenya to create jobs for the youth. Its goal is to create economic opportunities and participation by the youth in nation building through business development and strategic partnerships. (Kanyari and Namusonge 2017). In accordance with the Kenya National Youth Development policy (2019), which vouches for youth to be capital owners and job creators, the YEDF fund seeks to provide affordable credit alongside business development services to ensure the youth are economically empowered to run sustainable enterprises (YEDF strategic plan, 2020). In addition, the fund aims to promote youth-owned enterprises' goods and services in both the domestic and foreign markets. It also provides entrepreneurship training and promotes the recruitment of young people into the international labor market through overseas youth employment schemes (YEDF, 2019). The fund has had encouraging initial results

where, by 2020, over one million youth had benefitted from 13 billion ksh; 5.5 million deposited directly and 7.5 million through financial intermediaries. A further 190,298 youth benefitted from entrepreneurship training.

The enterprise development approach of the fund is key in creating sustainable businesses that grow and lead to job creation which in turn contributes to economic growth. The size of the loans (100,000ksh) limits its support to start -ups in the micro small and medium sized enterprises sector which play a significant role in the economic development of the country. The SME sector contributes over 50% to the GDP, provides about 50% of the employment opportunities and represents 90% of businesses (world bank report, SME finance).

The YEDF loan package includes group loans, individual loans for youth in groups, direct lending to individuals, "Agri-Vijana" loans, and "Angua" chick's loan. The latter two loans serve youth who are interested in greenhouse farming and commercial egg incubators, respectively. The two loans products were subsequently reorganized to cater for the needs of youth in agribusiness across all the value chains. The new product that has terms friendly for undertaking agriculture-based enterprises is dubbed the "agribiz" loan. It is expected to finance micro small and medium enterprises in the agri food sector that can be characterized as primary producers, input suppliers, service providers for example transport and storage services, traders of farm produce, processors of farm produce and retailers of farm produce and products to final consumers. Agar,2014).

Information on how the Youth Enterprise Development fund has supported enterprise development in the sector is scanty necessitating this study to look into how it has impacted the Indigenous chicken Enterprises that are attractive to youth agripreneurs.

## 2.2. The Improved Indigenous Chicken Value Chain

The concept of the agricultural value chain primarily refers to all the essential services that are involved between the production and consumption of agricultural products. At the heart of the concept is the idea that there are various actors connected within the chain who are involved in the production and delivery of goods to the consumers via connected activities efficiently (Stamm & Drachenfels, 2011). The Food and Agriculture organisation (FAO), 2011 further adds to the concept that at each stage of exchange, value must be added for it to be considered a value chain.

The main actors along the indigenous chicken value chain are the farmers, primary collectors, poultry traders and agents, wholesalers, and retailers (Bwalya & Kalinda, 2014). Input suppliers in the value chain include feed processors and suppliers, suppliers of vaccines and disease management drugs, day-old chick suppliers. Vaccination service providers, extension services, transport are some of the service providers along the IIC value chain. The products exchanged by main actors in the IIC value chain may include live birds, dressed chicken meat, eggs, manure, and other diversified products like chicken sausage, chicken food products, among others.

All the actors and service providers entail potential businesses in the indigenous chicken value chain that can benefit from credit. For example, feed producers can benefit from equipment financing and finance for raw material purchase, while a producer can require financing for house construction and purchase of day-old chicks (Bwalya & Kalinda, 2014).

Improved indigenous chicken are cross breed offspring of indigenous breeds with exotic breeds that have maturity period of approximately 4 months. The indigenous chickens have numerous benefits but suffer a drawback of having a long maturity period. Some of the benefits include health benefits, adaptation to harsh environment and easy conversion to cash. Due to their potential to contribute to household incomes and alleviate poverty, production of IIC has been promoted among small scale farmers in Kenya (Kamau et al., 2019).

FAO (2014) classifies production systems of indigenous Chicken and places IIC farming under semi- intensive or small–scale intensive systems. These systems are characterised as; poultry only farming systems with sometimes or no other livestock kept by the farmer; they keep commercial cross bred chicken and source their day old chicks or pullets commercially, or through natural incubation for the semi intensive producers. Their feed source is scavenging with regular supplementation or purchase commercial feed rations. They have fair poultry houses with conventional or variable materials where they keep at least 50 birds, access vet services and supplies and finally have access to urban markets. Their products include live birds, eggs and meat and their proprietors devout more than one hour per day to poultry management.

According to Magothe *et al.* (2012), an increasing demand exists for improved indigenous chicken products in Kenya. The demand is linked to different socioeconomic factors like the steady growth in the population, increased health consciousness among the consumers, and the increase in the per capita disposable income, particularly among the urban dwellers. With the rapidly growing urban population, the demand for indigenous chicken is growing, creating significant business

opportunities for enterprising farmers (Magothe *et al.*, 2012). This calls for increased commercialization in the sector which is practiced at subsistence level by majority 70% of small-scale farmers in Kenya. (ASTGS, 2019).

Current data on the level of commercialization of indigenous chicken enterprise is not known but Ouma (2011) in his study on factors affecting commercialization of indigenous chicken found lack of credit to be a major challenge and recommended exploration into sustainable funding for IC farmers in order to achieve commercialisation. The Youth Enterprise Development Fund credit can therefore provide enterprising young people with the much-needed funding to support and expand their Indigenous Chicken Business.

### 2.3. Empirical review

There is a paucity of literature on the issues surrounding agriculture led youth enterprises and how they have been impacted by microfinance institution interventions, however, several studies give general direction and highlights on the indigenous chicken enterprises, management practice, factors influencing use of credit in chicken enterprises and impact of microfinance on SMEs in agriculture.

#### 2.3.1. Empirical Review on Factors Influencing YEDF Credit Use in IIC Farming by Small Scale Farmers

Low access to financial institutions is found to be among the leading challenges faced by most rural-based farmers. Rural farmers are affected negatively since financial institutions are located far from their settlement; thus, they do not have easy access to the facility. Lack of information and long procedures followed in the financial

institutions is also a discouragement to some of the farmers. A descriptive study conducted by Asnawi and Amrawaty (2019) showed that access to agribusiness microfinance institutions increased access to easy capital for farmers` empowerment and increased involvement of farmers in group activities. This impacted positively on farmers' economic life (Asnawi & Amrawaty, 2019).

A study on factors influencing entrepreneurship development in Lagos state Nigeria revealed that, majority of farm owners who were members of cooperative societies with higher education levels were highly motivated and were greatly involved in agribusiness activities. The study further indicated that the level of education, gender, marital status, age and business size had direct influence on the level of participation in agribusiness activities. The study recommended motivation for access to credit in order to foster increased enterprise size and income. (Olowa & Olowa, 2015).

Research done in Mombasa County in Kenya titled "factors that influence the implementation of poultry farming enterprises for economic empowerment of local communities", sought to establish if technological skills affect the achievement of poultry farming enterprises in local communities. The study found that technological skills, marketing factors, cost of the chickens were significantly associated with the factors and recommended that an enabling environment including ease of access to credit should be created to enhance enterprise development. (Ng'ang'a, 2014).

The participation of smallholders' farmers in finance-based activities is mostly influenced by the farmer's education. The educated farmers are likely to access information on the credit and financial institutions for the development of their farming activities as compared to the farmers who never went to school. Level of education is

therefore a major factor that influences participation of smallholder farmers' in smallholder enterprises (Kiprop *et al.*, 2019).

Youth entrepreneurship has become a favourite topic worldwide. A study done by Njoroge (2012), titled "factors influencing the uptake of YEDF loans in Kieni East district in Nyeri County-Kenya", had an objective of investigating factors that affect the uptake of YEDF. The study revealed that entrepreneurship skills and education levels among the youths influenced the uptake of the loan.

### 2.3.2 Empirical review on the use of improved management practices among improved indigenous chicken farmers

Research done by Dutta *et al*. (2013) in Bangladesh with the aim of assessing the management methods, productive performance, profitability of indigenous chickens, and assessing the available rearing practices revealed important information on management practices and the productivity of the indigenous chickens. The study found that the performance of poultry enterprises is dependent on the integrated functions of hatchers, breeders, vaccinators and sellers of feed. The study showed that the lack of high-quality supplementary feed, low-quality poultry products, and an inadequate poultry marketing system could result in low production in the poultry industry. It further suggested that the use of poultry supplementary feeds enhances the sector's output.

A study on farm record keeping in Ga East municipality in Ghana by the small-scale poultry farmers indicated that the activity was not related to the level of education, age, experience in poultry farming, and farmers' status. Most poultry farmers assumed that

keeping poultry records was not important to them. The study further revealed that farmers mentioned that the common skills they had on poultry farming were more helpful to them as compared to keeping records. (Tham-Agyekum, 2010).

The production of indigenous chicken is very low in Ethiopia due to incompetent management practices and poor selection of indigenous poultry required to improve the important traits of economic factors (Desta & Wakeyo, 2012). An assessment of village production systems in Bure District of Ethiopia indicated that the potential of the chicken production system performance is dependent on the level of management practices (Moges *et al.*, 2010). The survival of indigenous chicken is significantly affected by the mode of feeding, sheltering system, and health management of the chicken (Natukunda *et al.*, 2011).

According to a research on the management practices and challenges in smallholder indigenous chicken rearing in western Kenya, most the farmers do not get access to institutional support services like training, extensions, loans, and veterinary services. The indigenous chicken are largely reared by many farmers though very few of them take up the management practices as taught by the extension service. Justus *et al.* (2013).

Kamau *et al.* (2019) studied adoption of IIC breeds as one of the improved management practices in the IC enterprise and found that training, awareness creation and time spent on farm duties had a significant relation to the adoption of the IIC technology

### 2.3.3 Empirical Evidence on Impact of Microfinance on Performance of Microenterprises

Various studies have empirically proven the significant effect of Microfinance institutions on SMEs, indicating that microfinance services have been found to generate a positive impact on client businesses, client wellbeing, client families, and the community at large (Quaye *et al.,* 2014). The findings of a study on the effects of microfinance on SMEs in Zimbabwe specified that microfinance promoted product quality and range, increased branch network, improved cash flows, and increased market shares of SMEs. The researcher concluded that MFIs have a positive contribution to SME's performance, especially on market share, competitive advantage and product innovation. Machingambi (2014).

A study by Mngadi (2016) on the impact of MF on entrepreneurial development found that MFIs play an essential role in entrepreneurial activity but leads to a lesser impact on its development. Another such study conducted in Machakos County revealed that provision of MFI services significantly affects annual growth in sales of enterprises. This research revealed that trading produced the highest turnover, while farming produced the lowest turnover (Mwewa, 2013). A research on the effects of microfinance services on the performance of small and medium-sized enterprises in Kenya revealed that there was a clear relationship between reach of microfinance provision and the performance of small and medium-sized enterprises, with a substantial impact on MFIs. (Rotich *et al.*2015).

Research using descriptive studies on selected factors affecting the establishment of the indigenous poultry value chain in Vihiga County revealed that farmers who had access

to capital had a substantial increase in employed labor and use of value feeds (Murekefu, 2013). Furthermore, the study found that credit access had a positive association with intensive systems of poultry production. Research on the effect of contract farming on the income of small-scale poultry farmers in Kenya concluded that access to credit had to be facilitated for farmers to engage and be successful in contract farming (Wainaina et al., 2012).

Research conducted by Ogutu *et al.* (2011) did not realize any significant effect of YEDF on the growth of youth enterprises in Kenya, however, other studies realized an existence of a positive impact of the fund on the economy as it enhances business growth, revenue generation, creation of employment and increased income (Kitavi, 2015; Nyongesa, 2014; Ratemo & Karanja, 2017).

A study on inclusive agribusiness under climate change gives a concise review of the role of finance in agribusiness citing that financial institutions find challenges in reaching the remote small-holder farmers and community-based organizations hindering the ability to upgrade their financial services (Oostendorp *et al.*, 2019). The studies of impact of microfinance on small scale farming in Tanzania show a high promotion from microfinance institutions. The microfinance institutions aim at empowering less privileged people. The main purpose of this study was to determine impact of microfinance on agricultural productivity by small-scale farmers. Microfinance positively influenced the growth and productivity of the smallholder farmers (Girabi & Mwakaje, 2013).

## 2.4. Challenges in Impact Evaluation

Researchers have indicated that the challenge in impact evaluation is how to control selection bias because the researcher may have no control over the participants' choice to undertake a treatment (Austin, 2011). Also, self-selection into a program can occur based on unobserved traits, for example, entrepreneurial behaviour. A simple comparison between a treatment group and a control group can lead to over or underestimating the impact (Austin, 2011). Caliendo and Kopeinig (2008) further observe that the outcome variable of interest can also be decided by components that decide the treatment decision. This implies that even in the absence of a treatment, the findings of individuals from treatment and comparison groups will vary.

Different econometric tools have been developed to create counterfactuals and test program impacts on outcomes of interest when controlling for confounding variables. Some of the evaluation methods identified include the Randomized social experiments where two groups are generated at the beginning of a programme and are assumed to have the same characteristics due to random assignment to participate or not participate. The difference in their outcome after the programme is measured as the programme effect. Random assignment gives an assurance of absence of selection bias. (Rusike et al, 2010).

The Simple Difference and Pre and Post comparison methods get the difference in outcomes between a participating group and a group who did not participate (in case of the simple difference) or between the same group before and after an intervention (the case of pre- and post). Both methods fail to create a valid counter factual and fails to account for other variables that could affect the outcome in the presence or absence of

the treatment. Difference in Difference (DID) method takes into account the difference in outcomes between two groups, treated and untreated but also takes into account the changes over time. The instrumental variable approach assigns individual into participation and control groups but according to the probability that they will participate rather than their actual participation. However, the instrumental variable used should not have a relationship with the outcome variable which is hard to achieve for social experiments (Pomeranz,2017).

