INFLUENCE OF CONTRACT FINANCING ON INCOME GROWTH AMONG POULTRY FARMERS IN KIAMBU COUNTY

JANE NJERI MACHARIA

A RESEARCH PROJECT SUBMITTED TO THE SCHOOL OF ENTREPRENEURSHIP, PROCUREMENT AND MANAGEMENT IN PARTIAL FULFILLMENT OF AWARD OF MASTER OF SCIENCE IN FINANCE OF JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY

MAY, 2018

DECLARATION

Declaration by Student

This research project is my original work and it has not been presented for a degree in any other university.

Signature **……………………………** 	Date………………………

Jane Njeri Macharia

HD335-C007-7883/2015

Approval by the Supervisor

This project has been submitted for examination with my approval as the University Supervisor.

Signature **……………………………** 	Date………………………

Mr. Solomon Ngahu

Lecturer JKUAT, Kenya

DEDICATION

To my Loving Mum Violet Mwihaki Macharia and Daniel Maina for their tireless prayers and support which has made this project completion possible.

ACKNOWLEDGEMENT

This work is the result of God who gave me the grace and wisdom to undertake it and many who invested their time, energy and interest of the success of this project. I'm grateful to my supervisor Mr. Solomon Ngahu and management of JKUAT Nakuru Campus for their support while conducting this research project.

ABSTRACT

The recent growth in contract farming schemes particularly in developing countries has sparked controversy over its economic and welfare impacts on participating smallholders. Thus, this study empirically examined the influence of contract financing on income growth among poultry farmers in Kiambu County. More specifically the study examined the influence of capital, advance pricing, contractor credit services and veterinary services on income growth among poultry farmers in Kenya. Theories underpinning this study included; Agency Theory, Efficient Market Hypothesis and Center - Periphery Theory, the researcher used descriptive research method. The target population for this study was 60 contract farmers in Kiambu County. Primary data was used which was collected using structured questionnaires. Data was analyzed in form of descriptive (frequencies, percentages, means and standard deviations) and inferential statistics (chi-square, correlation analysis and regression analysis) with an aid of SPSS as a tool for analysis. The research findings were presented in statistical tables. The findings indicate there exist statistically insignificant, positive causal relationship between capital and income growth among poultry farmers according to joint regression model coefficients results ($\beta = 0.014$, $p > 0.05$), advance pricing has significant positive influence on income growth among poultry farmers based ($\beta = 0.504$, $p < 0.05$). Contractor credit services have a significant influence on income growth among poultry farmers, as evidenced by the statistically significant positive relationship as shown in the overall regression model ($\beta = 0.326$, $p < 0.05$). There exist statistically significant, positive causal relationship between veterinary services and income growth among poultry farmers ($\beta = 0.662$, $p < 0.05$). It was concluded that chicks provided to farmers by Kenchic as initial capital are a key pillar in enhancing farmers' engagement in contract farming. Continuous compensation for sudden chicks' death Syndrome or immature death of chicks has also been a motivating factor that has enhanced loyalty among farmers towards contractual poultry farming with Kenchic. Contract finance helps in shifting of price risks to processors among poultry farmers acting as a good hedge against price fluctuation uncertainties. Credit facilities guaranteed by contracting firms have favorable terms since they do not attract interest costs during the actual payment for services. It was recommended that the management of Kenchic should put in place a strategy where of Pan Feeders, automatic drinkers and chick drinkers are provided to poultry farmers. This will cushion farmers on costs of buying these items thus minimizing their overheads and hence increasing their income level. It is recommended that there should be a renegotiation between the contractor and the financial institutions that advance credit facilities to farmers on the guarantee by Kenchic. The renegotiation will ensure that some bottlenecks are addressed including repayment terms since a fair majority of respondents held the opinion that penalties charged in case of delayed payment of credit facilities are not realistic.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF APPENDICES

ABBREVIATIONS AND ACRONYMS

CF   **:** Contract Financing

EFS   **:** Extension Field Staff

GDP   **:** Gross Domestic Product

IFAD   **:** International Fund for Agricultural Development

KEPOFA   **:** Kenya Poultry Farmers Association

SPSS   **:** Statistical Package for Social Sciences

DEFINITION OF TERMS

Contract Financing: is a financing scheme where farmers access working capital for an ongoing or upcoming project against a signed contract (Bernice, 2016).

Contract farming: it's a form of farming where there is an agreement between farmers and processing and/or marketing firms for the production and supply of agricultural products under forward agreements, frequently at predetermined prices (Eaton & Shepherd, 2001).

Contract Farming Arrangement: It's an arrangement where downstream agribusiness firms delegate production of primary agricultural products to farmers under contracts (Bellemare, 012).

Transaction costs: These are costs incurred whenever goods and services are transferred between individual entities or groups through contracts (Sykuta, Klein, & Harvey, 2007).

Capital: includes the assets and capital investments that are needed to start up and conduct business, even at a minimal stage. They are relatively durable and can be used repeatedly in the production of goods (Bijman 2008). In this study capital entails chicks, feeding equipments and housing poultry dimensions.

Contractor credit Services: Is a legal contract in which a contractor arranges to loan a customer a certain amount of money for a specified amount of time. The credit agreement contains all the rules and regulations associated with the contract (Simmons, 2002).

Income Growth: is the increase overtime of revenue a business earns from selling its goods and services (Bijman, 2008).

Advance Pricing: is ahead-of-time agreement between a farmer and the contractor on an appropriate pricing methodology over a fixed period of time (Miyata et. al., 2009).

Veterinary Services: Services provided by licensed veterinarians on poultry species such as chickens, turkeys, and ducks. The services include providing basic

examinations, giving vaccinations, conducting inspections, evaluating meat or eggs and devising flock health management procedures (Francis, 2012).

Rearing Cycle: is the process by which broiler chickens are reared and prepared for meat consumption in this case 35 days (Kenchic Limited, 2017)

CHAPTER ONE

INRODUCTION

1.1 Background Information

Contract financing (CF) has been seen as a promising linkage strategy between smallholders and agribusiness firms with vested interests in sharing the risks associated with the production of a specific crop. Through cooperation with smallholders either by providing the necessary farm inputs and technical assistance to farmers and/or through direct control of the farm production, agribusiness firms gain access to the land and labour of smallholders and are also enabled to meet their supply needs more regularly (IFPRI 2006).Contract financing is a form of contract farming. Consequently, the World Bank also recognizes contract financing as an avenue to create strategic partnerships between private capitals and smallholders which would lead to the transfer of modern agricultural technology, quality inputs, entrepreneurial development of smallholders and market growth (World Bank, 2005).

Contract financing has become an increasingly important aspect of agri-business as well as in the poultry sector in recent years. Contract financing in poultry farming could play an effective role in improving the economic status of small scale farmers by increasing their income, aside from providing nutritious food through meat and eggs. Contract financing could help alleviate poverty in most rural areas and empower poultry farmers to expand their capacity in order to effectively and consistently supply to other processing companies (Bernice, 2016). Alongside the neoliberal market reforms, other factors have led to the rise of contract financing arrangements in Kenya. These include; the revolution of the supply chain management which has been prompted by the rise of supermarkets, increased urbanization rates coupled by an

increase in per capita incomes of the rising middle class nonfarm population (IFAD, 2010; Costales & Catelo, 2008).

Participation of smallholders in contract financing, which in turn impacts their welfare in various ways, is influenced by socioeconomic and institutional factors. For example, smallholders are constrained in terms of productive resources like water for irrigation and land, which often limit their production. Similarly, smallholders' limited access to production technologies and support services like credit, extension education and information on uncertainties regarding risks associated with new technologies deter their participation in such schemes (Barrett *et al.*, 2012). Depending on the nature of the contract, contract farming may affect smallholder farmers' welfare through a number of pathways.

First, contracts that have interlinked services such as training, credit and technical advice including market information aim at alleviating constraints on smallholder productivity, thereby increasing marketed surplus. Second, contracts act as a strategy for fostering smallholder participation in restructured markets and value chains, thereby increasing and stabilizing smallholder incomes (Bellemare, 2012). Third, contracts that allow prices of outputs as well as the terms to be decided in advance may reduce risks associated with price fluctuations (Baumann, 2000; Eaton and Shepherd, 2001), thereby providing incentive mechanisms for smallholders to allocate resources efficiently and maximize returns on factors of production (Du *et al.*, 2013; Saenger *et al.*, 2013).

Strohm and Hoeffler (2006) argue that contract financing has been gaining popularity in developing countries. Some of the enterprises where contact financing is widely used are French beans and other horticultural crops (Kenya and Ethiopia), fruits such

as pineapples mangoes and passion fruits (Ghana), cotton (Zimbambwe) and poultry (Kenya). Indeed, much of the success in the horticulture industry in Kenya, Zambia and Ethiopia has for instance been attributed to contract farming with producer organization (Narrod et al, 2009; Okello and Swinton, 2007)**.**

Sachiko, Nicholas and Dinghuan (2009) on their study on impact of contract financing on income: Linking small farmers, packers, and supermarkets in China. Their study compared contract and non-contract growers of apples and green onions in Shandong Province, China in order to explore the constraints on participation and the impact of contract financing on income. They found little evidence that firms prefer to work with larger farms, though all farms in the area are quite small. Using a Heckman selection–correction model, they found that contract financing raises income even after controlling for observable and unobservable household characteristics. These results suggest that contract financing can help raise small-farm income. In their result they suggest that contract farmers earn more than their neighbours growing the same crops even after controlling for household labor availability, education, farm size, share of land irrigated, and proximity to the village leader. Furthermore, the treatment effect regression model suggests that there is no selection bias caused by unobserved differences between contract and non-contract farmers such as industriousness or intelligence. Finally, direct questions to contract farmers revealed that three-quarters of them perceived an increase in income since they began contracting.

Kenya is categorized as an agriculture-based country due to its high share of agricultural contribution to GDP growth which averages at 32% (World Development Report, 2008). This is articulated by the Agricultural Sector Development Strategy

(2009), which states that 70% of the population on average is predominantly rural of which close to 80% depend on agriculture for their livelihoods either directly or indirectly. According to ASDS (2009), the livestock sub sector contributes 17% with poultry contributing 6.1% of the livestock GDP. Poultry production is a key income generating activity for rural and peri urban farmers in Kenya and is estimated to contribute to the livelihoods of 21 Million people (Mwanza, 2010).

Contract arrangements in the Kenyan farming industry fall under the four models as explained by Eaton and Shepherd (2001) namely centralized model, multipartite model, intermediary model and the informal model. The centralized model involves a centralized processor and/or buyer procuring from a large number of small-scale farmers. The cooperation is vertically integrated and, in most cases, involves the provision of several services such as pre-financing of inputs, extension and transportation of produce from the farmer(s) to the buyers' processing plant. Multipartite contract model arises when a combination of two or more organizations (state, private agribusiness firms, international aid agencies or non-governmental organizations) work together to coordinate and manage the cooperation between buyers and farmers.

An intermediary model, on the other hand, shows many characteristics of a centralized model with the difference that they act as an intermediary on behalf of another firm. Normally, the intermediaries organize everything on behalf of the final buyer starting with input supply, extension service, payment of the farmers and final product transport. Indeed, handling several thousands of out growers involves significant management effort and therefore it might be economically attractive for a buyer to outsource this task to an intermediary. Lastly, informal arrangements involve

casual oral agreements between contracting parties and regularly repeated marketing transactions, but are characterized by the absence of written contracts or equally binding and specifying documents.

According to the Population and Housing Census (2009), poultry population estimates were approximated at 32 Million birds with indigenous birds dominating at 81% while commercial birds (both hybrid layers and broilers) stood at approximately 14 % of the total poultry population. Commercial layers represented 8.3% or approximately 3.1 Million birds (Omiti, 2010). There has been tremendous growth of the commercial poultry sector in Kenya over the years especially by smallholder farmers due to the rising opportunities for income generation, employment, and other sector linkages such as: poultry feed industry, hotel industry and input supply industry (Mwanza, 2010; Omiti, 2010). For instance, Kenya Poultry Farmers Association (KEPOFA) approximates that 70% of the livestock feeds manufactured in Kenya constitutes poultry feeds.

Commercial poultry production is concentrated in the urban centers of Nairobi, Mombasa, Nakuru, Kisumu and Nyeri where ready urban markets are available. This has led to the growth of commercial hatcheries located in the peri-urban areas, which sell hybrid broiler and layer chicks to commercial farmers (Nyaga, 2007). Kenya has one of the most well-developed commercial poultry industries in Africa (Nyaga, 2007). Among the commercial poultry producing areas in Kenya, few counties such as Kiambu, Kisumu and Nakuru counties have some form of contractual arrangement. The poultry contracting firm in Nakuru County is Kims Poultry Care Centre while in Kisumu is Chicken Basket, both work with smallholder farmers. On the other hand, the poultry contracting firm in Kiambu County is Kenchic Limited that deals

exclusively with medium and large scale farmers. This study focused on influence of contract financing on income growth among poultry farmers in Kenya.

1.2 Statement of the Problem

A farmer's decision to participate in contract financing is affected by different physical, social and economic factors. This may explain why many poultry farmers are not participating in contractual arrangements despite the provision of higher prices compared to the spot market. For the farmers, the benefit of contract financing depends on different factors such as the type of agricultural sector, behavior of the companies and other socioeconomic factors. For example, in some cases when farmers have no other option than trading with a single company, contractual arrangements may not be beneficial. Even though the contract approach is appreciated by different companies, it is questionable whether it really improves the farmers' income. Most contract financing arrangements entail provision of free veterinary services such as free training on the farmers on key management practices of the chicken. Equally frequent checkups and vaccinations are provided to the chicks. Some contract farmers argue that this has benefitted them, as finances that would be used on veterinary services are channeled to more useful aspects of the project. However, some farmers argue that the veterinary services provided by the contracting firms are very poor. They claim that the veterinaries are very negligent and thus key issues such as periodical vaccination and continuous checkups are not carried out thus a lot of loss has been incurred. The farmers argue that the veterinaries are not motivated in their work thus leading to inefficiencies in their performance. Contracting firms usually set an advance price at which they will buy the fully matured chickens after a rearing cycle. This price is usually set so as to attract most farmers to contract financing as it

protects them from price fluctuations in the market. To some farmers this is an advantage in cases whereby the current market prices are minimal than the advance price set. Contrary to this is whereby the market prices are higher than the advance price set. The study sought to find out that if contract financing is really beneficial to the contracting farmers. Contract financing is taken as one of the strategies for enhancing production efficiency and enhancing marketing access for small farming business; however, not much research has been undertaken in Kenya pertaining to this. Therefore, this led to research study on the influence of contract financing on income growth among poultry farmers in Kiambu County.

