INFLUENCE OF CREDIT FROM DIVERSE SOURCES ON THE PERFORMANCE OF SMALLHOLDER HORTICULTURAL AGRIPRENEURS IN KENYA

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Influence of Credit from Diverse Sources on the Performance of Smallholder Horticultural Agripreneurs in Kenya

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DECLARATION

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

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DEDICATION

This thesis is dedicated to my late parents Priscilla Mutio and Maillu who, even though never went to school, worked very hard to ensure that I had the opportunity to study. Because of them, and with the help of God, this far I have come. I also dedicate this work to my wife Annah Mwelu and my lovely children Fiona Mutio Maillu and Jonny Ethan Maillu.

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ACCRONYMS AND ABBREVIATIONS

AFDB	African Development Bank
AGRA	Alliance for Green Revolution in Africa
AJOBE	African Journal of Business Economics
APR	Agricultural Policy Review
CA	Cronbach's alpha
CGAP	Consultative Group to Assist the Poor
FaaB	Farming as a Business
FAO	Food Agricultural Organization
GDP	Gross Domestic Product
IAASTD	International Assessment of Agricultural knowledge, Science and Technology for Development
IFAD	International Fund for Agricultural Development
IFOAM	International Federation of Organic Agriculture Movements
IMF	International Monitory Fund
KIPPRA	Kenya Institute for Public Policy Research and Analysis
MFIs	Micro Finance Institutions

OECD	Organization for Economic Co-operation and Development
ODA	Official Development Assistance
ROSCAs	Rotation Savings and Credit Associations

OPERATIONAL DEFINITION OF TERMS

Smallholders: Smallholders are those farmers with limited resource endowments with less than 5 acres of land in areas with high population densities (Salami *et al.,* 2010). The operational definition for this study was that smallholders are those horticultural farmers who own or have leased and cultivated between two and ten acres of land.

Agripreneurs: According to Nagalakshmi, and Sudhakar (2013), an agripreneur is defined as an entrepreneur whose main business is agriculture or agriculture-related. For this study, agripreneurs were taken as those farmers who were doing farming as a business and had demonstrated innovativeness, resilience, risk taking among other entrepreneurial traits.

Credit: A credit is a legal contract where one party receives resource or wealth from another party and promises to repay him on a future date along with interest. In simple terms, a credit is an agreement of postponed payments of goods bought or loan. With the issuance of a credit, a debt is formed. Finance Maps of World (2015, June). Definition of Credit. Retrieved on 20th September 2016 from http://finance.mapsofworld.com/credit/definition.html

Performance: According to Dobrin and Popescus (2012), performance can be defined as making progress, having a successful

outcome or to make better. Afshan, Sobia, Kamran and Nasir (2012) define performance as the achievement of specific tasks measured against predetermined or identified standards of accuracy, completeness, cost and speed. Agripreneur performance can be manifested in improvement in production, employment creation and income generated. This study has adopted both these definition to track the realization of enterprise goals and objectives set by the horticultural agripreneurs.

Production: Production is a process of combining various material inputs and immaterial inputs in order to make something by creating output, a good or service which has value and contributes to the utility of individuals (Saari, 2011). In this study, production was taken as the process of combining several inputs (credit) by the smallholder agripreneurs to create a valuable output for the individuals.

Formal and Informal Sources of Credit: Formal financial activities are those emanating majorly from commercial banks and other institutions controlled by the central bank while the informal financial markets are defined as activities of various financial intermediaries ranging from money-lenders, friends, relatives, shopkeepers, merchants, traders, and Rotating Savings and Credit Associations (ROSCAs). The formal and informal financial systems co-exist and operate side by side with one another

(Mustafa, Ansari, & Younis, 2012; Mhunzi, 2012; Kamara, 2010).

Trader / Processor Credit: Trader / processor credit is normally provided to agripreneurs in form of inputs, cash or in-kind advances based either on repayment at harvest or on agreed purchase by the traders / processors (Kelly, 2012; Barrett, Bachke, Bellemare, Michelson, Narayanan & Walker 2012). The study adopted this definition for the research.

Family and Friends Credit: This is the credit availed to an individual by relatives and or friends to invest in business or to take care of an urgent need. The credit is availed to the said individual based on the mutual relational bonds that bind the individuals with the credit provider. The credit is normally given without interest (Pearlman, 2010).

ABSTRACT

This study sought to evaluate the influence of credit from diverse sources on the performance of the smallholder agricultural agripreneurs in Kenya. The majority of the developing economies are dependent on the agriculture sector which is mainly driven by the smallholder agripreneurs. However, despite the critical role that the agriculture sector plays in these developing economies in terms of food security, employment creation and poverty reduction, smallholder agripreneurs are unable to readily access credit from the formal financial institutions to improve their agricultural enterprises. To mitigate this challenge, this has led the smallholder agripreneurs to explore ways of getting credit from the informal financial sector. This study endeavoured to investigate the significance of credit from various sources and how this affects the performance of the smallholder agripreneurs in terms of production, job creation and amount of income realized. The study used descriptive design method to collect data from the target population of 337 smallholder horticultural agripreneurs. Data was collected from a sample size of 106 respondents using structured questionnaires. The data was analysed using multiple regression model and IBM SPSS Statistics 25. The study revealed that only 19.3 % of agripreneurs' enterprise challenges were addressed by access to finance. Credit sourced from formal financial institutions, traders and processors and from group savings associations was found to have significant influence on the performance of the smallholder agripreneurs since it increased production as well as gross and net income for the agripreneurs. These credit sources were found to be popular and effective for the development and growth of smallholder agricultural enterprises. However, credit sourced from family and friends did not have a significant influence on the smallholder agripreneurs'. The study recommended for the development of a policy framework that could help in developing and scaling-up the use of credit from both the formal and the appropriate informal sources. Since the study found that access to finance only tackles 19.3% of agripreneurs' enterprise challenges, it was recommneded that all smallholder agripreneurs should be sensitized to this fact to help them to plan and manage their enterprises more effectively. Smallholder agripreneurs were encouraged to join group savings associations to help them develop a resilient savings culture bolstered by the groups' peer accountability structures. The study recommended that other similar studies should be carried out within and without Kenya to support the generalization of this study findings.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Agriculture remains the central economic activity and employs the majority of the people in most low income countries. Worldwide, there are nearly 450 million households whose dominant activity is agriculture. Agripreneurs in developing countries, predominantly those in low income countries, experience a number of challenges including low productivity, limited access to markets for their products, lack of adequate risk management products and services and limited access to finance. Whereas agriculture remains a key economic activity in Africa employing about 55% of the populace, only around 1% of formal bank lending goes to the agricultural sector (IFC, 2014).

Agricultural development is vital to attaining the Sustainable Development Goal of eradicating extreme poverty and hunger. With an estimated 850 million persons globally who are underfed and a mounting global population, it is anticipated that the demand for food will continue to escalate. At the same time, food price upsurges in recent years have built up global anxieties about current levels of agricultural production (FAO, 2013). The agribusiness sector, which encompasses the commercial activities performed from the farm to the consumer's dining table, is now considered a major generator of employment and income worldwide (Konig, Da Silva, & Mhlanga, 2013). The global population is expected to increase from 7 billion in 2012 to 9.1 billion in 2050, a 30 per cent increase; accordingly, the demand for food production and agricultural products will also increase even faster, by almost 70 per cent over the same period (FAO, 2012).

1.1.1 Global Perspective on Financing Agripreneurs

Globally, provision of sustainable and adequate financial services to the smallholder agripreneurs faces many challenges, including limited capacity of the financial service providers in the rural areas (Kendall *et al*. 2010). The formal financial institutions are reluctant to serve agripreneurs in the agricultural sector, given its seasonality and the inherent risks of farming (Kloeppinger-Todd and Sharma, 2010; IFC, 2011; FAO, 2012; IFAD, 2011). Advocates of credit as a poverty alleviation measure (Adam, 2010; World Savings Bank Institute, 2010) contend that limited availability of credit services from formal financial institutions has prevented farmers from adopting improved farming practices because of their inability to purchase the necessary inputs required in the production. Low productivity in agriculture, livestock and fishing is generally attributed to the use of poor technology resulting due to limited access to credit. Wiggins, Kirsten, and Llambı (2010) notes that with insufficient funds, smallholder agripreneurs cannot invest in new equipment and machinery to enable them reach out to new markets and products.

1.1.2 Local Perspective on Financing Agripreneurs

Agriculture remains the mainstay of the Kenyan economy and directly contributes to 26 percent of gross domestic product (GDP). The sector performance greatly affects the poor, as 67 percent of the population and 80 percent of the poor live in rural areas and depend on agricultural activities for their livelihoods (KIPPRA, 2013). The rural economy in Kenya is mainly dependent on smallholder agripreneur agriculture, which accounts for 75 percent of total agricultural output and 70 percent of marketed agricultural production (GoK, 2010). Smallholder agripreneurs face various constraints, which lead to low returns. Among these constraints is limited access to inputs and financial services (World Bank, 2008). Agricultural productivity is low and declining and its competitiveness, in both domestic and export market, has worsened.

In Kenya, agriculture production especially in dairy and horticulture declined by 5 percent between 2010 and 2011 (KIPPRA, 2013). Concerted efforts are therefore needed to turnaround the sector through private-sector driven development with its ultimate target being low income smallholder agripreneurs (Mercy Corps, 2011). With rising incomes and growing urban markets demanding higher-value products, commercialisation of some of the key agricultural sub-sectors is occuring. Comercialization is also arising as agripreneurs are trying to meet higher public and private standards within the global markets. Both these processes lead to greater use of purchased inputs, greater demand for processing, packaging and transportation, and the increased use of services like finance (World Bank, 2013). In Kenya and Rwanda, agricultural growth reduces poverty as much as three to four times more than growth in other sectors (IFPRI, 2012).

1.2 Statement of the Problem

Poor performance by agripreneurs in agriculture in Kenya in terms of productivity is generally attributed to the use of poor technologies (farm inputs and machinery) due to limited access to credit (Wiggins, Kirsten, & Llambı, 2010). Lack of adequate credit from formal financial institutions has been prominently highlighted as one of the main factors that contribute to underperformance by agripreneurs in Kenya (Kloeppinger-Todd & Sharma, 2010; IFC, 2011; FAO, 2012; IFAD, 2010; CEA, 2011; Etonihu, 2010). To fill this gap created by the limited number of formal financial service providers, informal financial service providers have stepped in to provide credit to the smallholder agripreneurs (Chisasa & Makina, 2012; Marcoul & Veyssiere, 2010). While the provision of agricultural credit to the smallholder farmers in Africa by non-financial institutions has been recognized (Kamara, 2010; Egyir, 2010; Kloeppinger-Todd & Sharma, 2010; Mann, Tinsey, Tedjo & Nwadei, 2010), very little research on the influence of credit from the informal service providers on the performance of the

smallholder agripreneurs has been carried out (Girabi & Mwakaje., 2013; Coates, Kitchen, Kebbell, Vignon, Guillemain, & Hofmeister, 2011; Reyes & Lensink, 2010).

Most studies on agriculture have tended to examine other specific constraints to smallholder agripreneurs' activities (Liverpool & Winter-Nelson, 2010). There are no comprehensive comparative studies that have been carried out on the influence of credit from different sources on the performance of smallholder agripreneurs. This study sought to fill this gap by investigating the influence of credit from diverse sources on the performance of the smallholder agripreneurs in Kenya and to what degree. The knowledge from this study will help in the development of appropriate policies to support the scale up of these credit sources to improve the performance of agripreneurs in Kenya.

1.3 Significance of the Study

Empirical findings on the significance of credit from various sources on the performance the smallholder agripreneurs may have significant impact on the smallholder agripreneurs and communities who live in the rural areas. The findings may be utilized by various entities to develop appropriate agricultural credit products for agripreneurs leading to improved food security, increased employment opportunities, increased incomes for the agripreneurs and reduction in absolute poverty among the rural communities in Kenya. Since smallholder agripreneurs contribute significantly to Kenya's gross domestic product, development of appropriate financial products for agripreneurs may increase further the agripreneurs' contribution to the country's GDP.

1.4 Research Objectives

The research objectives for the study have been divided into the general or overall objective and the specific objectives of the study.

1.4.1 General Objective

The general objective for this study was to investigate the influence of credit from different sources on the performance of smallholder horticultural agripreneurs in Kenya.

1.4.2 Specific Objectives

The study was guided by the following specific objectives:

1. To examine the influence of credit from formal financial institutions on the performance of smallholder horticultural agripreneurs in Kenya.
2. To establish the effect of credit from traders and processors on the performance of smallholder horticultural agripreneurs in Kenya.
3. To determine the extent to which credit from group saving associations influence the performance of smallholder horticultural agripreneurs in Kenya.
4. To investigate the influence of credit from family and friends on the performance of smallholder horticultural agripreneurs in Kenya.

1.5 Hypotheses

The study was guided by the following null hypotheses:

H_{01}: Credit sourced from formal financial institutions has no significant influence on the smallholder horticultural agripreneurs' performance.

H_{02}: Credit sourced from traders and processors has no significant influence on the smallholder horticultural agripreneurs' performance.

H_{03}: Credit sourced from group savings associations has no significant influence on the smallholder horticultural agripreneurs' performance.

H_{04}: Credit sourced from family and friends has no significant influence on the smallholder horticultural agripreneurs' performance.

1.6 Scope of the Study

The study focused on the 337 smallholder horticultural agripreneurs working under the umbrella of Horticultural Crops Development Authority of Kenya. Due to its extensive and comprehensive geographical and horticultural crop variety coverage, Horticultural Crop Development Authority was purposively chosen as the umbrella horticultural body under which Sagana, Mwea, Yatta and Kibwezi areas were consideration for the study. The other horticultural development bodies considered along the Horticultural Crop.

In this study the independent variables are credit from formal institutions, credit from traders and processors, credit from group savings associations and credit from family and friends which were measured and correlated to the dependent variable namely the performance of agripreneurs who obtained credit from these different sources. Using the simple random sampling method, out of the four HCDA operation areas, Yatta location was chosen as the horticultural farming area for the study.

Yatta is a constituency in Machakos County and is home to many smallholder agripreneurs who are dependent on the water from the big Yatta Water Furrow and the Athi River. As of July 2014, there were 337 registered smallholder horticultural agripreneurs working under the HCDA office in Yatta Constituency office covering Kabaa, Masinga, Yatta and Goliba sub-locations. Out of this number of agripreneurs, a total of 100 agripreneurs were selected to constitute the sample for the study.

1.7 Limitation of the Study

While utilizing the findings of the study one should take into account that, the results obtained from this study relied on data obtained from the agripreneurs of which a small

number approximately one per cent did not know how to read and write and may have faced a challenge in understanding and filling in the questionnaires. This limitation was however mitigated by soliciting support from the affected respondents' next of kin to fill the questionnaires with them.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses the theoretical literature review, conceptual framework and empirical review that is available on the influence of agricultural credit from diverse sources on the performance of the smallholder horticultural agripreneurs. It particularly focuses on finding documented discussions that highlight relevant literature on credit from various sources on the performance of the smallholder horticultural agripreneurs in Kenya with a focus on credit from both formal financial institutions and informal sources of credit. In this section, research gaps are identified.

2.2 Theoretical Framework.

Before deriving the empirical and analytical discussions it was important to situate the argument within a theoretical context. The study presented different theories that deal with theoretical framework postulated to provide a lens to view the various formal and informal credit sources for agripreneurs to scale up their enterprises and how these sources of credit are instituted and dispensed within these theories. This included theories such as economic theory of bank credit, transaction costs, life-cycle and reciprocal altruism theory.

2.2.1 Resource-based Theory

Barney's resource-based view seeks to explain why some firms perform better than others by looking at the resources available to the firms (Barney, 1991). The core idea is that competitive advantage comes from a firm’s effective use of the available tangible and intangible resources. Maritan and Peteraf (2011) posit that internal resource

accumulation by an enterprise, especially investment capital, as one of the key strategic factors that define the performance of an enterprise. A study by Owoseni and Akanbi (2010) has reported that the performance of an enterprise is largely dependent on tangible situational variables like access to resources. Access to vital resources like capital for investment help entrepreneurs to create acceptable outcomes like employment opportunities among other which help in advancing economic growth (Islam, Khan, Obaidullah & Alam, 2011).

Agripreneurs who have access to credit to invest in their businesses prosper greatly. On the contrary, those agripreneurs who do not have access to credit to develop their enterprises, the enterprises perform poorly (Ngugi & Bwisa, 2013). The Resource-based Theory is relevant to the agripreneur performance variable. The theory clearly highlights that access to credit is one of the key drivers behind agripreneurs' performance.

2.2.2 Economic Theory of Bank Credit: An "apotheosis of credit creation"

In his fundamental proposition of his Economic Theory of Bank Credit, Hahn turned upside down the traditional view that credit represented a store of savings deposited with the banks by the public. Hahn states that the bank is not an office for "borrowing" and "lending" money, but a factory where credit is manufactured. Hahn's theory objective was to overcome the orthodox view that every credit has to be financed by means of savings deposited by the banks. Banks are producers of credit which is not limited by the amount of saving. According to Viet, (2013), banks are generally the only source of external financing for small firms and households. The extension of credit activates the formerly unemployed resources resulting to an increase in real wages. Werner (2014b) maintains that the credit creation theory of banking happens when each bank individually create money through accounting operations when extending a loan. This theory is relevant to this study because it applies to the possibility of smallholder agripreneurs acquiring credit from banks to increase production then employ idle labour

leading to increased incomes both for the employees as well as for the smallholder agripreneurs.

2.2.3 Transactions Costs Theory

According to Schwartz (1974), trade credit is extended from firms with widespread access to credit from financial intermediaries to credit constrained firms. Papers based on the transaction costs argument posit that suppliers extend credit to buyers because they have advantages over banks in acquiring information about customers' creditworthiness. When information between buyers and sellers is asymmetric, trade credit will be extended to allow clients to check the real quality of the product bought. However, in asymmetric information conditions, suppliers may tighten the terms of credit since buyers' creditworthiness is doubtful. Trade credit is a very important source of financing for firms. Bastos and Pindado (2013) describe that increased reliance on credit from trade and processors as being particularly pronounced among the financially constrained enterprises.

Ferrando and Mulier (2013) evidence that financially constrained companies are more reliant on credit from traders and processors to finance their growth. This compensates for their limited access to external finance from the formal financial service providers. Carvalho and Schiozer (2015) reports that trade credit is complementary to bank credit meaning that agripreneurs actually obtain credit from the formal banks but also complement the same with credit from traders and processors. This theory is relevant to advancing of trade credit to smallholder agripreneurs. The theory shows how trade credit is capable of reaching out to many agripreneurs without depending on the actual cash available to advance to customers.