In Matching Methods, the researcher usually compares the outcome of a treatment and control group that has been created by matching individuals based on similarities in their characteristics. This is done in the absence of a control group created at the beginning of a programme. In the event that the observable characteristics of individuals being matched are multiple, then the probability of being in the treatment group based on given characteristics is measured and assigned a value called the propensity score. The individuals in the treatment and comparison group will then be matched against this score. (Rusike et al, 2010; Pomeranz, 2013, Rosenbaum and Rubin, 1983).

Rosenbaum and Rubin (1983) describe the Propensity Score Matching (PSM) as a method not based on experiments that is used to estimate the average effect of social programs by comparing the average outcome of those who participate and those who do not, based on the Propensity Score value. The PSM has gained popularity due to its ability to construct a similar comparison group that is balanced on all confounders but different on their level of treatment(Yi *et al.,* 2016).Rusike *et al.* (2010) used it to determine the role of cassava research for development approach on productivity.

Wainaina *et al.* (2012) researched the impact of contract farming on household incomes; Gubert and Roubaud (2011) used it to measure the impact on small informal enterprises in Madagascar.

The propensity score matching model was adopted in this study to measure the impact of Youth enterprise Fund on enterprise incomes of small scale IIC enterprises. In the absence of a treatment and control group generated at the onset of the programme depicting credit and non- credit users, it was imperative to construct a control group to depict the counterfactual, and mimic a randomized control trial where the two groups would be similar on all characteristics and therefore eliminate the selection bias. This results in a more robust inference (Stuart *et al.*, 2014).

# CHAPTER THREE: RESEARCH METHODOLOGY

## 3.1 Introduction

This section reveals the approaches taken and portrays the study area. It specifies the study design applied, the population sampling technique adapted, the sample size, data collection methods, and the reliability of the research instrument. Also included are the statistical models that were used to test the hypothesis. This chapter also has ethical considerations that were observed before conducting the study.

## 3.2 Study area

The study was conducted in Gem Sub-County, Siaya County. With a surface area of 403.7 kilometre squared, Gem Sub-County is one of the six sub-counties in Siaya County. It borders 8 Sub-Counties and is divided into 6 wards, 9 locations and 39 sub-locations on an administrative basis. The 322.24-kilometre squared land size is mainly arable and is dominated by crop production and natural vegetation. The common livestock enterprises include indigenous chicken production mainly done at subsistence level, dairy farming, beekeeping and aquaculture practiced by a smaller percentage of farmers. Homesteads, colleges, hospitals, parks, and city market centres make up the remaining 81.46 kilometres squared. (CIDP, 2018).

Statistics derived from the Livestock production office data, (2016) show that 70% of the farming households practice IIC albeit at subsistence level. This coupled with the presence of extension services providers promoting improved indigenous chicken enterprise technologies led by both Governmental and Non-Governmental Organizations (NGOs) such as Technoserve, West Kenya Community Driven

programme, and Kenya Agricultural Productivity Project led to the selection of Gem Sub County for the study.

### 3.3 Biophysical information

The Sub County (SC) lies within Agro Ecological Zones (AEZ) of Lower Midland Zone one, (LM1), Lower Midland Zone two (LM2), with a small pocket Upper Midland Zone one (UM1). It has a varying topography with altitudes ranging from 1400 meters to 1800 meters above sea level. The SC also has a few rising hills, with Uriri and Got Regea being the most prominent. River Yala which is the main river originates from the Nandi hills. It has a bimodal rainfall pattern with long rains occurring between March and June and short rains falling between September and December. The temperature varies from 150 degrees centigrade to 300 degrees centigrade, with an annual average temperature of 21.75 degrees centigrade. The rainfall range is between 1800-2000 mm per year (County Government of Siaya, 2018).

### 3.4 Demographic and socioeconomic characteristics

The population of Gem is 160,675, with 76,547 males and 84,148 females. The annual population growth rate is 1.7%. The majority of the population members (65.3%) are below 24 years of age. The population density is 304 with Wagai and Yala Centres having the highest density. There is only one commercial bank in the Sub-County, with the populace relying on Siaya and Luanda towns for other financial services. According to KNBS (2012), its poverty index is 48%, and about 70% of the residents depend on farming for their needs. The activities that youth engage in includes motorcycle transport, commonly known as *bodaboda*, sand harvesting, tree planting, poultry

production, making and selling bricks, table banking, and HIV/AIDs awareness activities.

### 3.5 Research design

The study employed a cross-sectional descriptive design because it investigates the relationship between non-manipulated variables in a normal setting. This study design allows the collection of a lot of data from a relatively large population in a scientific and yet economical manner, serving the interest of the researcher.

The design was used to obtain relevant information on the current situation by asking poultry farmers about their farm management practices and enterprise incomes. This approach is encouraged by Mugenda and Mugenda (2003), who further argues that "a descriptive research design determines and reports the way things are" .Kothari (2004) shares Mugenda's views that a descriptive study design is a scientific method involving the observation and explanation of behavior or topic without manipulating it in any way.

### 3.6 Target Population

The target population was improved indigenous chicken farmers in Gem Sub-County. The sampling frame consisted of a list of all members in 119 groups which had been registered with the Department of Social Services (DSS), with 2168 farmers involved in improved indigenous chicken production. Most of the farmers took YEDF credit as a group but invested it in the individual chosen enterprises. This credit was used for either IIC farming or other business by the individual farmers. The inclusion criterion was the improved indigenous chicken farmer who willingly agreed to participate in the

study and had ever received credit from YEDF form its inception in 2006 up to 2014 through a registered group.

### 3.7 Sample Size determination and sampling method

#### 3.7.1 Sample Size determination

The population of the study was composed of all improved indigenous chicken farmers who were registered in all 119 groups. 249 respondents were obtained from the population to constitute the sample of the study using Cochran's sample size formula at a 5% margin of error.

$$n_{01}=z^2pq/e^2 \quad (1)$$

$n_{01} = \frac{z^2\,pq}{e^2}$ Where:

- $n_{o1}$ is the sample size
- z is the standard variation of 1.96 given confidence interval of 95%
- e is the desired level of precision (marginal error) in this case 5%
- p is the proportion of the population 24% containing the major attributes of interest (farmers with improved indigenous chicken). This is taken because the proportion of population rearing IIC in Siaya County is 24% (livestock Dept. annual report, 2015).
- q is 1-p

$n_{o1}= ((1.96)^2\ (0.24)\ (0.76))\ /\ (0.05)^2 =280.283$

≈281

Using modified Cochran's formula since the targeted population is less than 10000

$$\mathbf{N_0=n_{01} / 1+(n_0-1)/N} \qquad (2)$$

$n_0 = \frac{n_{01}}{1+\frac{(n_0-1)}{N}}$ n=281 / (1+ (280 / 2168) = 248.9

n≈249

### 3.7.2 Sampling Procedure

The researcher purposively selected Gem Sub-County in Siaya County-Kenya for this study. Sampling of households with individuals who had benefited from YEDF and were practicing IIC farming was done in all wards in Gem Sub-County as shown in table1. Stratified sampling was done to select number of participants per ward after which random sampling used to select the household in each ward until the desired sample was obtained.

**Table 1:** Distribution of households practicing IIC farming by wards

| **Ward** | **Number of Household practicing IIC farming** | **Sampled household** |
|---|---|---|
| East Gem Ward | 153 | $\frac{153x249}{2168} = 18$ |
| West Gem Ward | 214 | $\frac{214x249}{2168} = 25$ |
| Central Gem Ward | 355 | $\frac{355x249}{2168} = 41$ |
| North Gem Ward | 614 | $\frac{614x249}{2168} = 70$ |
| South Gem Ward | 612 | $\frac{612x249}{2168} = 70$ |
| Yala Township | 220 | $\frac{220x249}{2168} = 25$ |
| **Total** | **2168** | **249** |

### 3.8 Data Collection

The study used a well-structured questionnaire in the collection of quantitative data with the researcher administering the data. The investigator administered questionnaires to all the respondents in the 6 wards of the sub county.

### 3.9 Data management and analysis

The data underwent cleaning to ensure completeness, appropriateness, and accuracy in filling the required fields of the questionnaires. Completed questionnaires were then coded and entered into the Statistical package for Social Sciences (SPSS) and analysed using STATA statistical software. Descriptive analysis was done on farmers' demographic profiles and poultry management practices.

#### 3.9.1 Reliability Test.

In order to minimize a large number of variables into a few components that explain much of the variance in the original variables, the individual likert scale responses were summarised and averaged into the 7 improved management practices. Reducing variables into a few elements reduces redundancy, which occurs when independent variables are highly correlated.

The first step was on testing the internal reliability by employing Cronbachs' Alpha in which values greater than 0.7 indicate that consistency exists among the variables and values less than 0.7 implies the presence of unreliability (Cronbach, 1951).

$$\propto = \frac{NC}{V + (N-1)C} \tag{3}$$

$\propto = \frac{NC}{V+(N-1)C}$Where;

N- no of items

C- Average inter-item covariance

V- Covariance average

∝- cronbach`s alpha**.**

The results of reliability test showed that Cronbach's Alpha had all the variable parameters above the minimum permissible alpha coefficient 0.7, which indicated good internal consistency. All items measuring different management activities were acknowledged on the basis of the test and considered for the research. The closer Cronbach ’s Alpha coefficient is to one, the stronger the reliability (Creswell, 2013).

**Table 2:** Reliability test result

| Variables | Cronbach’s Alpha | Number of Items | Comments |
|---|---|---|---|
| Housing | 0.9481 | 20 | Highly reliable |
| Disease control | 0.9687 | 8 | Highly reliable |
| Equipment | 0.8530 | 9 | Highly reliable |
| Chicks management | 0.8042 | 2 | Highly reliable |
| Records | 0.9827 | 12 | Highly reliable |
| Bio-security | 0.7920 | 3 | Reliable |

### 3.9.2 Factors influencing YEDF credit use by IIC small scale farmers

This was achieved through inferential statistics. To evaluate the effects of socio-economic and institutional determinants on the use of YEDF credit by small-scale IIC farmers, a Probit regression model was used. The discrete nature of the dependent variable rendered the ordinary least square estimation methods inappropriate and hence adoption and use of the Probit model. The dependent variable was the decision to use YEDF in the IIC business. A value of 1 was used for farmers who used credit and a value of zero (0) for those who did not use YEDF credit. Independent variables were determined based on existing literature and included socio-economic, institutional, and demographic variables. The Probit model that was aimed to determine factors influencing YEDF credit use among was expressed as:

$$Pi = prob(Y_i = 1|X) = \emptyset(x, \beta_i) \quad (4)$$

Where;

$P_{i-}$ -is the probability that an IIC farmer used YEDF credit in their IIC enterprise given observed explanatory variables x.

$\oplus$ is the cumulative distribution function of a standard normal variable which ensures that

$0 \leq P_i \leq 1$

X=a vector of factors that explain the variation in the participation outcome and

β- Coefficients that reflects the effect of changes in x on the probability of credit use

The relationship between the explanatory variables and the outcome is measures using the marginal effects. The marginal effects will provide an insight into how the explanatory variables change the predicted probability of the outcome variable. The

maximum likelihood estimation method was used to estimate the specified model. The table 3 below show the variables used in the model.

**Table 3:** Description of variables for the Probit model

| Variable | Indicator |
|---|---|
| **Dependent Variable** | |
| Credit use | 1- credit used in IIC enterprise,<br>0-Credit not used in chicken enterprise |
| **Independent Variables** | |
| **Farm size**(as per the average farm size in the sub county) | 1.<1,2. 1-4, 3.>4 |
| **Age(**variables considered age at start of programme) | Age groups 1. <30 2. 30-35, 3. 36-42 4.>42 |
| **Education** | 1- None, 2-Primary, 3-Secondary,<br>4- Tertiary |
| **Gender** | 1-Male, 2-female |
| **Household members** | No. of members in a household |
| **Family labour** | Number of household members offering labour for IIC enterprise |
| **Land ownership** | 1-Individual, 2-family 3-lease |
| **Role in the poultry value chain** | Production, input supply, incubation and brooding, feed formulation, extension service provision |
| **Farming experience** | Number of years in IIC farming |
| **Source of income** | IIC enterprise, cereal traders, formal employment, other sources |
| **Income from chicken** | gross profit from IIC in Kenyan shillings (KSh) |

### 3.9.3 Level of use of improved management practices in IIC

To assess the level of use of improved management practices by IIC small-scale farmers in Gem Sub County, respondents' opinions on the use of the practices were rated on a five-point scale (1-Never, 2-Seldom, 3-Sometimes, 4-Often, and 5-Almost always).

The management methods appropriate for IIC farming were obtained from reviewed literature and included in broad terms Housing, feed supplementation, disease management, record keeping, chick management, equipment and biosecurity. The second step involved descriptive statistics where management practices were tabulated with YEDF use in IIC, and frequencies and percentages were reported.

### 3.9.4 Impact of microfinance on the performance of improved indigenous chicken

The Propensity Score Matching model was used to determine the impact of YEDF on the performance of IIC enterprises. The performance of the IIC business was evaluated using Gross profit from the poultry enterprise. Gross margin was calculated using the formula below;

Gross Profit= Total Revenue - variable costs (5)

**Table 4:** Description of revenues and costs in the IIC enterprise.

| **Revenues** | **Variable costs** |
|---|---|
| Mature Birds<br>Eggs<br>Day old chicks<br>4 month old growers<br>Chicken manure (guano) | Day old chicks, Vaccines, Treatment<br>Feeds, One month old chicks,<br>Transport, Labour, Lighting, Heating<br>Housing repairs, Feeders/drinkers |

The establishment of propensity scores were part of the procedure and was done by carrying out Probit regression analysis on factors influencing the use of credit.