1.3 Objectives of the Study

The study was guided by the following objectives.

1.3.1 General Objective of the Study

The study examined the influence of contract financing on income growth among poultry farmers in Kiambu County.

1.3.2 Specific Objectives of the Study

In achieving the general objective, the study was guided by the following specific objectives:

i. To examine the influence of capital on income growth among poultry farmers in Kiambu County.

ii. To examine the influence of advance pricing on income growth among poultry farmers in Kiambu County.

iii. To determine the influence of contractor credit services on income growth among poultry farmers in Kiambu County.

iv. To evaluate the influence of veterinary services on income growth among poultry farmers in Kiambu County.

1.4 Hypotheses of the Study

The following research hypotheses were formulated and tested:

H_{01}: Capital has no significant influence on income growth among poultry farmers in Kiambu County.

H_{02}: Advance pricing has no significant influence on income growth among poultry farmers in Kiambu County.

H_{03}: Contractor credit services have no significant influence on income growth among poultry farmers in Kiambu County.

H_{04}: There is no significant influence of veterinary services on income growth among poultry farmers in Kiambu County.

1.5 Justification of the Study

Farming being a leading economic activity in Kenya generates a lot of interests from all economic fronts. The optimization of profits from farming activities is a major concern by all stakeholders in an effort to enhance the income levels from agricultural activities. Therefore this study will be significant in various ways to the stakeholders. Firstly the study will provide information on the viability of contract financing in Kenya. This will enable policy makers in the ministry of agriculture to come up with policies that will enhance uptake of contract financing in the country as a whole. Secondly the study will be important to the county government of Kiambu as it will provide information on the potentiality of this form of farming and help them come up with programs aimed at promoting this form of farming. This will go a long way in

alleviating poverty levels in the region. Thirdly the study will expose to the non-contracting farmers on the benefits of contract financing thus enabling them adopt contract farming. The study further will contribute to the existing body of literature on contract financing and the growth of income among poultry farmers. This will provide a basis for which future researchers can base their research on.

1.6 Scope of the Study

The study was limited to the influence of contract financing on income growth among poultry farmers in Kiambu county Kenya. Kiambu County was chosen because it has medium and large scale farmers' who are contracted farmers. Therefore, accessibility of contracted farmers in this region formed the best target for this study. The study was conducted in the months of December 2017 and January 2018. The study consumed up to 120,000 Kenyan Shillings which was funded by the researcher.

1.7 Limitations of the Study

During the research process, the researcher experienced a number of limitations, however the limitations did not have a significant effect on the empirical findings. Firstly, the study was limited to poultry farmers in Kiambu County, the case study would not have been adequate to warrant generalization of the results. However the researcher did a census survey in a bid to select a sample size that was adequate for making inferences. Additionally, some respondents were unwilling to provide information for fear that the information was sensitive and confidential. The researcher ensured proper communication was made for the purpose of the study and assured the respondents of confidentiality on information provided. Another limitation was the nature of data collection instruments and procedures. The questionnaires which were self-structured and self-administered relied on the honesty of respondents

9

in indicating their responses. The variables used in this study were pure attitudinal survey thus subjective in nature. The responses were thus based on emotional attitude of the respondents which may have kept changing as at the time of completing the data collection instruments. Pre testing of the data instruments and selection of multiple responses through the census survey helped in delimiting this subjective nature aspect.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter explores in depth the concept of contract financing and income growth in poultry farming through a review of the various theories as well as empirical studies. The chapter further presents a conceptual framework to illustrate the interrelationship between the independent variables and the dependent variable. Finally the chapter presents a summary of literature and the research gaps.

2.2 Theoretical Framework

This research was anchored on Agency theory, Center-Periphery theory and Efficient Market Hypothesis. These theories formed the basis for this study's investigation.

2.2.1 Agency Theory

Jensen and Meckling (1976) the proponents of this theory argued that it is inevitable to avoid agency costs in contractual agreements Agency costs are the costs that arise when there are conflicts of interest between the agents and the principals (Berk & DeMarzo, 2007). Contract financing is a vertically integration form of production between the growers of an agricultural product and buyers or processors of that product (Harvey *et al*., 2005). Contracts may provide productions inputs, credit and extension services to the growers in return for market obligations on such considerations as the method of production, the quantity that must be delivered and the quality of the product (Warning and Hoo, 2000). Contracting farming scheme can be modeled as a principal-agent game between a firm and a grower of which the firm acts as the principal and a grower as the agent. In contract financing farmers find a

means to manage risk in production and marketing, as contract farming being fundamentally a way of allocating risks between growers and firms (Warning and Hoo, 2000; Mshiu, 2007). The two work together to produce and market the crop. The firm chooses growers with whom it would like to contract and sets the contract terms. The growers in turn choose whether to participate or not to participate. The combination of these choices describes the selection process for the contract-farming scheme. The benefits participants get will depend on the terms of the contract and their own characteristics (Warning and Hoo, 2000; Mshiu, 2007). Baumann (2005) argues that with appropriate enabling environment the potential advantages of contracting to farmers and agribusiness firms tend to outweigh the potential disadvantages. To the extent that the benefits from a contract-financing scheme accrue more to larger growers than to smaller growers; the scheme will reinforce income stratification. To the extent the opposite is true; the scheme will have an equalizing effect (Warnings and Hoo, 2000). This theory was relevant to this study since parties to contract will choose to contract with one another based on the gains they accept to obtain from the contract. Moreover, the transaction costs and information costs in the market environment in which production takes place jointly influences both processes (Warnings and Hoo, 2000; Baumann, 2005).

2.2.2 Center - Periphery Theory

This study was underpinned on the theoretical prepositions by Samir Amin (1980), a Neo Marxist and a proponent of dependency theory which holds the view that imperialism has actively underdeveloped the peripheral societies or at the very least obstructed their development (Martinussen, 1997). Amin drew his conclusions chiefly from empirical analyses of West Africa which were primarily concerned with the conditions and relations of production. According to Amin (1980), the peripheral

economy is characterized by two sectors, the center which plays a determining role in creating and shaping the market and the export sector while the periphery serves as the source of capital in the form of raw materials and labour which are extracted by the center at prices unfavorable to the peasants. In addition, there are no development promoting links between agriculture and industry in the periphery hence the periphery fails to be self reliant (Martinussen, 1997).

The periphery therefore depends entirely on the center for industrial goods necessary for production of raw materials (Amin, 1980). This relationship exposes the periphery to a dependency state where the external demand of industrial goods from the center continues to be the principal driving force in maintaining the dependent relationship. Amin (1980) notes that the center has objectively sustained the dependency relationship and gained dominance over the periphery by ensuring there is minimal development of industry in the peripheral so that it may continue to sell industrial goods in the periphery.

This theory was relevant to the current study because on one hand the production relations in the contract financing arrangement are defined by the poultry farmers who obtain pre-financed inputs and in exchange provide labour, land and the poultry produce. On the other hand the contracting firms provide industrial goods, chiefly in form of poultry feeds on credit basis after which they obtain surplus value in form of poultry produce derived from the pre-financed inputs, labor and land. The theory provided an appropriate framework to analyze the nature of exchange relations between the farmer in poultry farming and the contract financing companies and establish whether the prepositions of the theory do hold or otherwise.

2.2.3 Efficient market hypothesis (EMH)

Fama and French, (1992) stated that the market is efficienct, therefore it is then impossible for participants to beat the market. The theory can be explained in three ways: allocative efficiency, operational efficiency and information efficiency. A market is allocatively efficient if it directs savings towards the most efficient productive enterprise or project. In this situation, the most efficient enterprises will find it easier to raise funds and economic prosperity for the whole economy should result. Allocative efficiency will be at its optimal level if there is no alternative allocation of funds channeled from savings that would result in higher economic prosperity.

Operational efficiency relates to the cost of the borrower and lender, of doing business in a particular market. The greater the transaction cost, the greater the cost and therefore the lower the operational efficiency. Information efficiency reflects on the extent to which the information regarding the future prospect of a security or product is reflected in its current price. If all known information is reflected in the product price, then investing in it becomes a fair game. This theory was essential to the research in that the contractual arrangements reduce transactional costs of the poultry farmers thus operational efficiency is enhanced. Equally information efficiency is upheld as the contracting firms have the relevant information pertaining to the market prices.

2.3 Empirical Review

Past studies have been conducted relating to influence of contract financing on income growth among farmers.

2.3.1 Capital Requirement and income growth

Availability of capital determines how easy or difficult will it be to start up the business and eventually expand it. Businesses such as poultry farming on large scale are capital intensive. If the farming businessmen do not have access to sources of capital such as loans, the output will be low. In many African countries, farmers lack access to credit facilities. Many banks do not prefer taking the poultry and the farm structures as collateral and thus end up closing out many small and medium farmers as a result of inadequacy in security provided for the loans (Kwesisi, Margret & Sheila, 2015).

Smallholders may enter contracts to reduce transaction costs of accessing new markets, borrowing, managing risk, acquiring information or increasing employment opportunities (Tripathi et.al, 2005). A study by Patrice (2006) on factors that influence participation in a sugarcane contract farming scheme and the impact of contract participation on sugarcane farm households in Migori. The study shows that the contracted sugarcane growers were not necessarily better off than non-contracted farmers from welfare perspective. The contracted sugarcane farmers were experiencing a number of problems including higher cost of administering the contract, than those for the non-contract growers.

Birthal, Joshi, and Gulati (2005) found that the gross margins for contract dairy farmers in India were almost double those of independent dairy farmers, largely because contract growers had lower production and marketing costs. An agribusiness firm incurs very high transaction costs when engaged in informal markets in developing countries where quantity, quality and regularity in delivery are unpredictable owing to high levels of environmental and behavioral risk (Da Silva &

15

Rankin, 2013). These uncertainties discourage investment in assets required to add value to products. The seasonality and perishability of agricultural products also increases the complexity of transacting, particularly when markets require specific quality standards and credence attributes in products. Complexity increases transaction costs by increasing the uncertainty of supply, by increasing information and monitoring costs, by increasing the need for assets that have little value in alternative uses, and by increasing the cost of renegotiating incomplete contracts *ex post* (Bhattarai, Lyne, & Martin, 2013).

In a recent study to assess the impact of external funding on SME growth, the estimates showed that increasing the depth of credit pushes up the profit level of enterprise in all sample countries that were studied (significant at the 1% level). This showed that a firm's access to formal finance is a factor in facilitating its business growth. The extent of sales value in SMEs was typically found to be smaller than in large firms, being attributed to their constrained levels of credit access (Shinozaki, 2012). For developing countries, there are other potential benefits associated with CF. Since farm scale tends to be small, farmers are generally less educated, production and management technologies are less efficient, and infrastructure such as transportation, cold storage, and information channels are underdeveloped; contracting with a large agribusiness firm may be the only way farmers in developing countries can access higher end markets and receive higher returns (Barrett et.al., 2012). Transaction cost reduction is also an important motive given relative scarcity of resources (Bijman 2008). These two motives may be more important than the risk reducing motive (Wang et. al., 2011).

2.3.2 Advanced Pricing and Income Growth

A major source of risk that could possibly influence smallholders' decision to opt for contract production is price fluctuations which is common with most agricultural products due to the uncertain nature of the local agricultural output market. For this reason, the conditions of payment that a contracting firm adopts in its contract design to farmers for delivering the agreed quality and quantity of product is important to the smallholder. The commonly used price options in contract farming are fixed and variable options (Miyata et. al., 2009).

A fundamental feature of contract farming is the shifting of risk from producers to processors since it is a form of futures market. Production and price risks are important features of poultry farming. Risk sharing is one of the widely cited reasons for contracting. Numerous studies of contract financing emphasize risk reduction as a principal incentive for producers to enter in to contracts. Much of the price risk is reduced, in contract financing, by the use of a predetermined price rather than the market price (Martinetz, 2005).

Lucas et.al. (2016) carried a study on assessing challenges and prospects of contract farming schemes in Tanzania. They concluded that there is need to improve contract farming in the country. These include: availing and facilitating smallholder farmers access to long-term sources of finance; contract enforcement; improvement of transport infrastructure to areas surrounding the schemes; establishment of irrigation schemes for sugar, tobacco and cotton; establishment of competitive environment for the cash crops; and step up public awareness on the significance of contract financing in raising incomes and welfare of farmers.

2.3.3 Contractor Credit Services and Income Growth

On top of technical efficiency, financial constraints have always prevented farms from gaining higher economic efficiency. This is especially true for small and poor farms without credit or collateral to obtain financing in developing countries. CF can help farmers receive credit from financial institutions, and in-kind credit such as seeds, fertilizers, and other inputs directly from the firms (Simmons et al. 2005; Ma et al. 2011).

Simmons et al. (2005) considered farmers access to credit as one potential motive for contract participation. They find that credit constraints are not significant in the corn and rice industry, but positive for broiler growers. This significant effect (for broilers) is intuitive because farmers with poor access to credit may be particularly vulnerable to market fluctuations, and may find increased safety in a contract. Simmons (2002) summarized possible reasons for engaging in CF from the smallholder perspective as: access to product markets with high transactions costs; access to relatively inexpensive credit where - for various reasons - they face high interest rates or credit is unavailable; access to services for managing on-farm risk; and access to information, inputs, logistics and marketing at relatively low cost.

Many of the contractors provide desired or required inputs, technical advice and machinery services (Huh, Athanassoglou, & Lall, 2012; Melese, 2012). Farmers can gain access to credit directly through the contract farming scheme or indirectly from banks, using contract farming as collateral. In the multipartite model of contract for example, the agribusiness company can become involved in a joint venture with a local bank that will provide growers with credit for the purchase of fertilizer, seeds, and other inputs. At harvest time, the company will pay growers the contract price,

but take off a sum that goes to the bank to repay its loan to the grower (Vermeulen & Cotula, 2010).

In an imperfect input market situation or in a situation where there are not many suppliers of inputs, smallholders have limited access to specialized inputs. They may consider to participate in CF in order to have access to such inputs from the contracting firm, especially in the light of the fact that public provisions of agricultural inputs and services especially in developing countries have been noted to be inefficient and ineffective due to unreliable delivery (Dorward et.al., 2004) and also due to political interference (Banful, 2010).