2.2.4 The Life-Cycle Theory

Savings fundamentally is about choosing between current and future consumption. Savings theories traditionally predict that present consumption is related not to current income, but to a longer-term estimate of income. The life-cycle hypothesis LCH (Modigliani, 1966) predicts that individuals hold their consumption constant over their lifetime; they save during their working years and draw down their savings during retirement. The basic idea behind the Modigliani-Brumberg model of life-cycle savings is that individuals try to smooth their consumption over a finite lifetime. Since their labor income varies over time, and since their household size varies over time, their saving rates will vary over time by accumulating assets during its working years, and de-cumulate during retirement.

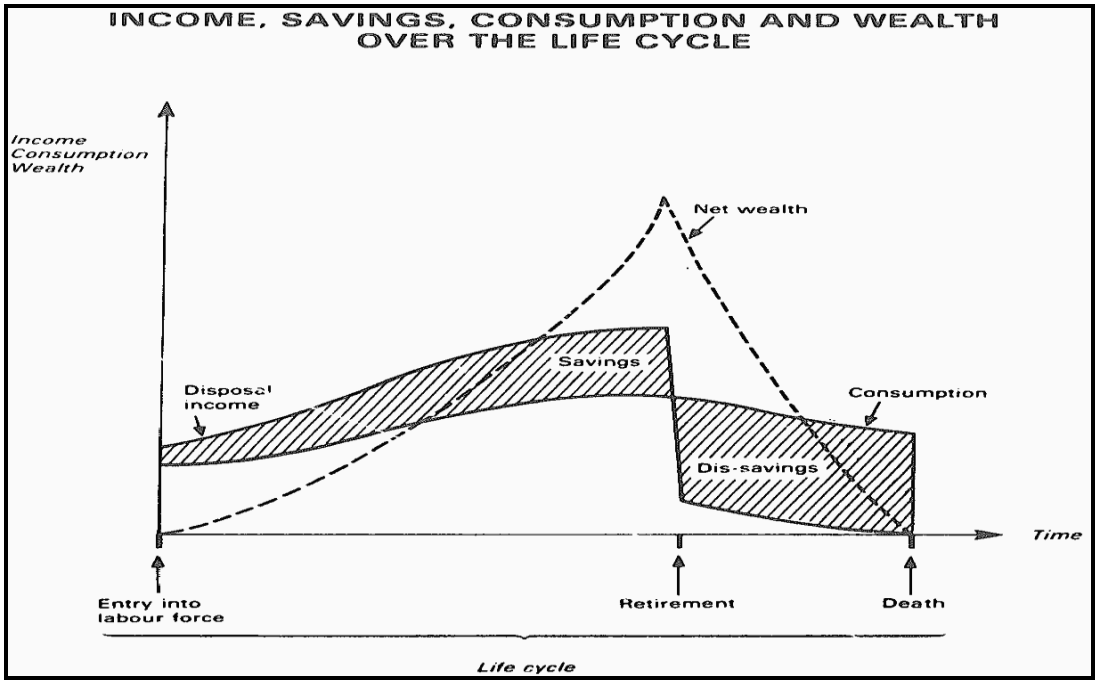

Figure 2.1: Life Cycle Savings Model.

Figure 2.1 clearly shows that people do save when they start accumulating disposable income until they reach the age of retirement. When individual savings are consolidated into one pool (Bernheim, Ray, & Yeltekin, 2011), then individual smallholder agripreneurs can access adequate credit to invest in enterprise development (Duflo, Kremer, & Robinson, 2011; Brune, Xavier, Jessica, & Dean, 2012). This theory is relevant to smallholder agripreneurs in that the savings mobilized can be used to on-lend to group members to develop and grow profitable agri-businesses.

2.2.5 Reciprocal Altruism Theory

According to Hamilton (1964), altruism is a type of social behavior. Forman evolutionary point of view, a behavior is social if it has consequences for both the giver and another individual — the recipient. Similarly, early theories of family financed enterprises explicitly shows the altruistic relations within the familial enterprise models (Lee & Persson, 2010; Noe, 2011). According to Samuel and Petra (2013), the single assumption of standard altruism between family members leads to a non-trivial set of predictions thus: *Coexistence* - both family and formal finance are used, sometimes simultaneously. *Financial deepening* - some projects cannot be undertaken without family finance, c*o-signing* - family finance helps raise outside finance and *negative returns* whereby family investors accept negative expected returns. Much less studies have been undertaken on the process of raising formal capital, that is, how agripreneurs mobilize resources from family, friends, and colleagues (Khayesi & George, 2011; Vissa, 2010). This source of credit is customarily issued without interest normally without collateral and the other laborious loan processing conditions and protocols (Pearlman, 2010). This theory is relevant to the smallholder agripreneurs because there are relatives and friends who are sufficiently motivated to support them with cash or in-kind credit to develop and grow their enterprises.

2.3 Conceptual Framework

Kombo and Tromp (2014) defined a conceptual framework as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a subsequent presentation. Conceptual framework also assists in developing awareness, understanding of a situation under scrutiny and communication (Dilanthi, 2015). This section refers to conceptualization of the relationship between variables in the study and shows the relationship graphically or diagrammatically with the purpose of enabling the reader to quickly see the proposed relationships. The dependent variable for this study is the performance of the smallholder horticultural agripreneurs. The main indicators to measure this variable will be production or yield, expansion of the business in terms of growth in the acreage under crop, employment opportunities created and income realized.

The independent variables are credit from formal financial institutions, traders and processors, group savings association and from family and friends. These variables are the drivers of agripreneurs' performance. This is summarized in Figure 2.2 below.

Credit from diverse sources

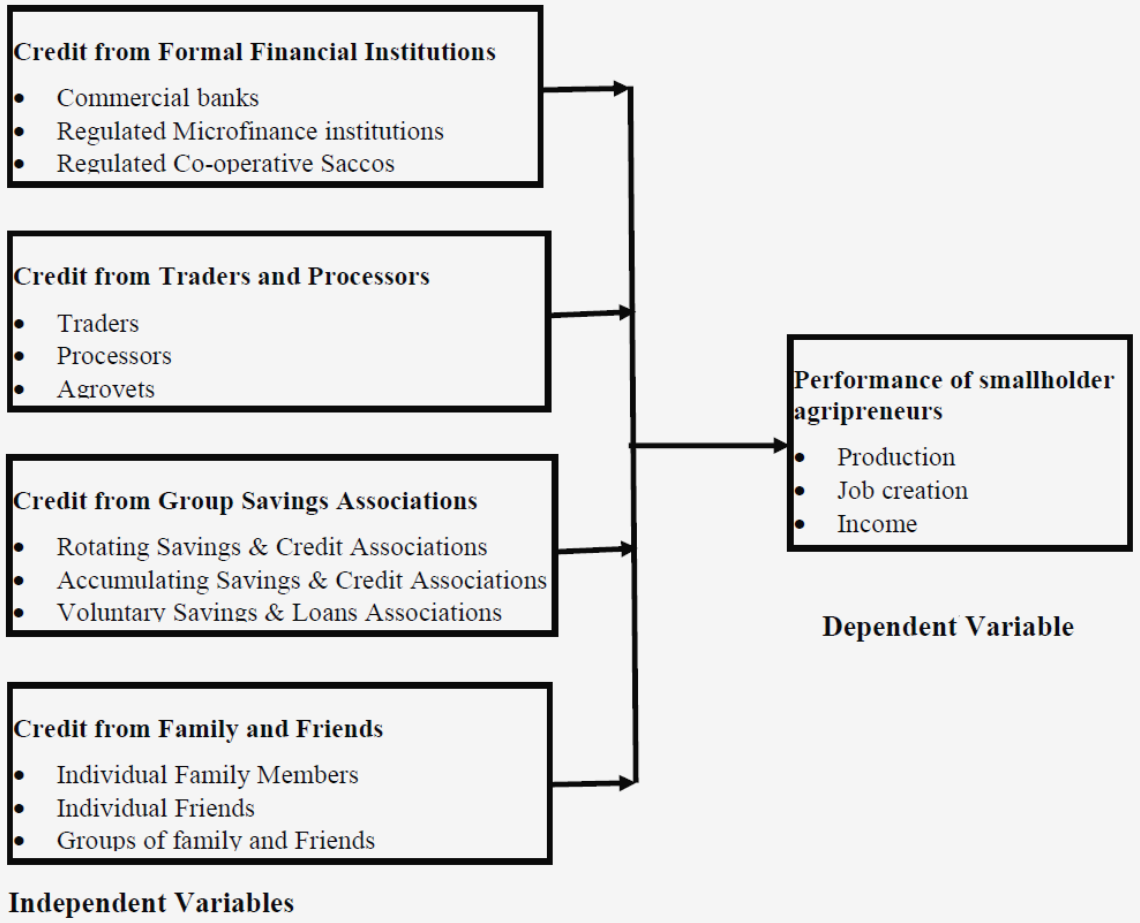

Figure 2.2: The Conceptual Framework

2.3.1 Credit from Formal Financial Institutions

Formal credit refers to credit or loans issued from financial institutions that are regulated by the government and operated within the regulatory framework of the financial system (Campero & Kaiser, 2013). Often, formal credit ownership concentrates among the better-off: people who are in the ethnic majority, male, have high educational attainment, and enjoy high income levels. Employment and asset ownership are of particular importance in determining whether a person borrows from a formal institution. The formal financial institutions that fall under this category as envisaged in this study include the commercial banks, microfinance institutions and cop-operative Saccos. Commercial banks are regarded as crucial forces in capital formation, savings, investment and other economic resource allocation of various countries by making funds available for investors (Ongore & Kusa, 2013). This parameter was measured by the amount and the frequency at which smallholder agripreneurs obtained credit from these formal sources and how they invested the funds to support the growth of the agricultural enterprises (Langat, 2013).

2.3.2 Credit from Traders and Processors

Under this variable which included input suppliers (agrovets), traders and exporters as the primary source of credit for agripreneurs, the credit facility was essentially disbursed in-kind by way of farm inputs (Kelly, 2012). Agripreneurs use credit from traders and processors to complement credit from the formal financial institutions like the commercial banks (Carvalho & Schiozer, 2015). The primary motive behind credit from traders and processors is the need to provide agripreneurs with some leeway in payment terms in order to accommodate additional purchases in their cash flow planning to facilitate the transaction settlement.

2.3.3 Credit from Group Savings Associations

Credit from group savings associations refer to a model whereby agripreneurs obtain credit from a communally owned, financed and managed kitty to develop their enterprises (Rasmussen, 2013). Many agripreneurs use credit from these 'savings and loan association' groups because they have limited access to credit from the banks (Rippey & Majara, 2011). Group savings associations provide simple savings and loan facilities in situations whereby agripreneurs do not have easy access to formal financial services (Montesquiou & Sheldon, 2014).

2.3.4 Credit from Family and Friends

In this category, agripreneurs obtain credit from individuals or groups of family members and friends. Credit from family and friends is frequently interest-free (Collins, Morduch, Rutherford, & Ruthven, 2010). Wall Street Journal (2012) refers to this source of credit which is popular among budding entrepreneurs, as the "Bank of Mom or Dad". According to (Deku, Kara, & Molyneux, 2015), this source of credit is normally widely used by those who are poor, have low levels of education, reside in rural areas and live in female-headed households.

2.3.5 Performance of Smallholder Agripreneurs

The study predicted that agripreneurs who obtained credit from the formal and informal sources and invested in their on-farm agricultural enterprises were going to experience growth of the enterprises (Wiggins, Kirsten, & Llambı, 2010; FAO, 2014). This variable predicted that agripreneur performance would be in terms of increased production, incomes, and job opportunities as well as in terms of the size of land under crop cultivation.

2.4 Empirical Literature Review

2.4.1 Credit from Formal Financial Institutions

Mashigo and Schoeman (2011) agree that formal commercial banks play a pivotal role in the delivery of financial services especially to the smallholder agripreneurs. However, a higher incidence of bank branch locations is skewed towards urban areas, with rural areas having a sharp decline in the number of rural bank branches. This is despite the fact that the bulk of the people, especially the smallholder agripreneurs, live in rural areas than in urban areas thereby making it increasingly difficult and more expensive for the formal banks to avail credit to smallholder agripreneurs in rural areas (Hinson, 2011). Hahn's study dwell more on investments in formal bank accounts and does not mention anything about informal credit (Chisasa & Makina 2012; Marcoul & Veyssiere, 2010) making it less effective to address credit needs for the smallholder agripreneurs. In developing countries, studies have shown that households that are headed by males with stable jobs are about two to five times more likely to use formal credit than are their counterparts who are female and do not own assets (Clamara, Peña, & Tuesta, 2014).

According to Okojie Monye-Emina, Eghafona, Osage, & Ehiakhamen, (2010), lack of formal bank accounts, collateral and information regarding the procedures for accessing credit from banks usually limit smallholder agripreneurs from readily accessing credit from the formal financial institutions. Ally (2013) stated that an economy's formal banking sector plays a very critical role in sustaining financial intermediation especially for agripreneurs in the agriculture sector which has a substantial impact on the entire national economy. Hinson, (2011) and Okojie, Monye-Emina, Eghafona, Osage & Ehiakhamen, (2010) however, posit that formal banks are not able to provide credit with flexible repayment conditions to the smallholder agripreneurs in the rural areas who are normally taken as high risk customers.

2.4.2 Credit from Traders and Processors through Contract Farming

A number of scholars are in agreement with Schwartz study that trade credit is extended from firms with widespread access to credit from financial intermediaries to credit constrained firms with limited access. Marcoul and Veyssiere (2010) identified contract farming as a major catalyzer to accessing credit from traders and processors for the smallholder agripreneurs. Yazdanfar and Ohman (2015) studied the influence of credit from traders and processors on the growth of small and medium enterprises and concluded that enterprises using trade credit were more were more likely to boost their revenues. Contract farming arrangement allows farming entrepreneurs to realize positive impacts by accessing an array of agricultural services including credit which they would otherwise not have access to (Bellemare, 2010). Wiggins and Keates (2012) confirm that large and formal firms (processors, exporters, retail outlets) often take responsibility for organizing value chain linkages including financial linkages.

Leturque and Wiggins (2011) states that Thailand's government has been instrumental in establishing public and semi-public agribusiness companies to facilitate agricultural exports through contract farming schemes which facilitate access to trade credit. Contract farming is seen to sit under a broader umbrella term of inclusive business models where smallholder agripreneurs are engaged by firms on 'equitable' terms through backwards integration by processors and forwards integration by input providers with efforts being made by retailers such as supermarkets, to include smallholder agripreneurs in their supply chains (Kelly, 2012). Smallholder agripreneurs who enter into contract farming almost unambiguously achieve higher yields, incomes and high input usage (Barrett, Bachke, Bellemare, Michelson, Narayanan & Walker, 2012). According to UNCTAD (2010) and Prowse (2012), there are five different basic models of contract farming: centralized, nucleus estate, multipartite, informal and intermediary. This informal model which is classically characterized by individual traders or companies contracting informally with the smallholder agripreneurs, the company pays

growers the contract price, but check off a sum that goes to the bank to repay its loan (Vermeulen & Cotula, 2010).

2.4.3 Credit from Group Savings Associations

According to Bernheim, Ray, and Yeltekin (2011), the reason why there is low savings among people in the rural areas including agripreneurs, is not that the people are simply too poor to save but because of self-control problems which lead to the low asset trap model. Experimental evidence from a multiplicity of countries show that being part of peer groups can increase individuals' saving rates and access to commitment savings products like credit (Kast, Meier, & Pomeranz, 2011; Karlan, McConnell, & Mullainathan, 2011). This is what necessitates smallholder agripreneurs to join saving groups to avoid the temptation to use up their savings prematurely (Banerjee & Mullainathan, 2010). Choi, Laibson, and Madrian (2011) posit that some form of commitment is needed for people with time-inconsistent preferences to make savings in the United States. Smallholder agripreneurs prefer to make agricultural investments through group savings in Kenya and Malawi (Duflo, Kremer, & Robinson, 2011; Brune, Xavier, Jessica, & Dean, 2012).

In an attempt to save and benefit from group saving financial services, there is evidence of savings misallocation in Kenya due to intra-household heterogeneity in time preferences (Schaner, 2011). However, this challenge is mitigated by the strong social component among the voluntary savings and loan associations (Hansen, 2012). Apart from availing credit to its members, Rao and Qaim (2011) states that working as a group association can also actually aid agripreneurs to undertake communal marketing.

2.4.4 Credit on Family and Friends

A number of empirical studies support Hamilton's reciprocal altruism study through documented evidence that informal credit is the prevalent form of credit used by

households in developing countries of which a large fraction originates from family and friends. Many of the relatives provide credit support out of love and duty, as a kind of social security (Collins, Morduch, Rutherford, & Ruthven, (2010). In Peru and Ecuador, family and friends are the main source of funds for the poor borrowers for business and family emergencies. This is because this type of credit is more flexible and provides the needed cushion to the borrowers from large shocks such as robbery, bribes, extrusion and natural disasters which normally limit their ability to meet rigid loan repayment schedules inherent with loans from formal financial institutions (Pearlman, 2010). Evidence from Amazonian hunter-gatherer societies show that villagers and families who are more socially connected provide each other with more informal finance but also invest in more traditional, safer entrepreneurial activities (Saidi, 2012). Rutherford (2010) notes that flexibility of financial services offered family and friends is extremely important to the smallholder agripreneurs due to the irregularity and unpredictability of smallholder agripreneurs' cash flows.

2.4.5 Performance of Agripreneurs

The early years of resource-based theory's development were focused on establishing theoretical and empirical relationships between the presence of resources and the development of a sustained enterprise competitive advantage. More recently, the central issue of where the resources come from, especially capital for enterprise investment and the performance of an entrepreneur have begun to attract attention (Wernerfelt, 2011). Sirmon, Hitt, Ireland and Gilbert (2011) contribute to the resource-based theory literature by focusing on the role of the resources available to an enterprise and how this influence the performance of the agripreneur. Studies carried out by Mugo (2012); Mwania, (2011) and Kinyua, (2014) identified lack of access to finance as the major impediment affecting the performance of entrepreneurs in Kenya.

2.5 Summary of Literature Review

This chapter reviewed theoretical and empirical literature on credit sources and their effects agripreneur performance which showed that for agripreneurs to perform well in their quest to develop and grow their enterprises, they need to have access to important resources like capital for investment (Wernerfelt, 2011; Sirmon, Hitt, Ireland & Gilbert, 2011). The above literature is evident that focus in sources of credit for agripreneurs is shifting from the conventional banks to include other flexible informal sources that seem to speak equally to the needs of the agripreneurs appropriately (Hinson, 2011; Okojie, Monye-Emina, Eghafona, Osaghae & Ehiakhamen, 2010). Access to flexible credit from both formal and informal financial sources is fundamental to the development and performance of smallholder agripreneur agri-businesses (Chisasa & Makina 2012; Marcoul & Veyssiere, 2010). It is important for the smallholder agripreneurs to explore the various sources of credit and finally settle down on which source or sources are most appropriate for the development and growth of their enterprises (Wiggins & Keates 2012). The literature looked at the following theories that guided the study on sources of credit and their influence on the performance of smallholder agripreneurs: Resource-based Theory, Economic theory of bank credit, Transaction Cost theory, The Life-Cycle theory and Reciprocal Altruism theory.