The Propensity Score Matching analysis model was expressed as:

$$P(X) = Pr\ Pr\ (D = \frac{1}{X}) = F(\beta_1 X_1 + \beta_k X_K) \quad (6)$$

$P(X) = Pr\ Pr\ (D = \frac{1}{X}) = F(\beta_1 X_1 + \beta_k X_K)$Where:

D – Participation indicator, and D =1 if a farmer used YEDF credit in ICC enterprise and P= 0 if they did not use YEDF in IIC enterprise.

$X_i$ - set of independent variables that are similar across all small scale IIC farmers.

The purpose of this study was to estimate the impact of YEDF use on small-scale IIC farmers. To accomplish this, two conditions were laid down: assumption of common support and assumption of conditional independence (S. P. Kothari et al., 2005).

The assumption of common support means that the pre-uptake characteristics of the YEDF use and non-use should be the same and depend on the propensity score. Also, each individual should have the same chance of using YEDF in IIC enterprises. This means that the possibility of small-scale IIC farmers using YEDF depends on socioeconomic and institutional factors in farmers. Rosenbaum and Rubin (1983) have shown that if the possible outcomes are independent of use conditional on covariate, they are also independent of participation, conditional on the balancing score (X) or average effect of the program (AEP). The assumption of common support requires that the participant propensity score P (D=1 for participants) = P(X) should be subject to the assessment of the programme's impact.

On the other hand, the Conditional Independent Assumption (CIA) requires independent variables to be independent of participation but conditional on the propensity score. It also implies that selection is based solely on measurable characteristics. The model is expressed as:

$Y1Y0 \perp \frac{D}{P(X)}$ ……(7)

Where,

$Y_1Y_0$ – possible results with or without program,

D - Participation variable

P(X) - the propensity score.

For every particular propensity score, use of YEDF in IIC is random and, thus, YEDF users and non-users in the enterprise should be observationally identical on average (Mugenda & Mugenda, 2003).

Once the propensity score is computed, it is possible to estimate the average treatment effect (ATE) as follows;

$$ATE = \sum \quad [Y_{1i} - Y_{\frac{0i}{D_i}=1}] \tag{8}$$

$$= \sum \quad [\sum \quad [Y_{1i-Y_{0i/}} D_i = 1, P(X_i)]] = \sum \quad [\sum \quad [Y_{1i/} D_i$$

$$= 1P(X_i)] - \sum \quad [Y_{0i} \,/\, D_i = 0, P(X_i)] \,/\, D_i = 1]$$

Where:

ATE - average effect of treatment,

$Y_{1i}$ – is the potential outcome if the farmer is YEDF user in IIC enterprise,

$Y_{0i}$ – is the potential outcome if the farmer is not a YEDF user in IIC enterprise.

ATT is the average treatment impact for those who have undergone the treatment (average treatment effect on the treated). This reflects the mean difference between YEDF users and YEDF non- users who are similar in measurable characteristics.

$$ATT = E[\delta i \mid Xi = 1] \quad (9)$$

=E[Yi1−Yi0|Xi=1]

=E[Yi1|Xi=1]−E[Yi0|Xi=1]=i

=1∑NT(yi1|xi=1)−i=1∑NT(yi0|xi=1)

Under which use of YEDF in IIC farming which describing their treatment Xi is equal to 1

Becker and Ichino (2002) suggested various matching methods, including Nearest Neighbour Matching, Radius Matching, Kernel Matching, and stratification matching, to assess the impact of the treatment of propensity score techniques. A flow diagram depicting the propensity score model generated by the researcher from theoretical frameworks is illustrated below;

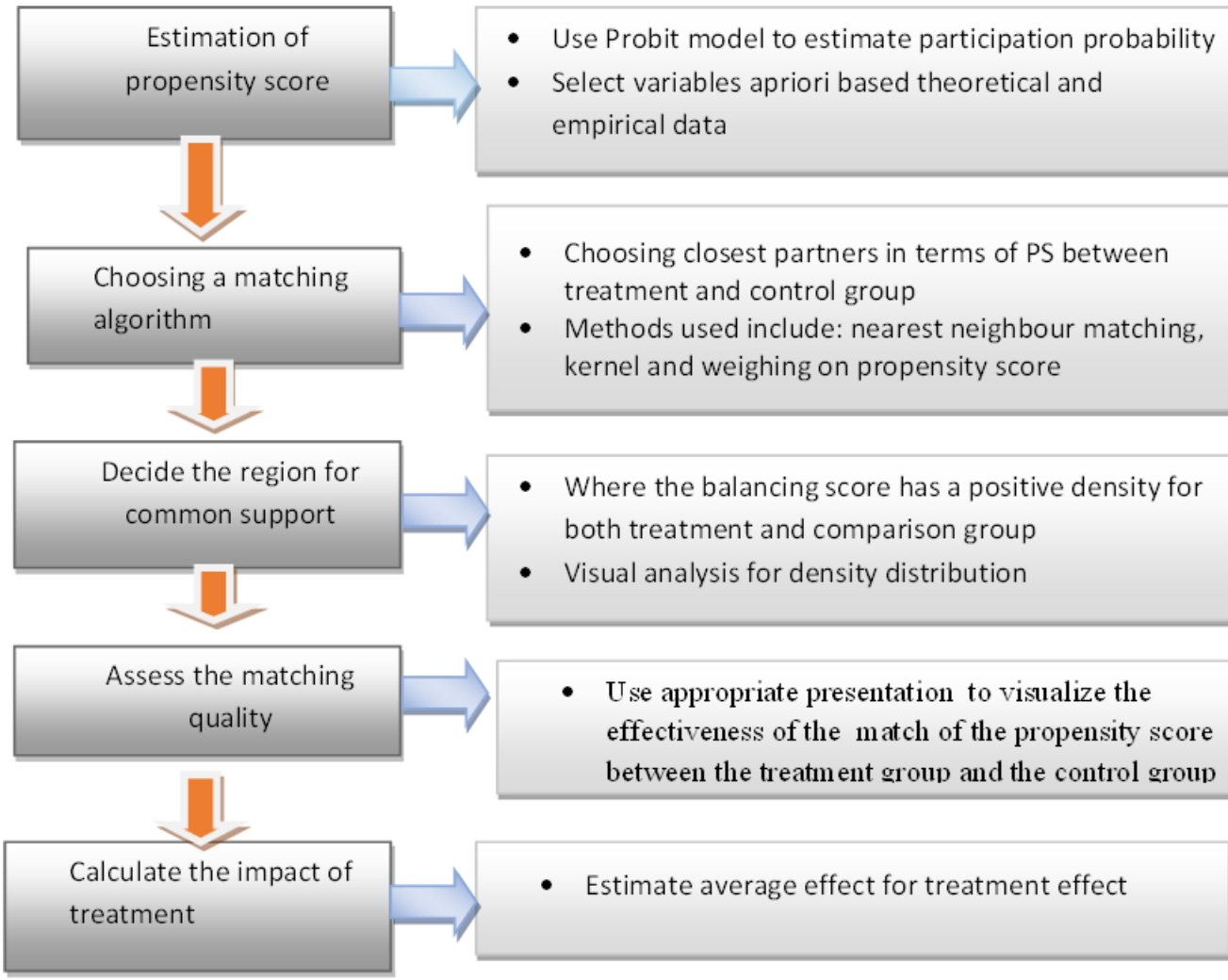



Figure 2 propensity score matching flow diagram

### 3.9 Ethical consideration

The researcher obtained approval to perform the study on the basis of the procedures defined in different authorities. Initially, approval was obtained from the graduate school of Kenyatta University that accredited all dimensions of ethics in study. Secondly, the request was forwarded for review and approval to the National Council for Science, Technology and Innovation (NACOSTI), which is the body mandated to provide research permits in Kenya. On obtaining a clearance certificate for the conduct

of the study, the researcher obtained the approval of the local government, including the county commissioner and head of the livestock directorate in Siaya County. In conclusion, after clarifying the intent of the research and the confidentiality of the information afterwards, the researcher sought the consent of the respondents.

# CHAPTER FOUR: RESULTS

## 4.1 Introduction

This chapter provides the findings of the data analysis. It is divided into four sections; the first one presents descriptive statistics of the sampled households. The second section assesses the level of use of improved management practices by IIC farmers using descriptive statistics derived from summarizing responses from the Likert scale. The third section gives factors influencing credit use in improved indigenous chicken using Probit Regression analysis. The fourth section presents the impact of credit use in IIC on chicken income using the Propensity Score Matching method.

### 4.1.1 Response Rate

From the 249 questionnaires administered to farmers who were practicing IIC farming, only 217 were registered for data analysis, which translates to an 87.15% response rate. Visser et al. (2000) postulates that; surveys with a response rate of over 50 per cent are sufficient for reliable calculation of survey data obtained from a homogenous population. Similarly, Creswell (2014) and Onen (2009) both accept that 50% is sufficient, 60% is good enough and that the rate of return above 70% is high. Accordingly, the current study's 87.15% return rate on the questionnaire is considered outstanding. The high rate of answers observed was due to the fact that the surveys were directly administered to the respondents by the researcher. The researcher also told the participants beforehand of the purpose of the study, did aggressive follow ups and sent reminders to encourage participation. The questionnaires were also clear, simple enough for respondents who were sure that the collected data was confidential.

### 4.1.2 Demographic and socio-economic characteristics of the respondents

From descriptive statistics (appendix D) , the respondent's gender was almost equally distributed, with the females (53%) being slightly higher than males (47%). Considering age, most of the respondents were above 42 years of age (51.61%) followed by the age between 30 and 35 (23.96%). The age group with the least number of respondents was below 30 years (8.76%). On the education level, most of the respondents were at the primary level (36.87%) followed by secondary level (31.8%), the least number being the certificate level at a percentage of 12.9.

47.74% of the respondents who were the majority, practiced poultry farming as their main source of income followed by cereal traders (24.12%). The least number of respondents depended on other sources of income (11.56%). Most of the respondents were household heads (71.89%), while only 28.11% were not household heads. 60.83% of the respondents had households of between 1 to 5 members. followed by 6 to 10 34.1% had 6 to 10 household members while only 5.07% of the respondents had household members of above 10.

On household labour, majority of the households were found to have between 1 to 5 (88.94%) family members providing labour to the indigenous chicken enterprises and only 3.23% of the households had none of their members involved in providing labour in the IIC enterprises. On farm size, most of the participants fall between 1 to 4 acres (57.14%), and the least were having a land size of above 4 acres (12.44%). Among these participants owning land, only 43.32% had title deeds while 56.68% did not have the title deeds.

### 4.1.3 Proportion of youth farmers who invested YEDF in IIC enterprise

The study found that, out of 217 respondents, only 76 (35%) invested YEDF credit in IIC enterprise.