Bellemare (2012) studied the welfare impacts of contract farming on smallholders in Madagascar and concluded that participation in CF by smallholder farm households did not only increase net household income significantly but also had a spillover effect on income from other agricultural sources than CF, such as livestock. Key and Runsten (1999) had mixed results from their study of contract farming and smallholders in Latin America. On the positive side, the study noted that smallholders who participated in CF enjoyed enormous benefits such as increased household income, access to new markets, technical assistance, specialized inputs and financial resources as against non-participating smallholders. On the negative side, however, the study noted that in areas where agribusiness firms chose to contract with large-scale farmers to the exclusion of smallholders, the latter was made worse off.

2.3.4 Veterinary services and income growth

Non-price factors involved in the contracts, such as technical assistance, training and education could further help farmers to improve their efficiency, productivity and profitability. Improving technical efficiency of poultry farmers has the potential to

increase their productivity, total output, and incomes without requiring increase in inputs or change of technology (Ruben and Sáenz-Segura, 2008; Chakraborty, 2009). Using cross-sectional data from farmers in Tanzania, Joseph A.Kuzilwa et al., 2015 found a significant selection bias. Contract farming significantly increases the yield potential but lowers the average group technical efficiency. As the first effect is slightly larger than the second, a small positive effect of contract farming on productivity was observed.

Greater consumer consciousness of health and safety issues generally translates into a demand for products that are not only healthy but also are produced in a healthy environment. Consumers may be prepared to pay a premium for products that originate from approved bio secure farms, even though the products' quality might not differ from the quality of products from ordinary farms. Nerlich et al. (2009) found that farm-gate bio security was not only beneficial in reducing disease risk but also sent out a symbolic message to consumers that the product was safe.

Masakure and Henson (2005) explored the motivations behind the decisions of small scale producers to grow non-traditional vegetables under contract for export. Based on a survey among smallholders in Zimbabwe (in 2001-2002), they found four factors motivating contracting, namely market uncertainty, indirect benefits (knowledge acquisitions), income benefits, and intangible benefits (status). Guo et al. (2005), in their study of contract farming in a number of eastern provinces in China, found that farmers enter CF arrangements to obtain the following advantages: price stability, market access, and technical assistance to improve product quality.

Segura (2006), in his study on contract in the pepper and chayote supply chains in Costa Rica, provides empirical support for this argument. He found that contracts

have one or more of the following functions for farmers that consider the production of high value crops: (1) a security device to enable farmers to take up new production activities and to gain access to specialized markets; (2) a provision of incentives to make the investments needed for specialty production; and (3) a provision of information on specialty markets.

Francis (2012) did a study on the role of agricultural extension services in agricultural transformation for rural poverty reduction. He conducted a survey study of Ashanti region. He found that majority of agricultural producers in Ghana still need Agricultural Extension Services as a major agricultural transformation strategy. He recommended for the provision of extension services in the country. Some of these include disseminating technology to farmers in manageable groups of a maximum of twenty, increasing logistical and Extension Field Staff (EFS) capacity, motivating Field Staffs, institutionalizing provision of credit in kind and establishing a National Extension Services Provision Fund to help make extension services delivery sustainable.

2.3.5 Income Growth

Earning additional income is a primary motivation for farmers to enter contracts (Bijman, 2008). Smallholders enter the contract if their expected gain of contracting is greater than their reservation utility (Barrett et al., 2011; da Silva, 2005). Even though earning additional income is the primary motivation for farmers to engage in contract farming, farmers may also contract for other reasons (Prowse, 2012). Contract farming can also be used to allocate risk between the smallholders and the contracting firm (Bogetoft and Olesen, 2004). Smallholders usually take the production risk, whereas the contracting firms usually face the marketing risk (Bogetoft and Olesen,

2004). Bogetoft and Olesen (2004) argue that most of the smallholders use contract farming to diversify the risk rather than to maximize the production volume.

Contract farmer arrangements allow farmers to have access to an array of agricultural services which they would otherwise not have access to. By reducing risk, uncertainty and transaction costs, they have the potential to link farmers to markets and stimulate agricultural production in the face of globalization. The World Bank has officially promoted contract financing as a tool for poverty reduction in Africa (WB, 2007). Also, a large body of empirical literature has been developed and confirmed a positive impact of CFAs on participants' income (Bolwig et al., 2008; Bellemare, 2010; Miyata et al., 2009; Bijman, 2008).

Smallholder farmers can be empowered to take advantage of new market opportunities for high-value agricultural products which have emerged as a result of increasing global consumption of these products, particularly vegetables and fruits (Temu and Temu, 2006). With most of the world's rural poor engaging in agriculture, encouraging smallholders' access to global export markets for high-value products is vital in increasing incomes and hence alleviating poverty, which is predominant in Sub-Saharan Africa.

An analysis of efficiency and distribution of contract financing of poultry production, in the state of   Andhra Pradesh India, showed that contract production is more efficient than non-contract production. In addition, the study found that there was an income difference between the two groups. Farmers also gain appreciably from contracting in terms of higher expected returns and lower risk. From the average returns of contract and non-contract farmers, they concluded that the contract enables poor farmers to generate a comparable income (Ramaswami et.al., 2006).

Similarly, Gibbons et al. (2009) also analyzed the revenue effect of participation in smallholder contractual organic cocoa production in Uganda. They found that there was a positive revenue effect of contract farming. Besides, contract farmers have exposure to improved farming techniques that can enhance their yields. Contract farming arrangements have a higher ability to generate more income for the smallholder farmer in comparison to independent farming arrangements (Rusten & Key, 2002; Ramaswami et al., 2006; Wainaina et. al, 2012).

This is largely because contract farming ensures market access for the smallholder farmer produce thereby providing market certainty often at predetermined prices. This enhances the capacity of smallholder farmer to deal with the problem of marketing perishable farm produce which is a major challenge in commercial production (Woodend, 2003). In addition Masakure et ah (2005) notes that contract financing arrangements in Zimbabwe help smallholder farmer save costs associated with poor market information systems that characterize most developing countries. Kirsten and Sartorious (2002) argue that the limited scale of operations pose high transaction costs at individual level in producing and marketing especially when located in remote areas and therefore marketing through the contract financing arrangement positively influences their participation.

Although contract financing has the possibility of increasing total household income, the woman is generally excluded from participating in income access and allocation within the household (Maertens and Swinnen, 2009). Quisumbing and McClafferty (2006) observe that household income control by women has superior development impact because it is more likely to be associated with improved child nutrition, increased investment in children education, healthcare and other household

investments. The effect of contract financing on women's work intensity and subsequent bias in income participation imply extending gender inequality and hampering genuine development within the household.

Warning and Key (2002) explore how participation in the NOVASEN (a private company) program affected the agricultural income of 32,000 peanut growers in Senegal. They found that farmers increased their income substantially by participating in the contract program compared to non-participating farmers. In addition, the authors found that the contract farming scheme did not favour larger or wealthier growers.

2.4 Conceptual Framework

The purpose of a conceptual framework is to categorize and describe concepts relevant to the study and map relationships among them. As shown in Figure 2.1 the independent variables were capital requirement, advance pricing, contractor credit services and free veterinary services. On the other hand, the dependent variable was income growth among poultry farmers.
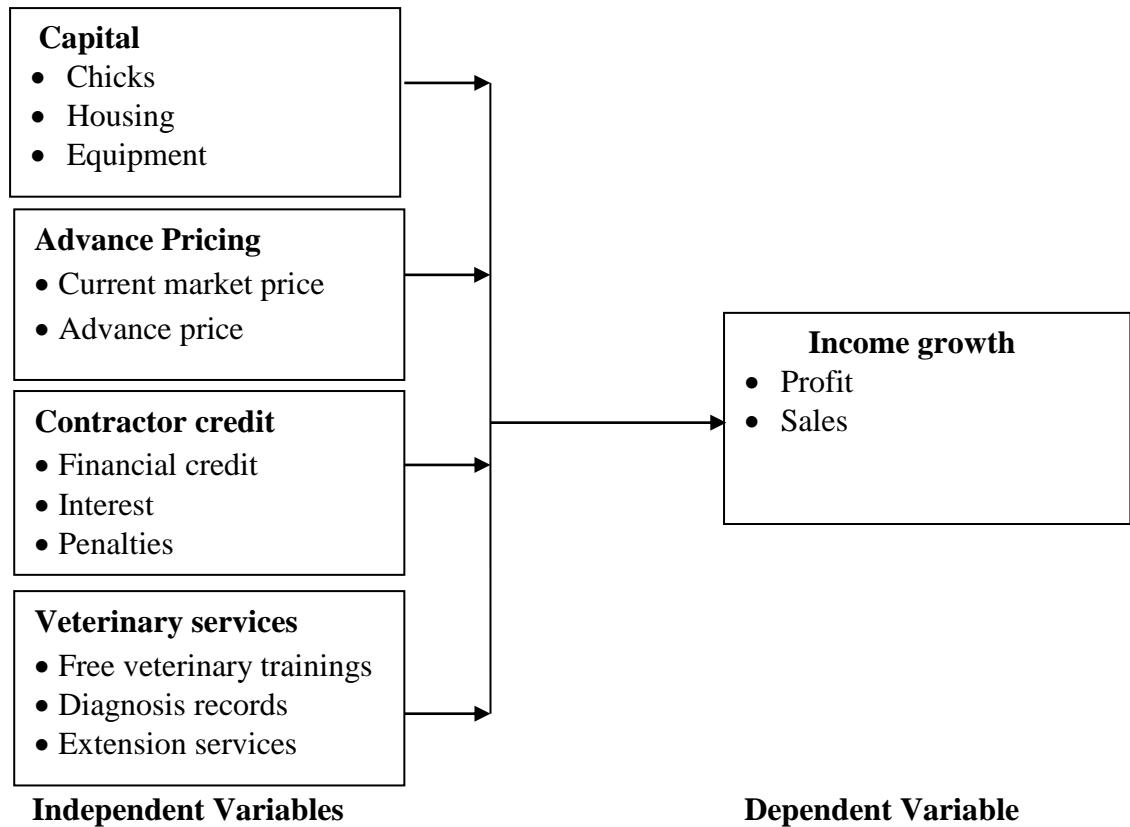
```
┌─────────────────────┐
│  Capital            │
│  • Chicks           │────────┐
│  • Housing          │        │
│  • Equipment        │        │
└─────────────────────┘        │
┌─────────────────────┐        │        ┌─────────────────────┐
│  Advance Pricing    │        │        │  Income growth      │
│  • Current market   │────────┤        │  • Profit           │
│    price            │        ├───────►│  • Sales            │
│  • Advance price    │        │        │                     │
└─────────────────────┘        │        └─────────────────────┘
┌─────────────────────┐        │
│  Contractor credit  │        │
│  • Financial credit │────────┤
│  • Interest         │        │
│  • Penalties        │        │
└─────────────────────┘        │
┌─────────────────────┐        │
│  Veterinary services│        │
│  • Free veterinary  │────────┘
│    trainings        │
│  • Diagnosis records│
│  • Extension        │
│    services         │
└─────────────────────┘

     Independent Variables                    Dependent Variable
```

Figure 2.1: Conceptual Framework

2.5 Critique of Literature

While contract farming is widespread in Africa and many other developing countries, there are conflicting views on its impact on the welfare of smallholder farmers. Some authors argue that contract financing is beneficial to the small holder farmers since it enables farmers to access ready markets and also to access global markets (Warnings & Key, 2002; Gulati *et al,* 2005; Minot & Roy, 2006; Minot & Benson*,* 2009). Such authors also argue that contract financing enhances the income of farmers which they attribute to the economies of scale enjoyed in contract farming.

On the other hand other authors argue that contract financing is a means of exploiting farmers by the large agribusiness firms due to the unequal bargaining power (Singh, 2002). They criticize contract financing on the basis that most of the contractual terms

are too costly for smallholder farmers to comply with and that most large firms break the contractual terms at the expense of the smallholder due to unequal market power. Some critics of contract financing argue that contract financing is only beneficial to large scale farmers and that it only serves to push smallholder farmers out of the market and could even lead to rural inequality and entrench poverty among the rural smallholder farmers (Guo et.al, 2005).

2.6 Summary of Literature

There are few estimates of the prevalence of contract farming and no estimates of trends over time, but changes in global agricultural markets provide some hints. First, rapid income growth, particularly in Asia, is shifting consumption away from staple grains and toward high-value commodities such as meat, fish, dairy, and horticulture and toward processed foods (Minot & Roy, 2006). Second, income growth, urbanization, and foreign investment are driving a consolidation in retail food outlets, the supermarket revolution (Reardon, Timmer, Barrett, & Berdegue´, 2003). Third, lower trade barriers and improved communication technology are expanding trade linkages, connecting small farmers in developing countries with high-income consumers in developing country cities and in industrialized countries. The growth in high-value agriculture, supermarkets, processing, and export-oriented agriculture suggest that the importance of contract farming is probably growing.

2.7 Research Gaps

According to Lucas et.al, (2016) that carried out carried a study on assessing challenges and prospects of contract farming schemes in Tanzania. They concluded that there is need to improve contract farming in the country by availing and facilitating smallholder farmers' access to long-term sources of finance; contract

enforcement and step up public awareness on the significance of contract financing in raising incomes and welfare of farmers. The researchers however failed to examine how advance pricing can help in shifting of price risks to farmers thus acting as a good hedge against price fluctuation uncertainties.

Possible reasons for engaging in contracting financing from the smallholder perspective are: access to product markets with high transactions costs; access to relatively inexpensive credit where - for various reasons - they face high interest rates or credit is unavailable; access to services for managing on-farm risk; and access to information, inputs, logistics and marketing at relatively low cost (Simmons, 2002). Simmons (2002) focused on rice and corn farming as opposed to poultry farming thus this study seeks to focus in poultry farming. The study did not also examine credit services vis avis income growth among farmers.

It is not explicit how contract financing safeguards the position of the poultry farmers in the livestock sector. Further, most literature on contract financing in Kenya has tended to focus on the horticultural sector and little emphasis has been given to the poultry sector (Strohm and Hoeffler, 2006). This study sought to fill this knowledge gap by empirically examining the influence of contract financing on income growth among poultry farmers.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

The chapter focuses on the methods that were used to collect data and analyze it. It majorly addresses the research design, the population studied, the sample selection procedures and sampling techniques, data collection, pilot tests and data processing and analysis.