These theories were found to be relevant for the study of credit sources and their influence on the performance on the smallholder agripreneurs. The theories addressed the need for both formal and informal financial service providers to develop appropriate credit products for the smallholder agripreneurs in order to enhance credit uptake leading to effective development and growth of smallholder agripreneur agribusinesses. From the literature it is evident that different sources of credit influence the performance of smallholder agripreneurs differently based on accessibility and terms and conditions. Credit from formal financial institutions especially from conventional banks is viewed and appropriated differently by the smallholder agripreneurs (Hinson, 2011). Based on the literature review, trade credit from traders and processors delivered especially through contract farming normally lead to increased yields, incomes, and high input usage (Barrett, Bachke,

Bellemare, Michelson, Narayanan & Walker, 2012). The literature review shows that credit from group savings benefit smallholder agripreneurs in that apart from the credit, the groups do marketing together helping the members to access better markets (Rao & Qaim 2011). It also revealed that smallholder agripreneurs are going for credit from family and friends because the terms of the credit are more flexible (Pearlman 2010).

2.6 Research Gaps

The theoretical review on formal credit focused only on the formal conventional bank and implies that other sources of credit do not exist. There was a research gap that could be addressed by coming up with a comprehensive theoretical study encompassing all credit sources and needs. The empirical studies showed that formal banks were not able provide credit with flexible repayment conditions to the smallholder agripreneurs in the rural areas (Hinson, 2011; Okojie, Monye-Emina, Eghafona, Osaghae & Ehiakhamen, 2010). The studies did not empirically state whether smallholder agripreneurs preferred formal credit to informal credit, how and by what degree. There is therefore a research opportunity to find out how formal credit influenced the performance of the agripreneurs' agribusinesses.

Marcoul and Veyssiere (2010) states that traders and processors can provide credit without any conventional collateral safe for the crop under cultivation. However, the studies did not state what happens in case of crop failure and how the traders and processors could behave when providing consequent credit to smallholder agripreneurs. The studies did not state how the credit backed by the crop collateral was used by the smallholder agripreneurs and how it influenced the performance of the smallholder agripreneurs' agribusinesses. The study did not empirically state whether smallholders preferred credit from traders and process and to what degree in relation to other sources of credit. There is therefore a research opportunity to find out how credit from traders and processors influence the performance of agripreneurs.

All theoretical and empirical studies on formal bank credit and credit from other informal sources did not show what portion of credit was acquired by customers to invest in enterprise development especially in horticultural enterprises comparatively. Among all the theoretical and empirical studies, there was no clear mention of measuring the influence of credit on agricultural enterprises. While the provision of agricultural credit in Africa by non-financial institutions has been recognized (Kamara, 2010; Egyir, 2010; Kloeppinger Todd & Sharma, 2010; Mann, Tinsey, Tedjo, & Nwadei, 2010; Coates, Kitchen, Kebbell, Vignon, Guillemain, & Hofmeister, 2011), very little and accurate information on the influence of credit on the smallholder agripreneurs has been documented (Girabi & Mwakanje, 2013). This study tried to investigate, quantify and document how each of the sources of credit highlighted in this study comparatively influenced the performance of smallholder agripreneurs in Kenya.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Introduction

In this chapter, the study highlights the research design which was used in carrying out the research as well as discussion on the research design and the justification of the chosen research design. This section also provides details of the project target population, sampling technique, sample size, research instruments, pilot testing, measurement and scaling techniques, data collection procedures and data analysis.

3.1.1 Research Philosophy

While undertaking this study, the researcher considered different research paradigms, matters of ontology and epistemology which relate to the development of knowledge and nature of the knowledge and assumptions about the way the research will be view and examined according to Sunders (2014). Based on a study carried out by Dilanthi (2015), the researcher paid attention to different philosophies that guide research and effectively chose positivism as the philosophy that guided this research. Positivism is the view that the only authentic knowledge is scientific knowledge, and that such knowledge can only come from positive affirmation of theories through strict scientific method (techniques for investigating phenomena based on gathering observable, empirical and measurable evidence, subject to specific principles of reasoning (Bryman & Bell, 2011).

3.2 Research Design

A research design is the actual structure or framework that indicates how and the time frame in which data is collected as well as how and when the data is analyzed using qualitative methods (Edmonds & Kennedy, 2012). This study used descriptive design

method. A descriptive research design attempts to describe, explain and interpret conditions of the present whose purpose is to examine a phenomenon that is occurring at a specific place and time focusing on conditions, practices, structures, differences or relationships that exist, opinions held, processes that are going on or trends that are evident (Kothari, 2012; Harrison, 2011; Privitera & Wallace ,2011). The descriptive research design was used because it was the most appropriate since the study itself is descriptive in nature trying to investigate relationships existing between independent and dependent variables as well as exploring respondent opinions concerning the variable relationships.

3.3 Target Population

The target population for this study was the smallholder agripreneurs involved in horticulture farming in Kenya. This study focused on a sample drawn from the target population of 337 smallholder horticultural agripreneurs who were carrying out farming in Yatta division in Machakos County. Out of the total 337 agripreneurs, 110 were female representing 33% and the rest 227 were male agripreneurs representing 67%. Using the simple random sampling method, Yatta division was chosen for the study out of four areas namely Sagana, Mwea and Kibwezi. Yatta is home to a diverse number of horticultural agripreneurs who are dependent on the Yatta Water Furrow and the Athi River for irrigation.

Unlike other horticultural agripreneurs in other regions who may have unpredictable production due to unreliable water supply, this target population had consistent production of horticultural crops produced reliably throughout the year due to the availability of irrigation water. The target population of 337 agripreneurs was producing diversified horticultural crops for both the local and export markets. The target population was easily accessible because the agripreneurs were well organized in groups and operating under the Horticultural Crop Development Agency (HCDA) umbrella

body. The different groups produced and sold horticultural crops for both the export and local markets.

3.4 Sampling Frame

A sampling frame is a list of all items or elements from which a sample is drawn and may include individuals, households or institutions (Marshall & Rossman, 2011). In the current study, the sampling frame involved a list of all smallholder agripreneurs registered with Horticultural Crop Development Agency (HCDA) Yatta regional office in Kenya. As of March 2015, there were 337 registered smallholder horticultural agripreneurs working under the HCDA office in Yatta division office covering different geographical areas namely Kabaa sub-location with 85 farmers (25%), Masinga sub-location with 58 farmers (17%), Yatta with 134 farmers (40%) and Goliba sub-location with 60 famers (18%).

3.5 Sample Size

The total number of smallholder horticultural agripreneurs within the target population was 337 which comprised of both male and female agripreneurs. Using the formula below by Glenn (1992) and Yamane (1967), a sample of 100 smallholder agripreneurs was selected. According the formula, this was the minimum sample size that needed to be considered in the study.

$$n = \frac{N}{1 + N(e)^2} \qquad n = \frac{337}{1+337(0.1)^2} = 99.704$$

Where n was the sample size, N the target population size, and e the level of precision considered at 90% confidence level (Glenn, 1992). Sample sizes larger than 30 and less than 500 are appropriate for most research (Roscoe, 1975).

3.6 Sampling Technique

Stratified sampling method was used to obtain a sample from the target population. Stratification was done to categorize members of the population into homogeneous subgroups before sampling. Thereafter, the systematic sampling technique was applied in each stratum to select items for the sample (Kothari, 2012). The strata sample sizes were obtained through proportional allocation. The sampling frame was the list of all the 337 agripreneurs registered with Horticultural Crop Development Authority office in Yatta division in Machakos County. Based on the sampling formulae highlighted in section 3.4, this study used the stratified systematic random sampling technique to draw out a sample from the population of smallholder agripreneurs stratified in terms of gender and groups in each of the geographical areas.

As is seen on Table 3.3, sample items were selected from each stratum. According to Kothari, (2012); Locke, Silverman, & Spirduso (2010), this technique aimed at ensuring proportionate representation with a view of accounting for the differences in stratum characteristics. Based on the sampling formulae in section 3.4, this study targeted to work with a minimum sample of 100 agripreneurs who were proportionally and scientifically selected and placed in the different strata as follows:

Table 3. 1: Strata representing a sample of 100 agripreneurs

Strata:	Target population in each stratum	%number of agripreneurs in sample	Actual number of agripreneurs in the sample	Female agripreneurs in sample (33%)	Male agripreneurs in sample (67%)
Kabaaa	85	25%	25	8	17
Masinga	58	17%	17	6	11
Yatta	134	40%	40	13	27
Goliba	60	18%	18	6	12
Totals	**337**	**100%**	**100**	**33**	**67**

3.7 Data Collection Instruments

The researcher provided respondents with structured questionnaires with guided questions with a fixed set of choices, often called closed questions. There were a few open-ended questions that gave room for any suggestions and opinions that the respondents might have had. The respondents were requested to complete filling the questionnaires by themselves and for those who were not literate; they were helped by trained research assistants to fill in the questionnaires objectively (Kothari, 2012). The trained research assistants were available to the respondents for clarification on any issues that needed any further clarification. To maximize reliability of the questionnaire, the researcher ensured that questions were framed clearly to reduce ambiguity and bias. Questions were kept few, short and simple to ensure high statistical value and accuracy from the data being collected.

3.8 Extraneous Variables

Confounding variables: To mitigate the effect of possible confounding variables like age, gender and experience of the respondents that could easily result into "rival

hypothesis" among others, randomization was done to ensure that all the members of the target population had equal chances of being included in the research sample. To mitigate **Maturation** (fatigue, boredom), the researcher ensured that the questionnaire was short with clear questions making it easy for the respondents to fill in the questions. The data assistants were also well trained to ensure that the respondents were motivated and sufficiently supported to fill in the questionnaires without unnecessary fatigue among other maturation related challenges. **Demand Characteristics**: To ensure that the questionnaires were truthfully and objectively filled without any preconceived ideas, the data collection assistants were well trained to ensure that they created the right environment and rightly debriefed all the respondent sufficiently before administering the questionnaires. This mitigated a situation whereby some participants could have answered the questions in compliance to either "help" the researcher by giving the "right data" or in defiance to "hinder" the researcher's efforts by deliberately giving "wrong data".

Diffusion of Treatment: To mitigate this possible error, each respondent was requested not discuss the questions in the questionnaire with any other group members to ensure objectivity. This was done with each respondent at the end of filling each questionnaire. **Instrumentation**: There was a need to anticipate and moderate any change that could occur in the process of data collection which could affect the objectivity of the research experiment. Some of the aspects that could affect the objectivity of the research could emanate from poor skills and lack of confidence among the research assistants. A robust training was carried out for all the research assistants to ensure that they were sufficiently enfranchised to administer the research tool using a standard set of instructions and procedures.

3.9 Measurement of variables and Scaling Technique

According to Rafael and Schutt (2012), mmeasurement is the process of linking abstract concepts to empirical indicators. The study adopted both deductive and inductive models of reasoning which involves deriving a specific hypothesis from the general ideas. Deduction is a form of inference that purports to be conclusive and whose conclusion must follow the reasons given (Abott & Bordens, 2013). Inductive reasoning moves from facts to general but tentative conclusions and regards statistical inferences as an application of inductive reasoning (Sekaran, 2015). According to Rafael & Schutt, (2012), there are typically four levels of measurement that are defined: nominal, ordinal, interval and ratio. In nominal measurement the numerical values just "name" the attribute uniquely.

In ordinal measurement the attributes can be rank-ordered. In interval measurement the distance between attributes have meanings while in the ratio measurement there is always an absolute zero meaning that one can construct meaningful fractions (or ratios) with ratio variables. In this study, the researcher used nominal measurement especially for section one of the measuring instrument (questionnaire) which was basically capturing respondents' profile data. Ordinal measurement dominated the better part of the questionnaire because of its ranking and comparative nature. Ratio measurement was used finally during the analysis of the data to make comparative measurements by way of percentages, frequencies, bar charts, and tables among others. A number of steps such as editing, coding and analysis were included in the data processing cycle to ensure available format that could be interpreted (Kumar, 2013).

Data analysis involved reducing accumulated data to a manageable size, developing summaries, looking for patterns, and applying statistical techniques. Statistical Package for Social Sciences (SPSS) version 25 software package was used as a tool to analyse the data. Cross tabulation was used to determine if associations existed between various variables.

The study used descriptive statistics in the form of percentages, means and measures of dispersion; which allowed for a meaningful and more way simpler way of data presentation and interpretation.

3.10 Data Cleaning

During data entry and immediately after data entry, some minimal errors and omissions were detected and corrected. **Missing data:** There were a few questions that required a YES or NO answer that were found not to have been filled by some respondents (nonresponses). Fortunately these questions had follow-up questions. The researcher was able to look at the way the follow-up questions were answered in order to find the right response for the skipped multiple choice questions. This was done manually before and during data entry.

Wrong Measurement Patterns: There were a few questionnaires with measurements that had been entered incorrectly. For example, production was supposed to be measured in kilograms but some respondents had entered the same in tones. Also, a few respondents had captured land sizes in hectares instead of acres. These anomalies were detected and corrected manually before data entry.

Outliers: There a number of cases where some of the figures recorded for some of the questions by the respondents appeared way out the normal range as compared with responses to the same questions by other respondents. These anomalies mainly occurred on data on production, amount of loan acquired and income generated. Fortunately all the questionnaires had phone numbers for the respondents and the researcher with the research assistants were able to get back to the respondents who had recorded questionable data. The corrections on outliers were effected manually in collaboration with the respondents during and before data entry was finalized.

3.11 Pilot Testing

To ascertain the validity and reliability of the questionnaires, the researcher pre-tested the questionnaire among 20 smallholder agripreneurs who were randomly selected from the target population (Cooper & Schindler, 2011). The pre-test sample is normally between 1% and 10% of the target population (Mugenda & Mugenda, 2003). The purpose of the pilot testing was basically to establish the accuracy and appropriateness of the research design and instrumentation. During the pilot study, ambiguity and sensitivity of the items and other features related to data collection quality were flagged out. The tools and procedures were then revised and refined before the researcher embarked on the main study.

3.11.1 Validity Test

Validity test was carried out to ensure that the research instrument measured what it was supposed to measure. The four types of external validity are: face, content, criterion and construct validity (MacKenzie & Podsakoff, 2011) were tested by the researcher using triangulation method which is a powerful technique that facilitates the validation of data through cross verification from two or more sources. This was done by involving several other investigators (trained research assistants) and two qualified professional peer researchers to review the data collected during the pilot test. This helped in ensuring that the instrument adequately covered the breath of the study content. Convergent construct validity was also measured manually by comparing scores for different variables, for example, if a respondent took credit and invested in the horticultural business, under normal circumstances, this should have resulted in increased production, increased income and increased employment with a positively correlations among the variables. Graphical analysis tests were carried out using SPSS where scatter plots were generated to check for deviations from randomness. A Pearson Product-Moment Correlation test was also run on SPSS to determine the relationship between the variables.

3.11.2 Reliability Test

Reliability test ensures that the instrument measures phenomena consistently showing the extent to which the researcher can confidently rely on the information obtained through the use of the instrument adopted to gather data for the research work (Edmonds & Kennedy, 2010). The two major categories of reliability test (test-retest and equivalent form) were carried out as a follow-up of the pilot study to ensure the reliability of the instrument. The researcher called some of the pilot study participants randomly and went through the questions again on phone with the respondents. The researcher then restated the questions using different words and format and went through the same with the other randomly chosen respondents. Fortunately all respondents for the retest exercise were successfully reached through phone.

To assess the consistency reliability of the set of indicators, Cronbach's Alpha was used (Bollen & Lennox, 1991). The recommended Cronbach's Alpha threshold is CA 0.7. Results from the SPSS reliability test showed that the lowest Cronbach's Alpha was .732 while the highest Cronbach's Alpha Based on Standardized Items was .888

3.12 Test of Assumptions on the Independent Variables.

The assumption that there was no multicollinearity in the research data was tested using the Collinearity and Correlation statistical tests. For the assumption to be met, the VIF scores are supposed to be well below 10, and Tolerance scores to be above 0.2 (Shieh, 2010). Another measure of multicollinearity is Correlations test. Any correlations with more than 0.8 may be problematic and if this happens, a researcher may have to consider removing one of IVs.

The assumption that the values of the Independent Variables residuals were independent was tested using Durbin-Watson statistical test to test the assumption that the residuals were independent (or uncorrelated). This statistic can vary from 0 to 4. For the assumption to be

met, Durbin-Watson value has to be close to 2. Values below 1 and above 3 are cause for concern and may render analysis invalid. To validate the assumption that there was no multicollinearity in the research data, a Collinearity Statistics and Correlation tests were carried out.

For the assumption to be met, the VIF scores were supposed to be well below 10, and Tolerance scores to be above 0.2. For the Correlation test, correlations with more than 0.8 would have been problematic and if this happened, the researcher would have had to consider removing one of IVs.

3.13 Data Analysis

For descriptive data analysis, the study made use of the IBM SPSS Statistics 25 computer software statistical tool to make analysis the necessary interpretations from the coded research data. Frequencies, percentages, graphs and bar charts were used to describe analyzed data. The opinions of the respondents were analyzed and presented using figures and tables. For inferential analysis, several statistical methods were used including the Multiple Regression Model and ANOVA to analyze the data. The dependent variable was denoted by as [Y] and the independent variables as [X]. The dependent variable [Y] took the dummy values [0, 1 and 2] where

Y_i = change in agripreneur performance ($Y_i = 2$ if there is positive change, $Y_i = 1$ if there is negative change and $Y_i = 0$ if otherwise)

The mean of Y_i was represented by a logistic distribution and it sufficed that

$$\log\left[\frac{pr\ (Y \leq i)}{1 - \Pr(Y \leq i)}\right] = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

The above explanatory variables were used to estimate the Multiple Regression model (Grima & Meron 2012; Jim, H. 2006) of horticultural smallholder agripreneur performance as specified below

$$Y_i = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Where the independent variables were:

X_1 = Credit from formal financial institution (X_1=1 if yes; X_1=2 if negative and X_1=0 if otherwise)

X_2= Credit from traders and processors(X_2= 1 if yes; X_2=2 if negative and X_2=0 if otherwise)

X_3 = Credit from group savings associations (X_3=1 if yes; X_3=2 if negative and X_3=0 if otherwise)

X_4 = Credit from family and friends (X_4=1 if yes; X_4=2 if negative and X_4=0 if otherwise)

β_{is} = the coefficients of the independent variables**.** This is the change in Y for each 1 increment change in X

α = the value of Y when X is equal to zero. This is also called the "Y Intercept".