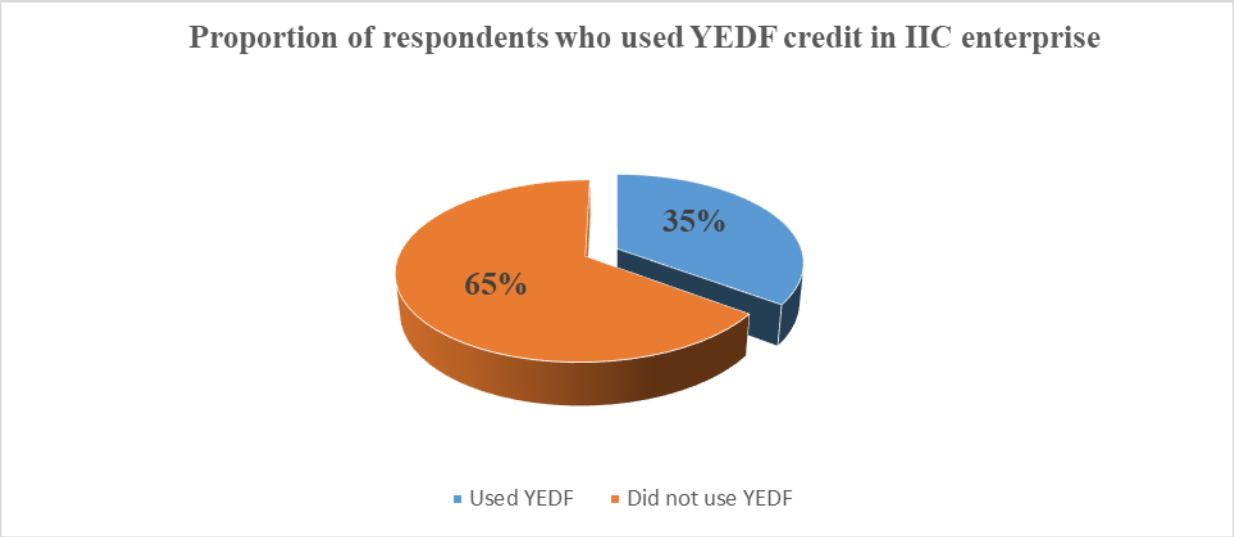



*Figure 3*. The proportion of participants who used YEDF in IIC enterprise

### 4.1.4 Distribution of the gross profit from IIC enterprises

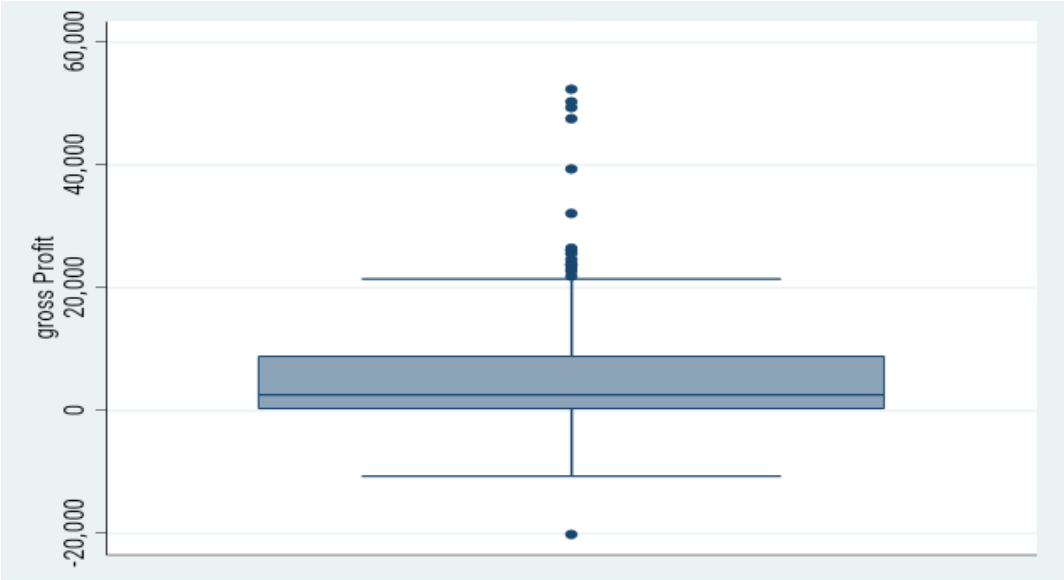



Figure 4 Distribution of gross profit from IIC enterprises

The Gross profit was calculated by deducting costs of goods sold from total sales over a financial period. The minimum and the maximum gross profits were KSh -20180, and Ksh 52300 respectively. The median gross profit was KSh 2500.

## 4.2 Factors influencing the use of YEDF credit in poultry farming by small scale improved indigenous chicken farmers.

The study used the Probit model to analyse the factors influencing the use of YEDF credit in small scale improved indigenous chicken enterprises by farmers in Gem Sub County. The Probit Regression analysis was carried out to examine if one or more of the independent variables is predictive of the dependent variable. The researcher employed a systematic elimination approach to remove all variables that were insignificant at 5% levels of significance and included all the independent variables which showed significance in the final model.

### 4.2.1 Probit Regression analysis on factors influencing use of YEDF credit in IIC enterprises by small scale improved indigenous chicken farmers.

Table 5 shows the results of the Probit Regression analysis where dy/dx denotes the marginal effect that shows the changes in the explanatory variables that affect the features of the outcome variable.

**Table 5:** Probit Regression Analysis on factors influencing use of YEDF

| Variables | N (%) | No Credit Use n (%) | Credit Use n (%) | dy/dx (95% CI) | P-Value |
|---|---|---|---|---|---|
| **Age Group** | | | | | |
| <30 | 19(8.76) | 14(73.68) | 5(26.32) | Ref | |
| 30 – 35 | 52(23.96) | 22(42.31) | 30(57.69) | 0.28(0.03, 0.52) | **0.028**** |
| 36 – 42 | 34(15.67) | 14(41.18) | 20(58.82) | 0.28(0.01, 0.55) | **0.042**** |
| >42 | 112(51.61) | 91(81.25) | 21(18.75) | -0.06(-0.29, 0.17) | 0.599 |
| **Income Source** | | | | | |
| Poultry farming | 95(47.74) | 62(65.26) | 33(34.74) | Ref | |
| Cereal Traders | 48(24.12) | 32(66.67) | 16(33.33) | 0.1(-0.05, 0.25) | 0.184 |
| Employed | 33(16.58) | 21(63.64) | 12(36.36) | 0.11(-0.05, 0.27) | 0.185 |
| Other Sources of income | 23(11.56) | 10(43.48) | 13(56.52) | 0.26(0.04, 0.47) | **0.02**** |
| **Farm size (ha)** | | | | | |
| <1 | 66(30.41) | 53(80.3) | 13(19.7) | Ref | |
| 1 to 4 | 124(57.14) | 76(61.29) | 48(38.71) | 0.15(0.02, 0.28) | **0.026**** |
| >4 | 27(12.44) | 12(44.44) | 15(55.56) | 0.26(0.05, 0.48) | **0.015**** |
| **Role in Poultry Enterprise** | | | | | |
| Value addition or chicken trade. | 20(9.8) | 12(66.67) | 6(33.33) | Ref | |
| Hatching and selling day old chicks | 20(9.8) | 5(25) | 15(75) | 0.36(0.05, 0.66) | **0.023**** |
| Raising day old chicks and selling after one month | 12(5.88) | 7(58.33) | 5(41.67) | -0.07(-0.42, 0.27) | 0.677 |
| Raising and selling chicks after 3 months | 25(12.25) | 15(60) | 10(40) | 0.03(-0.26, 0.32) | 0.831 |
| Raising and selling chicks after maturity (6months and above). | 127(62.25) | 92(72.44) | 35(27.56) | -0.06(-0.3, 0.18) | 0.632 |

Source: Own survey 2020, *** 1% significance level **significance at 5% * 10% significance level

The result in table 5 shows that age group, source of income, farm size (hectares), and role in the enterprise were significant at a 5% significance level.

Farmers whose ages were between 36 to 42 years were 28% more likely to use YEDF credit in poultry farming compared to farmers who had ages less than 30 years

(dy/dx=0.28, p-value=0.042, 95%Ci= (0.01, 0.55)). On the other hand, farmers who were 30 to 35 years of age were also 28% more likely to use YEDF credit in poultry farming compared to farmers who were less than 30 years of age (dy/dx=0.28, p-value=0.028, 95%Ci= (0.03, 0.52).

The farmers' main source of income was a contributing factor to the use of YEDF credit in poultry farming among small scale improved indigenous chicken farmers at a 5% level of significance. Poultry farmers who had other sources of income were 26% more likely to use YEDF in poultry farming compared to those who had poultry farming as their main source of income (dy/dx=0.26, p-value=0.02, 95%Ci= (0.04, 0.47)).

The size of the farm owned by the farmer showed a significant effect on the use of YEDF in poultry farming at a 5% level of significance. Those who were doing farming in more than four hectares of land were 26% more likely to use YEDF in poultry farming compared to those who had less than 1 hectare of land (dy/dx=0.26, p-value=0.015, 95%Ci= (0.05, 0.48)). Farmers who had between 1 to 4 hectares of land were 15% more likely to use YEDF in poultry farming compared to farmers who had less than a hectare of land (dy/dx=0.15, p-value=0.026, 95%Ci= (0.02, 0.28)).

The result further showed that the role of the respondent in the improved indigenous chicken value chain has a significant effect on the use of YEDF in poultry farming at 5% level of significance. The farmers who were hatching and selling day-old chicks were 36 % more likely to use YEDF credit in indigenous chicken farming compared to individuals who were involved in value addition and or chicken trade (dy/dx=0.36, p-value=0.023, 95%Ci= (-0.3, 0.18)).

### 4.3 Assessment of level of use of improved management practices in small scale IIC enterprises

To determine the rate of the usage of improved management practices by IIC small scale farmers in Gem Sub County, participants' opinion were rated on a five-point Likert scale (1-Never, 2-Seldom, 3-Sometimes, 4-Often, 5-Almost always). An average for each management practice was obtained by summing the responses given under each management practice and dividing by the numbers of responses from all the statements. Table 6 below shows the frequencies of poultry management methods among IIC farmers.

**Table 6:** Level of use improved management practices of credit users and non –credit users in IIC enterprises

| Management practices | Credit use | Never n (%) | Seldom n (%) | Sometimes n (%) | Often n (%) | Almost always n (%) | Exact test p-value |
|---|---|---|---|---|---|---|---|
| Disease control | Yes, N=64 | 14(21.88) | 31(48.44) | 14(21.88 | 5(7.81) | 0(0.00) | **0.005**** |
| | No, N= 118 | 51(43.22) | 34(28.81) | 15(12.71) | 17(14.41) | 1(0.85) | |
| Equipment | Yes, N= 69 | 7(10.14) | 24(34.78) | 27(39.13) | 10(14.49) | 1(1.45) | 0.104 |
| | No, N= 127 | 17(13.39) | 61(48.03) | 40(31.50) | 9(7.09) | 0(0.00) | |
| Chicks management | Yes, N=54 | 0(0.00) | 18(33.33) | 15(27.78) | 15(27.78) | 6(11.11) | **0.042**** |
| | No, N= 66 | 1(1.52) | 25(37.88) | 8(12.12) | 14(21.21) | 18(27.2) | |
| Records | Yes, N=45 | 18(40.00) | 9(20.00) | 7(15.56) | 6(13.33) | 5(11.11) | 0.369 |
| | No, N= 64 | 17(26.56) | 17(26.56) | 18(28.13) | 6(9.38) | 6(9.38) | |
| Bio-security | Yes, N=73 | 0(0.00) | 4(5.48) | 14(19.18) | 26(35.62) | 29(39.73) | 0.226 |
| | No, N= 124 | 6(4.84) | 6(4.84) | 25(20.16) | 31(25.00) | 56(45.16) | |
| Feed supplement | Yes, N=61 | 5(8.20) | 13(21.31) | 12(19.67) | 16(26.23) | 15(24.59) | 0.342 |
| | No, N=85 | 2(2.35) | 21(24.71) | 25(29.41) | 21(24.71) | 16(18.82) | |
| Correct quantity of feed | Yes, N=61 | 28(45.90) | 25(40.98) | 8(13.11) | 0 | 0 | 0.645 |
| | No, N=85 | 44(46.81) | 42(44.68) | 8(8.51) | 0 | 0 | |

The results reveal that there is a significant correlation between the use of YEDF in IIC farming and disease control at 0.05 level (p-value=0.005) and chick management practices. Out of 64 improved indigenous farmers who used YEDF in poultry farming, majority 31(48.44%) seldom carried out disease management practices such as deworming and vaccination of Merek`s, New castle, Fowl Typhoid,

Gumboro, Infectious Bronchitis, and Fowl pox; 5 (7.81%) often carried out disease management practices, and none of the farmers almost always carried out disease management practices in their poultry farms

.

Even though the results do not reveal any significant correlation between availability of adequate equipment such as feeding trough and drinking cans (p-value=0.104) and use of YEDF, majority of the farmers who used YEDF in their project, 27(39.13%) out of 69 sometimes used 1 meter per 20 mature birds and one litre drinker per 10 birds; 10(14.49%) and 1(1.45%) often and almost always used proper equipment respectively.

Concerning feeding practices, 61 of those who used credit in their poultry enterprise responded to the question on feed supplement. Majority 16(26.23%) of them often used either factory formulated feed supplement and or own formulated feed supplement; 15(24.59%) always used feed supplement, and only 5(8.20%) never used feed supplement. It is also evident that respondents were not applying the correct quantity of feeds to the day old- 1 month, 2 -3 months, and 4 months and above old birds. Out of those who used credit in their poultry enterprise, 28(45.90%) never used the correct quantity of feeds; 25(40.98%) hardly used the correct amount of feeds, and 8(13.11%) sometimes used the correct quantity of feeds. However, none of the respondents often or almost always used the correct quantity of feeds.

Concerning the management of chicks in the farms, there is a positive correlation between the use of YEDF in improved indigenous poultry farming and good chicks management (p-value=0.042). Majority 18(33.33%) out of 54 of those who used YEDF hardly manage chicks well by providing services such as raising different ages separately and separating chick from the mother at latest three days after hatching; 6(11.11%) almost always provided good chicks management. The results further reveal that the association between record management and the use of YEDF is not statistically significant (p-value=0.369). Majority18

(40.00%) of poultry farmers who used YEDF in their projects never kept records such as production and financial records, 9(20.00%) barely keep records, 8(12.12%) sometimes kept records, 6(13.33%) often kept good records, and 5(11.11%) almost always kept farm records.

Bio-security practices include confinement, disinfection, waste disposal, managing sources of feed and birds. The result shows that the majority 29 (39.73%) out of 73 farmers who used Credit from YEDF in their projects almost always had good biosecurity management, and 6(35.62%) often had good biosecurity management.