3.2 Research Design

A research design is a blue print for fulfilling the objectives of the study. Although there are numerous research designs; the study employed a descriptive research design. This is because the design is well structured with clearly stated research questions. Descriptive survey research design was adopted as it enabled the researcher to generalize the findings to a large population. The study utilized quantitative approach in the collection of data. According to Kothari (2009), the approach enables data to be systematically collected and analyzed in order to provide a descriptive account of the questions under study.

3.3 Target Population

A population is a complete group of entities sharing some common set of characteristics. A target population is the complete group of specific population elements relevant to the research project (Cooper & Schindler, 2003; Zikmund, 2003). The target population for this study was the contract farmers in Kiambu County. There are 60 contracted farmers dealing with poultry farming in the county (Kenchic Farmers Database, 2017). Given the small number of these farmers, the study adopted a census survey with all the farmers acting as the study's respondents.

3.4 Data Collection Instrument

The study employed the use of questionnaires as the main tools for collecting data. According to Kothari (2006), a questionnaire is the best tool for a researcher who wishes to acquire the original data for describing a population. Questionnaires enabled the researcher to reach a large sample within a short time. The questionnaires composed of short structured closed ended statement constructed on 5 point Likert scale.

3.5 Pilot Study

The data collection instrument was pilot tested in order to ensure its reliability and validity. A pilot test is a small scale trial run of all procedures planned for use in the main study (Monette et al., 2002). The data instrument was piloted in Nakuru County where Kenchic Limited also operates. It was carried out on 20% of the contracted poultry farmers. Pretesting helped to determine the strengths and weaknesses of the questionnaire concerning question format and wording.

3.5.1 Validity of instruments

Brains and Manheim (2011) asserted that validity is the extent to which a concept, conclusion, or measurement is well-founded and corresponds precisely to the real world. In other words, the validity of a measurement tool such as a questionnaire is said to be the degree to which that tool measures what it claims to measure. The study sought to determine the content validity of the research instrument. Given that the content validity cannot statistically be determined, the researcher sought the expert opinion of University supervisor who helped in ascertaining validity of the data instrument.

3.5.2 Reliability of Instruments

Reliability is said to be the extent to which a measurement gives results that are consistent. When reliability is upheld, then the research instrument should collect similar data when administered to different sample populations exhibiting related characteristics. The study employed Cronbach alpha (α) coefficient to test the reliability of the research instrument. The Cronbach's reliability coefficient above 0.70 in the questionnaire was considered as an indication that the items on the questionnaire were reliable according to Kombo and Tromp (2009) rule of thumb.

3.6 Data Collection Procedure

The researcher first sought the authorization from the chairman of department in Jomo Kenyatta University to proceed for data collection. The researcher then made a pre-visit to the field of research so as to familiarize with and book appointments with the farmers for data collection. The researcher then proceeded for the actual data collection. The researcher used drop and pick technique in distributing the questionnaires among the respondents.

3.7 Data Analysis

The questionnaires collected from the respondents were ascertained to ensure that only the sufficiently and appropriately filled ones were considered for the study. Data collected from the questionnaires was analyzed, summarized, and interpreted accordingly with the aid of descriptive (Frequencies, percentages, means and standard deviations) as well as inferential statistics (chi-square, correlation coefficient and regression analysis). Statistical Package for Social Sciences (SPSS) computer software version 24.0 was used for analysis. The findings were presented in the form

of statistical tables and discussions thereof. The following multiple regression model was adopted.

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \varepsilon$$

Where:

Y   representing Income Growth

B_0 represents model Constant

X_1 Stands for Capital

X_2 Stands for Advance Pricing

X_3 Stands for Contractor credit services

X_4 Stands for Veterinary services

ε Represents Error term

$\beta_1, \beta_2, \beta_3, \beta_4$ Represents regression coefficients for independent variables

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSIONS

4.1 Introduction

This chapter presents the research findings for each of the objectives. The findings are presented on basis of descriptive and inferential statistical analysis. The results from the analysis formed the discussion basis for each of the study's variable.

4.2 Descriptive Statistics on Profile of Respondents

This section presents and discusses results of descriptive statistics of the profile of respondents. It also presents descriptive analyses results of the study variables. Frequencies and percentages were used to examine the distribution of the respondents.

4.2.1 Response Rate

Orodho(2003) defines response rate as the extent to which the final data sets includes all sample members and is calculated as the number of respondents with whom interviews are completed and divided by the total number of respondents in the entire sample including non-respondents. As presented in Table 4.1, out of sixty questionnaires that were administered, fifty three were properly filled and returned back. This indicates a repose rate of 88.3 %. Mugenda & Mugenda (2003) recommends at least a 50% response rate as appropriate in achieving a study's objectives. Thus response rate in this study was appropriate for conclusion of research findings.

Table 4.1: Response Rate

Rate Response Rate	Frequency	Percent
Returned	53	88.3%
Unreturned	7	11.7%
Total	**60**	**100**

4.2.2 Demographics Information

This section presents the demographics of the study. The key characteristics of the respondents were: respondents' gender, experience in contract farming, respondents' gross income and respondents' current stock or poultry level.

4.2.2.1 Respondents' gender

The study sought to establish gender of the respondents.

Table 4.2: Gender of the respondents

		Frequency	Percent
	Male	48	90.6
Valid	Female	5	9.4
	Total	**53**	**100.0**

From the results on Table 4.2, majority 48 (90.6%) of respondents were men while 5(9.4%) were female. This means that majority of those engaging in poultry contract farming are men in Kiambu County.

4.2.2.2 Respondents' Experience in Contract Farming

The study sought to establish how long the respondents have been engaged in contract farming.

Table 4.3: Respondents' Experience in Contract Farming

		Frequency	Percent
	below 3 years	2	3.8
	3-10 years	21	39.6
Valid	10-15 years	24	45.3
	above 15 years	6	11.3
	Total	**53**	**100.0**

Table 4.3 shows that majority 24 (45.3%) of the respondent have practiced contract farming for 10-15 years. 21 (39.6%) of respondents have been engaged in contract farming for 3-10 years. 6 (11.3%) of respondents have been in contract farming for more than fifteen years while only 2(3.8%) of the respondents have been engaged in contract farming for less than 3 years. Thus it can be concluded that most of the respondents have adequate contract farming experience to understand topic under study.

4.2.2.3 Respondents' Gross Income Level

The study sought to establish the level of gross income of the respondents per contractual rearing cycle.

Table 4.4: Level of Gross Income Contractual Rearing Cycle

		Frequency	Percent
	less than 4,000,000	2	3.8
	4,000,000-6,000,000	20	37.7
Valid	6,000,000-8,000,000	20	37.7
	above 8,000,000	11	20.8
	Total	**53**	**100.0**

Table 4.4 shows that a larger majority 40 (74.4%) of the respondent earn a gross income of between Kshs 4,000,000-8,000,000 while a minor 2(3.8%) of respondents earn less than Kshs 4,000,000. Only a fair majority of respondents 11(20.8%) earn more than Kshs 8,000,000 gross income per contractual rearing cycle. Thus it can be concluded that majority of respondents are large scale earners based on the gross income level results.

4.2.2.4 Respondents' Current Stock/Poultry Level

The study sought to establish current stock/poultry level of the respondents.

Table 4.5: Current Stock/Poultry Level

		Frequency	Percent
	13,000-16,000	11	20.8
Valid	16,000-18,000	16	30.2
	above 18,000	26	49.0
	Total	**53**	**100.0**

The results on Table 4.5 indicate that a larger majority 26 (49.0%) of the respondent have a poultry level of above 18,000 birds. 16(30.2%) of respondents rear 16,000-18,000 chickens while 11(20.8%) of respondents have 13,000-16,000 birds. It can be concluded that most respondents were large scale contract famers.

4.3 Reliability Test

Pretesting data collection instrument helped to determine the strengths and weaknesses of the survey concerning question format, wording and order. From the pilot test results as shown on table 4.6, the questionnaire yielded a reliability

coefficient of 0.77. The instrument was considered reliable as its alpha value was above the recommended 0.7 threshold (Cohen & Manion, 2000).

Table 4.6: Pilot test results

Variables	Cronbach's Alpha
Capital	0.762
Advance Pricing	0.704
Contractor Credit Services	0.713
Veterinary Services	0.752
Income Growth	0.779
Overall Reliability Coefficient	**0.777**

4.4 Descriptive statistics and discussions on study's variables

Descriptive statistics analysis for study research variables and discussions are presented. The study's independent variables were capital, advance pricing, contractor credit services and veterinary services while income growth was the dependent variable.

4.4.1 Capital

Respondents were asked to indicate the extent to which they agreed that provision of capital influences income growth among contracting poultry farmers in Kenya. The measurable indicators were ranked on a 5-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses were analyzed using mean scores and standard deviations. Table 4.7 presents the results of the analysis.

Table 4.7: Descriptive Analysis for Capital

Measurable Indicators	5	4	3	2	1	Mean	Standard Deviation

Statement						Mean	SD
Chicks are provided to the farmers as an initial capital and this has enabled led to increase in income	1.9%	52.8%	7.6%	1.9%	35.8%	3.1698	1.43762
There is reimbursement (compensation with other chicks) for sudden chicks death Syndrome or immature death of chicks	35.8%	58.5%	1.9%	1.9%	1.9%	4.2453	0.75716
Pan feeders, automatic drinkers and chick drinkers are provided to the farmers which has enhanced your income growth	3.8%	28.3%	7.5%	43.4%	17.0%	2.5849	1.18377
Construction materials for the chicken coop are provided to the farmers thus leading to more income	45.3%	7.5%	1.9%	11.3%	34.0%	2.8113	1.84032
Specific heating and lighting materials in the poultry house are provided to the farmers	12.60%	15.5%	21.0%	0.0%	50.9%	2.0943	1.18101

The findings on Table 4.7 Shows that majority of respondents (54.7%) agreed that Chicks are provided to the farmers as an initial capital and this has enabled them engage in contract farming (mean=3.1698, SD=1.43762). 94.3% of the respondents agreed that there is reimbursement (compensation with other chicks) for sudden

chicks death Syndrome or immature death of chicks (mean=4.2453, SD=0.75716) while majority of respondents disagreed that Pan feeders, automatic drinkers and chick drinkers were provided to the farmers which enhanced contract farming (mean=2.5849, SD=1.18377). According to 52.8% of the respondents, construction materials for the chicken coop are provided to the farmers thus increased income for the farmers (mean=2.8113, SD=1.84032). Specific heating and lighting materials in the poultry house are not provided as indicated by a fair majority (50.9%) of respondents (mean=2.0943, SD=1.18101). Improving technical efficiency in heating and lighting in poultry farming has the potential to increase their productivity, total output, and incomes without requiring increase in inputs or change of technology (Ruben and Sáenz-Segura, 2008; Chakraborty, 2009). There was greater disparity in respondents' opinions with most of the responses registering standard deviation values greater than 1 or close to 1. The results indicate that the data was close to the mean values of the indicators since standard deviations were not very far from zero.

4.4.2 Advance Pricing

Regarding advance pricing, respondents were asked to indicate the extent to which they agreed that the statements of aspects of advance pricing influenced income growth among poultry farmers in Kenya. Each item had a 5-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses were analyzed using mean scores and standard deviations. Table 4.8 presents the results of the analysis.

Table 4.8: Descriptive Analysis for Advance Pricing

Measurable Indicators	5	4	3	2	1		Standard
						Mean	Deviation

Statement						Mean	SD
Assurance of a fixed sales price for product enhances income growth	22.6%	66.0%	7.5%	3.9%	0.0%	4.0755	0.67508
Through contract financing there is shift of price risks to processors among farmers	17.0%	43.4%	3.8%	28.3%	7.5%	3.3396	1.27012
The current market prices influence the advance pricing of the poultries' product	0.0%	0.0%	26.4%	62.3%	11.3%	2.1509	0.60116
The advance price is usually determined by the total cost of production thus influencing the income of the farmer	34.0%	28.3%	0.0%	9.4%	28.3%	3.3019	1.68232
Contract farmer has no power in pricing of products	39.6%	20.8%	0.0%	32.1%	7.5%	3.5283	1.47549
A farmer prefers to sell his or her product at the prevailing market prices as compared to the advance price set as it leads to increased income	3.8%	0.0%	7.5%	34.0%	54.7%	1.6415	0.92184

The results on Table 4.8 indicate that majority of respondents (88.0%) agreed that assurance of a fixed sales price for product enhance poultry farming (mean=4.0755, SD=0.67508). The conditions of payment that a contracting firm adopts in its contract design to farmers for delivering the agreed quality and quantity of product is important to the smallholder. The commonly used price options in contract financing

are fixed and variable options (Miyata et. al., 2009). 60.4% of respondents agreed that through contract financing there has been shift of price risks to processors among poultry farmers (mean=3.3396, SD=1.27012). Contracts that allow prices of outputs as well as the terms to be decided in advance may reduce risks associated with price fluctuations (Baumann, 2000; Eaton & Shepherd, 2001). A larger majority of respondents (73.6%) disagreed that the current market prices influence the advance pricing of the poultries' product (mean=2.1509, SD=0.60116). The advance price is usually determined by the total cost of production as agreed by 62.3% of the respondents (mean=3.3019, SD=1.68232). Smallholders usually take the production risk, whereas the contracting firms usually face the marketing risk (Bogetoft and Olesen, 2004). According to 60.4% of the respondents, contract farmers have no power in pricing of products (mean=3.5283, SD=1.47549) while farmers do not prefer to sell their products at the prevailing market prices as compared to the advance price set as agreed by a larger majority (88.7%) of the respondents (mean=1.6415, SD=0.92184). Smallholder farmers can be empowered to take advantage of new market opportunities through advance pricing for high-value agricultural products which have emerged as a result of increasing global consumption of these products, particularly vegetables and fruits (Temu and Temu, 2006). Although there was disparity in respondents' opinions with some of the responses registering standard deviation values greater than or equal to 1, the results indicate that the data was close to the mean values of the indicators since standard deviations were not very far from zero.

4.4.3 Contractor Credit Services

Respondents were asked to indicate the extent to which they agreed with contractor credit services statements in influencing income growth among poultry farmers in Kenya. The measurable indicators were ranked on a 5-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses were analyzed using mean scores and standard deviations. Table 4.9 presents the results of the analysis.