Descriptive statistics summarized the data and described the sample, while the inferential statistics enabled the researcher to infer the sample results to the population (Edmonds & Kennedy, 2012). The researcher used the statistical knowledge and numerical values were obtained from statistical software tools to make inferences on hypothesis tests. These inferences derived their meaning from the ANOVA model. The study used the ANOVA model to obtain the interaction of the factors. These chosen techniques were used by the researcher to develop frequency counts, percentages, graphs to describe distributions, tables to show variation in frequencies and bar charts to display nominal or ordinal data.

3.13.1 Summary Statistical Significance Tests

Test of hypotheses was done using multiple regression ANOVA F-test at 95% level of confidence for earlier hypothesis H_{01}*:* Credit sourced from formal financial institutions has no significant influence on the smallholder horticultural agripreneurs' performance H_{02}: Credit sourced from traders and processors has no significant influence on the smallholder horticultural agripreneurs' performance H_{03}: Credit sourced from group savings associations has no significant influence on the smallholder horticultural agripreneurs' performance, and H_{04}*:* Credit sourced from family and friends has no significant influence on the smallholder horticultural agripreneurs' performance.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION

4.1 Introduction

This chapter presents and discusses the results based on the objectives and hypotheses of the study. The discussion is organized based on the objectives of the study. The chapter is arranged into three sections namely respondents' characteristics, study outcomes which present a detailed presentation, analysis and discussion of the results.

4.2 Response Rate

Out of the 106 questionnaires that were issued out to respondents by the research assistants, a total of 105 questionnaires were successfully filled and returned back. This gave a percentage respondent rate of 99% as is seen in Figure 4.5. This percentage was evaluated as very good. According to Mugenda and Mugenda (2003), a response rate of 50% is adequate, 60% is good and 70% and above very good.

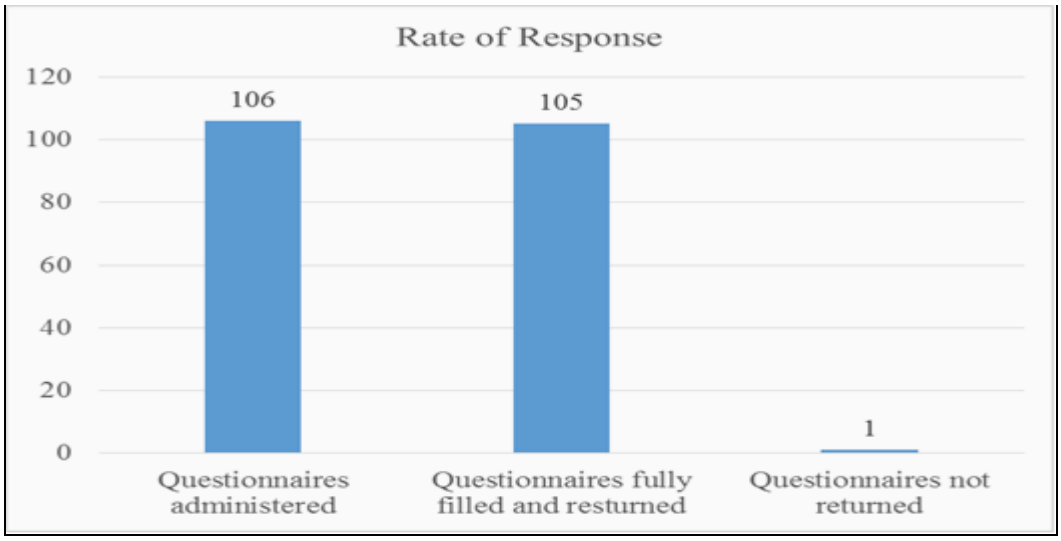

Figure 4.1: Questionnaire Response Rate

4.3 Sample Characteristics:

4.3.1 Location and Gender of the Smallholder Horticultural Agripreneurs

The data as illustrated in Table 4.1show that 60% of the respondents were male and 40% female. The finding on the gender distribution shows that there is a male dominance in horticultural farming in Machakos Kenya. This finding is similar to those of a study carried out by Babalola (2014) in Nigeria which also revealed that men were the majority among the smallholder farmers who participated in the study. Babalola (2014) views the predominance of male farmers as an indication that agribusiness is generally labor intensive and still a strenuous enterprise. He further attributes the skewed gender disparity to the tedious and time-consuming nature of the cultural practices involved in arable cropping that discourages most prospective female entrances into the business.

This position is also similar to other studies on women agripreneur participation in agriculture in Pakistan which found out that only 16% of women participated in agriculture against 83% by men (Balagamwala, & Gazdar, 2013; de Schutter, 2013; PBS, 2014). The studies on the other hand found out that women dominated in providing agricultural labor than men.

Table 4.1: Location and Gender of respondents

Location: sub-clusters	No. respondents per sub-cluster	Female respondents per sub-cluster	Male respondents per sub-cluster
Kabaaa	26	10	16
Masinga	20	9	11
Yatta	40	14	26
Goliba	19	9	10
Totals	**105**	**42**	**63**
Per cent	100%	40%	60%

4.3.2 Gender of Respondents who obtained credit

Figure 4.2 below highlights the gender of the respondents who took credit from the four sources under study. As is noted, 60% of the agripreneurs who took credit to develop and grow their agricultural businesses were male while 40% were female.

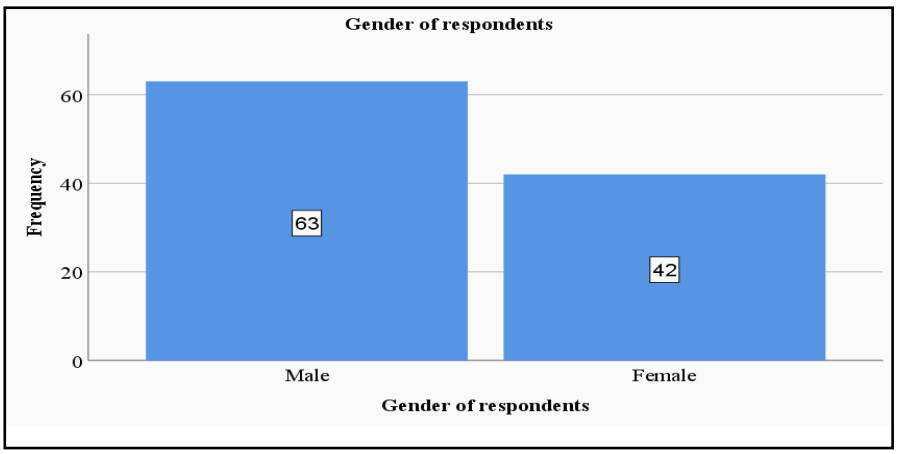

Figure 4.2: Respondents Gender Disaggregation

4.3.3 Size of land held by the Smallholder Horticultural Agripreneurs

The data analysis in Figure 4.3 revealed that 71 respondents (68%), owned land that was less than 2 acres in size. The second category of 22 respondents representing 21% had an average land size of 2 acres per farmer. Only 12 respondents (11%) had land that was between 2-4 acres. These findings collaborate with other research findings by Jamie, Colleen, and Scott (2016) whose study on globalization and Ugandan smallholders found that smallholders have limited resource endowments normally an average of 2.7 acres of land. A similar research on agricultural credit access by grain growers carried out in Uasin Gishu by Yegoh, (2012) revealed that a significant number of smallholder farmers (49%) owned less than five acres of land. This is also supported by studies carried out in Oyo and Abia states in Nigeria which established that 59% of the smallholder farmer had an average farm size of 2.68 acres (Ololade & Olagunju, 2013; Nto, Mbanasor, & Nwaru, 2011).

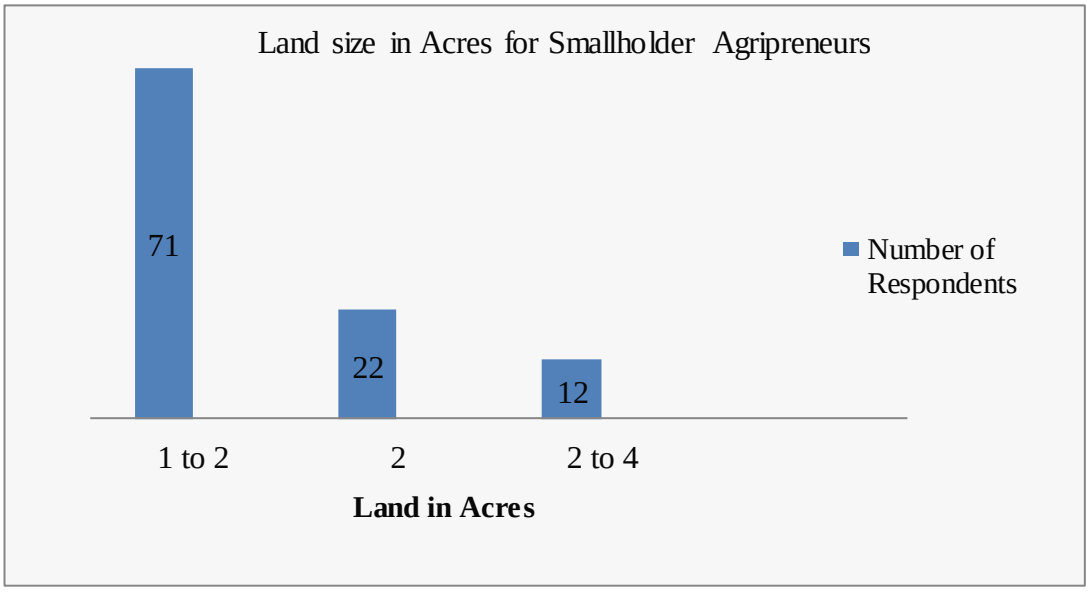

Figure 4.3: Land Size per Respondent.

4.3.4 Main Types and Markets of Horticultural Crops

Analysis as shown in Table 4.2 showed that the top three main horticultural crops were French Beans, tomatoes and chilies. Out of the respondents, 102 (97%) respondents had grown French Beans, 25 respondents (24%) stated that they were growing tomatoes while 14 respondents (13%) were growing chilies. Thirty nine (39) of the agripreneurs were involved in growing more than one crop. The main markets for the above crops were export and local as depicted in Table 4.2. The dominance of the French bean in the horticultural export market is supported by other recent scholarly studies carried out by other entities and scholars like Africa Research Institute (2009); Government of Kenya (2010).

Table 4.2: The 3 main horticultural crops and their markets

Crop	Average area under crop (Acres)	% no. of agripreneurs growing crop	Main market for crop	Percentage of main market
French beans	1.29	97%	Local market	**4%**
			Export market	**9**6%
Tomatoes	1.05	24%	Local market	91.9%
			Export market	8.1%
Chilies	1.04	13%	Local market	91.5%
			Export market	8.5%

4.4 Sources of Credit for horticultural farming

The data analysis in Table 4.3 presented clearly the sources of credit for the smallholder horticultural agripreneurs. The majority of the agripreneurs took credit from exporters / traders as well as from group savings associations at (33%) from each source respectively. Following closely was agripreneurs who took loans from family and friends at 22%. Only 12% of the smallholder agripreneurs said that they took credit from the formal financial institutions (banks, microfinance institutions and co-operatives).

Table 4.3: Sources of Credit for Agripreneurs

Credit Source	No. respondents	% respondents
Formal financial institutions	12	12%
Traders and Processors (Exporters/product buyers/agrovets)	35	33%
Group Savings Associations	35	33%
Family and Friends	23	22%
Totals	**105**	**100%**

These research findings are in tandem with research findings by Elumilade, Asaolu, and Oladele (2010) who found out that the performance of smallholder agripreneurs in Nigeria was diversely influenced by credit that the respondents had obtained from different sources. In another research carried out in Kwara state in Nigeria, Ammani, (2012) found out that only about 11% of rural farmers sourced credit from the formal sources, 40% sourced from traders/ exporters, 39% from group savings association and 24% from family and friends. The low uptake of credit from the formal financial institutions especially the conventional commercial banks was attributed the fact that these institutions required land as collateral. This was reported as major limitation to accessing credit among the farmers in Kwara State, Nigeria (Isitor, Babalola, & Obaniyi, 2014). This finding is in agreement with studies by Yiu, Su, and Xu (2012) which confirm that alternative financing (credit from informal sources) positively associates with agripreneurs' firm performance in China. The scholars concluded that informal finance is an important source of financing for private firms in developing economies where formal financing is not widely available.

4.4.1 Frequency of taking credit from various sources

The data analysis in Figure 4.4 shows that 71% of the respondents applied and obtained credit from the various sources more than 4 times per year while 6% and 24% applied and obtained credit 2 times and once per year respectively. The majority of the respondents under these last two categories are those that received credit from the formal financial institutions. The formal financial institutions are in a position to give large amounts of loans that could take care of the needs of the enterprises for a longer period as opposed to the informal lenders who have low capital amounts for lending and some of them give credit in-kind. Thus, the agripreneurs that took loans from the formal financial institutions took loans only once or twice per year, while those that took from the informal sources took credit as many as 4 times or more per year.

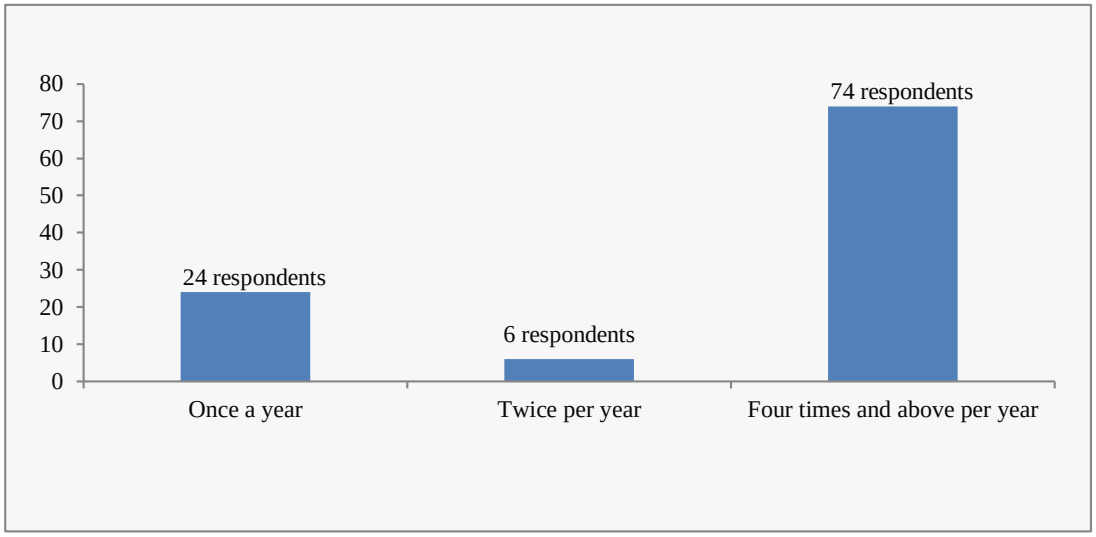

Figure 4.4: Frequency of obtaining credit.

These analyses show that smallholder agripreneurs do require credit regularly but may not be able to acquire the credit as much as they want especially from the formal financial institutions. These findings are in line with a comparable research by Isitor, Babalola, and Obaniyi (2014) which shows that the need for land asset as collateral was reported as major limitation to accessing credit among the farmers interviewed in Kwara State, Nigeria. The issue of tangible collateral, especially land, significantly limited the number of times an entrepreneur could borrow a loan from the formal commercial banks whose loans are normally long term with longer repayment periods. On the other hand, enterprises were able to borrow loans several times a year from the informal sources due the flexibility in terms collateral, short loan period and the smaller amount of loans issued by the informal credit sources, (Rutherford, 2010; Pearlman, 2010). Lack of collateral was reported by the majority of the farmers (74%) as the limitation for sourcing for credit from the formal commercial banks (Isitor, Babalola, & Obaniyi, 2014).

4.4.2 Use of credit

The data analysis in Table 4.4 revealed that the majority of agripreneurs (83%) used the credit to acquire farm inputs (seeds, fertilizers, pesticides). The study indicated that 12% of the agripreneurs used the credit for hiring farm labor while three per cent and two percent of the respondents stated that they used the credit for leasing extra land and taking care of transport for the horticultural enterprises respectively. These findings show that most of the smallholder agripreneurs normally use credit mainly for farm inputs. This is supported by a similar research carried out by Isitor, Babalola, and Obaniyi (2014) who found out that the majority smallholder farmers in Nigeria (83%) used credit on farm inputs, labor and transport to stabilize and increase agricultural production. Similar findings were also observed by Nwaru and Onuoha (2010) in their study on crop production by smallholder farmers in Imo State, Nigeria.

Table 4.4: Use of credit by the agripreneurs

Credit use	No. respondents	% of respondents
Farm Inputs (seed, fertilizer, pesticides)	87	83%
Farm labor	13	12%
Hiring extra land	3	3%
Farm transport	2	2%
	105	**100**%

4.4.3 Mode of credit

The analysis in table 4.5 shows that 57 of the respondents (54.3%) obtained credit in form of cash. This was largely consisting of those agripreneurs who took credit from the formal financial institutions, group savings associations and from family and friends. The remaining 48 respondents constituting 45.7% took in-kind credit in form of farm inputs. These were majorly the agripreneurs who took credit from the traders/processors. These findings on credit preference by smallholder agripreneurs are in synchrony with a similar research carried out in Northern Ghana on factors influencing smallholder farmers' access to agricultural microcredit. The study found out that the majority of the smallholder farmers (57%) took credit in form of cash while 39% took in-kind credit (Anang, Sipilainen, Backman, & Kola, 2015).

4.5 Pilot Study Results

As an initial step, a pilot test of the research questionnaire was conducted to ascertain the operational aspect of the questionnaire and ensure questionnaire adequacy and the external and internal consistency of the questions. Twenty questionnaires from 20 randomly selected respondents were used in the pilot test. The features of concern in the pilot phase of the study were the setup of the questionnaire, the clarity of the questions and respondents' consistency in interpreting questions and the open ended aspect of the instrument. To ensure that all facets of concern were addressed, the pilot testing phase involved personally administered questionnaires.

4.5.1 Reliability and Validity

The Scatter P-Plots graphical analysis test as observed on Figure 4.5 revealed that there was linear regression relationship between the dependent variable Y and the explanatory variables (or independent variables) denoted by X.

$$Yi = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4$$

Y = horticultural crop production

X = sources of credit.