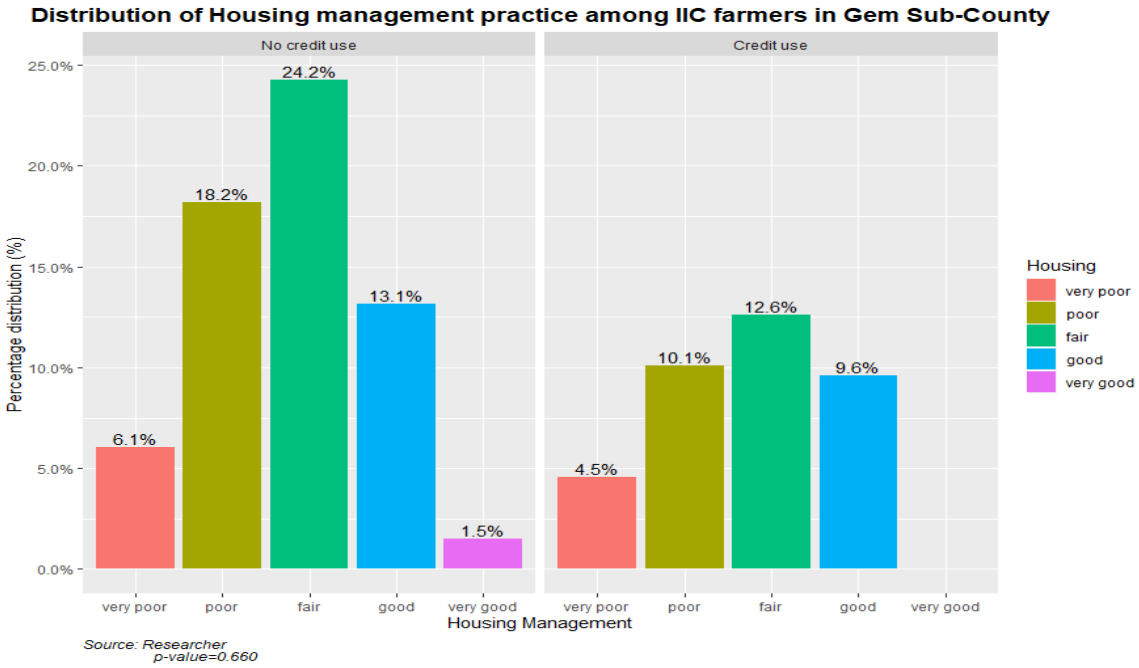



Figure 5: Distribution of housing management practices among IIC enterprises in Gem Sub-County.

Housing management is an essential practice in poultry farming. However, the result in Fig 4 do not present any significant relationship between the use of credit from YEDF and housing management practice. There is a higher proportion of those who were doing fair housing management (12.6%) among those who used credit from YEDF as compared to 4.5% very poor, 10.1% poor, and 9.6% good housing management.

### 4.4 Impact of credit use on improved indigenous chicken enterprise performance in Gem sub-county

To determine the effects of credit use on IIC enterprise performance, a propensity score matching model was adopted with credit use in improved indigenous chicken enterprise as the treatment and no credit use as the control. The outcome variable measuring the performance of improved indigenous poultry enterprise was the gross profit gained from the enterprise.

The possible confounding variables (independent variables) included in the propensity score model included age group, farm size, the major source of income, and role in the enterprise value chain. Average treatment effect on the treated (ATT) was obtained to examine the difference between the gross profit of those who used YEDF in improved indigenous poultry enterprise and those who never used YEDF in improved indigenous poultry enterprise. The nearest neighbour matching method with replacement was used to match the propensity scores of the treatments (used credit) and the control (did not use credit).

#### 4.4.1 Average treatment effect on the treated

Table 7 shows the results of ATT based on matching algorithms such as Nearest Neighbour Matching method and the Kernel method.

**Table 7:** Impact of credit use on IIC enterprise income in Gem sub-county

| Matching algorithms | Outcome variable | Coefficient | Std. Err. | T | p-value | 95% CI |
|---|---|---|---|---|---|---|
| | ATT | 10139.46 | 2829.345 | 3.58 | **<0.001** | 4558.12 -15720.80 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Nearest Neighbour (1) | ATE | 9829.708 | 2936.15 | | | |
| | ATU | 8542.784 | 1546.438 | | | |
| Nearest Neighbour (5) | ATT | 6998.92 | 2225.854 | 3.14 | **0.002** | 2608.06 - 11389.78 |
| | ATE | 8209.893 | 1905.003 | | | |
| | ATU | 8542.784 | 1546.438 | | | |
| Kernel | ATT | 8196.404 | 2061.603 | 3.98 | **<0.001** | 4129.56 - 12263.25 |
| | ATE | 8943.124 | 2033.936 | | | |
| | ATU | 8542.784 | 1546.438 | | | |

Source: Own survey 2020, bold shows significance at 5% level of significance

The use of YEDF credit in improved indigenous poultry enterprise is significantly associated with the performance of improved indigenous poultry enterprise (increase in gross profit at 5% level of significance) for all the algorithms. The average gross profit if all improved indigenous poultry farmers were to use credit, would be Ksh10,139.46 more than the average that would occur if all the improved indigenous poultry farmers had not used credit for Nearest Neighbour (NN1). The average gross profit if all improved indigenous poultry farmers were to use credit, would be Ksh 6,998.92 more than the average that would occur if all the improved indigenous poultry farmers had not used credit for Nearest Neighbour (NN5). The result further revealed that the average gross profit if all improved indigenous poultry farmers were to use credit, would be Ksh8,196.404 more than the average that would occur if all the improved indigenous poultry farmers had not used credit for the Kernel matching method. The significance of the ATT estimates for the NN1, NN5, and Kernel matching showed that the ATT estimate is robust.

The average gain of Gross Profit if all improved indigenous poultry farmers use credit for IIC enterprises ranged from Ksh 6,998.92 to Ksh 10,139.46, which was significant at 5% level of significance for all the matching algorithms used an indication that the use of YEDF in IIC enterprises had an impact of increased enterprise incomes

### 4.4.2 Density Plots of Propensity scores

Figure 6 shows density plots before and after matching, respectively. The graphic presentation of the density plots are used to visualize the effectiveness of the match of the propensity score between the treatment group and the control group.

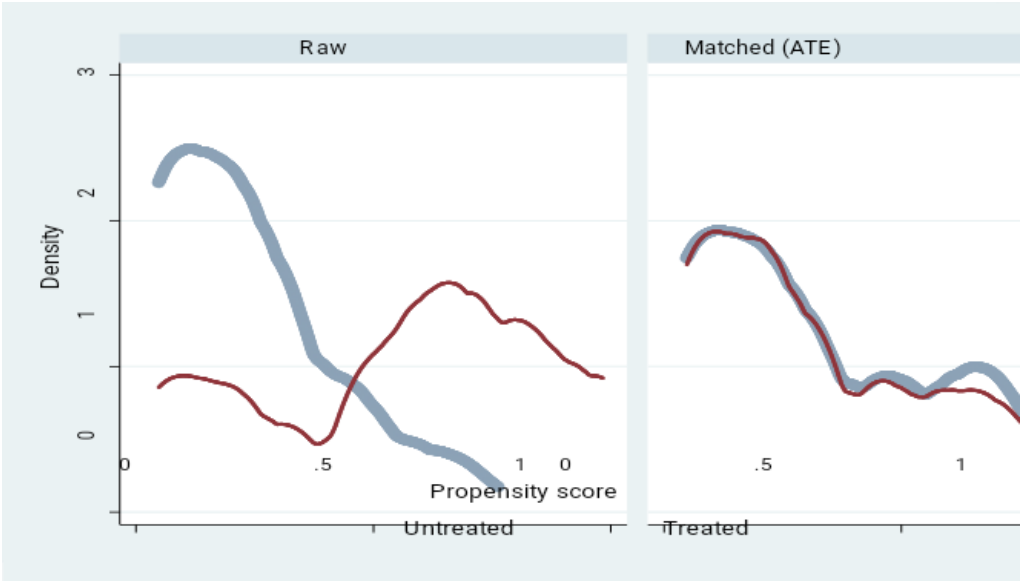



Figure 6: Density Plots of Propensity score before and after Kernel Matching

The distribution of the propensity scores across the matched propensity scores for treatment (credit use) and propensity scores for the control group (no credit use) were reasonably similar after matching compared to before matching (raw).

**4. 4.3 Propensity score Histogram after matching**

A back-to-back histogram was also used to visualize the match of the propensity score between the treatment group (use YEDF credit) and the control group (no YEDF credit use).

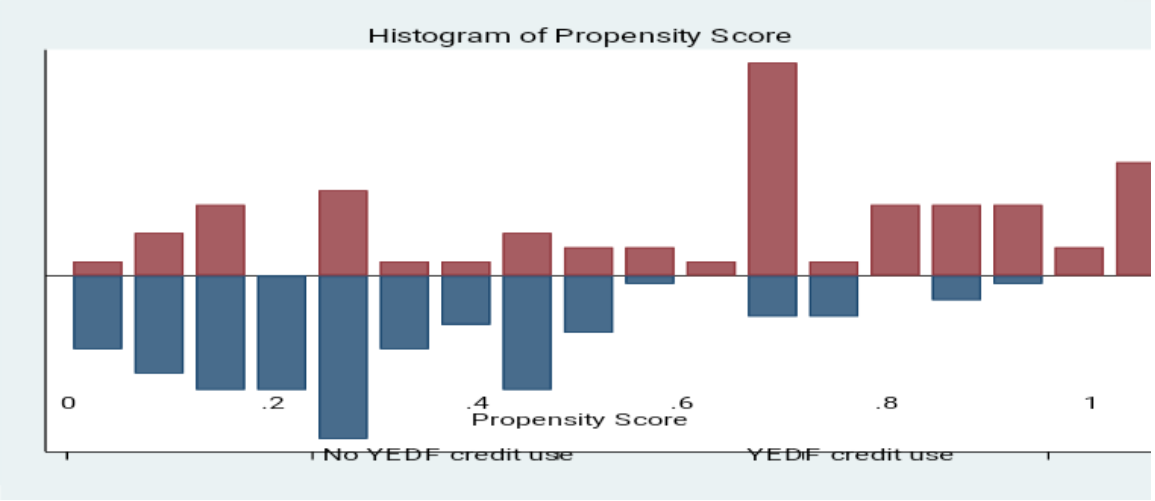



Figure 7: Propensity score Histogram after matching (NN1)

The bars above indicate propensity scores for credit users, while the bars below indicate propensity scores for their matched counterpart non- credit users. According to the histogram, a remarkable proportion of propensity scores were matched. This indicates a substantial reduction in selection bias.

### 4.4.4 Sensitivity analysis for Estimated Average Treatment Effects (ATT)

The results in table 8 shows the results of the sensitivity analysis that was done to reveal presence of any hidden bias that may have had an effect on the outcome.

**Table 8:** Sensitivity analysis for Estimated Average Treatment Effects (ATT)

| Rosenbaum bounds for profit (N = 217 matched pairs) | | | | | | |
|---|---|---|---|---|---|---|
| **Gamma(γ)** | **σ+** | **σ-** | **t̂+** | **t̂ -** | **CI+** | **CI-** |
| 1.00 | 0 | 0 | 4250 | 4250 | 3187.5 | 5300 |
| 1.05 | 0 | 0 | 4075 | 4405 | 3027.5 | 5500 |
| 1.10 | 0 | 0 | 3900 | 4562.5 | 2880 | 5705 |
| 1.15 | 0 | 0 | 3750 | 4700 | 2750 | 5920 |
| 1.20 | 1.10E-16 | 0 | 3600 | 4845 | 2580 | 6105 |
| 1.25 | 1.00E-15 | 0 | 3475 | 4985 | 2450 | 6295 |
| 1.30 | 6.30E-15 | 0 | 3350 | 5130 | 2310 | 6471 |
| 1.35 | 3.40E-14 | 0 | 3225 | 5270 | 2190 | 6615 |
| 1.40 | 1.60E-13 | 0 | 3105 | 5425 | 2100 | 6780 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 1.45 | 6.90E-13 | 0 | 3000 | 5555 | 2000 | 6925 |
| 1.50 | 2.70E-12 | 0 | 2890 | 5700 | 1920 | 7090 |

* gamma - log odds of differential assignment due to unobserved factors

sig+ - upper bound significance level

sig- - lower bound significance level

t-hat+ - upper bound Hodges-Lehmann point estimate

t-hat- - lower bound Hodges-Lehmann point estimate

CI+ - upper bound confidence interval (a= 0.95)

CI- - lower bound confidence interval (a= 0.95)

The results reveal that there is no hidden bias when ($\Gamma = 1$) due to unobserved confounders. Additionally, the p-value is the same as the one estimated in the matching analysis indicating a significant treatment effect, and no prospects of outliers on the estimated parameters.

The results indicate that a 0.05 increase in gamma causes an infinitesimal increase in the p-value which is below 0.05 thresholds. In conclusion, the result is significant across the level of sigma $\Gamma = 1$ to $\Gamma = 1.5$, indicating that the matching was sensitive to any unobserved confounder.

# CHAPTER FIVE: DISCUSSION

This chapter discusses the findings of the study and compares them to findings of studies done by other researchers.

## 5.1 Factors influencing the use of YEDF credit in poultry farming by small scale improved indigenous chicken farmers

The result in table 5 above shows that age group, source of income, farm size (hectares), and role in the enterprise were significantly associated with the use of YEDF credit in improved indigenous poultry farming at a 5% level of significance.

Farmers whose ages were between 36 to 42 years were more likely to use YEDF credit in poultry farming compared to farmers who had ages less than 30 years. On the other hand, farmers who were 30 to 35 years of age were also more likely to use YEDF credit in poultry farming compared to farmers who were less than 30 years of age. Taking into account that at the time of data collection, 10 years had elapsed since the inception of the fund, it means the farmers who took loans were then at 26 to 32 age cohort followed by 20 to 25 age cohort, farmers who were then below 20 years of age hardly took loans. The result shows that age is an important characteristic affecting decision making when it comes to credit use among farmers.

The result is similar to those of a study titled “Modelling the effect of farming attitudes on farm credit use: a case study from Ireland” that revealed that the age of a farmer is a significant factor influencing decisions regarding credit use (Howley & Dillon, 2012). Studies have revealed that the ability to make a decision regarding use of credit or other important financial matters increases with increase in age (Hananu *et al.*, 2015).