Table 4.9: Descriptive Analysis for Contractor Credit Services

Measurable Indicators	5	4	3	2	1	Mean	Standard Deviation
Contracting firms guarantee farmers in order to access credits from financial institutions	50.9%	15.1%	0.0%	34.0%	0.0%	3.8302	1.36911
Contractor credit services attract interest costs during the actual payment for services thus less income is earned	0.0%	0.0%	5.7%	79.2%	15.1%	1.9057	0.44996
Access to credit services has led to increased income	64.2%	0.0%	0.0%	0.0%	35.8%	3.4340	1.93659
Penalties are charged in case the farmers make delayed payment for the services (such as contract termination)	0.0%	0.0%	32.1%	67.9%	0.0%	2.3208	0.47123
Favourable repayment terms have influenced income growth	35.8%	64.2%	0.0%	0.0%	0.0%	4.3585	0.48415
Level of stock (poultry) determines the amount of credit advanced thus influencing income growth	0.0%	35.8%	0.0%	64.2%	0.0%	2.7170	0.96829

As depicted on Table 4.9, a larger majority of respondents (66.0%) agreed that contracting firms guarantee farmers in order to access credits from financial

institutions (mean=3.8302, SD=1.36911). According to Conning and Udry (2005), farmers' access to credit is also very crucial in the sense that it can facilitate the levels of input use closer to their potential levels when capital is not a constraint, consequently leading to higher levels of output per farm and productivity, given fixed resources such as land. Many banks do not prefer taking the poultry and the farm structures as collateral and thus end up closing out many small and medium farmers as a result of inadequacy in security provided for the loans (Kwesisi, Margret & Sheila, 2015). 94.3% of respondents disagreed that contractor credit services attract interest costs during the actual payment for services (mean=1.9057, SD=0.44996) while access to credit service has led to increase of farmers to engage in contract financing according to 64.2% of the respondents (mean=3.4340, SD=1.93659). Aside the ready market for farmers, contract farming gives farmers the opportunity to use the contract agreement as collateral to arrange for credit facilities with commercial banks in order to fund inputs (Eaton & Shepherd, 2001). While 67.9% of the respondents disagreed that penalties are charged in case the farmers make delayed payment for the services (such as contract termination) with a fair majority of 32.1% held a neutral opinion (mean=2.3208, SD=0.47123). Petrick (2004) stated that high interest rates and the short-term nature of loans with fixed repayment periods do not suit annual cropping, and thus constitute a hindrance to credit access among farmers. According to a larger majority of respondents (100%), favourable repayment terms on credit facilities advanced have influenced income growth among farmers (mean=4.3585, SD=0.48415) while the level of stock (poultry) determines the amount of credit advanced according to 64.2% of the respondents (mean=2.7170, SD=0.96829).Credit providers often shy away from giving loans to farmers because of the high cost of administering such loans and the perceived high default rates

among farmers. Ghosh et al., (2000), believe that it is largely because some farmers lack sufficient stock level to put up as collateral which usually is a prerequisite for borrowing from financial institutions. Most standard deviations were not far from zero, this indicates that the data was close to the mean of respective indicators.

4.4.4 Veterinary Services

Regarding Veterinary Services, respondents were asked to indicate the extent to which they agreed that the statements of aspects of veterinary services influenced income growth among poultry farmers in Kenya. Each item had a 5-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses were analyzed using mean scores and standard deviations. Table 4.10 presents the results of the analysis.

Table 4.10: Descriptive Analysis for Veterinary Services

Measurable Indicators	5	4	3	2	1	Mean	Standard Deviation
Free, basic veterinary training has enhanced poultry farming productivity and income growth	32.1%	67.9%	0.00%	0.0%	0.0%	4.3208	0.47123
Health and safety training concerning poultry farming has enhanced your poultry farming productivity and income growth	90.6%	0.0%	0.0%	0.0%	9.4%	3.3774	1.18039
Regular visits by veterinary officers has increased your poultry yields thus increased income growth	37.8%	9.4%	0.0%	52.8%	0.0%	3.3208	1.43813
Willingness to learn or consult with veterinarians improves a farmer's performance hence enhancing income growth.	52.8%	9.4%	37.8%	0.0%	0.0%	3.3208	1.43813
Keeping proper records of diagnoses and treatments has reduced prevalence of diseases thus increased income	0.0%	0.0%	41.5%	0.0%	58.5%	2.4151	0.49745

Frequent collaborative extension services trainings between Kenchic Limited and the Ministry of Agriculture has enhanced income growth	0.0%	0.0%	78.1%	0.0%	21.9%	4.2453	0.64765

The findings on Table 4.10 show that majority of respondents (100%) agreed that free, basic veterinary training has enhanced poultry farming productivity (mean=4.3208, SD=0.47123) with 90.6% of respondents agreeing that health and safety training concerning poultry farming has enhanced poultry farming productivity (mean=3.3774, SD=1.18039). Regular visits by veterinary officers has increased poultry productivity and thus increased income as agreed by 52.8% (mean=3.3208, SD=1.43813) while willingness to learn or consult with veterinarians has enhanced poultry farming according to 62.2% of respondents (mean=3.3208, SD=1.43813). Keeping records of diagnoses and treatments has enhanced poultry farming as agreed by fair majority of 58.5% of the respondents with 41.5% holding a neutral opinion (mean=2.4151, SD=0.49745). 78.1% of the respondents held a neutral opinion on whether frequent collaborative extension services trainings between Kenchic Limited and the Ministry of Agriculture has enhanced poultry farming (mean=4.2453, SD=0.64765). Francis (2012) did a study on the role of agricultural extension services in agricultural transformation for rural poverty reduction. He found that majority of agricultural producers in Ghana still need Agricultural Extension Services as a major agricultural transformation strategy. Although there was disparity in respondents' opinions with some of the responses registering standard deviation values greater than

1, the results also indicate that the data was also close to the indicators' mean values since some standard deviations were close to zero

4.4.5 Income Growth

Respondents were asked to indicate the extent to which they agreed with income growth measurable indicators. These statements were ranked on a 5-point Likert-type scale, ranging from 'strongly disagree' (1) to 'strongly agree' (5). The responses were analyzed using mean scores and standard deviations. Table 4.11 presents the results of the analysis.

Table 4.11: Descriptive Analysis for Income Growth

Measurable Indicators	5	4	3	2	1	Mean	Standard Deviation
Contract financing has led to an increase in sales levels which has led to increase in profits	28.3%	45.3%	15.1%	11.3%	0.0%	3.9057	0.94593
Contract financing has reduced the level of poverty since farmers gain more income when engaging in contract farming	7.5%	12.1%	43.4%	0.0%	37.0%	2.4340	1.37993
Contract farmers gain higher expected returns and lower risks as compared to non-contracting farmers	28.3%	58.5%	3.8%	1.9%	7.5%	3.9811	1.04680
Contract financing ensures market access for farmers' produce thereby providing high ability to generate more income for the farmers	45.3%	30.2%	13.2%	3.8%	7.5%	3.0377	1.42724
Contract financing save costs associated with poor market information systems hence reduces the transaction costs and in turn increased income	40.3%	8.8%	37.7%	13.2%	0.0%	3.1887	1.16118
Engaging in contract financing has helped you as a farmer reduce your overall variable costs thus increased income	3.0%	24.5%	44.2%	28.3%	0.0%	2.8868	0.91274

The findings on Table 4.11 indicate that 73.6% of respondents agreed that Contract financing has led to an increase in sales levels which has led to increase in profits (mean=3.9057, SD=0.94593). Farmers also gain appreciably from contracting in

terms of higher expected returns and lower risk. From the average returns of contract and non-contract farmers, they concluded that the contract enables poor farmers to generate a comparable income (Ramaswami et.al, 06). Studies by Warning and Key (2002) have confirmed improvement in farmers' income as a result of participation in contract financing. It was not clear on whether contract financing has reduced the level of poverty since farmers gain more profits when engaging in contract farming since a fair majority of respondents 43.4% held a neutral opinion (mean=2.4340, SD=1.37993). According to Bernice (2016), contract financing could help alleviate poverty in most rural areas and empower poultry farmers to expand their capacity in order to effectively and consistently supply to other processing companies. A larger majority of respondents (86.8%) agreed that contract farmers gain higher expected returns and lower risks as compared to non-contracting farmers (mean=3.9811, SD=1.04680). Birthal, Joshi, and Gulati (2005) found that the gross margins for contract dairy farmers in India were almost double those of independent dairy farmers, largely because contract growers had lower production and marketing costs. According to 75.5% of respondents, contract financing ensures market access for farmers' produce thereby providing high ability to generate more income for the farmers (mean=3.0377, SD=1.42724) while 49.1% of respondents agreed that contract financing save costs associated with poor market information systems hence reduces the transaction costs (mean=3.1887, SD=1.16118). Tripathi et.al (2005) asserts that smallholders may enter contracts to reduce transaction costs of accessing new markets, borrowing, managing risk, acquiring information or increasing employment opportunities. Majority of respondents (44.2%) held a neutral opinion on whether engaging in contact financing had helped farmers reduce their overall variable costs resulting to an increased income (mean=2.8868, SD=0.91274). Almost all the

responses had standard deviation values greater than 1.0 indicating lack of cohesion in respondents' views. The results in figure 4.3 indicate that there was a continuous decrease of respondents who were earning less than 16 million from year 2013 to 2017. However, the trend shows a continuous increase for respondents earning sales turnover of 16-24 million and 24-32 million over the five years. The trend changes a bit for those earning above 32 million where there was an increase of respondents earning over 32 million from year 2013 to 2014 then a steady decrease. It can thus be explained that the sales turnover has increased over years with many respondents earning between 16-32 million. There was a steady increase in sales level over the year for the respondents earning 16-24 million. Contract financing arrangements have a higher ability to generate more sales turnover for the smallholder farmer arrangements (Rusten & Key, 2002; Ramaswami et al., 2006; Wainaina et. al, 2012). The results in figure 4.4 indicate that there was a continuous decrease of respondents whose profit level was less than 2 million from year 2013 to 2017. However, the trend shows a continuous increase for respondents whose profit level was 2-4 million and 4-6 million over the five years. The trend changes a bit for respondents who reported profit above 6 million where there was an increase of respondents whose profits was above 6 million from year 2013 to 2014 then a steady decrease. It can thus be explained that profit level over years has increased as shown in the results with many respondents earning profit between 4-6 million. Similarly, Gibbons et al. (2009) also analyzed the revenue effect of participation in smallholder contractual organic cocoa production in Uganda. They found that there was a positive revenue effect of contract financing. Besides, contract farmers have exposure to improved farming techniques that can enhance their yields.
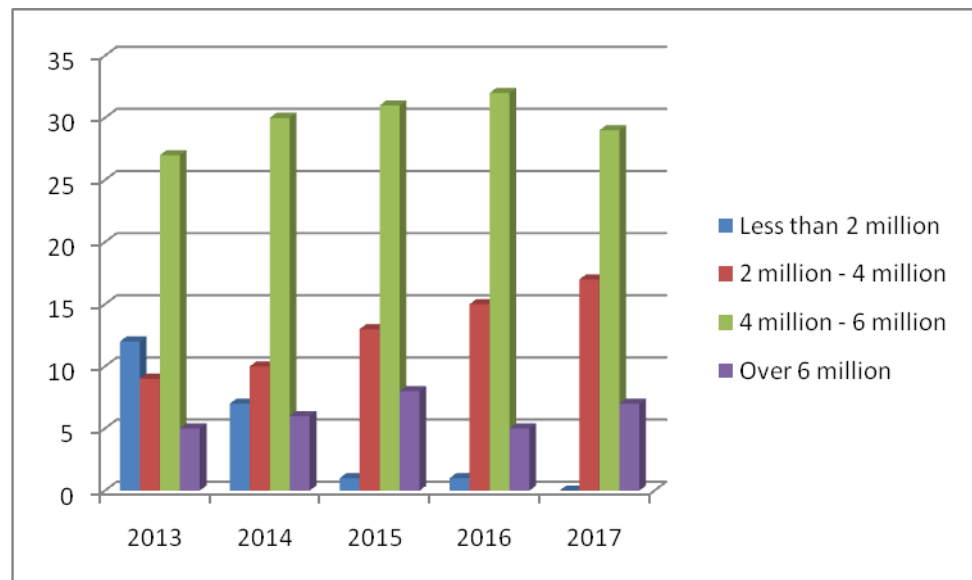
No. of respondents
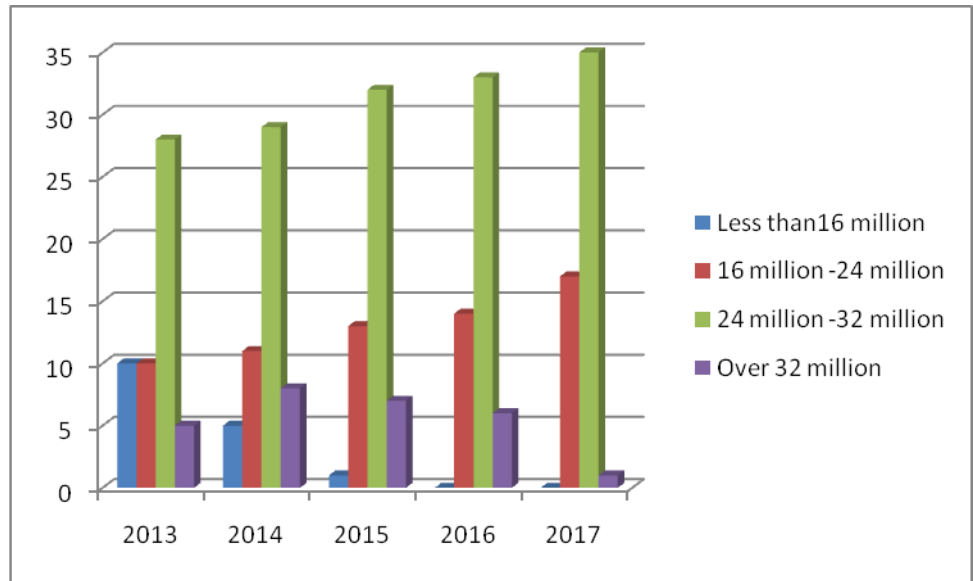
Period

Figure 4.1: Sales level

No. of respondents

Period

Figure 4.2: Profit level

4.5 Inferential Statistics

This section presents inferential statistics tools that were used which include chi-square, pearson correlation coefficient and multi regression analysis.