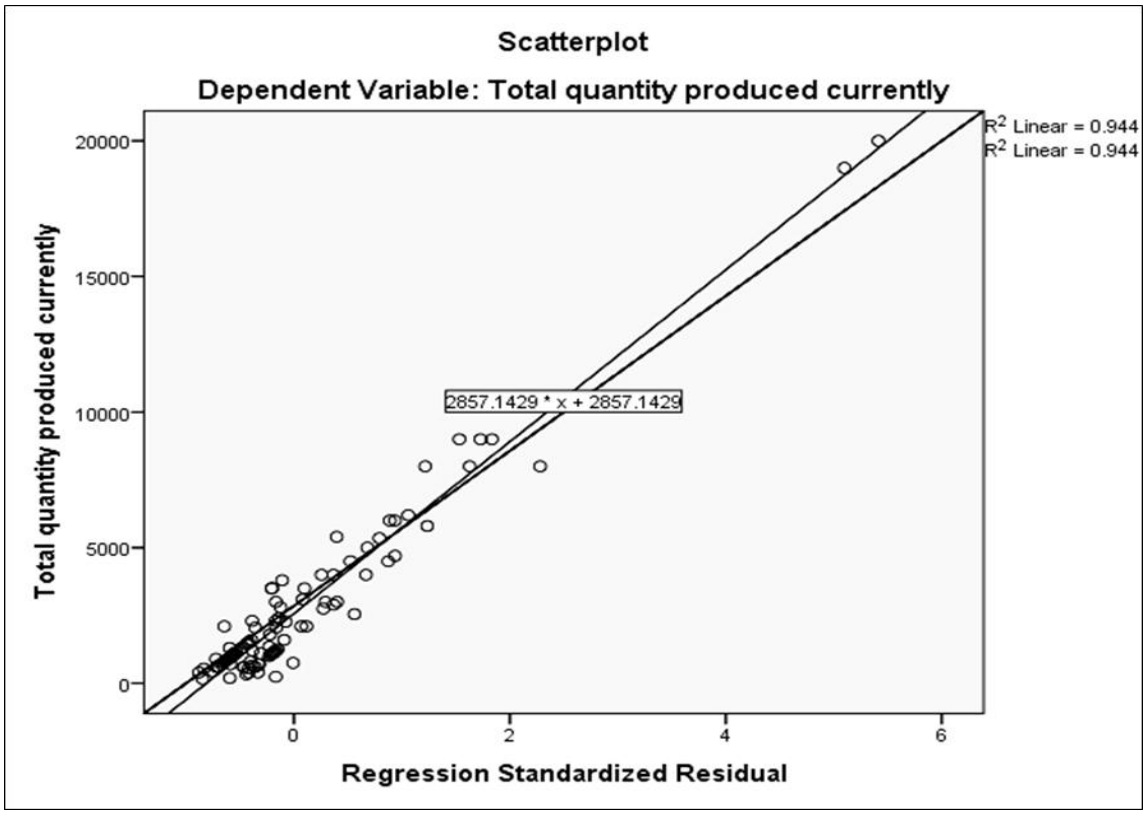

Figure 4.5: Normal P-Plot

4.5.2 Correlation between the Independent Variables

The Pearson Product-Moment Correlation validity test in Table 4.6 revealed that there were a strong, positive correlations between production, credit from banks, exporters, group chamas and family and friends which were statistically significant (r = .340, n = 105, p = .001, r = .494, n = 105, p = .001, r = .794, n = 105, p = .001, and r= -.011, n = 105, p = .910) respectively as shown on Table 4.6 below.

Table 4.5: Pearson Product-Moment Correlation

Correlations

		total change production after credit	Banks, microfin, cop sacco	Exporter/ buyer/ agrovet	Group *chama*	family and friends
total change production after credit	Pearson Correlation	1	.340**	.357**	.384**	-.109
	Sig. (2-tailed)		.000	.000	.000	.270
	N	105	105	105	105	105
Banks, microfin, cop sacco	Pearson Correlation	.340**	1	.494**	.443**	-.087
	Sig. (2-tailed)	.000		.000	.000	.380
	N	105	105	105	105	105
Exporter/ buyer/agrovet	Pearson Correlation	.357**	.494**	1	.794**	.011
	Sig. (2-tailed)	.000	.000		.000	.913
	N	105	105	105	105	105
Group chama	Pearson Correlation	.384**	.443**	.794**	1	-.011
	Sig. (2-tailed)	.000	.000	.000		.910
	N	105	105	105	105	105
Family and friends	Pearson Correlation	-.109	-.087	.011	-.011	1
	Sig. (2-tailed)	.270	.380	.913	.910	
	N	105	105	105	105	105

**. Correlation is significant at the 0.01 level (2-tailed).

4.5.3 Independent Variables Residuals

The assumption that the values of the Independent Variables residuals were independent was tested using Durbin-Watson statistical test to test the assumption that the residuals were independent (or uncorrelated). This statistic can vary from 0 to 4. For the assumption to be met, Durbin-Watson value has to be close to 2. Values below 1 and above 3 are cause for concern and may render analysis invalid. This assumption was met since the Durbin-Watson value was close to 2 as in Table 4.6 below.

Table 4.6: Residuals are Independent Test

Model Summary[b]					
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.439[a]	.193	.160	1495.75510	1.621

a. Predictors: (Constant), family and friends, Exporter/product buyer/agrovet, Banks, microfinance, cop sacco, Group chama
b. Dependent Variable: total change production after credit

4.5.4 Cronbach's Alpha Coefficients

After the pilot study, the questionnaire was revised and reliability test using Cronbach's Alpha Coefficient carried out on the tool to ensure it gave reliable results. Table 4.7 shows that he lowest Alpha coefficient was 0.732 while the highest was 0.888. This reliability test results indicated that the individual components and overall coefficient were above the 0.7 Cronbach's Alpha minimum threshold as recommended by Cooper and Schindler (2008) as well as by Santos and Reynolds (1999. Therefore based on this recommendation the study questionnaire had adequate internal consistency and was reliable for the study and its results were used to generalize population characteristics.

Table 4.7: Cronbach's Alpha Reliability Statistics

Reliability Statistics			
	Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
Credit from Formal Financial Institutions	.744	.882	19
Credit from Traders and Processors	.733	.888	20
Credit from Group Savings Associations	.732	.883	20
Credit from Family and Friends	.732	.869	19

4.5.5 Collinearity Test Results

In addition, the model was tested with respect to whether it represented the best linear unbiased estimation of credit sources. In this respect model validation tests of normality, multicollinearity, heteroscedasticity and linearity were undertaken. Multicollinearity assumption was measured using Collinearity and Correlation tests. For the assumption to be met the VIF scores are supposed to be well below 10, and Tolerance scores to be above 0.2 and the Correlations to be below 0.8 (Shieh, 2010). The Collinearity test results in Table 4.8 revealed that the VIF scores for the independent variables were between 1.012 and 2.911 which were well below 10. The Tolerance scores were between .343 and .988 which were all above the 0.2.

Table 4.8: Collinearity Test on Credit Sources

Coefficients[a]								
Model		**Unstandardized Coefficients**		**Standardized Coefficients**	**t**	**Sig.**	**Collinearity Statistics**	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	124.511	326.335		.382	.704		
	Banks, microfinance, cop sacco	659.478	365.193	.188	1.806	.074	.741	1.349
	Exporter/product buyer/agrovet	279.924	569.864	.075	.491	.624	.343	2.911
	Group chama	845.313	524.192	.240	1.613	.110	.366	2.732
	family and friends	-319.655	319.002	-.091	-1.002	.319	.988	1.012

a. Dependent Variable: total change production after credit

4.5.6 Multicollinearity Test Results

The best regression models are those in which the independent variables each correlate highly with the dependent (outcome) variable but correlate at most only minimally with each other, such model is often called "low noise" and statistically robust (Kock and Lynn, 2012). Results from Table 4.9 revealed that all the correlation scores were found to be between -.011 and .704. These results show that the assumption that there was no multicollinearity was met as the predictors (or IVs) were not too highly correlated.

Table 4.9: Correlation Test on Credit Sources

Correlations						
total change production after credit			Banks, microfinance, cop sacco	Exporter/product buyer/agrovet	Group chama	family and friends
Pearson Correlation	total change production after credit	1.000	.340	.357	.384	-.109
	Banks, microfinance, cop sacco	.340	1.000	.494	.443	-.087
	Exporter/product buyer/agrovet	.357	.494	1.000	.704	.011
	Group chama	.384	.443	.704	1.000	-.011
	family and friends	-.109	-.087	.011	-.011	1.000
Sig. (1-tailed)	total change production after credit	.	.000	.000	.000	.135
	Banks, microfinance, cop sacco	.000	.	.000	.000	.190
	Exporter/product buyer/agrovet	.000	.000	.	.000	.456
	Group chama	.000	.000	.000	.	.455
	family and friends	.135	.190	.456	.455	.
N	total change production after credit	105	105	105	105	105

4.5.7 Heteroscedasticity Test Results

The assumption that there was no heteroscedasticity was tested using Coefficients Regression model. As shown in Table 4.10, the test results yielded p-values of Sig as .074, .624, .110 and .319 essentially > 0.05. The assumption was therefore accepted and conclusion made that there was no heteroscedasticity problem among the variables.

Table 4.10: Heteroscedasticity Assumption Test

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	124.511	326.335		.382	.704
	Banks, microfinance, cop sacco	659.478	365.193	.188	1.806	.074
	Exporter/product buyer/agrovet	279.924	569.864	.075	.491	.624
	Group chama	845.313	524.192	.240	1.613	.110
	family and friends	-319.655	319.002	-.091	-1.002	.319

4.5.8 Homoscedasticity Test Results

To test the assumption that there was homoscedasticity or homogeneity, a Levene's Test of Equality was carried out. The results of the test in Table 4.10 showed that the p-values of Sig was .437 > 0.05. It was therefore concluded that there was homoscedasticity since there was no significant difference of sample variances across various sample conditions. (Nguyen et al., 2013).

Table .4.11: Homoscedasticity Assumption Test

Levene's Test of Equality of Error Variances[a]			
Dependent Variable::Total quantity produced currently			
F	df1	df2	Sig.
1.063	73	31	.437

Tests the null hypothesis that the error variance of the dependent variable is equal across groups.

a. Design: Intercept + GrossIncomeCurrent + BMicrofinance * Exporter * Grpchama * family

4.6 Influence of credit sources on agripreneur performance in terms of production

The data analysis as shown in Figure 4.6 revealed that 98 respondents (93%), recorded positive performance in terms of production. Out of the total agripreneurs interviewed, 5 respondents (5%) realized a decrease in production while 2 respondents (3%) did not have any change in production as seen on figure 4.6. These findings are similar to finding from a study carried out in Vietnam on credit accessibility. The study revealed that the majority of enterprises who acquired credit from both formal and informal sources experienced increase enterprise growth with a small number experiencing decreased and stagnated growth respectively (Nguyen, Barrash, Koenigs, Bechara, Tranel & Denburg, 2014). A similar study carried out in Imo Stae Nigeria showed that when agricultural credit is used, it stabilizes farming enterprise and often leads to increases in productivity, agricultural production, value addition and net incomes for smallholder farmers, thus fulfilling the main objective of taking credit (Nwaru & Onuoha, 2010).

Another study carried out among smallholder farmers in Southwestern Nigeria also observed that access to credit influenced farm productivity positively (Omonona, Lawal, & Oyinlana, 2010). The finding of the study shows that access to credit from the four sources increased the overall amount of production for the agripreneurs.

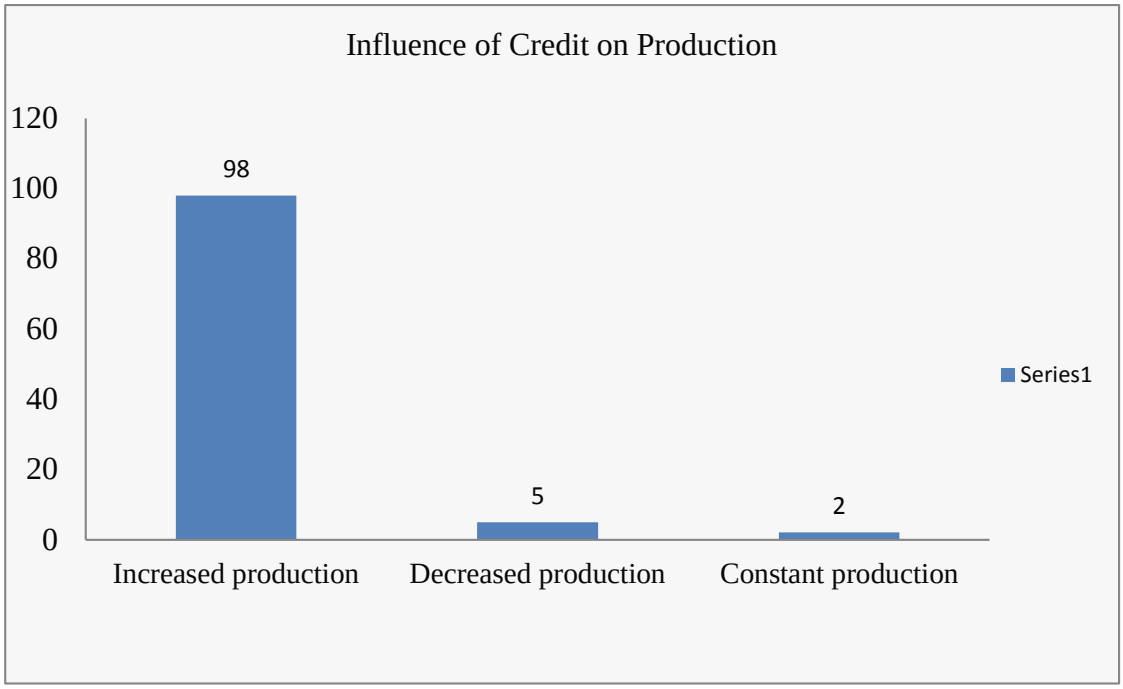

Figure 4.6: Influence of Credit on Agripreneur Performance in terms of Production

4.6.1 Increase in production due to access to credit

As is seen in Table 4.12, each respondent was producing an annual average of 1,657.97 kilos of horticultural produce previously before accessing credit. After acquiring credit, the amount of production increased up to an annual average of 2,571.09 kilos. Apparently there was a resultant increase of 913.12 kilos (55%) in production due to the influence of credit from the four sources of credit as is highlighted in Table 4.3. This finding is in concurrence with similar research findings from studies carried out in South-western Nigeria and Denkyira West District of Ghana respectively which revealed that agricultural credit stabilized farming, increased productivity and agricultural production as well as agripreneurs incomes (Nwaru & Onuoha, 2010; Amoah, 2013).

Table 4.12: Increase in production due to access to credit

Average Production in kilos After Access to Credit	2571.09
Average Production in kilos Before Access to Credit	1657.97
Overall Average Change in Production due to Access to Credit	913.12
Overall per cent Increase in Production	55%

4.6.2 Increase in size of land under horticultural crops

The study data analyses on Figure 4.7 revealed that there was a slight increase in the average land size under horticultural crops after respondents acquired credit. The average land size held by the respondents under horticultural crops before obtaining credit was 1.31 acres. After obtaining credit, the average land size increased to 1.92 acres leading to an overall resultant land increase of 0.61 acres (47%) as is depicted in Figure 4.7. This finding showing positive performance in terms of increase in land under crop production is in tandem with a study result from a similar research report published by Dalberg (2011) on credit support to SMEs in developing countries in Africa. The study report discloses that access to finance by smallholder agripreneurs encourages market entry, facilitates growth, reduces risks and fosters innovation and entrepreneurial activity. According to Amoah (2013), an increase by 1 acre of land increases production by 2.578 times.

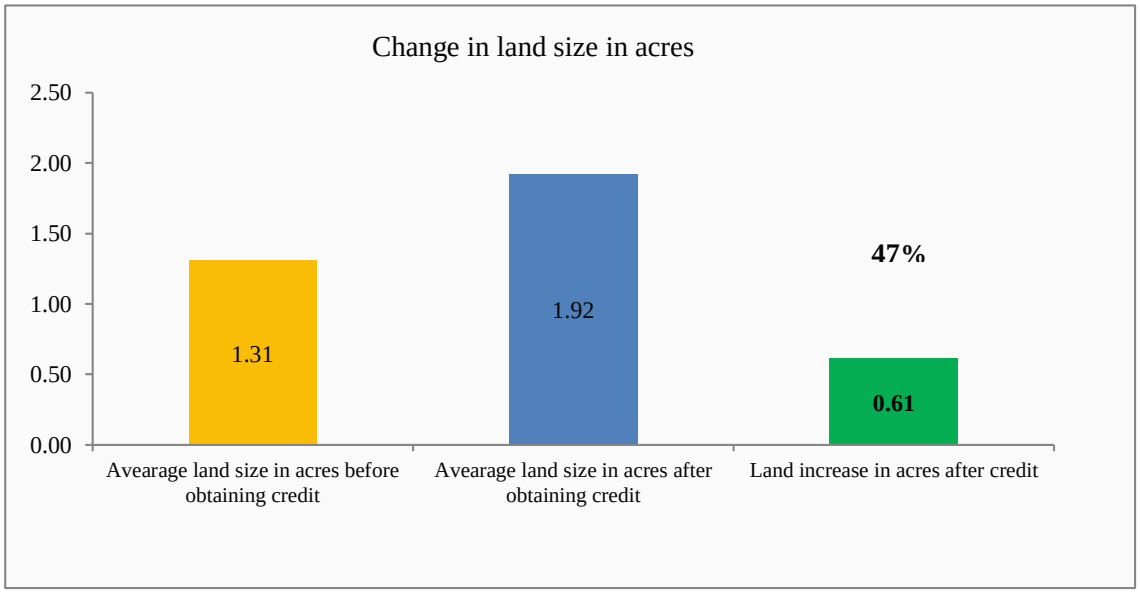

Figure 4.7: Change in Land Size

4.6.3 Increase in Permanent and Casual Employees

According to the data analysis in Table 4.13, the study established that respondents did not experience any increase in the number of permanent employees after acquiring credit. However, after obtaining credit, the respondents experienced a 38% increase in the number of casual employees as is highlighted in Table 4.13. During peak seasons, agripreneurs tend to engage more casual workers and rarely permanent employees based on business seasonality and cost considerations. Hiring of extra casual employees is facilitated better when the agripreneurs have ready cash especially by way of loans to enable them to effectively engage the workers (Cappellari, Carlo, & Marco, 2012).