Farmer's main source of income was a contributing factor to the use of YEDF credit in poultry farming among small scale improved indigenous chicken farmers at a 5% level of significance. Poultry farmers who had other sources of income were more likely to use YEDF in poultry farming compared to those who had poultry farming as their main source of income. Poultry farming sometimes results in big losses when proper management practices are not observed. Farmers who do not have other sources of income may find it difficult to use credit in running such an enterprise. This finding concurs with the finding of a study titled "Credit accessibility and poverty among smallholder cassava farming households in South West, Nigeria" that revealed that those who had farming as the main source of income were 70% less likely to use credit in farming (Obisesan, 2013).

The size of the farm owned by the farmer showed a significant effect on the use of YEDF in poultry farming at a 5% level of significance. Those who were doing farming in more than four hectares of land were more likely to use YEDF credit in poultry farming compared to those who had less than 1 hectare of land. Farmers who had between 1 to 4 hectares of land were 15% more likely to use YEDF in poultry farming compared to farmers who had less than a hectare of land. Studies have shown that farmers with large sizes of owned land-use diversification and agricultural credit in expansion and risk management. The result of a study titled "Catastrophic risks management at the farm: The use of diversification, precautionary savings and agricultural credit" indicated that farmers with large sizes of owned land have larger risk-bearing capacity, thus giving them the courage to use credit in farming that involves a lot of risks (Ullah *et al.*, 2015).

The result further indicated that the role of the respondent in the improved indigenous chicken farming has a significant effect on the use of YEDF in poultry farming at 5% level of significance. Farmers who were hatching and selling day-old chicks were more likely to use YEDF credit in indigenous chicken farming compared to individuals who were involved in value addition and or chicken trade. This is probably due to the high demand for capital to set up hatcheries and maintain a few days old chicks compared to the capital required to buy and sell chicken to other farmers. Chicken trading and value addition may require a small amount of capital, depending on the size of the enterprise (Mwansa, 2013).

### 5.2 Level of use of improved management practices in IIC enterprises in Gem Sub- County

According to the results indicated in Table 6, majority of the farmers hardly carried out disease management practices such as deworming and vaccination of Mereks, New castle, Fowl Typhoid, Gumboro, Infectious Bronchitis, and Fowl pox. The results are is in contrast with those of a study done in Kakamega and Makueni, which reported that majority of households sampled practiced disease control for their flock and the most common recorded disease was New Castle Disease (NCD), Gumboro, Fowl Typhoid disease, Fowl Pox and Coccidiosis (Njuguna, 2018).

The results of the research also revealed that most farmers were not always using the recommended equipment such as, feeding and watering trays with a capacity that matches the number of birds to ensure adequate hygienic feeding and watering practices in their IIC enterprises. This was in contrast with a study conducted by Sparks (2009), which showed that majority of the farmers used feeders and waterers, which were cleaned daily to avoid contamination that may cause food poisoning. The result also showed that majority of those who invested the YEDF credit in poultry enterprise fed their flock with factory or own

formulated food supplement. This is supported by a study by Dutta *et al*. (2013) which mentioned that the use of supplementary feeds in poultry is essential in enhancing the poultry output.

The study showed that most farmers had fair quality of poultry houses. These results concur with those of a study conducted by Tarwireyi and Fanadzo (2013) in Kwa Zulu-Natal, South Africa, which showed that the sampled households had fair quality (40%) structures for their IIC.

Most of the farmers never kept records such as production and financial records of the enterprise. This was not the same for a study conducted in the Ga East Municipality in Ghana which indicated that, as a result of good records, the bulk of respondents (70%) received farm credit from financial institutions. Receipt of agricultural loans was based on the poultry farmer's ability to provide proper records of the farm (Tham-Agyekum, 2010). Iton (1999) and Chapman (2008) confirm that farmers must have written records of their farms in order to prove the profitability of their enterprise, otherwise securing a farm loan can be an uphill task

**5.3 Impact of credit use on performance of indigenous poultry farming**

Inadequate funding of small scale farming of improved indigenous chicken in Kenya has slowed down the spate of poultry farming industry (Ogolla, 2016). Propensity score matching was used to determine the impact of credit use on the IIC productivity, estimate the average treatment effect for the credit use in which the results reveal that the use of credit in indigenous poultry farming has a positive impact on the profit of IIC farming. This finding is consistent with the study of (Olagunju & Babatunde, 2011) that found that credit use had a significant effect on the productivity of IIC farming. The finding is consistent with

that of (Girabi & Mwakaje, 2013) established that access to credit increases production because farmers procure inputs at the required time. (Dolberg,2003) similarly reported that in Bangladesh, access to credit resulted in efficient utilization of inputs and increased revenue returns. However, access to credit is not enough to increase poultry profit, but the credit has to be adequate to ensure a high profit from poultry farming (Adeoti, 2003).

# CHAPTER SIX: CONCLUSION AND RECOMMENDATION

## 6.1 Conclusion

This study concluded that the Youth enterprise development fund credit had a significant positive influence on incomes of improved indigenous chicken enterprises of small-scale farmers in Gem Sub County. It adds to the body of knowledge by addressing the scarcity of information that existed in knowing how the youth fund impacts on agribusiness enterprises.

The study however concluded that not all youth in the age bracket of 18-35 easily accessed the fund as youth in the older age group (above 25 years) were found to have easier access. Other factors that affected access to the fund by youth in the IIC enterprise included the size of land they owned and the role they played in the IIC enterprise. The farmers perceived land as a risk bearing cushion therefore, the larger the size of land, the more likely their decision to access credit. Diversifying income was also another risk bearing cushion. They likewise sought finance for investment in the more capital-intensive nodes of the value chain like egg hatching.

In addition, the study concluded that the youth did not fully implement the improved management practices requisite to the success of the chicken enterprises. Feed supplementation was always practiced but not in the right quantities, disease control and chick management practices were hardly practiced while record keeping was the least implemented management practice and yet it is a key requisite for obtaining credit. The farmers however had fair quality of chicken housing structures.

The impact study which was done at least 10 years after the inception of the Youth fund revealed the resilience the youth had in undertaking an agribusiness related enterprise despite the narrative that youth are generally not interested in agriculture as a source of employment. Considering the finding that majority of the farmers were relying on their chicken enterprise as the main source of income, is an indication that the YEDF may have met one of its objective of employment creation through enterprise development suggesting the potential that the fund has in promoting youth employment through enterprise development in the agri- food sector.

### 6.2 Recommendation

In respect to the objectives and the findings discussed herein, this study recommends the following to policy makers, microfinance institutions, government agencies and development partners and the youth;

1. Microfinance institutions should use a value chain financing approach dedicating funds to value chain nodes that are more capital-intensive like hatching and feed supplementation in the IIC enterprise. The innovative financial packages should be formulated to give room for risk aversion behaviour of farmers with low land acreages and also for youth in the younger age cohorts.
2. Effort should be made by extension service providers and Technical and vocational Training Institutions to skill the young farmers and make follow ups in order to improve the uptake of improved management practices and current technologies among farmers. These should include digitized technologies for example in record keeping to make it easier and simpler for farmers to keep records.

3. Policy makers and development partners should support credit access programmes that lead to increased incomes in the agribusiness sector leading to enhanced employment creation.
4. Further research can be undertaken to assess the impact of other business development services like entrepreneurship training, market linkages, coaching and mentoring offered by the YEDF on youth led agribusiness enterprises in Kenya.

## REFERENCES


Aduda, Josiah and Elizabeth Kalunda. "Financial Inclusion and Financial Sector Stability with Reference to Kenya: A Review of Literature." *Journal of Applied Finance and Banking*, vol. 2, no. 6, 2012, p. 95.

Afande, OF. "Factors Influencing Growth of Small and Microenterprises in Nairobi Central Business District." *Journal of Poverty, Investment and Development*, vol. 9, no. 1, 2015, pp. 104-139.

Akinola, LAF and A Essien. "Relevance of Rural Poultry Production in Developing Countries with Special Reference to Africa." *World's Poultry Science Journal*, vol. 67, no. 4, 2011, pp. 697-705.

Anane, George Kwadwo et al. "Sustainability of Small and Medium Scale Enterprises in Rural Ghana: The Role of Microfinance Institutions." *Asian Economic and Financial Review*, vol. 3, no. 8, 2013, p. 1003.

Armendáriz, Beatriz and Jonathan Morduch. "The Economics of Microfinance (Ed.)." Cambridge, MA: MIT Press, 2010.

Armendariz de Aghion, Beatriz and J Morduch. " The Economics of Micro Finance." Cambridge: MIT Press, 2005.

Asnawi, A and AA Amrawaty. "A Study of Effect Agribusiness Micro Finance for Beef Cattle Farmers in South Sulawesi Indonesia." *IOP Conference Series: Earth and Environmental Science*, vol. 334, IOP Publishing, 2019, p. 012052.

Austin, Peter C. "An Introduction to Propensity Score Methods for Reducing the Effects of Confounding in Observational Studies." *Multivariate behavioral research*, vol. 46, no. 3, 2011, pp. 399-424.

Ayele, Amanuel and Degye Goshu. "Determinants of Microfinance Loan Utilization by Smallholder Farmers: The Case of Omo Microfinance in Lemo District of Hadiya Zone, Southern Ethiopia." *Journal of Development and Agricultural Economics,* vol. 10, no. 7, 2018, pp. 246-252.

Bwalya, Richard and Thomson Kalinda. "An Analysis of the Value Chain for Indigenous Chickens in Zambia's Lusaka and Central Provinces." *Journal of Agricultural Studies,* vol. 2, no. 2, 2014, pp. 32-51.

Channgakham, P et al. "Promoting Rural Livelihoods and Public Health through Poultry Microfinance: Evidence from Lao Pdr." Pro-Poor HPAI Risk Reduction Project, Mekong Team Research Brief, 2010.

Cronbach, Lee J. "Coefficient Alpha and the Internal Structure of Tests." *psychometrika,* vol. 16, no. 3, 1951, pp. 297-334.

Dallimore, Anthea. "Banking on the Poor: Savings, Poverty and Access to Financial Services in Rural South Africa." The London School of Economics and Political Science (LSE), 2013.

De Mel, Suresh et al. "Returns to Capital in Microenterprises: Evidence from a Field Experiment." *The quarterly journal of Economics,* vol. 123, no. 4, 2008, pp. 1329-1372.

Desta, Takele Taye and Oli Wakeyo. "Uses and Flock Management Practices of Scavenging Chickens in Wolaita Zone of Southern Ethiopia." *Tropical animal health and production,* vol. 44, no. 3, 2012, pp. 537-544.

Dolberg, Frands. "A Review of Household Poultry Production as a Tool in Poverty Reduction with Focus on Bangladesh and India." 2003.

Dutta, R Kumar et al. "Production Performance of Indigenous Chicken (Gallus Domesticus L.) in Some Selected Areas of Rajshahi, Bangladesh." *Journal of Experimental Agriculture International*, 2013, pp. 308-323.

FAO,2011."Agriculture value Chan Development: Threat or opportuntiy for women employment"*Gender and Rural employment policy brief 4*

FAO,2014"Importance of indigenous chicken to Rural Communities"*publiction number p3394*

Farrell, David. "The Role of Poultry in Human Nutrition." *Poultry Development Review. Rome: Food and Agriculture Organization*, 2013, pp. 2-9.

Ghatak, Maitreesh and Timothy W Guinnane. "The Economics of Lending with Joint Liability: Theory and Practice." *Journal of development economics*, vol. 60, no. 1, 1999, pp. 195-228.

Girabi, Frank and Agnes Mwakaje. "Impact of Microfinance on Smallholder Farm Productivity in Tanzania." 2013.

Gubert, Flore and François Roubaud. *The Impact of Microfinance Loans on Small Informal Enterprises in Madagascar: A Panel Data Analysis.* World Bank, 2011.

Hananu, Baba et al. "Factors Influencing Agricultural Credit Demand in Northern Ghana." *African Journal of Agricultural Research*, vol. 10, no. 7, 2015, pp. 645-652.

Howley, Peter and Emma Dillon. "Modelling the Effect of Farming Attitudes on Farm Credit Use: A Case Study from Ireland." *Agricultural Finance Review*, 2012.

Irungu, KRG et al. "Information and Communication Technologies (Icts) Attract Youth into Profitable Agriculture in Kenya." *East African Agricultural and Forestry Journal*, vol. 81, no. 1, 2015, pp. 24-33.

Justus, Ochieng et al. "Management Practices and Challenges in Smallholder Indigenous Chicken Production in Western Kenya." *Journal of Agriculture and Rural Development in the Tropics and Subtropics (JARTS)*, vol. 114, no. 1, 2013, pp. 51-58.

Kamau, Christopher N et al. "Analysis of Improved Indigenous Chicken Adoption among Smallholder Farmers: Case of Makueni and Kakamega Counties, Kenya." *International Journal of Agricultural Extension*, vol. 7, no. 1, 2019, pp. 21-37.

Kanyari and P Namusonge. "Factors That Influence the Kenyan Youth Entrepreneurs Towards the Youth Enterprise Development Fund: A Case Study of Gatundu South District, Kenya." 2017.

Kiprop, Emmanuel et al. "Factors Influencing Smallholder Farmers Participation in Collective Marketing and the Extent of Participation in Improved Indigenous Chicken Markets in Baringo, Kenya." *Asian Journal of Agricultural Extension, Economics & Sociology*, 2019, pp. 1-12.

Kitavi, Alfred M. "Influence of Youth Enterprise Development Fund on Growth of Youth Business Enterprises in Kenya: The Case of Kitui Central Sub-County Kitui County." University of Nairobi, 2015.

Kithinji, Angela M. "Credit Risk Management and Profitability of Commercial Banks in Kenya." 2010.

Kothari, Chakravanti Rajagopalachari. *Research Methodology: Methods and Techniques.* New Age International, 2004.