4.5.1 Chi-square Test for Goodness of Fit Analysis

This section presents the findings of the chi-square test for goodness of fit for the variables under study.

Table 4.12: Chi-square test for goodness of fit

	Capital	advance pricing	contractor credit	veterinary services	Income growth
Chi-Square	25.868[a]	7.396[b]	33.321[b]	5.453[c]	7.962[b]
Df	3	2	2	1	2
Asymp. Sig.	.000	.025	.000	.020	.019

Table 4.12 presents these findings. The Chi-square test for equal proportions is a statistical test used to investigate whether the proportions of responses in each category are equal or whether there are statistically significant differences in the proportions of responses in each category. The null hypothesis of the Chi-square test is that the proportion of responses that fall into each of these categories is equal and any differences observed are due to chance or random variation. If the null hypothesis is true, then we cannot conclude anything based on the responses we observe, as these are essentially due to chance. We reject this null hypothesis of equal proportions at the 5% significance level (95% confidence) if the p-value of the test for that question is less than or equal to 0.05. The chi-square probability values shown are less than the conventional probability value of 0.05 (χ^2=25.868, p<0.05), (χ^2=7.396, p<0.05), (χ^2=33.321, p<0.05), (χ^2=5.453, p<0.05) and (χ^2=7.962, p<0.05) respectively,

indicating that the results obtained are statistically significant, showing dominant and equal perception of respondents regarding the said questions.

4.5.2 Correlation Analysis

Correlation between variables is a measure of how well the variables are related. The most common measure of correlation in statistics is the Pearson Correlation which shows the linear relationship between two variables. Devore and Peck (2006) recommends a guideline for assessing resultant correlation coefficients which states that correlation coefficients less than 0.5 represent a weak relationship, correlation coefficients greater than 0.5, but less than 0.8, represent a moderate relationship whereas correlation coefficients greater than 0.8 represent a strong relationship. The Results are between -1 and 1. A result of -1 means that there is a perfect negative correlation between the two values, while a result of 1 means that there is a perfect positive correlation between the two variables. Result of 0 means that there is no correlation between the two variables (Gujarat, 2004). Before carrying out a test on research hypotheses, the study examined how the variables of the study: capital, advance pricing, contractor credit services, veterinary services and income growth among poultry farmers were related. The analysis was carried out using Pearson correlation coefficient. Pearson correlation coefficient was used because the data was normally distributed.

Table 4.13: Correlation Matrix for Capital, Advance Pricing, Contractor Credit Services, Veterinary Services and Income Growth

		Capital	Advance Pricing	Contractor Credit	Veterinary Services	Income Growth
Capital	Pearson Correlation	1				
	Sig. (2-tailed)					
	N	53				
Advance pricing	Pearson Correlation	.032	1			
	Sig. (2-tailed)	.818				
	N	53	53			
Contractor Credit	Pearson Correlation	.062	.755**	1		
	Sig. (2-tailed)	.661	.000			
	N	53	53	53		
Veterinary Services	Pearson Correlation	-.022	.615**	.345*	1	
	Sig. (2-tailed)	.876	.000	.012		
	N	53	53	53	53	
Income Growth	Pearson Correlation	.037	.927**	.741**	.779**	1
	Sig. (2-tailed)	.791	.000	.000	.000	
	N	53	53	53	53	53

Table 4.13 presents the results of the correlation coefficient analysis.

**. Correlation is significant at the 0.05 level (2-tailed)

The correlation results in Table 4.13 show a statistically insignificant weak positive relationship between capital and income growth among poultry farmers ($r = 0.037$, $p > 0.05$). Capital endowment (accumulation of non-land fixed assets) has a positive

relationship with growth acceleration of household's income among smallholder farmers (Sen, 2003).The results also show that there exists a statistically significant strong positive relationship between advance pricing and income growth among poultry farmers ($r = 0.927$, $p < 0.05$). According to Martinetz (2005) there exists a positive association between advance price setting and income growth since price risk is reduced, in contract financing, by the use of a predetermined price rather than the market price. The correlation results also reveal that there is a statistically significant moderate positive relationship between contractor credit services and income growth among poultry farmers ($r = 0.741$, $p < 0.05$). Significant relationship between credit access and income growth shows that access to credit can significantly increase the ability of households with no or few savings to meet their financial needs for agricultural inputs; especially those that are highly necessary for pest, disease control and productive investments. Furthermore, easy availability and access to credit enables farmers and entrepreneurs to diversify by undertaking new investment (Robinson, 2001). Further, the results show a statistically significant moderate positive relationship between veterinary services and income growth among poultry farmers ($r = 0.779$, $p < 0.05$). These results are consistent with findings of Oladele (2004), who found a positive relationship between veterinary services and income growth among poultry farmers asserting that limited access to institutional services such as extension and veterinary services affect poultry production and hence income of farmers .

4.6 Test of Research Hypotheses

This section presents analysis and results of the tests of hypotheses using inferential statistics. Combined effect of predictor variables on the outcome variable was tested. The results obtained are presented in this section.

4.6.1 Multi Linear Regression Analysis

A regression analysis was conducted to determine combined influence of predictor variables on the outcome variable. Formulated research hypotheses were tested using multiple regression analysis results.

Table 4.14: Model fitness for all the Predictor Variables

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df 1	df 2	Sig. F Change	Durbin-Watson
1	.973a	.947	.942	.20301	.947	212.330	4	48	.000	1.902

a. Predictors: (Constant), advance pricing, capital, veterinary services, contractor credit

b. Dependent Variable: income growth

Table 4.14 presents the goodness of fit for the regression between the predictor variables (independent variables) and the outcome variable (Dependent variable). The overall R^2= 0.947 which indicates 94.7 percent of the variation in the dependent variable is explained by the independent variables that are included in the model. The F-statistics of the regression result is F=212.330 (df=4, 48) whose probability value is

0.000 which is less than the conventional probability value of 0.05. This indicates that the model is good and significantly fitted and that the coefficients of the model are not equal to zero. The Durbin-Watson statistic value of 1.902 indicates that there is minimal autocorrelation in the residuals from the statistical regression analysis. The Durbin-Watson statistic is always between 0 and 4. A value of 2 means that there is no autocorrelation in the sample, values approaching 0 indicate positive autocorrelation and values toward 4 indicate negative autocorrelation.

Table 4.15: ANOVA for influence of Contract Financing on Income Growth among Poultry Farmers

Model		Sum of Squares	df	Mean Square	F	Sig.
	Regression	35.003	4	8.751	212.330	.000[b]
1	Residual	1.978	48	.041		
	Total	36.981	52			

   a. Dependent Variable: income growth

   b. Predictors: (Constant), advance pricing , capital, veterinary services, contractor credit

Table 4.15 results show that the mean square of the residuals is very small (0.041) compared the mean square of the regression (8.751). The F-statistics of the regression is also statistically significant proving there is a significant relationship between the study variables (F=212.330, *p<0.05*). The ANOVA results indicate that the overall model was significant.

Table 4.16: Multiple regression analysis coefficients

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
(Constant)	1.746	.279		6.254	.000		
Capital	.014	.029	.016	.464	.644	.994	1.006
contractor credit	.326	.086	.199	3.803	.000	.406	2.465
veterinary services	.662	.077	.376	8.619	.000	.587	1.704
advance pricing	.504	.058	.545	8.743	.000	.287	3.488

a. Dependent Variable: income growth

From the findings of table 4.16 the regression equation was obtained using the unstandardized beta coefficients in determining how the dependent variable varies as a result of a unit change in the independent variables. The following regression equation was obtained;

INGR = 1.746 + 0.014 CPTL+ 0.326 COCRE +0.662 VSER + 0504 ADPR

Where:

INGR   - Income Growth among Poultry Farmers

CPTL   - Capital

COCRE   - Contractor Credit Services

VSER   - Veterinary Services

ADPR   - Advance Pricing

The regression analysis results on Table 4.16 indicate that there exist a statistically insignificant positive relationship between capital and income growth among poultry farmers (β = 0.014, $p > 0.05$). Numerically, the 0.014 beta coefficient of capital variable implies that for every one additional unit of capital, income growth among poultry farmers increases by 0.014 shillings. The null hypothesis (**H_{01}**) was thus accepted concluding that capital has no significant influence on income growth among poultry farmers. Sen, (2003) in a study of the Drivers of Escape and Descent reported that capital endowment (accumulation of non-land fixed assets) has a positive relationship with growth acceleration of household's income among smallholder farmers.

The results indicated that the relationship between contractor credit services and income growth among poultry farmers was positive and statistically significant (β = 0.326, $p<0.05$). This implies that for every one additional loan amount advanced income growth among poultry farmers increases by 0.326 shillings. The null hypothesis (**H_{02}**) was thus rejected concluding that contractor credit services have significant influence on income growth among poultry farmers. There is a significance link between credit and income growth among farmers since, access to credit may affect farm productivity because farmers facing binding capital constraints would tend to use lower levels of inputs in their production activities compared to those not constrained (Petrick, 2004).

It was also established that there exist a statistically significant positive relationship between veterinary services and income growth among poultry farmers (β = 0.662, $p<0.05$).This means that for every one additional veterinary services provided, income growth among poultry farmers increases by 0.662 shillings. The null hypothesis (**H_{03}**)

was thus rejected concluding that veterinary services have significant influence on income growth among poultry farmers. The results are consistent with those of Van Schaik (2001, who examined veterinary awareness of the farmers and the effect of veterinary participation by broiler poultry farmers. In the research findings Income of farmers who patronize veterinary services were compared with and non-veterinary patronage and found to be significant.

The results indicate that the relationship between advance pricing and income growth among poultry farmers was positive and statistically significant ($\beta = 0.504$, $p<0.05$), implying that for every one additional advance price set, income growth among poultry farmers increases by 0.504 shillings. The null hypothesis (**H04)** was thus rejected concluding that advance pricing has a significant influence on income growth among poultry farmers. The results are consistent with those of Martinetz (2005) who found that the main factor in encouraging smallholders to join contract farming projects is the price the project authorities will pay for the product and a guaranteed market which enhances income growth. Thus there exists a significant relationship between price set and income growth among farmers.

The t-statistics on Table 4.16 also show that the predictor variables; contractor credit services, veterinary services and advance pricing were statistically significant ($t=3.803$, $p<0.05$; $t=8.619$, $p<0.05$, $t= 8.743$, $p<0.05$ while capital variable was statistically insignificant ($t=.464$, $p>0.05$). Tolerance and VIF results indicate there was no collinearity in the predictor variables since the VIF values are less than 5 and tolerance values are greater than 0.2. VIF greater than 5 may suggest that the concerned variable is multi-collinear with others in the model and may need to be

excluded from the model while tolerance greater than 0.2 indicates nonexistence of multicollinearity (Gujarati, 2003).

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter discusses the summary of the findings from chapter four, gives the conclusions of the findings, recommendations of the study and suggestions for further research.

5.2 Summary

The purpose of the study was to examine the influence of contract financing on income growth among poultry farmers in Kenya. Data was collected using questionnaires from 53 respondents and analyzed using descriptive and inferential statistics. The study intended to find whether there exists any relationship between capital, contractor credit services, veterinary services, advance pricing and income growth among poultry farmers. This section summarizes the research findings of the study on the basis of formulated research objectives.

5.2.1 Influence of Capital on Income Growth among Poultry Farmers

The study's first objective was to examine the influence of capital on income growth among poultry farmers. According to the research findings, majority of respondents agreed that chicks are provided to the farmers as an initial capital and this has played a critical role in enabling farmers engage in contract farming. There is reimbursement (compensation with other chicks) for sudden chicks' death Syndrome or immature death of chicks as agreed by majority of respondents. However, Pan Feeders, automatic drinkers and chick drinkers are not provided to poultry farmers by Kenchic Limited as agreed by many respondents. Most respondents agreed that specific heating and lighting materials in the poultry house are not provided. Improving

technical efficiency in heating and lighting in poultry farming has the potential to increase their productivity, total output, and incomes without requiring increase in inputs or change of technology (Ruben and Sáenz-Segura, 2008; Chakraborty, 2009). There exist statistically insignificant, positive causal relationship between capital and income growth among poultry farmers according to joint regression model coefficients results ($\beta = 0.014$, $p > 0.05$). The non-causal relationship between capital and income growth among poultry farmers was found to be weak positive and statistically insignificant ($r = 0.037$, $p > 0.05$).

5.2.2 Influence of Advance Pricing on Income Growth among Poultry Farmers

The study's second objective was to assess the influence of advance pricing on income growth among poultry farmers. The research findings indicate that assurance of a fixed sales price for product enhance poultry farming and through contract financing there has been shift of price risks to processors among poultry farmers. The current market prices do not influence the advance pricing of the poultries' product while the advance price is usually determined by the total cost of production. The results indicate that contract farmers have no power in pricing of products and farmers do not prefer to sell their products at the prevailing market prices as compared to the advance price set. Smallholder farmers can be empowered to take advantage of new market opportunities through advance pricing for high-value agricultural products which have emerged as a result of increasing global consumption of these products, particularly vegetables and fruits (Temu and Temu, 2006). The correlation between the influence of advance pricing and income growth among poultry farmers was found to be strong, positive and statistically significant ($r = 0.927$, $p < 0.05$). The joint regression results also indicate that the advance pricing

have significant positive influence on income growth among poultry farmers based (β = 0.504, p<0.05).

5.2.3 Influence of Contractor Credit Services on Income Growth among Poultry Farmers

The study's third objective was to evaluate the influence of contractor credit services on income growth among poultry farmers. The research findings indicate that contracting firms guarantee farmers in order to access credits from financial institutions. The contractor credit services offered by the contracting firms do not attract interest costs during the actual payment for services. The results also indicate that credit service has led more farmers to engage in contract financing according to most respondents. A fair majority held a neutral opinion on whether penalties are charged in case the farmers make delayed payment for the services (such as contract termination). Favourable repayment terms on credit facilities advanced, do influence farmers to engage in contract financing while the level of stock (poultry) determines the amount of credit advanced to farmers. Simmons et al. (2005) considered farmer access to credit as one potential motive for contract participation. Contractor credit services have a significant influence on income growth among poultry farmers, as evidenced by the statistically significant positive relationship as shown in the overall regression model (β = 0.326, p<0.05). The correlation between the influences of contractor credit service and income growth among poultry farmers was found to be moderate, positive and statistically significant ($r = 0.741$, $p < 0.05$).