Table 4.13: Increase in the number of employees

Employees	Permanent workers	Casual workers
Average No. Employees Before Access to Credit	3	8
Average No. Employees After Access to Credit	3	11
Increase in Overall No. Employees	0	3
Overall per cent Increase in No. Employees	0%	38%

4.5.1 Increase in Annual Net Income

The study analysis as is shown in Figure 4.8 established that there was an overall increase in net income among the respondents after they received credit from the four credit sources. On average, there was an increase of Ksh 30,138 in the net income translating to 94% increase on the overall average net income. This finding is in tandem with other similar research findings from studies carried out in South-western Nigeria and Denkyira West District of Ghana which showed that agricultural credit stabilized farming, increased productivity and agricultural production as well as agripreneurs' incomes (Nwaru & Onuoha, 2010; Amoah, 2013).

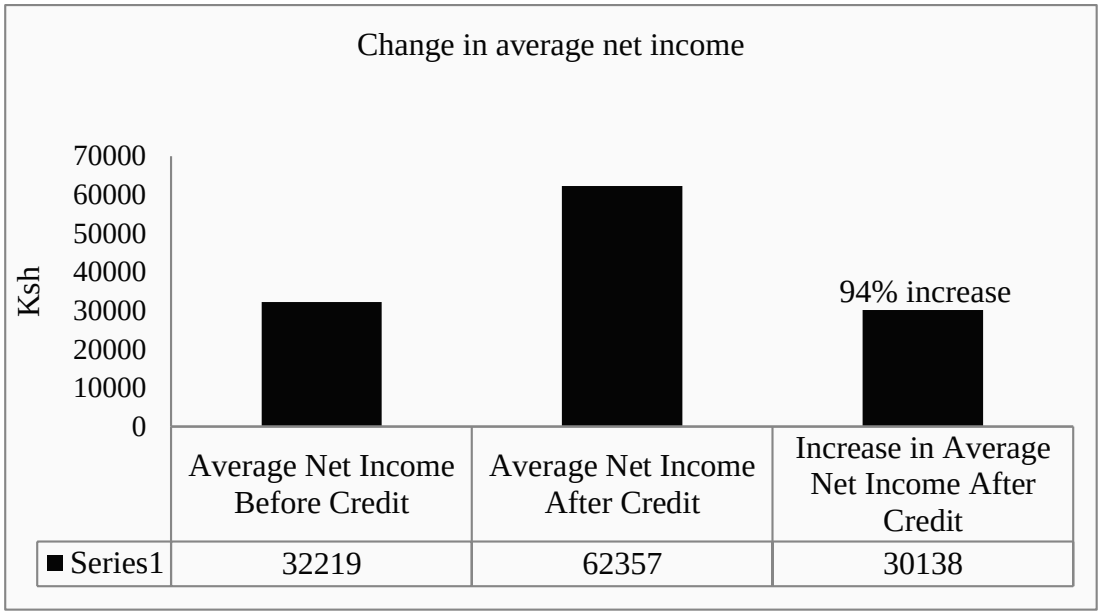

Figure 4.8: Influence of credit on average annual net income

4.6.4 Negative performance.

The research data analysis in Figure 4.9 did establish that a few respondents (5) experienced a decline in production instead of an increase. This negative performance affected 4.7% of respondents despite having taken credit and invested the funds in their horticultural enterprises. One of the reasons that could be attributed to the negative performance is strengthened by similar research findings by Salami who carried out a study among 4 countries namely Kenya, Tanzania, Uganda and Ethiopia. The study revealed that production increased or decreased depending on the experience of the employees (human capital) in applying the inputs that were provided (Salami, Kamara, & Brixiova, 2010). This study revealed that the respodents who recorded negative production had not increased at all the size of the land under the hortucutlural crops.

Similarly some of the repondends reported that experience in farming especially in applying the farm inputs was an important contributor the production: those with less expereince were more likely to misapply by getting the timing for the application wrong thereby realizing negative or very low yield despite acquiring credit for farming. A similar finding is shared by Yawson, Armah, Afrifa, and Dadzie (2010) from a study carried out in Ghana where late application of fertilizers and other inputs by smallholder farmers had negative effects on yields. These findings are also in agreement with outcomes of a similar study carried out in Vietnam by Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) whereby the research showed that a number of agripreneurs' experienced a decline in production.

4.7 Respondents' opinions on how each of the four sources of credit comparatively affect horticultural agripreneurs' performance.

The respondents were given an opportunity to express their opinions and views on which source of credit, out of the four sources under research, they considered as most effective in terms of influencing the growth of horticultural enterprises. They were also given space to state what other factors they considered as key in determining the performance of horticultural farming enterprises. The comparative ranking of the four sources was highlighted in Figure 4.9 showing the respondents' views on which of the four sources of credit they viewed as most effective in influencing the performance of their horticultural enterprises. As is validated in figure 4.9, this study found out that 27% of the respondents viewed credit from formal financial institutions as the most influential to their enterprises' performance as compared to all the four sources of credit. They said that this was because credit from formal financial institutions is normally larger than credit from informal credit sources and is useful for more meaningful crop production.

According to findings on a research carried out in Bangladesh, the large size of credit from formal financial institutions brings about significant enterprise growth (Majumder, & Rahman, 2011). This position is also reinforced by Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) whose study findings on credit from formal financial insitutions in Vietneam exhibited significant positive growth for a significant number of SME agripreneurs (52.98%) who had borrowed funds from the formal financial institutions. Mashigo and Schoeman (2011) study findings carried out in South Africa also present similar results that show that access to formal commercial bank credit play a key role in agripreneur performance in terms of enterprise growth. The study results in Figure 4.9 also found out that 72% of the respondents believed and stated that credit from traders and processors had the most influence on their enterprises' performances.

The respondents believed that credit from traders and processors was important because it was more reliable in terms of availability and, more importantly, because the credit package was holistic as it also included support for capacity building for the participating agripreneurs. Under the traders and processors credit package, agripreneurs had reliable contracts and sustainable market linkages with well-developed supply chains ensuring the success of the enterprises (Kelly, 2012; Rahman, 2011; Barrett, Bachke, Bellemare, Michelson, Narayanan & Walker, 2012).

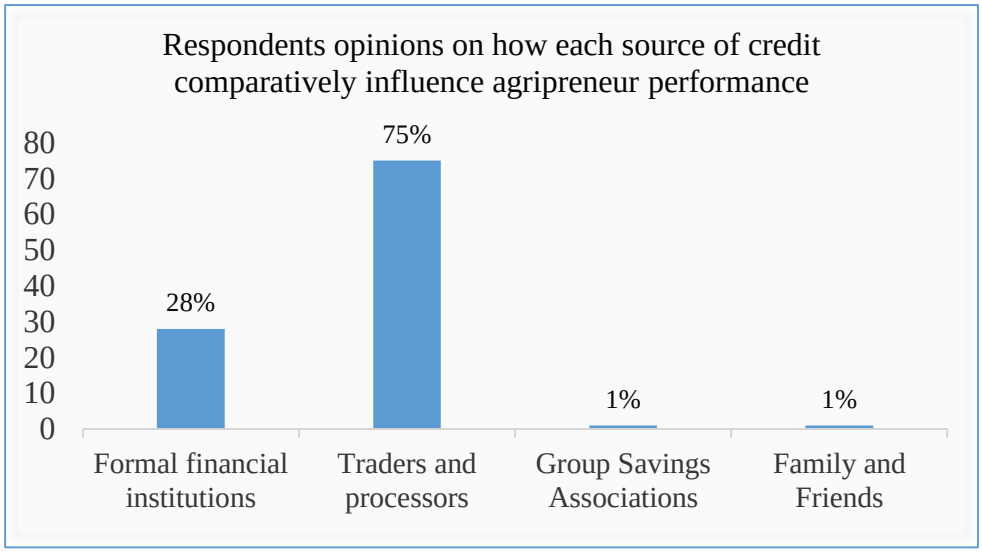

Figure 4.9: Level of influence from each source of credit on agripreneur performance

A similar study carried out by Marcoul and Veyssiere (2010) in South Africa found out that credit from traders and processors through contract farming had significant contribution to agripreneurs' performance in terms of enterprise growth. As demonstrated in figure 4.10, only 1% of the respondents believed that credit from group savings associations and from family and friends sources had the most influence on agripreneur performance as compared to the other sources of credit. This opinion is similar to findings from research carried out by Majumder and Rahman (2011).

The amount of loan from group associations is normally commensurate to how much an individual has managed to save. Agripreneurs at times find it hard to maintain the discipline of saving substantial amounts consistently. Based on these low savings, they are only able to obtain low amounts of credit which normally does not influence the performance of the enterprises as significantly as credit from the first two sources of

credit (Kast, Meier & Pomeranz, 2011; Karlan, McConnell, Mullainathan & Zinman, 2011; Banerjee & Mullainathan, 2010). Though flexible and convenient, credit from family and friends is not reliable. It is not transparent since it is normally issued in small amounts mostly relying too heavily on kindness and goodwill from the funders (Pearlman, 2010).

4.7.1 Respondent's opinions on other factors other than credit that influence agripreneurs' performance.

After ranking the four sources of credit in terms of how they viewed them as having influence on the agripreneurs performance, respondents went a step further as seen in Figure 4.10 and identified five other factors that they considered as having possible influence on the performance of agripreneurs. The four factors were agripreneurs' amount of experience, level of training, age, gender and level of education.

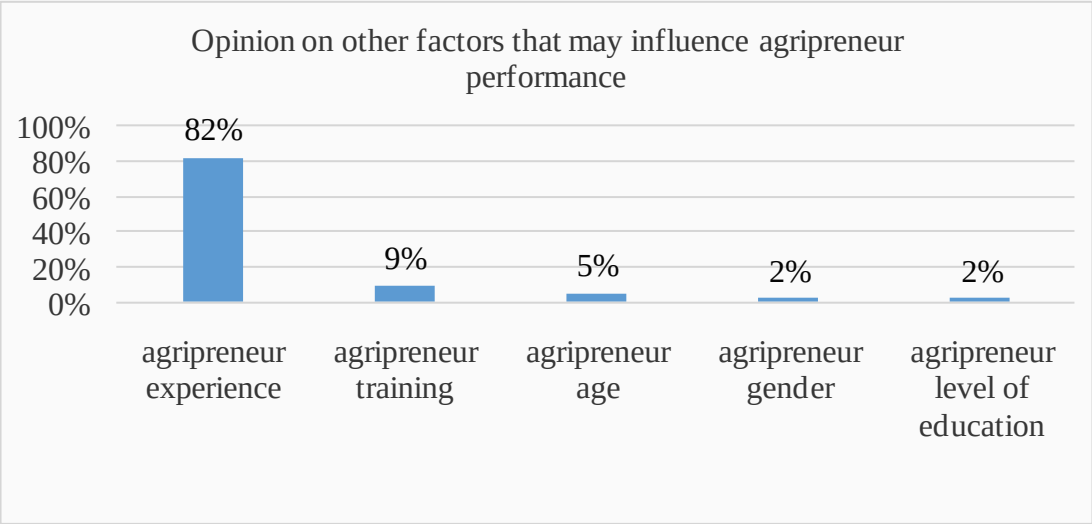

Figure 4.10: Respondents' opinion on other factors that may influence agripreneur performance

4.7.2 Agripreneur Experience

Respondents' opinions on other factors that could influence agripreneur performance revealed that 82% of the respondents held the believe that enterprise owners with many years of experience in horticultural farming were more likely to realize higher production yields than those with less experience, holding all other factors constant. They stated that agripreneurs with many years of experience knew how and when to apply inputs as well as ways in which to identify and mitigate farming challenges effectively. This position was reinforced by Yawson, Armah, Afrifa and Dadzie (2010) study which found out that varying production among smallholder farmers in Central Region in Ghana was mostly attributed to farmers' experience. The smallholder farmers who had very little experience in farming recorded declining or negative production while those who had experience recorded increased production. A study carried out by

Mehdi (2012) in Iran on factors affecting sustainability of agricultural production established that farming experience had significant influence on agricultural production among the agripreneurs. A research undertaken by Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) in Vietnam established that the expereince of an agripreneur contributed significantly to productivity of the enterprise.This finding is also supported by a study carried out in Kenya, Tanznia, Uganda and Ethiopia (Salami, Kamara, & Brixiova, 2010).

4.7.3 Agripreneur Training

The study analysis in Figure 4.11 established that 9% of the respondents believed that enterprise owners who had training in agriculture were more likely to realize higher production yields than those with very little or no agricultural training. This position was again supported by Yawson, Armah, Afrifa and Dadzie (2010) research carried out in Central Region in Ghana where he found out that those smallholder farmers who had very little or no training at all in agriculture experienced declining production as opposed to the farmers who had agricultural training and information on how to use farm inputs. This finding is also supported by research done in Abia State in Nigeria by Odoemelam, Osahon, and Nwokocha (2014) who found that women who had limited access to formal education and training experienced low production. Another study carried out by Mehdi (2012) in Iran on factors affecting sustainability of agricultural production established that agripreneurs who participated in extension services classes realized significant agricultural production and vice versa.

4.7.4 Agripreneur' Age, Gender and Level of Education

The study analysis as highlighted in Figure 4.10 indicated that only 5% of the respondents believed that the age of the agripreneur could influence greatly the performance of the agripreneur in horticultural farming. The study analysis also revealed that only 2% of the respondents believed that age and gender of the entrepreneur could

influence the performance of agripreneurs. This view that age and gender has minimal influence on agripreneurs performance is supported research finding by Amoah (2013) who carried out a study in Ghana and established that both age and gender did not have significant effects of the performance of agripreneurs in cocoa production. However, a study by Mehdi (2012) in Iran established that the age of agripreneurs had significant influence on the agricultural production. Mehdi's (2012) position is in tandem with findings from a study carried out in Indonesia by Ketut and Yovita, (2013) that found out that age and education variables significantly affected the level of adoption and improvement opportunities on production. A similar study carried out by Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) in Vietnam established that the age of an agripreneur contributed significantly to productivity. Another study carried out in Ghana by Amoah revealed that education level was significantly associated with the performance of agripreneurs output of cocoa production (Amoah, 2013).

4.8 Overall Influence of Credit Sources on Agripreneur Performance in terms of farm production

To test the general objective for this study which was to investigate the influence of credit sources on the performance of smallholder horticultural agripreneurs, a correlation and multiple regression analyses were conducted to examine the relationship between agripreneurs performance in terms of farm production and the four sources of credit as predictors. Table 4.14 summarizes the descriptive statistics and analysis results. The results $F(4, 100) = 5.967$, $p < .001$ show that, since the p-value is less than 0.05, credit from both formal and informal sources under the study have significant influence on agripreneurs' farm production.

Table 4.1: Overall Influence of Credit from Formal and Informal Sources on Farm Production

ANOVA[a]						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	53400028.623	4	13350007.156	5.967	.000[b]
	Residual	223728331.034	100	2237283.310		
	Total	277128359.657	104			

a. Dependent Variable: total change production after credit
b. Predictors: (Constant), family and friends, Exporter/product buyer/agrovet, Banks, microfinance, cop sacco, Group chama

The Model Summary in Table 4.15 of the multiple regression model with all the four predictors produced $R^2 = .193$. The results showed that credit from the four sources contribute 19.3% to agripreneur performance in terms of farm production. That means that 80.7% of agripreneurs' performance in terms of farm production is contributed by other factors. This finding is in line with other studies like Yawson, Armah, Afrifa, and Dadzie (2010); Nguyen, Barrash, Koenigs, Bechara, Tranel, and Denburg (2014); Odoemelam, Osahon and Nwokocha, (2014) and Ketut, and Yovita, (2013) which shows that, apart from access credit, there are other factors that influence agripreneur performance in terms of farm production.

Table 4.15: Influence of all the credit sources on agripreneurs' performance Model Summary

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.439[a]	.193	.160	1495.75510

Predictors: (Constant), family and friends, Exporter/product buyer/agrovet, Banks, microfinance, cop sacco, Group chama

a. Dependent Variable: total change production after credit

4.9 Influence of credit from Formal Financial Institutions on Horticultural Agripreneurs' Performance

The study established that only 12 respondents (12%) of the total number of respondents) obtained credit from the formal financial institutions (Table 4.16). This means that 88% of the agripreneur obtained credit from informal financial institutions. Further, the study established that out of the 12 respondents who obtained credit from the formal financial institutions, 3 respondents (25%) obtained credit from Equity Bank which is essentially a commercial bank while the remaining 75% obtained credit from micro-finance institution as is highlighted. That means that 75% of the borrowers who took credit from the formal financial institutions tended to go to microfinance institutions which have more flexible terms than the conventional banks.

Table 4.16: Types of Formal Financial Institutions who provided credit to Agripreneurs

Credit Source	Number of respondents	%number of respondents	Name of financial institution
Banks	3	25%	Equity Bank
Micro-finance institutions	5	41.7%	Juhudi Kilimo
Micro-finance institutions	3	25%	Eclof
Micro-finance institutions	1	8.3%	KWFT
Totals	**12**	**100%**	**-**

This study finding is in agreement with other similar studies carried out by Adam (2010) and World Savings Bank Institute (2010) which contend that there is limited availability of credit services from formal financial institutions especially from the conventional commercial banks. The findings show that 25% of the respondents obtained credit from Equity Bank which is not essentially a conventional commercial bank. Equity Bank has a micro-finance lending department which is friendlier to smallholder farmers unlike the commercial banks. The remaining 75% of the respondents obtained credit from the micro-finance institutions which are currently friendlier to the smallholder farmers than the conventional commercial banks. The formal financial institutions especially the commercial banks are reluctant to serve the agricultural sector, given the sector's seasonality and the inherent risks in farming (Kloeppinger-Todd & Sharma, 2010; IFC, 2011; FAO, 2012 & IFAD, 2011).

This position is also backed up by Akande, Adewoye, Oladejo and Ademola, (2011) study which found out that entrepreneurs fear approaching commercial banks for credit because they view commercial banks as institutions for the rich. In the study that the author carried out in Oyo State in Nigeria, none of the respondents claimed to have obtained credit from commercial banks, while in another study carried out in Kwara State in Nigeria, only 11% of agripreneurs obtained loans from commercial banks (Ammani, 2012). The study carried out in Kwara sate in Nigeria did find out that the majority (65%) of those who had acquired credit from the formal financial institutions were men which is consistent with the findings of this study ad that of Ajagbe, Oyelere and Ajetomobi (2012) which pointed out that men constitute the majority of credit beneficiaries from banks. This is consistent with study findings that entrepreneurs with collateral, especially formal collateral like land (mostly men) are significantly more likely to be successful in their bank credit applications compared to entrepreneurs without formal collateral, like land (Fatoki & Asah, 2011).