Magothe, TM et al. "Indigenous Chicken Production in Kenya: I. Current Status." *World's Poultry Science Journal*, vol. 68, no. 1, 2012, pp. 119-132.

McMichael, Philip. "Value-Chain Agriculture and Debt Relations: Contradictory Outcomes." *Third World Quarterly*, vol. 34, no. 4, 2013, pp. 671-690.

Mersha, Deresse and Zerihun Ayenew. "Financing Challenges of Smallholder Farmers: A Study on Members of Agricultural Cooperatives in Southwest Oromia Region, Ethiopia." *African Journal of Business Management*, vol. 12, no. 10, 2018, pp. 285-293.

Mngadi, Wandile Phinda. "The Role of Microfinance Institutions on Entrepreneurship Development: The Case of Swaziland." 2016.

Moges, Fisseha et al. "Assessment of Village Chicken Production System and Evaluation of the Productive and Reproductive Performance of Local Chicken Ecotype in Bure District, North West Ethiopia." *African Journal of Agricultural Research*, vol. 5, no. 13, 2010, pp. 1739-1748.

Mugenda, O and A Mugenda. "Research Methods: Quantitative and Qualitative Methods." *Revised in Nairobi*, 2003.

Mwansa, Sosthenes. "Comparative Investment Analysis for Small Scale Broiler and Layer Enterprises in Zambia." Kansas State University, 2013.

Mwewa, Naomi M. "The Effects of Microfinance Services on the Growth of Small and Medium Enterprises in Machakos County." University of Nairobi, 2013.

Natukunda et al. "Indigenous Chickens of the Kamuli Plains in Uganda: Ii. Factors Affecting Their Marketing and Profitability." *Livestock research for rural development*, vol. 23, no. 10, 2011, p. 221.

Ng'ang'a, Julius M. "Factors Influencing Implementation of Poultry Farming Enterprises for Economic Empowerment of Local Communities in Mombasa County, Kenya." University of Nairobi, 2014.

Ngugi, Veronica W and F Kerongo. "Effects of Micro-Financing on Growth of Small and Micro Enterprises in Mombasa County." *International Journal of Scientific Engineering and Research (IJSER)*, vol. 2, no. 4, 2014, pp. 138-142.

Njoroge, IM. "Factors Influencing the Uptake of Youth Enterprise Development Fund Loans in Kieni East District, Nyeri County." University of Nairobi, Kenya, 2012.

Njuguna, C.K. "Impact of Improved Poultry Production Technologies among Smallholder Indigenous Chicken Farmers in Kakamega and Makueni–Kenya." Kenyatta University, 2018.

Nyongesa, Melody N. "Influence of Youth Enterprise Development Fund on the Growth of Enterprises; a Case of Youth Enterprises in Butula Constituency, Busia County." University of Nairobi, 2014.

Obisesan, AA. "Credit Accessibility and Poverty among Smallholder Cassava Farming Households in South West, Nigeria." *Greener Journal of Agricultural Sciences*, vol. 3, no. 2, 2013, pp. 120-127.

Ochanda, MM. "Effect of Financial Deepening on Growth of Small and Medium-Sized Enterprises in Kenya: A Case of Nairobi County." *International Journal of Social Sciences and Entrepreneurship*, vol. 1, no. 11, 2014, pp. 191-208.

Ochieng, J et al. "Effect of Management Interventions on Productive Performance of Indigenous Chicken in Western Kenya." *Livestock research for rural development*, vol. 23, no. 5, 2011, p. 2011.

Ogolla, Maureen. "Factors Influencing Poultry Production among Poultry Farmers in Eldoret Town, Uasin Gishu County, Kenya." University Of Nairobi, 2016.

Ogutu, Martin et al. "Effect of the Youth Enterprise Development Fund on Youth Enterprises in Kenya." 2011.

Olagunju, FI and RO Babatunde. "Impact of Credit on Poultry Productivity in South-Western Nigeria." *Journal of Agricultural and Biological Science*, vol. 6, no. 10, 2011, pp. 58-65.

Olowa, Olatomide Waheed and Omowumi Ayodele Olowa. "Factors Affecting Entrepreneurship Development in Agribusiness Enterprises in Lagos State, Nigeria." *Global Journal of Management and Business Research*, 2015.

Omiti, John M and Nancy M Laibuni. "25. Feeding Africa's Growing Population." *AFRICA at a Fork in the Road*, 2015, p. 435.

Oostendorp, Remco et al. "Inclusive Agribusiness under Climate Change: A Brief Review of the Role of Finance." *Current Opinion in Environmental Sustainability*, vol. 41, 2019, pp. 18-22.

Ouma B H."Factors affecting commercialization of Indigenous Chicken in Njiru and kasarani Districts of Nairobi County, Kenya"*university of nairobi repository.*

Pomeranz D. "Impact Evaluation Methods in Public Economics:A Brief introduction to Randomized Evaluation and Comparison with other methods"*Public Finance Review 2017.was Havard Business School working Paper no.16-049.*

Quaye, Isaac et al. "Bridging the Sme Financing Gap in Ghana: The Role of Microfinance Institutions." *Open Journal of Business and Management*, vol. 2, no. 04, 2014, p. 339.

Ratemo, Bonface Matayo and Ngugi Karanja. "Effect of Regulatory Compliance on the Relationship between Public Procurement of Innovation and Supply Chain Performance." *International Journal of Scientific Research and Management*, vol. 5, no. 9, 2017, pp. 7040-7046.

Rosenbaum, Paul R. *Design of Observational Studies.* vol. 10, Springer, 2010.

Rosenbaum, Paul R and Donald B Rubin. "The Central Role of the Propensity Score in Observational Studies for Causal Effects." *Biometrika*, vol. 70, no. 1, 1983, pp. 41-55.

Rotich, Irene et al. "Effects of Microfinance Services on the Performance of Small and Medium Enterprises in Kenya." *African Journal of Business Management*, vol. 9, no. 5, 2015, pp. 206-211.

Rusike, J et al. "Estimating Impact of Cassava Research for Development Approach on Productivity, Uptake and Food Security in Malawi." *Food Policy*, vol. 35, no. 2, 2010, pp. 98-111.

Sparks, NHC. "The Role of the Water Supply System in the Infection and Control of Campylobacter in Chicken." *World's Poultry Science Journal*, vol. 65, no. 3, 2009, pp. 459-474.

Stamm, Andreas and C von Drachenfels. "Value Chain Development: Approaches and Activities by Seven Un Agencies and Opportunities for Interagency Cooperation." 2011.

Stein, Peer et al. "Closing the Credit Gap for Formal and Informal Micro, Small, and Medium Enterprises." 2013.

Stuart, Elizabeth A et al. "Using Propensity Scores in Difference-in-Differences Models to Estimate the Effects of a Policy Change." *Health Services and Outcomes Research Methodology*, vol. 14, no. 4, 2014, pp. 166-182.

Tarwireyi, L and M Fanadzo. "Production of Indigenous Chickens for Household Food Security in Rural Kwazulu-Natal, South Africa: A Situation Analysis." *African Journal of Agricultural Research*, vol. 8, no. 46, 2013, pp. 5832-5840.

Tham-Agyekum, Enoch Kwame. "Assessing Farm Record Keeping Behaviour among Small-Scale Poultry Farmers in the Ga East Municipality." 2010.

Ul-Hameed, Waseem et al. "Microfinance Institute's Non-Financial Services and Women-Empowerment: The Role of Vulnerability." *Management Science Letters*, vol. 8, no. 10, 2018, pp. 1103-1116.

Ullah, Raza et al. "Catastrophic Risks Management at Farm: The Use of Diversification, Precautionary Savings and Agricultural Credit." *Pakistan Journal of Agricultural Sciences*, vol. 52, no. 4, 2015.

Von Pischke, John D. *Finance at the Frontier: Debt Capacity and the Role of Credit in the Private Economy.* The World Bank, 1991.

Wainaina, Priscilla W et al. "Impact of Contract Farming on Smallholder Poultry Farmers' Income in Kenya." 2012.

YEDF. "Yedf Status Report 2011, Retrieved from Http://Www.Youthfund.Go.Ke." 2011.

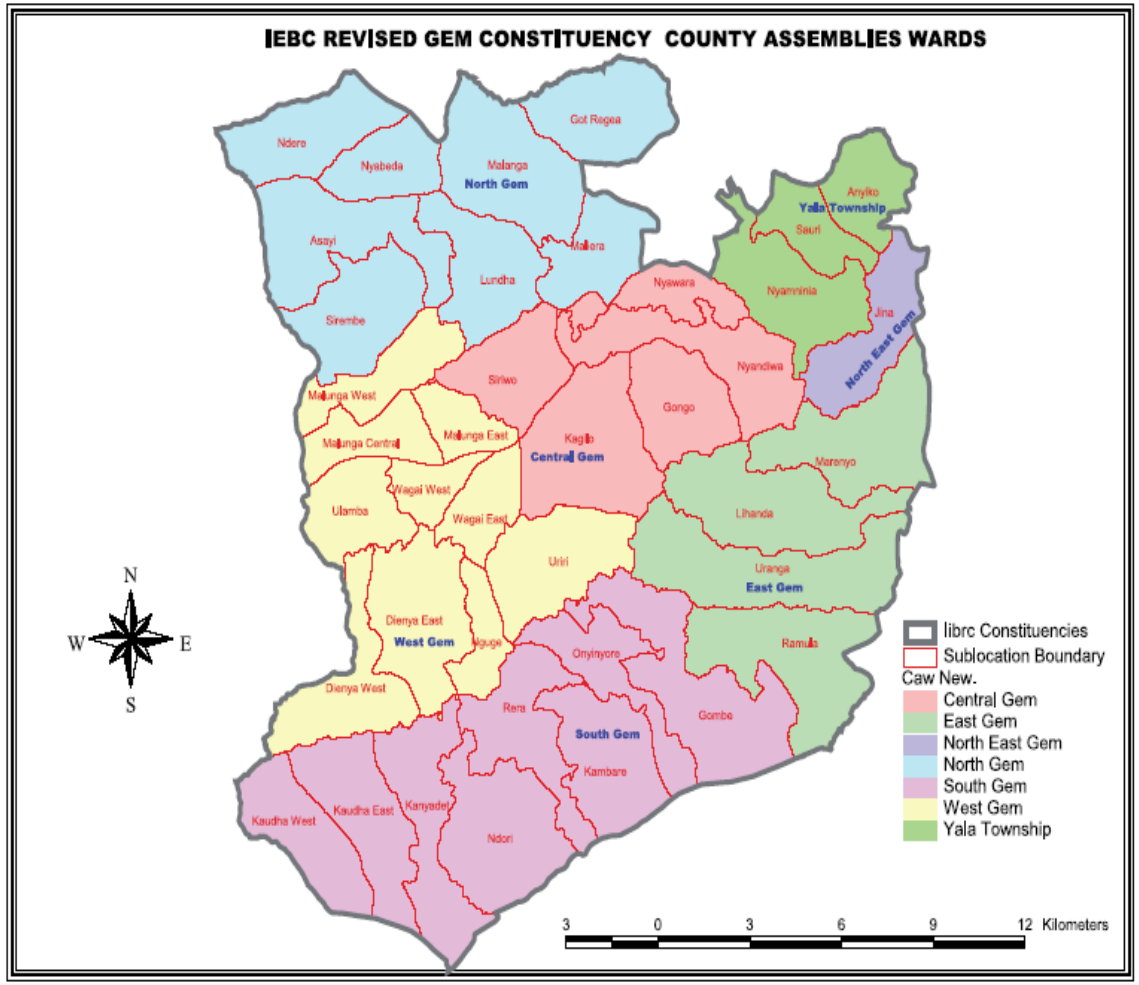
Yi, Yingying et al. "A Reverse Factual Analysis of the Association between Smoking and Memory Decline in China." *International journal for equity in health*, vol. 15, no. 1, 2016, p. 130.

Yusuf, SA et al. "Effects of Microcredit on Small Scale Enterprises in Osun State, Nigeria." *American International journal of Contemporary research*, vol. 4, no. 6, 2014, pp. 190-200.

# APPENDICES

## Appendix A

Map of Gem Sub-County


IEBC REVISED GEM CONSTITUENCY COUNTY ASSEMBLIES WARDS
Got Regea
Ndere
Nyabeda
Malanga
North Gem
Asayi
Lundha
Mallara
Sirembe
Anyiko
Yala Township
Saurl
Nyamninia
Jina
North East Gem
Nyawara
Nyandiwa
Siriwo
Gongo
Malunga West
Malunga Central
Malunga East
Kagilo
Central Gem
Marenyo
Wagai West
Ulamba
Wagai East
Lihanda
Uriri
Uranga
East Gem
Ramula
Dienya East
West Gem
Aguge
Onyinyore
Dienya West
Rera
Gombe
South Gem
Kambare
Kaudha West
Kaudha East
Kanyadet
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W
E
S
librc Constituencies
Sublocation Boundary
Caw New.
Central Gem
East Gem
North East Gem
North Gem
South Gem
West Gem
Yala Township
3 0 3 6 9 12 Kilometers

**Appendix B: questionnaire used for data collection**

**Questionnaire**

This questionnaire is for research purposes only. The information provided during this interview will be treated as highly confidential. You are therefore requested to answer the questions as objectively and honestly as possible giving details were requested without fear of disclosure or reprimand.

**Please tick as appropriate in the box provided after each question**

**INTERVIEW BACKGROUND**

Date of interview: Day.....Month.....Year.....

Enumerators` name……..