5.2.4 Influence of Veterinary Services on Income Growth among Poultry Farmers

The study's fourth objective was to examine the influence of veterinary on income growth among poultry farmers. The research findings indicate that free, basic veterinary training, health and safety training concerning poultry farming has enhanced poultry farming productivity. The results also indicate that regular visits by veterinary officers have increased poultry yields while willingness to learn or consult with veterinarians has not enhanced poultry farming productivity. Keeping   records of diagnoses and treatments has enhanced poultry farming productivity. However, it was not clear on whether frequent collaborative extension services trainings between Kenchic Limited and the Ministry of Agriculture has enhanced poultry farming productivity due to neutrality opinion held by many respondents. Francis (2012) did a study on the role of agricultural extension services in agricultural transformation for rural poverty reduction. He conducted a survey study of Ashanti region. He found that majority of agricultural producers in Ghana still need Agricultural Extension Services as a major agricultural transformation strategy. There exist statistically significant, positive causal relationship between veterinary services and income growth among poultry farmers according to joint regression model coefficients results ($\beta = 0.662$, $p<0.05$). The relationship between veterinary services and income growth among poultry farmers was found to be moderate, positive and statistically significant ($r = 0.779, p < 0.05$).

5.3 Conclusions

Based on the research findings of the study, the following conclusions were drawn.

5.3.1 Influence of Capital on Income Growth among Poultry Farmers

It can be concluded that capital has a positive influence on income growth among poultry farmers but the influence is not statistically significant. There exists a positive significant correlation between influence of capital and income growth among poultry farmers. Based on the results it can be concluded that chicks provided to farmers by Kenchic as initial capital are a key pillar in enhancing farmers' engagement in contract farming. Continuous compensation for sudden chicks' death Syndrome or immature death of chicks has also been a motivating factor that has enhanced loyalty among farmers towards contractual poultry farming with Kenchic. It can also be concluded that there has not been provision of Pan Feeders, automatic drinkers and chick drinkers to poultry farmers something that need to be taken care of.

5.3.2 Influence of Advance Pricing on Income Growth among Poultry Farmers

It can be concluded that advance pricing has a significant influence on income growth among poultry farmers. There exists a positive significant relationship between influence of advance pricing and income growth among poultry farmers. It can be concluded that assurance of a fixed sales price for product enhances poultry farming productivity. This is because poultry farmers are certain about the expected selling price thus building confidence in poultry farming. Conclusion can be made that contract finance helps in shifting of price risks to processors among poultry farmers thus acting as a good hedge against price fluctuation uncertainties. Much of the price risk is reduced, in contract financing, by the use of a predetermined price rather than the market price (Martinetz, 2005).It can be concluded that current market prices does not in any way influence the setting of the advance pricing of poultries' products with farmers not preferring to sell their products at the prevailing market prices as compared to the advance price set. Though poultry farmers have no power in pricing

of products since advance price is usually determined by the total cost of production, they still prefer to sell their products at the advance price set as compared to the prevailing market prices.

5.3.3 Influence of Contractor Credit Services on Income Growth among Poultry Farmers

It can be concluded that contractor credit services has a significant influence on income growth among poultry farmers. There exists a positive significant relationship between influence of contractor credit services and income growth among poultry farmers. It can be concluded that contracting firms guarantee farmers in order to access credits from financial institutions. This guarantee enhances poultry farming as farmers are able to boost their stock level. Conclusions can also be made that credit facilities offered by contracting firms have favorable terms since they do not attract interest costs during the actual payment for services. Moreover the credit facilities do not attract huge penalties in case the farmers make delayed payment for the services. Such penalties may include contract termination. Thus it can be concluded that credit facilities terms influence farmers to engage in contract financing. Simmons (2002) summarized possible reasons for engaging in CF from the smallholder perspective as: access to product markets with high transactions costs; access to relatively inexpensive credit where - for various reasons - they face high interest rates or credit is unavailable; access to services for managing on-farm risk; and access to information, inputs, logistics and marketing at relatively low cost.

5.3.4 Influence of Veterinary Services on Income Growth among Poultry Farmers

It can be concluded that veterinary services has a significant influence on income growth among poultry farmers. There exists a positive significant relationship

between influence of veterinary services and income growth among poultry farmers. It can be concluded that free, basic veterinary training, health and safety training concerning poultry farming has enhanced poultry farming productivity. More regular visits by veterinary officers have increased poultry yields since the officers are able to give regular diagnoses and treatments to poultry thus enhancing productivity. Using cross-sectional data from farmers in Tanzania, Joseph A.Kuzilwa et al., 2015 found a significant selection bias. Contract farming significantly increases the yield potential but lowers the average group technical efficiency. Conclusions can also be made that poultry farmers have been actively keeping records of diagnoses and treatments, a trend that has enhanced poultry farming productivity. There exists no clear collaboration strategy between the Ministry of Agriculture and Kenchic Limited in a bid to offer regular extension services to poultry farmers.

5.4 Recommendations

Based on the research findings and conclusions, the following recommendations were made:

5.4.1 Influence of Capital on Income Growth among Poultry Farmers

The management of Kenchic should put in place a strategy where by Pan Feeders, automatic drinkers and chick drinkers are provided to poultry farmers. This will save farmers on costs of buying these items thus minimizing their overheads and hence increasing their income level. There should also be provision of heating and lighting materials as well as specific heating and lighting dimensions to poultry farmers. These will ensure cost efficiency to farmers who don't need to source for substandard heating and lighting materials as this may affect the productivity of poultry farming by lessening sudden chicks' death syndrome.

5.4.2 Influence of Advance Pricing on Income Growth among Poultry Farmers

It is recommended that through a mutual agreement with the contractor, farmers should be involved in advance price setting. This will ensure that farmers as well as the contractor are able to hedge against price fluctuation in future enabling farmers to shift their preference from prevailing market prices to advance price set. Equally the advance price set should be continuously adjusted to the cost of production thus ensuring reap the benefit of being in contract farming. Contracts that allow prices of outputs as well as the terms to be decided in advance may reduce risks associated with price fluctuations (Baumann, 2000; Eaton & Shepherd, 2001).

5.4.3 Influence of Contractor Credit Services on Income Growth among Poultry Farmers

It is recommended that there should be a renegotiation between the contractor and the financial institutions that advance credit facilities to farmers on the guarantee by Kenchic. The renegotiation will ensure that some bottlenecks are addressed including repayment terms since some of the respondents held the opinion that penalties charged in case of delayed payment of credit facilities are not realistic. This can create a mutual relationship between contracting parties thus enhancing engagement in contractual financing among poultry farmers. Aside the ready market for farmers, contract farming gives farmers the opportunity to use the contract agreement as collateral to arrange for credit facilities with commercial banks in order to fund inputs (Eaton & Shepherd, 2001).

5.4.4 Influence of Veterinary Services on Income Growth among Poultry Farmers

It is recommended that continuous free veterinary trainings should be conducted through regular visits by veterinary officers. This will ensure that poultry farmers are equipped with basic veterinary training in bid to offer basic diagnoses and treatments in absence of veterinarians or in emergency cases. Respondents held neutral opinion on whether there exist frequent collaborative extension services trainings between Kenchic Limited and the Ministry of Agriculture. It is recommended that collaborative strategies be formulated so that the poultry farmers can benefit from such agreements in terms of enhancing their productivity through continuous training and working capital provision. Consumers may be prepared to pay a premium for products that originate from approved bio secure farms with great veterinary, even though the products' quality might not differ from the quality of products from ordinary farms. Nerlich et al. (2009)

5.5 Recommendations for Further Research

The study employed a case study approach of Kiambu County; it is recommended that this study be carried on a broader scale in Kenya. Yin (2003) asserts that a single case study is weaker than a multiple case study as the research findings cannot be applied in any other situations. In determining key measurable indicators under each study's variable qualitative research was used. Further research can be conducted to test and validate the research findings using a quantitative approach.

REFERENCE

Amin, S. (1980). *Class and Nation, Historically and in the Current Crisis*. Monthly Review Press: New York.

Banful, A. B. (2010. *Old Problems in the New Solutions? Politically Motivated Allocation of Programme Benefits and the 'New' Fertilizer Subsidies.* International Food Policy Research Institute, Washington DC.

Barrett, B., Bachke, E., Bellemare, F., Michelson, C., Narayanan, S., & Walker, F. (2011). Smallholder participation in contract farming: Comparative evidence from five countries. *World Development 40,* 715–730.

Barrett, C., Bachke, M., Bellemare, M., Michelson, H., Narayanan, S., & Walker, T. (2012), "Smallholder participation in contract farming: comparative evidence from five countries", *World Development* , 40(3),715-730.

Baumann, P. (2000). "Equity and efficiency in contract farming schemes: the experience of agricultural tree crops", *Working Paper No. 139,* Overseas Development Institute, London.

Baumann, P. (2005). Equity and efficiency in contract farming schemes. The experience of Agriculture Tree Crops. *Overseas Development Institute Working Paper. Retrieved from:* http://www.odi.org.uk/publications/ working papers] site visited on 01/07 2007

Bellemare, M. (2012). "As you sow, so shall you reap: the welfare impacts of contract farming," *World Development*, 40(7): 1418-1434.

Berk, J., & Demarzo, P. (200). Corporate Finance *(Pearson International Ed.)* Greg Tobin.

Bernice, Z. (2016). *Enhancing economic security among small-scale poultry farmers through entrepreneurship and contract farming.* A study for BF farm. Unpublished Bachelor Thesis Turku University of Applied Sciences.

Bhattarai, S., Lyne, M. C., & Martin, S. K. (2013). Assessing the performance of a supply chain for organic vegetables from a smallholder perspective. *Journal of Agribusiness in Developing and Emerging Economies, 3*(2), 101-118.

Bijman, J. (2008). "*Contract farming in developing countries: an overview,*" working paper, Department of Business Administration, Wageningen University, Wageningen, Holland.

Birthal, P., Gulati, A., & Joshi, P. K. (2005). "Vertical coordination in high-value food commodities: Implications for smallholders." *Markets, Trade, and Institutions Division Discussion Paper No. 85*. International Food Policy Research Institute. Washington, D.C.

Bogetoft, P., & Olesen, B. (2004). *Design of Production Contracts: Lessons from Theory and Agriculture.* Copenhagen Business School Press DK.

Bolwig, S., & Gibbon, P. (2009). The Economics of Smallholder Organic Contract Farming In Tropical Africa. *World Development* vol 37, NO.6, pp.1094-1104.

Bolwig, S., Gibbon, P., & Jones, S. (2008). "The economics of smallholder organic contract farming in Tropical Africa", *World Development* , *37*(6), 1094-1104.

Broilers rearing, (2017). Retrieved from http://www.kenchic.com/products/broilers/ (29/12/2017)

Chakraborty, D. (2009). Contract financing in India: Unique solution to multilayer agricultural problems? *Review of Market Integration 1*(1), 83–102.

Conning, J., and Udry, C. (2005). *Rural Financial Markets in Developing Countries, Economic Growth Centre.*" Yale University, and Centre Discussion Paper No.
914

Costales, A., & Catelo, O. (2008). *Contract Farming as an Institution for Integrating Rural Smallholders in Markets for Livestock Products in Developing Countries:Framework and Applications.* New York: Pro-Poor Livestock Policy Initiative (PPLPI).

Da Silva, C. A., & Rankin, M. (Eds.). (2013). *Contract financing for inclusive market access: Synthesis and findings from selected international experiences*. Rome, Italy: FAO.

Da Silva, C., (2005). "*The growing role of contract farming in agrifood systems development; drivers, theory and practice",* working document, Agricultural Management, Marketing and Finance Services, FAO, Rome. Retrieved from: www.fao.org/fileadmin/user_upload/ags/publications/AGSF_WD_9.pdf

Dorward, A. (2004). A Policy Agenda for Pro-poor Agricultural Growth. *World Development,* Vol. 32, No. 1. 73-89.

Du, X., Lu, L., & Zilberman, D. (2013). "*The economics of contract financing: a credit and investment perspective*", Department of Agricultural and Resource Economics, UC, Berkeley, available at: aeaweb.org

Eaton, C., & Shepherd, A. (2001). *Contract financing:* partnerships for growth, Food and Agriculture Organization of the United Nations.

Fama, E., & French, K. (1996). "Multifactor explanation of asset pricing anomalies". *Journal of Finance*. 51 (1): 55–84

Francis, A. (2012). *The Role of Agricultural Extension Services in Agricultural Transformation for Rural Poverty Reduction*: A Situational Study in the Ashanti Region. Unpublished Thesis Kwame Nkrumah University of Science and Technology.

Ghosh, P., Mookherjee, D., and Ray, D. (2000). *Credit Rationing in Developing Countries: An Overview of the Theory:* Published in Dilip Mookherjee and Debraj Ray (eds), A Reader in Development Economics,, London: Blackwell.

Gibbon, P., Lin, Y., & Jones, S. (2009). *Revenue effects of Participation in Smallholder Organic Cocoa Production in Tropical Africa:* A Case Study, DIIS Working Paper 2009:06 Copenhagen: Danish Institute for International Studies.

Gulati, A., Minot, N., Delgado, C., & Bora, S. (2005*). Growth in high value agriculture in Asia and the emergence of vertical links with farmers:* Paper presented at the symposium, Toward High-Value Agriculture and Vertical Coordination: Implications for Agribusiness and Smallholders. National Agriculture Science centre, Pusa, New Delhi.

Guo, H., Jolly, R. W., & Zhu, J. (2005). *Contract financing in China: Supply chain or ball and chain?.* Paper presented at the 15th Annual World Food & Agribusiness Symposium, IAMA, Chicago.

Huh, W. T., Athanassoglou, S., & Lall, U. (2012). Contract financing with possible reneging in a developing country: Can it work? *IIMB Management Review, 24*(4), 187-202.

IFPRI, (2006). *Linking Smallholders to Markets. Background Paper No. GSSP 0001.* International Food Policy Research Institute, Washington D.C.

International Fund for Agricultural Development, (2010). *"New Realities, New Challenges: New Opportunities for Tomorrow's Generation."* Rural Poverty Report 2011. Rome: IFAD.

Jensen, M. (1976). The agency costs of free cash flow, corporate finance and takeovers, *American Economic Review* 76,pp. 323-329.