4.9.1 Inferential Statistics

Effect of credit from formal financial institutions on agripreneurs' performance in terms of production, job creation and incomes:

To help in testing the null hypothesis that credit from formal financial institutions does not have significant influence on agripreneurs performance, an ANOVA test was carried out. The ANOVA test results in Table 4.17 established that there was significant association between credit from formal financial institution and agripreneurs' production and gross income and net income at F (1, 103) = 13.427, p-value .001 for production, (F, 103) = 14.946, p-value .001 for gross income and F (1, 103) = 11.235, p-value .001 for net income. Since the p-values of change in production, gross income and net income were found to be less than 0.05, it was established that credit from formal institutions had significant influence on production, gross income and net income. However, the

results showed that credit from formal financial institutions did not have significant influence on agripreneur performance in terms employment creation whose results were F (1, 103) = .024, p-value of .876. This was because the p-value was more than 0.05.

Table 4.17: Credit from formal financial institutions and performance of agripreneurs

ANOVA Table[a,b,c,d]

		Sum of Squares	df	Mean Square	F	Sig.
total change production after credit * Banks, microfinance, cop sacco	Between Groups (Combined)	31958968.910	1	31958968.910	13.427	.000
	WithinGroups	245169390.747	103	2380285.347		
	Total	277128359.657	104			
Change in number of casual employees after credit * Banks, microfinance, cop sacco	Between Groups (Combined)	1.591	1	1.591	.024	.876
	WithinGroups	6729.742	103	65.337		
	Total	6731.333	104			
Change in gross income after credit receipt * Banks, microfinance, cop sacco	Between Groups (Combined)	103387054689.75	1	103387054689.75	14.946	.000
	WithinGroups	712476292929.293	103	6917245562.42		
	Total	815863347619.048	104			
Change in Net Income after credit receipt * Banks, microfinance, cop sacco	Between Groups (Combined)	11588654892.13	1	11588654892.13	11.235	.001
	WithinGroups	106243735012.626	103	1031492572.938		
	Total	117832389904.762	104			

a. Total change production after credit * Banks, microfinance, cop sacco computed.
b. Change in number of casual employees after credit * Banks, microfinance, cop sacco computed.
c. Change in gross income after credit receipt * Banks, microfinance, cop sacco computed.
d. Change in Net Income after credit receipt * Banks, microfinance, cop sacco computed.

Further study results in Table 4.18 below showed clearly that the influence of formal credit on agripreneurs performance was positive and significant. The measures of association Eta Squared .115, .000, .127 and .098 representing amount produced, number of employees engaged, gross and net income generated respectively revealed that 1 unit of credit from formal financial institutions contributed to 11.5% increase in production, 0% increase in employment creation, 12.7% increase in gross income and 9.8% increase in agripreneurs net income.

Table 4.18: Credit from formal financial institutions and agripreneur performance measure of association

Measures of Association		
	Eta	Eta Squared
Total change production after credit * Banks, microfinance, cop sacco	.340	.115
Change in number of casual employees after credit * Banks, microfinance, cop sacco	.015	.000
Change in gross income after credit receipt * Banks, microfinance, cop sacco	.356	.127
Change in Net Income after credit receipt * Banks, microfinance, cop sacco	.314	.098

This study findings agree with several other research studies. A research carried out in Nigeria showed that when agricultural credit is used, it stabilizes farming enterprise and often leads to increases in productivity, agricultural production, value addition and net incomes for smallholder farmers, thus fulfilling the main objective of taking credit

(Nwaru & Onuoha, 2010; Omonona, Lawal & Oyinlana, 2010; Nguyen, Barrash, Koenigs, Bechara, Tranel & Denburg, 2014). The findings of this research are also comparable to those expressed by Mashigo and Schoeman (2011) whose research findings in South Africa established that formal commercial banks play a pivotal role in the delivery of effective financial services for the development and growth of the smallholder agripreneurs. These sentiments are also echoed by Ayyagari, Demirgüç-Kunt, & Maksimovic's (2010) whose study in China revealed that firms that borrowed from formal banks grew faster than firms borrowing from informal sources. Similar findings were documented from a research carried out in Indonesia by

4.9.2 Hypothesis Testing - H01

The hypothesis for credit from formal financial institutions was stated as:

H_{01}: Credit sourced from formal financial institutions has no significant influence on the smallholder horticultural agripreneurs' performance.

Credit from formal financial institutions has been cited by many scholars as a key factor that could positively improve the performance of the smallholder agripreneurs and the agricultural sector as a whole. This study sought to find out if credit from the formal financial institutions has any influence in the performance of the smallholder horticultural agripreneurs in terms of crop production, number of employees engaged and the amount income being realized by the horticultural enterprise. Commercial banks and all the financial institutions that are regulated by the Central Bank like micro-finance institutions as well as co-operative SACCOs were all categorized under the formal financial institutions variable in this research. The ANOVA test results in Table 4.19 were as follows: F (1, 103) = 13.427, p-value .001 for production, (F, 103) = 14.946, p-value .001 for gross income and F (1, 103) = 11.235, p-value .001 for net income.

Since the p-values of change in production, change in gross income and change in net income were found to be less than 0.05, it was established that credit from formal financial institutions had significant influence on agripreneurs' performance in terms production, gross income and net income.

The null hypothesis H_{01} was therefore rejected.

There other studies that support the finding that credit from formal financial institutions plays a significant role in agripreneurship performance. A study by Shinozaki, (2012) shows that credit from formal financial institutions was more effective in influencing enterprise development and growth than credit from informal sources. A similar study carried out in Pakistan by Abbas, Jiang, Jam and Shahbaz (2016) showed that credit from formal financial institutions increased production and farmer incomes. Another study carried out by Iyanda, Afolami, Obayelu, and Ladebo (2014) in Nigeria on cassava farmers revealed that formal credit influenced production positively. A study carried out by (Okojie, Monye-Emina, Eghafona, Osaghae. and Ehiakhamen, (2010) in Edo State, found that credit from the formal microfinance institutions has had positive impacts on the businesses and family life of rural agripreneurs.

It is however important to note that the test results on change in employment F (1, 103) = .024, p-value of .876 showed that credit from formal financial institutions did not have significant influence on agripreneur performance in terms of increase in employment opportunities since the p-value was more than 0.05.

4.10 Influence of credit from traders and processors on horticultural agripreneurs' performance

The findings from this study established that 35 respondents obtained credit from traders and processors who were mainly French beans exporter companies. As is highlighted in Table 4.3, this represented 33% of all the respondents who participated in this study. The mode of credit under this category was mainly delivered to agripreneurs in-kind as farm inputs (seed, fertilizer and pesticides). The descriptive statistical finding of this study on the popularity of credit from traders and processors was found to be in agreement with other similar research findings established by other scholars on the provision of credit in Africa by non-financial institutions. Some of the other studies whose findings established that informal credit was popular with smallholder agripreneurs were found to have been carried out by Kamara, (2010); Egyir, (2010); Kloeppinger-Todd and Sharma, (2010); Mann, Tinsey, Tedjo, and Nwadei (2010) and Coates, Kitchen, Kebbell, Vignon, Guillemain, and Hofmeister (2011). The finding of this study is also comparable to that carried out by Yiu, Su, and Xu (2012) whose study in Asia confirmed that alternative financing especially from traders and processors, positively influences enterprise performance.

4.10.1 Inferential Statistics

Effect of credit from traders and processors on agripreneurs' performance in terms of production, job creation and incomes:

To assist in testing the null hypothesis that credit from traders and processors does not have significant influence on agripreneurs performance, an ANOVA test was carried out. The test results as shown in Table 4.19 established that credit from traders and processor had significant influence on agripreneurs' performance in terms of production at F (1, 103) = 15.092, p-value .001, gross income at (F, 103) = 14.088, p-value .001 and net income at F (1, 103) = 16.865, p-value .001. Since the p-values of change in

production, gross income and net income were found to be less than 0.05, it was recognised that credit from traders and processors had significant influence on production, gross income and net income. However, the results showed that credit from traders and processors did not have significant influence on agripreneur performance in terms employment creation whose results were F (1, 103) = 1.788, p-value of .184. This was because the p-value was more than 0.05.

Table 4.19: Credit from traders and processors and performance of agripreneurs

ANOVA Table[a,b,c,d]

		Sum of Squares	df	Mean Square	F	Sig
total change production after credit * Exporter/product buyer/agrovet	Between Groups	35416483.634	1	35416483.634	15.092	.000
	(Combined)	241711876.023	103	2346717.243		
	Within Groups					
	Total	277128359.657	104			
Change in number of casual employees after credit * Exporter/product buyer/agrovet	Between Groups	114.872	1	114.872	1.788	.184
	(Combined)					
	Within Groups	6616.462	103	64.237		
	Total	6731.333	104			
Change in gross income after credit receipt * Exporter/product buyer/agrovet	Between Groups	98164034228.734	1	98164034228.734	14.088	.000
	(Combined)					
	Within Groups	717699313390.313	103	6967954498.935		
	Total	815863347619.048	104			
Change in Net Income after credit receipt * Exporter/product buyer/agrovet	Between Groups	16579139292.226	1	16579139292.226	16.865	.000
	(Combined)					
	Within Groups	101253250612.536	103	983041268.083		
	Total	117832389904.762	104			

a. Total change production after credit * Exporter/product buyer/agrovet computed.
b. Change in number of casual employees after credit * Exporter/product buyer/agrovet computed.
c. Change in gross income after credit receipt * Exporter/product buyer/agrovet computed.
d. Change in Net Income after credit receipt * Exporter/product buyer/agrovet computed.

More study results in Table 4.20 below revealed clearly that the effect of credit from traders and processors on agripreneurs performance was confirmatory and significant. The measures of association Eta Squared.128, .017, .120 and.141 representing amount produced, number of employees engaged, gross and net income generated respectively revealed that 1 unit of credit from traders and processors contributed to 12.8% increase in production, 1.7% increase in employment creation, 12% increase in gross income and 14.1% increase in agripreneurs net income.

Table 4.20: Credit from traders and processors and performance of agripreneurs measure of association

Measures of Association		
	Eta	Eta Squared
total change production after credit * Exporter/product buyer/agrovet	.357	.128
Change in number of casual employees after credit * Exporter/product buyer/agrovet	.131	.017
Change in gross income after credit receipt * Exporter/product buyer/agrovet	.347	.120
Change in Net Income after credit receipt * Exporter/product buyer/agrovet	.375	.141

The finding of this study is in line with other similar research findings established by other scholars on the provision of credit in Africa by non-financial institutions especially traders and processors and the positive impacts thereof (Kamara, 2010; Egyir, 2010; Kloeppinger-Todd and Sharma, 2010; Mann, Tinsey, Tedjo, & Nwadei, 2010 and

Coates, Kitchen, Kebbell, Vignon, Guillemain, & Hofmeister, 2011). This study findings are also in tandem with findings from a study carried by Yiu, Su and Xu, (2012) who confirmed that alternative financing especially from traders and processors, positively influences enterprise performance. This study finding was further corroborated by another research finding by Marcoul and Veyssiere (2010) whose study carried out in South Africa identified traders and processors as one of the major source of credit for enterprises growth for smallholder agripreneurs.

4.10.2 Hypothesis Testing - H02

The hypothesis for credit from traders and processors was earlier stated as:

H_{02}: Credit sourced from traders and processors has no significant influence on the smallholder horticultural agripreneurs' performance

This study sought to find out whether credit from traders and processors had any effect on the performance of the smallholder horticultural agripreneurs in terms of crop production, number of employees engaged and the amount income being realized by the horticultural agripreneurs. The research analysis established that 33% of the respondents had taken credit from traders and processors as indicated in Table 4.3. The ANOVA tests revealed the following: change in production, F (1, 103) = 15.092, p-value .001, change in change in gross income, (F, 103) = 14.088, p-value .001 and change in net income, F (1, 103) = 16.865, p-value .001 all with p-values that were less than 0.05 as seen on Table 4.20. Since the p-values of change in production, change in gross income and change in net income were found to be less than 0.05, it was established that credit from traders and processors had significant influence on agripreneurs' performance in terms production, gross income and net income.

The null hypothesis H_{02} was therefore rejected.

There are research studies that provide a backing to the finding this study that credit from traders and processors influence agripreneurship significantly. Studies by Nwaru & Onuoha., (2010); Omonona, Lawal, and Oyinlana, (2010) and Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) show that when agricultural credit from traders and processors is properly extended and utilized, it stabilizes farming enterprises and often lead to increases in productivity, agricultural production, value addition and net incomes for smallholder farmers, thus fulfilling the main objective of taking the credit. Wiggins and Keates (2012) on their study findings in Africa confirmed that large and formal firms (processors, exporters, retail outlets) often take responsibility for organizing value chain linkages including financing for the smallholder agripreneurs which lead to improved yields and incomes. Studies by Barrett, Bachke, Bellemare, Michelson, Narayanan and Walker (2012); Bellemare, (2010) and Kelly, (2012) show that smallholder agripreneurs who enter into contract farming and access credit from traders and processors almost unambiguously achieve higher yields, incomes, and high input usage.

However, the statistical test on the relationship between the credit source and the change in the number of employees presented an outcome of $F(1, 103) = 1.788$, p-value of .184.

Since the p-value was higher than 0.05, this showed that credit sourced from traders and processors did not contribute significantly to change in the number of employees engaged by the agripreneurs.

4.11 Influence of credit from Group Savings Associations on horticultural agripreneur performance

The study established that 35 respondents obtained credit from group savings associations popularly known as *chamas* in Kenya representing 33% of all the respondents as is highlighted in Table 4.4. This mode of credit under this category was in form of cash which agripreneurs used to purchase farm inputs and to pay farm

workers. The finding of this research was in line with other study discoveries established by other researchers which demonstrated that smallholder agripreneurs prefer to make agricultural investments through group savings (Duflo, Kremer, & Robinson, 2011; Brune, Xavier, Jessica & Dean, 2012). This position was reaffirmed by Kast, Meier, & Pomeranz, (2011) and Karlan, McConnell, Mullainathan, and Zinman (2011) who carried out similar studies and found out that being part of peer groups increased individuals' saving rates and access to commitment savings products like credit. The finding was also in line with Mwangi and Ouma (2012) study in Kenya which reported that the higher the number of groups that one pledged loyalty to, the higher the probability of accessing informal credit from the groups.

4.11.1 Inferential Statistics

Effect of credit from group savings associations on agripreneurs' performance in terms of production, job creation and incomes.

To test the null hypothesis that credit from group savings associations does not have significant influence on agripreneurs performance, an ANOVA test was carried out. The test results as shown in Table 4.21 established that credit from group savings associations had significant influence on agripreneurs' performance in terms of production F (1, 103) = 17.795, p-value .001, gross income (F, 103) = 14.522, p-value .001 and net income at F (1, 103) = 16.990, p-value .001. Since the p-values of change in production, gross income and net income were found to be less than 0.05, it was recognised that credit from group savings associations had significant influence on production, gross income and net income. However, the results showed that credit from group savings associations did not have significant influence on agripreneur performance in terms employment creation whose results were F (1, 103) = .786, p-value of .378. This was because the p-value was greater than 0.05.

Table 4.21: Credit from group savings associations and performance of agripreneurs

ANOVA Table[a,b,c,d]

		Sum of Squares	df	Mean Square	F	Sig.
total change production after credit * Group chama	Between Groups (Combined)	40824552.945	1	40824552.945	17.795	.000
	Within Groups	236303806.712	103	2294211.716		
	Total	277128359.657	104			
Change in number of casual employees after credit * Group chama	Between Groups (Combined)	50.947	1	50.947	.786	.378
	Within Groups	6680.387	103	64.858		
	Total	6731.333	104			
Change in gross income after credit receipt * Group chama	Between Groups (Combined)	100817457636.171	1	100817457636.171	14.522	.000
	Within Groups	715045889982.877	103	6942193106.630		
	Total	815863347619.048	104			
Change in Net Income after credit receipt * Group chama	Between Groups (Combined)	16684256480.104	1	16684256480.104	16.990	.000
	Within Groups	101148133424.658	103	982020712.861		
	Total	117832389904.762	104			

a. Total change production after credit * Group chama computed.
b. Change in number of casual employees after credit * Group chama computed.
c. Change in gross income after credit receipt * Group chama computed.
d. Change in Net Income after credit receipt * Group chama computed.

Association study results in Table 4.22 showed that the outcome of credit from group savings associations on agripreneurs performance was positive and substantial. The measures of association Eta Squared .147, .008, .124 and .142 representing amount produced, number of employees engaged, gross and net income generated respectively revealed that 1 unit of credit from group savings associations contributed to 14.7% increase in production, 0.8% increase in employment creation, 12.4% increase in gross income and 14.2% increase in agripreneurs net income.

Table 4.2: Credit from group savings associations and performance of agripreneurs measure of association

Measures of Association		
	Eta	Eta Squared
total change production after credit * Group chama	.384	.147
Change in number of casual employees after credit * Group chama	.087	.008
Change in gross income after credit receipt * Group chama	.352	.124
Change in Net Income after credit receipt * Group chama	.376	.142

This finding revealed that credit from group savings associations played a very key role in increasing, significantly, the horticultural crop production and incomes for agripreneurs. A similar study carried out by Rao and Qaim in Kenya (2011) found that apart from accessing credit to boost productivity and incomes, working as a group association also actually aided the group savings association to undertake communal

marketing triggering increased production and incomes. Dalberg (2011) research finding that credit from groups' savings to agripreneurs in developing countries in Africa facilitates growth is in tandem with this research this study test result. According to other studies by Amoah (2013) and Nguyen *et al*. (2014), access to credit from group savings associations increases production.

4.11.2 Hypothesis Testing - H03

The hypothesis for credit from group savings associations was earlier stated as:

H_{03}: Credit sourced from group savings associations has no significant influence on the smallholder horticultural agripreneurs' performance

This study sought to find out whether credit from group savings associations had any effect on the performance of the smallholder horticultural agripreneurs in terms of crop production, number of employees engaged and the amount of gross and net income being realized by the horticultural enterprise. The research analysis established that 33% of the respondents had taken credit from group savings associations as indicated in Table 4.3. The ANOVA tests revealed the following results: change in production F (1, 103) = 17.795, p-value .001, change in gross income (F, 103) = 14.522, p-value .001 and change in net income at F (1, 103) = 16.990, p-value .001 all with p-values that were less than 0.05 as seen on Table 4.21.

Since the p-values of change in production, change in gross income and change in net income were found to be less than 0.05, it was established that credit from group savings associations had significant influence on agripreneurs' performance in terms production, gross income and net income.

The null hypothesis H_{03} was therefore rejected.