Location: Ward.....Sub Location……

**POULTRY FARMER`S BASIC INFORMATION**

1. What is your gender? **Male** ☐ **Female** ☐

3. What is your age? **18-23** ☐ **24-29** ☐ **30-35** ☐ **36-42** ☐ **>42** ☐

4. What is your level of education? (Number of years) **0-5** ☐ **6-10** ☐ **11-15** ☐ **16-20** ☐

☐ ☐

5. What is your main source of income? Poultry farming Horticulture Fish farming Brick making Tree nursery Transport (boda-boda) reals trading Employment Any other (specify) _____

7(a) Are y he house hold hea **es** No

(b) If yes, how many people are in your household……

8. How many people in the household provide labor for the poultry enterprise?……..

9. What size of land do you own for farming----------

10. Does it have a title deed to your name? Yes No

**PART 1: DESCRIPTION OF POULTRY ENTERPRISE**

A. **Enterprise size**

1. What is the nature of your poultry enterprise? Individual Group Family

2 (a) Which type of poultry do you keep? Pure local proved local L s Broil

(b) If you swer above is 2, which improved poultry breed do you keep?

Kari Kienyeji **2**. Kuroiler **3**. Rainbow rooster 4. Ken bro

3. How many years have you practised poultry farming?……

4. How many birds did you begin your poultry firm with? Less than 10 ☐ 10-49 ☐

50-100 ☐ 101-300 ☐ 300-500 ☐ >500 ☐

5. How many birds do you have now?

<10 ☐ 10-49 ☐ 50-100 ☐ 101-300 ☐ 300-500 ☐ .>500 ☐

5. What is the highest number of birds you have ever had? ……

**B. Level of specialisation**

1. What is your role in the poultry value chain? (Tick the appropriate box)

i. Hatching eggs and selling day old chicks ☐

ii. Raising day old chicks and selling at one month after completion of basic vaccination ☐

iii. Raising day old chicks and selling at 3 months old (spring chick) ☐

iv. Raising and selling birds at 6 months and above ☐

v. Formulate poultry feeds and sell to other farmers ☐

vi. Provide poultry vaccination services at a cost ☐

vii. Sell poultry inputs, equipment from agrovet to farmers ☐

viii. Purchase birds from poultry farmers and sell onward to other traders or retailers

ix. Slaughter and sell poultry at market outlet

x. Have a hotel outlet for cooked/ roasted poultry

xi. Transportation of poultry from farmers to the market

2. Among the specified activities (i-xi) that you undertake, which **one** gives you the most returns?

3. If you would choose one area of specialisation, (i-xi above), which area would it be?

4. Which area of the poultry value chain (i-xi) requires the highest amount of funds to run?

**PART II: LEVEL OF MANAGEMENT PRACTICES**

**A. Source of technical information**

1(a) Have you received training that has helped you in your poultry enterprise**?** Yes No (b) If yes, from which organisation did you receive the training?

KAPAP NORTH GEM CBO TECHNOSERVE Ministry of Agriculture West Kenya ASDSP YEDF MVP

Others

(c) What did the training involve? Poultry management practices Business management practices Agribusiness Marketing Other

2(a) Did you receive mentorship from another farmer who was more experienced than you? Yes

No ☐

(b) If yes, who linked you to the farmer?

An organisation ☐ Neighbour ☐ Extension worker ☐ Other ☐

3. Which other communication media have you commonly accessed information about your poultry enterprise?

. Radio Google Face book Whatsapp group TV (Shamba shape up) Newspaper (Seeds of Gold)

4. How ☐ave you n☐ned contact with☐xtension service pr☐?

Weekly ☐ Every 2 weeks ☐ Monthly ☐very three months ☐early ☐rogramme wound up ☐

B. **FARMERS` MANAGEMENT PRACTICE CHECKLIST**

(Tick and score as per the likert scale below)

**(Quality of practice**) 1. Very poor 2. Poor 3. Fair 4. good 5.very good(for question 1)

(**Frequency of practice**) 1. Never 2. Seldom 3. Sometimes 4. Often 5. Almost always (for questions 2-6)

| **MANAGEMENT PRACTICE** | **PARAMETERS** | **STANDARD** | **FARMERS PRACTICE** | **LIKERT SCORE (1-5)** |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| 1. Housing | floor and wall condition | cement | | |
| | | smooth/even | | |
| | | no cracks | | |
| | mud house | smeared with cow dung | | |
| | Ventilation | east-west orientation | | |
| | Front wall | upto 1m high front | | |
| | Wire mesh | front wall end to roof | | |
| | Roof | at least 6 m high roof | | |
| | Perches | avail for resting | | |
| | laying nests | 2sq feet placed darker area | | |
| | Security | chicken run around poultry unit | | |
| | | fenced homestead | | |
| Appropriate bird population | Size of house | Allow for 2 square feet per bird | | |
| | No.of birds | | | |

| | | | | |
|---|---|---|---|---|
| Hygiene | Environment | Avoid damp situations | | |
| | | avoid stagnant water around the house | | |
| | | Clean feeders and drinkers | | |
| | | clean house | | |
| | | litter changed every 3 months | | |
| | | routine disinfection | | |
| 2. Disease control | De-worming | monthly free range | | |
| | | every 3 months - intensive | | |
| Vaccination (KALRO) | Mareks | Day old | | |
| | New Castle Disease | Day 21,8wks,18wks, every 3 months | | |
| | Fowl Typhoid | Week 8 | | |
| | Gumboro | Day14, day 24 | | |
| | Infectious Bronchitis | Day 1 | | |
| | Fowl pox | Wk 3 or 6 | | |

| | | | | |
|---|---|---|---|---|
| 3. Equipment | Feeding Trough | 1 metre per 20 mature birds | | |
| | | round-5kg per15- 20 birds | | |
| | Water | 10 birds per 1 litre drinker | | |
| | | 5 litres` drinker per 100 birds | | |
| Feed | Quality | Factory formulated from agrovet e.g unga feeds | | |
| | | own formulation | | |
| | Quantity | | | |
| | Day old- 1 month | 12-30 g/bird/day | | |
| | 2-3 month | 31-50 g/bird /day | | |
| | 4 months and above | 68-80 g/bird/day | | |
| 4. Chick management | | separate from mother at latest 3 days | | |
| | | raise different ages separately | | |
| 5. Records | Production | no, of eggs laid | | |

| | | | | |
|---|---|---|---|---|
| | | no.hatched | | |
| | | chick survival rate | | |
| | | egg laying cycle per year | | |
| | | disease control | | |
| | financial | input purchases | | |
| | | cost of vaccine | | |
| | | cost of medicines | | |
| | | labour costs | | |
| | | quantity of sell | | |
| | | selling price | | |
| | | selling dates | | |
| 6. Bio-security | waste disposal | away from poultry house | | |
| | Feed | avoid feed collection from markets and funerals | | |

| | | | | |
|---|---|---|---|---|
| | Imports | avoid/vaccinate imported birds | | |

**PART III: PROFITABILITY OF POULTRY ENTERPRISE**

Fill in the tables below representing your returns for the year 2016

| **Item** | **Quantity (Units)** | **Price/ Units** | **Returns per week (Ksh)** | **returns per Month (Ksh)** | **Gross returns in 2016 in Ksh.** |
|---|---|---|---|---|---|
| Mature Birds | | | | | |
| Eggs | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Day old chicks | | | | | |
| Month old chicks | | | | | |
| 4-month-old growers | | | | | |
| Others (specify) | | | | | |

**Operation costs of poultry enterprise 2016**

| **Item** | **Quantity (Units)** | **cost/ Units** | **costs per week (Ksh)** | **costs per Month (Ksh)** | **Total costs in 2016 in Ksh.** |
|---|---|---|---|---|---|
| Day old chicks | | | | | |
| Disease control | | | | | |
| Vaccination | | | | | |
| Equipment | | | | | |
| Housing | | | | | |
| Feeds | | | | | |
| Month old chicks | | | | | |
| Energy | | | | | |
| Transport | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Labour | | | | | |

**PART IV: IMPACT OF YOUTH FUND**

1(a) Have you heard of the Youth Enterprise Fund? Yes ☐ No ☐

(b) If yes, what services does the youth fund provide? ( Tick where appropriate)

(i) Training on poultry management ☐ (v) Business mentorship services ☐

(ii) Business training ☐ (vi) Links products to markets ☐

(iii) Loans to individual youth ☐ (vii) Provides space and infrastructure to do business

(iv) Loans to youth in groups ☐ (viii) Provides opportunities to participate in trade fairs ☐

(c) What kind of projects are funded by the YEDF? **Tick where appropriate**

- Transport (bodaboda) ☐
- Trading (shop items) ☐
- Trading (cereals) ☐
- Jua kali ventures ☐
- Tree nurseries ☐
- Horticulture (e.g kales) ☐
- Poultry production ☐
- Dairy production
- Table banking ☐
- Other (specify) ☐

☐

2 (a) Have you ever accessed the YEDF services for investment in your poultry project?

Yes ☐ No ☐

(b) If your answer is no to the above, what are your reasons for not accessing the loan?

(**Tick where appropriate)**

| NO. | REASON | AGREE | DISAGREE |
|---|---|---|---|
| i | Lack of awareness | | |
| ii | Not aware that it can fund agricultural projects | | |
| iii | Amount of loan to be applied for would not have been sufficient for my capital requirement | | |
| Iv | Not comfortable with the initial requirement to take the loan as a group | | |
| V | Repayment requirements did not suit the poultry project income flow | | |

| | | | |
|---|---|---|---|
| Vi | Applied for the loan but it was not approved | | |
| vii | Saved for the capital I required to invest in the enterprise | | |
| Viii | Received a grant from another organization so did not require a YEDF loan | | |
| Ix | Received a loan from another institution | | |

(c) If you agree to ix) above, from where did you access the loan?

Formal bank (e.g equity) Agree ☐ Disagree ☐

ROSCA Agree ☐ Disagree ☐ Friend/relative Agree ☐ Disagree ☐

Agro vet Agree ☐ Disagree ☐ Other-specify _____

3(a) If your answer is YES to question 2 above which year and month did you first receive the loan……..

(b) What were you able to do with the funds received?

(Tick as appropriate)

(i) Constructed a new poultry house ☐

(ii) Renovated the old poultry unit ☐

(iii) Bought feeders and drinkers ☐

(iv) Bought starter birds ☐

(v) Increased my stock size ☐

(vi) Was able to adhere to the vaccination regime ☐

(vii) Purchased poultry feeds ☐

(viii) Was not able to invest due to other pressing needs that the fund was allocated to ☐

(ix) The loan was given to a group which broke up, so there was no investment ☐

4(a) Have you been able to repay the loan you took to invest in the poultry enterprise? Yes ☐ No

(b) If yes, have you taken a follow up loan to invest in poultry production? Yes ☐ No

(c) If no, to question 4 above, what are your reasons for non repayment? (tick as appropriate) ☐

(i) Poultry enterprise did not generate profits ☐

(ii) family needs were too pressing ☐

(iii) repayment frequency was not in line with rate of income flow from enterprise ☐

5. Have you ever taken a loan to invest in any other agricultural enterprise? Yes ☐ No ☐

If yes, specify……..

6. Which microfinance intervention in your opinion would result in the most significant impact on profitability of your poultry enterprise if received? (Tick as appropriate)

(i) Micro credit ☐

(ii) Entrepreneurship training ☐

(iii)Market linkage ☐

(iv)Mentorship programme ☐

☐

(v) Savings programme

(vi)Micro insurance ☐

(viii)Technical training ☐

**Thank you for your time and the valuable information you have offered. God bless you.**

**Appendix C: Published Journals**

1. Journal of Economics and Sustainable Development www.iiste.org

ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online), Vol.9, No.17, 2018 62

**Determinants of Credit Uptake Among Smallholder Improved Indigenous Chicken Farmers in Kenya**

2. International Journal of Agricultural Extension and Rural Development ISSN 3254-5428 Vol. 7 (2), pp. 001-005, February, 2019. Available online at www.internationalscholarsjournals.org © International Scholars Journals

**Impact of credit uptake on performance of improved indigenous chicken enterprises among smallholder farmers in Kenya**

**Appendix D.**

*Descriptive statistics of the respondents' characteristics.*

| Variables | Frequency (N) | Percentage (%) |
|---|---|---|
| **Gender** | | |
| Male | 102 | 47.00 |
| Female | 115 | 53.00 |
| **Age** | | |
| <30 | 19 | 8.76 |
| 30 – 35 | 52 | 23.96 |
| 36 – 42 | 34 | 15.67 |
| >42 | 112 | 51.61 |
| **Education Level** | | |
| No education | 40 | 18.43 |
| Primary | 80 | 36.87 |
| Secondary | 69 | 31.8 |
| tertiary | 28 | 12.9 |
| **Source of Income** | | |
| Poultry Farmers | 95 | 47.74 |
| Cereal Traders | 48 | 24.12 |
| Employed | 33 | 16.58 |
| Other Source | 23 | 11.56 |
| **House hold head** | | |
| No | 61 | 28.11 |
| Yes | 156 | 71.89 |

| | | |
|---|---|---|
| **Household members** | | |
| 1 to 5 | 132 | 60.83 |
| 6 to 10 | 74 | 34.1 |
| >10 | 11 | 5.07 |
| **Number of House members offering labour** | | |
| None | 7 | 3.23 |
| 1 to 5 | 193 | 88.94 |
| above 5 | 17 | 7.83 |
| **Farm size** | | |
| <1 | 66 | 30.41 |
| 1 to 4 | 124 | 57.14 |
| >4 | 27 | 12.44 |
| **Own farm** | | |
| No | 123 | 56.68 |
| Yes | 94 | 43.32 |