Joseph, K., Arne, H., Daniel, M., Anwar, A., & Tomasz, C. (2015). *A Meta-Frontier Approach for Causal Inference in Productivity Analysis: The Effect of Contract Farming on Sunflower Productivity in Tanzania.* Selected Paper prepared for presentation at the 2015 Agricultural & Applied Economics Association and Western Agricultural Economics Association Annual Meeting, San Francisco, CA, July 26-28.

Key, N., & Runsten, D. (1999). Contract financing, smallholders, and rural development in Latin America: The organization of agroprocessing firms and the scale of outgrower production. *World Development, 27*(2), 381-401

Kirsten, J., & Sartorius, K., (2002). Linking agribusiness and small-scale farmers in developing countries: Is there a new role for contract farming? *Working Paper:* 25pp.

Ma, J., Zhang, Y., & Yu, C. (2011). "Innovative strategy and case study for the contract financing based value chain," *Rural Financial Studies*, 2011(7): 11-17.

Maertens, M., & Swinnen, M. (2009). Trade, Standards and Poverty: Evidence from Senegal. *World Development*, 37(1), 161-178.

Martinetz, S. (2005). *Vertical coordination of marketing systems: Lessons learned from the poultry, egg and pork industries* (ERS Agricultural Economic Report No. 708). Washington D.C: United States Department of Agriculture.

Martinusen, J. (1997). *Society, State & Market: A Guide to Competing Theories of Development.* Femwood Publishing: Nova, Scotia.

Masakure, O., & Henson, S. (2005). Why do small-scale producers choose to produce under contract? Lessons from non-traditional vegetable exports from Zimbabwe. *World Development 33(*10), 1721–1733

Melese, A. T. (2012). *Contract farming: Business models that maximise the inclusion of and benefits for smallholder farmers in the value chain*. Paper presented at the UNIDROIT Colloquium, Promoting Investment in Agricultural Production: Private Law Aspects", Rome, Italy.

Minot, N., & Benson, T. (2009). *Fertilizer Subsidies in Africa: Are Vouchers the Answer*? International Food Policy Research Institute, Washington DC.

Minot, N., & Roy, D. (2006): *Impact of high-value agriculture and modern marketing channels on poverty:* An analytical framework. MTID Mimeo. International Food Policy Research Institute, Washington, D.C.

Miyata, S., Minot, N., & Hu, D. (2009). Impact of contract financing on income: Linking small farmers, packers, and supermarkets in China. *World Development*, *37*(11), 1781-1790.

Mshiu, S. (2007). *Comparative analysis of contract farming modalities in Tanzania. A case study of Mtibwa sugarcane farming in Morogoro Region and tobacco farming in Tabora Region.* Dissertation for Award of MSc Degree at Sokoine University of Agriculture, Morogoro, Tanzania, 100pp.

Nerlich B., Brown, B., & Crawford, P. (2009. Health, hygiene and biosecurity: tribal knowledge claims in the UK poultry industry. Health, Risk and Society 11(6), 561–577

Nyaga, (2007). *Poultry sector country review*, FAO

Okello, J., & Swinton, M. (2007)."Compliance with international food safety standards in Kenya's green bean industry: a paired case study of small and large family farms." *Review of Agricultural Economics***.** *29*:269-285.

Oladele, O.I., (2004). *Livestock farmers' awareness, access and benefits of Veterinary Extension Services in Southwestern,* Nigeria. Livestock Research for Rural Development, 16(6).

Petrick, M. (2004) Farm investment, credit rationing, and governmentally promoted credit access in Poland: a cross-sectional analysis*. Food Policy*, 29(3), pp. 275-   294.

Prowse, M. (2012). "Contract financing in developing countries: A review", À Savoir, Agence Française de Developpement, 12 February. Retrieved from:

www.afd.fr/webdav/site/afd/shared/publications/recherche/scientifiques/a-savoir/12-va-a-savoir.pdf

Quisumbing, A., & McClafferty, B. (2006). *Using Gender Research in Development* (Washington, DC: International Food Policy Research Institute).

Ramaswami, B., Birthal, S., & Joshi, K. (2006). *Efficiency and Distribution in Contract Farming: The Case of Indian Poultry Growers.* MTID Discussion Paper No. 91. Washington DC,IFPRI.

Ruben, R., Sáenz-Segura, F. (2008). Farmers, markets and contracts: Chain integration of smallholder producers in Costa Rica. *European Review of Latin American and Caribbean Studies* 85, 61–80.

Sachiko, M., Nicholas, M., & Dinghuan, H. (2009). Impact of Contract Financing on Income: Linking Small Farmers, Packers, and Supermarkets in China. *World Development, 37*(11), 1781–1790

Saenger, C., Qaim, M., Torero, M., & Viceisza, A. (2013). "Contract financing and smallholder incentives to produce high quality: experimental evidence from the Vietnamese dairy sector", *Agricultural Economics* , *44*, 297-308. doi: 10.1111/agec.12012.

Sen, B., (2003): Drivers of Escape and Descent: Changing household fortunes in Bangladesh, pp 518-523

Simmons, P. (2002). *Overview of smallholder contract farming in developing countries.* Armidale, Australia: Graduate School of Agricultural and Resource Economics, University of New England.

Simmons, P., Winters, P., & Patrick, I. (2005). An Analysis of Contract Financing in East Java, Bali and Lombok, Indonesia. *Journal Agricultural Economics 33*(3): 513-529.

Singh, S. (2002). "Contracting Out Solutions: Political Economy of Contract Financing in the Indian Punjab." *World Development 30*(9): 1621-1638.

Strohm, K., & Hoeffler. H. (2006). *Contract farming in Kenya:* Theory, evidence from selected value chains & implications for Development Cooperation.

Temu, A., & Temu, A. (2006). "High value agricultural products for small markets in sub-Saharan Africa: trends, opportunities and research priorities", *Workshop Proceedings on How Can the Poor Benefits From the Growing Markets for High Value Agricultural Products, Cali, 3-5 October.*

Tripathi, R. S., Singh, R., & Singh, S. (2005). "Contract farming in potato production: an alternative for managing risk and uncertainty," *Agricultural Economics Research Review* 18, 47-60.

Van Schaik (2001). Introduction into Diary Farm Preventive Veterinary *Medicine S1* 289 – 3903

Vermeulen, S., & Cotula, L. (2010). *Making the most of agricultural investment:* A survey of business models that provide opportunities for smallholders, Iied.

Wachira, J. (2017). *kenchic farmers database*. Retrieved on November 16th 2017 from   http://www.kenchic.com.

Wainaina, W., Okello, J., & Nzuma, J. (2012). "Impact of contract financing on smallholder poultry farmers' income in Kenya", *The International Association of Agricultural Economists Conference, Foz do Iguacu, 18-24 August.*

Wang, H. H., Zhang, Y., & Wu, L. (2011). "Is contract financing a risk management instrument for Chinese farmers?" *China Agricultural Economic Review*, 3(4): 489-504.

Warning, M., & Key, N. (2002). The social performance and distributional consequences of contract farming: An equilibrium analysis of the Arachide de Bouche Program in Senegal. *World Development*, *30*(2), 255-263.

Warning, M., & Hoo, W. (2000). *The Impact of Contract Financing on Income Distribution: Theory and Evidence*. Paper prepared for Presentation at the Western Economics Association International Annual Meetings. June, 2000. 26pp. [http://www.ups.edu/eco/working papers] site visited on 10/07/2007.

Woodend, J. (2003). Potential of contract farming as a mechanism for the commercialization of vegetable supply chains. *Food Policy. 34*: 8-15

World Bank, (2005). *Reform Experience with the Tanzanian Cotton Sector*. [www.worldbank.org/afr/findings] site visited on 03/07/2007.

World Bank, (2007). *World Development Report 2008: Agriculture for Development*. World Bank, Washington D.C.

World Development Report, (2008)*. Agriculture for Development*. New York: World Bank

APPENDICES

Appendix 1: Introduction Letter

JANE NJERI

PO BOX 10130,

NAKURU-20100

Dear Respondent,

Re: Research Questionnaire

I am a Masters' degree student at Jomo Kenyatta University of Agriculture conducting a research entitled **"Influence of Contract Financing on Income Growth among Poultry Farmers in Kenya."** This research forms part of the requirement for my masters' qualification. I would appreciate if you would kindly take a little of your time to complete a questionnaire that I will provide. Any information provided from you is purely for academic purposes and all responses will be treated with utmost confidentiality. Your cooperation is most valued and appreciated.

I take this opportunity to thank you in advance for your quick return of your completed questionnaire.

Yours Faithfully,

Jane Njeri

Appendix II: Research Questionnaire

This questionnaire refers to a research on influence of contract financing on income growth among poultry farmers in Kenya. The questionnaire forms an integral part of the study and the respondents are kindly requested to complete and give any additional information they feel is necessary for the study. The researcher will uphold utmost integrity and ethics by ensuring that the data collected will be used absolutely for academic purpose and will be treated with strict confidentiality.

1. State your Gender

    Male ☐   Female ☐

2.   How long have you been in contract farming

    Below 3 Yrs ☐   3-10 Yrs ☐ 0-15 Yrs ☐   Above 15Yrs ☐

3. What is your current stock level (poultry?)

    Less than 13,000   [ ]

    13,000-16,000   [ ]

    16,000-18,000   [ ]

    Above 18,000   [ ]

4. What is the level of your Gross income per contractual rearing cycle?

    Less than 4,000,000   [ ]

    400,000-6,000,000   [ ]

    6,000,000-8, 000,000   [ ]

    Over 8,000,000   [ ]

In the following section, indicate your level of agreement with the statements therein on scale 1-5 where (**1-Strongly Disagree (SD), 2-Disagree (D), 3-Undecided (U), 4-Agree (A) and 5-Strongly Agree (SA).**

1. **Capital**

	Statement	5	4	3	2	1
Chicks						
i.	Chicks are provided to a farmer as an initial capital and this has led to increase in income growth					
ii.	There is reimbursement (compensation with other chicks) for sudden chicks death Syndrome or immature death of chicks					
Feeding Equipment						
iii.	Pan feeders, automatic drinkers and chick drinkers are provided to a farmer which enhances income growth					
Poultry House						
iv.	Construction materials for the chicken coop are provided to the farmers					
vi.	Specific heating and lighting materials in the poultry house are provided					

2. **Advance Pricing**

	Statement	5	4	3	2	1
i.	Assurance of a fixed sales price for the product has enhanced income growth					
ii.	Through contract financing there is shift of price risks from the farmer to processors					
iii.	The current market price influences the advance pricing of the poultries' product					
iv.	The advance price is usually determined by the total cost of production thus influencing the income of the farmer					
v.	A Contract farmer has no power in pricing of products.					
vi.	A farmer prefers to sell his or her products at the					

		Statement	5	4	3	2	1
	prevailing market prices as compared to the advance price set as it leads to more income.						

3. Contractor Credit Services

	Statement	5	4	3	2	1
i.	Contracting firms guarantee farmers in order to access credits from financial institutions					
ii.	Contractor credit services attract interest costs during the actual payment for services thus less income earned.					
iii.	Access to credit service has led to increased income growth.					
iv.	Penalties are charged in case a farmer makes delayed payment for the services (such as contract termination).					
v.	Favourable repayment terms have influenced income growth.					
vi.	Level of stock (poultry) determines the amount of credit advanced to you as a farmer thus influencing income growth					

4. Veterinary Services

	Statement	5	4	3	2	1
i.	Free, basic veterinary training has enhanced poultry farming productivity and income growth.					
ii.	Health and safety training concerning poultry farming has enhanced productivity and income growth.					
iiii.	Regular visits by veterinary officers has increased your poultry yields thus increased income					
iv.	A farmer's willingness to learn or consult with veterinarians improves his/her performance hence enhancing income growth.					
v.	Keeping records of diagnoses and treatments has reduced prevalence of diseases thus increased income					

		5	4	3	2	1
vi.	Frequent collaborative extension services trainings between Kenchic Limited and the Ministry of Agriculture has enhanced poultry farming productivity and income growth.					

5. Income Growth

	Statement	5	4	3	2	1
i.	Contract financing has led to an increase in your sales levels which has led to increase in profits.					
ii.	Contract financing has reduced the level of poverty since a farmer gets more income when engaging in contract farming.					
iii.	A Contract farmer gains higher expected returns and lower risks as compared to a non-contracting farmer.					
iv.	Contract financing ensures market access for a farmers' produce thereby providing high ability to generate more income for the farmer.					
v.	Contract financing saves costs associated with poor market information systems hence reduces the transaction costs and in turn increased income.					
vi.	Engaging in contract financing has helped you as a farmer reduce your overall variable cost thus increased income					

vii. Please indicate your sales level per year

	2013	2014	2015	2016	2017
Less than 16 million					
16-24 million					
24-32 million					
Over 32 million					

viii. Please indicate your profit level per year

	2013	2014	2015	2016	2017
Less than 2 million					
2-4 million					
4-6 million					
Over 6 million					

Appendix III: Farmers

1. Walter Muhu
2. Andrew Muhu
3. Maurice Njugu
4. Patrick Muiru
5. John Maina
6. John Gichomo
7. George Mwangi
8. Milda Owuor
9. Joyce Nyambura
10. Daniel john
11. Samuel Macharia
12. Benard kiarie
13. Bernard Muchemi
14. Alex Mucheru
15. George Samba
16. Peter Jackson
17. Mwangi Mwangi
18. Rwenji Kahio
19. Peter Kihoru
20. Fredrick Maina
21. Walter Macharia
22. Martin Mwaniki
23. James kamau
24. James Kariuki
25. Martin Mwaniki
26. Martin Kirio
27. Ernest Too
28. Hillary Mwaura
29. Edward Ngugi
30. Gideon Waweru
31. Phillip Ngotho
32. Evans kamenya

33. Kamande Maina

34. Ernest kamande

35. Brian Muigai

36. Micheal Kanji

37. Sospeter Jacob

38. Victor Matu

39. Victor Kamau

40. Elijah Kimemia

41. Gachanja Macharia

42. Patrick Mugendi

43. Thuranira Mugendi

44. Jackson Makau

45. Victor Owuor

46. Hellen Gichuhi

47. Anne Mwihaki

48. Stanley Mwaura

49. Charles Karaya

50. Fredrick Kanyi

51. Maria Magdalene

52. Chefs kuku

53. Isaac Thingo