Studies that support this finding that credit from groups savings associations do have significant influence on agripreneur performance include research work carried out by Kast, Meier, & Pomeranz, (2011) in Chile and Karlan, McConnell, Mullainathan, & Zinman, (2011) covering Philippines, Peru and Bolivai show that agripreneurs join peer groups to increase their individuals' saving rates and to have access to commitment savings products like credit which lead to increased agribusiness yields. In Kenya and Malawi, smallholder agripreneurs prefer to make agricultural investments through group savings (Duflo, Kremer, & Robinson, 2011; Brune, Xavier, Jessica & Dean, 2012) leading to increased yields and incomes. This study finding is also strongly supported by a study carried out by Nguyen, Barrash, Koenigs, Bechara, Tranel and Denburg (2014) in Vietnam which found out that smallholder enterprises that acquired credit from their own internally mobilized savings experienced higher growth than those who acquired credit from other sources.

However, the results showed that credit from group savings associations did not have significant influence on agripreneur performance in terms employment creation whose results were F (1, 103) = .786, p-value of .378. This was because the p-value was greater than 0.05.

4.12 Influence of credit from Family and Friends on horticultural agripreneur performance

The study established that 23 respondents obtained credit from family and friends. This represents 22% of the total respondents as is highlighted in Table 4.3. This mode of credit under this category was normally availed in cash to agripreneurs then used to purchase farm inputs and to pay farm workers. The findings from the analysis of this research are in agreement with other scholarly studies which state that smallholder agripreneurs obtain credit from family and friends because this type of credit has more flexibility than financial services offered by the formal financial institutions. This is

extremely important to the smallholder agripreneurs because it speaks to the needs of the agripreneurs who experience irregular and unpredictable enterprise cash flows (Pearlman, 2010; Rutherford, 2010).

Other studies confirm that credit from family and friends is popular because it is frequently interest-free or has very lower interest as compared to loans from the conventional banks and microfinance institutions loans among the (Collins, Morduch, Rutherford & Ruthven, 2010). It is also noticeable that less respondents took credit from family and friends compared to the number of respondents who took credit from group savings associations and traders and processors. A study by Slide (2011) show that people avoid credit from family and friends for fear of losing relationships. Rutherford (2010) notes that flexibility of financial services offered by family and friends is extremely important to the smallholder agripreneurs thus making the source of credit attractive to the clients.

4.12.1 Inferential Statistics

Effect of credit from family and friends on production

To test the null hypothesis that credit from family and friends does not have significant influence on agripreneurs' performance, an ANOVA test was carried out. The test results as shown in Table 4.23 established that credit from family and friends did not have significant influence on agripreneurs' performance in terms of production F (1, 103) = 1.232, p-value .270, number of employees F (1, 103) = .786, p-value .378, gross income (F, 103) = .195, p-value .660 and net income at F (1, 103) = .115, p-value .735. Since the p-values of change in production, change in number of employees, change in gross income and change in net income were found to be greater than 0.05, it was recognised that credit from group savings associations had no significant influence on amount of production, number of employee, and amount of gross and net income generated by the agribusiness.

Table 4.23: Credit from family and friends and performance of agripreneurs

ANOVA Table[a,b,c,d]

		Sum of Squares	df	Mean Square	F	Sig.
total change production after credit * family and friends	Between Groups (Combined)	3276771.828	1	3276771.828	1.232	.270
	Within Groups	273851587.829	103	2658753.280		
	Total	277128359.657	104			
Change in number of casual employees after credit * family and friends	Between Groups (Combined)	50.947	1	50.947	.786	.378
	Within Groups	6680.387	103	64.858		
	Total	6731.333	104			
Change in gross income after credit receipt * family and friends	Between Groups (Combined)	1540822897.301	1	1540822897.301	.195	.660
	Within Groups	814322524721.747	103	7906043929.337		
	Total	815863347619.048	104			
Change in Net Income after credit receipt * family and friends	Between Groups (Combined)	131801702.707	1	131801702.707	.115	.735
	Within Groups	117700588202.055	103	1142724157.302		
	Total	117832389904.762	104			

a. Total change production after credit * family and friends computed.
b. Change in number of casual employees after credit * family and friends computed.
c. Change in gross income after credit receipt * family and friends computed.
d. Change in Net Income after credit receipt * family and friends computed.

Association study results in Table 4.24 showed that the outcome of credit from family and friends on agripreneurs performance was not significant. The measures of association Eta Squared. 012, .008, .002 and .001 representing amount produced, number of employees engaged, gross and net income generated respectively revealed that 1 unit of credit from family and friends contributed to 1.2% increase in production,

0.8% increase in employment creation, 0.2% increase in gross income and 0.1% increase in agripreneurs' net income.

Table 4.24: Credit from family and friends and performance of agripreneurs measure of association

Measures of Association		
	Eta	Eta Squared
total change production after credit * family and friends	.109	.012
Change in number of casual employees after credit * family and friends	.087	.008
Change in gross income after credit receipt * family and friends	.043	.002
Change in Net Income after credit receipt * family and friends	.033	.001

The ANOVA test established that statistically there was no significant association between credit from family and friends and production, employment creation as well as gross and net income. This means that the credit sourced from family and friend by agripreneurs did not result in any substantial increase in the horticultural crop production, employment creation and income generation. This study finding is in line with a similar study by Akande, Adewoye, Oladejo and Ademola, (2011) carried out in Nigeria which found out that even though credit from family and friends was popular among micro and small enterprises, the entrepreneurs who obtained credit from this source did not perform well. The above study states that, although the credit from family

and friends was frequently interest-free, it was always unreliable and normally generated very small amount of capital relative to the enterprises' needs.

4.12.2 Hypothesis Testing - H04

The hypothesis for credit from family and friends was earlier stated as:

H_{04}: Credit sourced from family and friends has no significant influence on the smallholder horticultural agripreneurs' performance

This study sought to find out whether credit from family and friends had any effect on the performance of the smallholder horticultural agripreneurs in terms of crop production, number of employees engaged and the amount of gross and net income realized by the horticultural enterprise. The research analysis established that 22% of the respondents had taken credit from family and friends as indicated in Table 4.3. The ANOVA tests revealed the following results: change in production F (1, 103) = 1.232, p-value .270, number of employees F (1, 103) = .786, p-value .378, gross income (F, 103) = .195, p-value .660 and net income at F (1, 103) = .115, p-value .735 all with p-values that were greater than 0.05 as seen on Table 4.24.

Since the p-values of change in production, change in number of employees, change in gross income and change in net income were found to be greater than 0.05, it was established that credit from family and friends had no significant influence on agripreneurs' performance in terms production, employment, gross income and net income.

The null hypothesis H_{04} was therefore accepted.

The findings of this study are in tandem with other findings of a similar studies carried out by Essien and Arene (2014) in Nigeria and Bohme and Thiele (2012) in West Africa

which found out that credit from family and friends normally yielded very minimal impacts on enterprise growth / expansion basically due the unreliability of the credit and the relatively small amounts of credit availed. Other similar studies carried out by Bohme and Thiele (2012) found out that credit from family and friends had little impact on enterprise performance. Elumilade, Asaolu and Oladele (2010) who also carried out another study in Nigeria observed that credit from family and friends did not have significant effect on the performance on agripreneurs' enterprises. Recent studies by Ashraf, Erica and Yin (2010); Schaner (2012) and Hertzberg (2012) have found that household credit models have inherent intrafamily conflicts which lead to enterprise inefficiencies which affect the performance of the agripreneurs negatively.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents the summary, conclusions and recommendations of the study on the influence of credit sources on the performance of agripreneurs in Yatta Division, Machakos County, Kenya. The chapter summarized the collected data and the analysis; discussion with reference to the specific objectives and the interpretation of the results. The conclusions of the study relate to the specific objectives and recommendations based on the conclusion of each specific objective.

5.2 Summary of the Findings

The general objective of the study was to investigate the influence of credit sources on the performance of smallholder horticultural agripreneurs in Kenya. The summary of the findings of the study were guided by the specific objectives. The study was guided by credit from formal financial institutions, traders and processors, group savings associations and credit from family and friends as the independent variables while the dependent variable was performamce of smallholder agripreneurs in terms of production, number of employees as well as average gross and net income as sub-variables. The findings from the study were that credit from formal financial institutions, credit from traders and processors as well as from group savings associations were found to have significant influence on agripreneur performance. However credit from family and friends was found not to have significant influence on agripreneur performance.

5.2.1 General Objective: To investigate the influence of credit sourced from formal financial institutions and informal sources on the performance of smallholder horticultural agripreneurs in Kenya.

The study sought to find out whether credit sourced from formal financial institutions and informal sources had any influence on the performance of smallholder horticultural agripreneurs. The study revealed that all credit sourced from both the formal financial institutions and the informal sources combined had significant influence on the performance of the smallholder horticultural agripreneurs in Kenya in terms of farm production and the income realized by the agripreneurs. Descriptive statistics showed that, the influence of all the credit sources combined contributed to less than twenty per cent of agripreneurs' performance in terms of production and income generation. The knowledge from this study can be useful when designing programs that support the development and growth of agribusinesses. Financial institutions would also find the findings from this study useful when developing financial products for smallholder agripreneurs.

5.2.2 Objective 1: To examine the influence of credit from formal financial institutions on the performance of smallholder horticultural agripreneurs in Kenya

The study sought to find out whether credit from formal financial institutions had any influence on the performance of smallholder horticultural agripreneurs. Descriptively, the study established that twelve per cent of the agripreneurs who were interviewed took credit from formal financial institutions. The study found out that credit from formal financial institutions significantly influenced the performance of the smallholder horticultural agripreneurs in Kenya in terms of production and gross and net income realized leading to the rejection of the null hypothesis. Inferentially, the results showed that agripreneurs experienced significant growth in crop production and in both gross and net incomes.

5.2.3 Objective 2: To establish the effect of credit from traders and processors on the performance of smallholder horticultural agripreneurs in Kenya

The study sought to investigate whether credit from traders and processors had any influence on the performance of smallholder horticultural agripreneurs. Descriptively, the study established that thirty three per cent of the agripreneurs took credit from traders and processors showing that credit from traders and processors was widespread among the agripreneurs. Inferential statistical analysis from the study revealed that credit from traders and processors had significant influence on the performance of the smallholder horticultural agripreneurs in Kenya in terms of increased production and on both gross and net income leading to the rejection of the null hypothesis.

5.2.4 Objective 3: To determine the extent to which credit from group saving associations influence the performance of smallholder horticultural agripreneurs in Kenya.

Under this objective, the study tried to investigate whether credit from group savings associations had any influence on the performance of smallholder horticultural agripreneurs. Desriptive analysis reavealed that thirty three per cent of all the garipreneurs interviwed for this study had acquired credit from groups savings associations indicating that this source of credit was relevant to the needs of the garipreneurs. The inferential statistical investigations established that credit from group savings associations had significant influence on the performance of smallholder horticultural agripreneurs in terms of production and on both gross and net income leading to the rejection of the null hypothesis.

5.2.5 Objective 4: To investigate the influence of credit from family and friends on the performance of smallholder horticultural agripreneurs in Kenya.

In this objective, the study tried to investigate whether credit from family and friends had significant influence on the performance of smallholder horticultural agripreneurs. Desriptive analysis reavealed that tenty two per cent of all the garipreneurs interviwed for this study had acquired credit from family and friends indicationg that this source of credit was relatively popular among the garipreneurs. However, the study found out that credit from family and friends did not have significant influence on the performance of smallholder horticultural agripreneurs in terms of production, the number of employees enaged as well as amount of income generated leading to the acceptance of the null hypothesis. The majority of the agripreneurs who obtained credit from family and friends recorded indifferent or insignificant increases either in production, labour force and income realized.

5.3 Conclusions

5.3.1 Credit from all sources

Contrary to the widespread belief among the smallholder agripreneurs and indeed, micro, small and medium enterprises that access to finance solves almost all the enterprises' challenges, this study concluded from the findings that access to finance or credit only solves less than a fifth of the enterprises' challenges. The study also concluded that more than eighty per cent of enterprises' challenges are attributable to other factors other than access to finance or credit. The study further concluded that, as much as credit is important, alone, it cannot solve all the agripreneurs' enterprise challenges.

5.3.2 Credit from formal financial institutions

The study concluded that credit from the formal financial institutions was effective in developing and growing agripreneur enterprises. This was because the agripeneurs who

obtained credit from formal financial institutions experienced significant successes in their horticultural enterprises in terms of increased production and incomes. The study however concluded that credit from formal financial institutions especially commercial banks was the least popular in terms of agripreneur patronage, when compared to all the other sources of credit under this study.

5.3.3 Credit from traders and processors

The study concluded that credit from traders and processors was most popular among agripreneurs in terms of patronage when compared to all the other sources of credit under this study. The study also concluded that credit sourced from traders and processors was effective in terms of influencing the success of the agripreneurs' enterprises in terms of increased production and incomes.

5.3.4 Credit from group savings associations

The study concluded that credit from group savings associations was equally popular as credit from traders and processors among agripreneurs in terms of patronage. The study also concluded that credit sourced from group savings associations was effective in terms of influencing the success of the agripreneurs' enterprises in terms of increased production and incomes.

5.3.5 Credit from family and friends

The study concluded that credit from family and friends was the third most popular among agripreneurs in terms of patronage compared to the other three sources of credit under this study. The study also concluded that credit sourced from family and friends was not effective in terms of influencing the success of the agripreneurs' enterprises in terms of increasing production and incomes.

5.4 Recommendations

1. Since access to finance was found to tackle only less than a fifth of agripreneurs' enterprise challenges, it is recommneded that all smallholder agripreneurs should be sensitized to this fact to help them in planning and managing their enterprises more effectively.
2. The study recommends for the development of a policy framework that would help in developing and scaling-up the use of credit from both the formal and the appropriate informal sources, especially credit from traders and processors and group savings associations. These two sources of informal credit were found to be very critical to the performance of agripreneurs.
3. The formal financial institutions should try and develop and pilot more innovative financial products that appropriately speak to the needs of the smallholder agripreneurs. They should also, in the process, come up with practical marketing strategies geared to sensitizing and training the smallholder agripreneurs on how to effectively access and appropriate the new financial products for sustainable enterprise growth.to provide financial services to the smallholder agripreneurs more effectively.
4. This study recommends that all smallholder agripreneurs in all the agricultural sub-sectors should be encouraged to join group savings associations to help them develop a resilient savings culture bolstered by the inherent groups' peer accountability structures. The group savings associations should be encouraged to document and share varied successful group savings and on-lending case studies across different sub-sectors in different regions locally and internationally.
5. This study recommends that credit from family and friends should not be used to finance enterprises due to its unreliable nature. However this source of credit could be used to effectively mitigate social welfare aspects at the individual and household level.

5.5 Areas for Further Research

This study proposes that a similar study like this be undertaken to cover other agricultural sub-sectors. To support successful generalization of the study, similar studies should be carried out in other additional counties in Kenya as well as in other countries to aid regional and international replication. There is also a need to carryout research that could help formal financial institutions especially the commercial banks to develop appropriate and ground-breaking financial products for the smallholder agripreneurs. Further research is also needed to find out and document various ways in which traders and processors could effectively provide credit to more smallholder agripreneurs. Further research should identify and document the nature and types of financial products, ascertaining what and how much interest is charged on the products and services. The findings and documentation of this proposed research will help key stakeholders in the agriculture industry to develop policies and appropriate support systems to leapfrog provision of credit services to the smallholder agripreneurs in Kenya.

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APPENDICES

Appendix I: Questionnaire

Section I: General Information about the Stallholder Agripreneurs

Q1a. Name of the entrepreneur……

Tel:.....

Q1b. What is the **name of your enterprise?**_____

Q2. The **gender** of the owner of the enterprise: _____

0 = Male, 1= Female, 99= Others

Q3. When did you **start** this horticulture business? _____

Q4. A. What type of the horticultural crop/s are you growing?

(a) Option 1 type _____ (b) Option 2 type _____ (c) Option 3 type _____

Q4 B. What size of land is under the following horticultural crop type that you are growing?

(a) Crop type ___ land size ___, (b) Crop type ___ land size ____, (c) Crop type ____ land size _____

Q4 C. What is the market for the following horticultural crop type that you are growing?

(b) Crop type ___ market ___, (b) Crop type ___ market ____, (c) Crop type ____ market _____

*type of horticultural crops: 1=French beans, 2=kalela, 3=dudhis, 4=okra, 5=chillies, 6=baby corn, 7=tomatoes, 8=watermelon, 9=kales, 10= butternut, 99=others (specify)

*Size of the land: 1=less than 2 acres, 2=2 to 4 acres, 3=4 to 6 acres, 4=6 to 8 acres, 5=8 to 10 acres, 6=more than 10 acres

*Market for you crop: 1= local market, 2=export market, 3=both local and export market, 99=others (specify)

Section II: Access to Credit

Q1. Do you **normally take credit** to grow your horticultural business?
Yes =1, No =0

Q2. If yes, how often do you take credit to grow your horticultural business?

Every planting season= 0 Once per month =1, Four times per year =2,
Two times per year = 3, Once per year =4, Never take credit =5

Q2b. Kindly specifically state what you use the credit for

Q3. Where do you normally obtain credit for your horticulture enterprise development?
(Tick the ones that apply)

Where you normally obtain credit	Tick as appropriate	How do receive the credit? Cash or inputs	When was the last time you received the credit
Banks, Micro finance Co-op sacco			
Exporters/product buyer/agrovet			
Group/chamas			
Family and friends			

*type of credit source: 1= (banks, microfinance and co-op sacco), 2=exporters/traders/agrovets, 3=group savings/ chamas 4=family and friends.

Kindly specify the source of credit by name: e.g. name of bank, chama, relative etc._____

Q3 b. If you normally obtain credit from more than one source for the development of your horticulture enterprise, kindly state which of the sources has influenced your business the most in terms of increase in production, job creation, business expansion and increase in income: _____

*type of credit source: 1= (banks, microfinance and co-op sacco), 2=exporters/traders/agrovets, 3=group savings/ chamas 4=family and friends.

Section III(a): Agripreneur Performance: Production

Q1. Has the credit that you have obtained for developing your horticulture business brought any positive change to your business in terms of crop yield per acre?

1= Yes, 0= No

If yes fill in the table below

Q2a. How many times do you normally plant per year?

0= once, 1= twice, 2= thrice, 3= Four times, 99=others (specify)

Indicate the actual quantities produced each season in the table below in Kgs / tonnes

Period	**Season 1**	**Season 2**	**Season 3**	**Season 4**	**Total**
Before you got credit					
Currently since you got credit					

Section III(b): Agripreneur Performance: Expansion

Q1. Has the credit that you have obtained for developing your business brought any positive change to your business in terms of increasing land under crop or additional horticultural crop/s?

1= Yes, 0= No

If yes fill in the table below

Period	**Size of land in acres**
Land cultivated **before** credit	
Current land under cultivation since credit obtained	

Section III(c): Agripreneur Performance: Job creation

Q1. Has the credit that you have obtained for developing your business brought any positive change to your business in terms of increased number of people that you have employed?
1= Yes, 0= No

If yes complete the table below

Period	**Permanent employees**	**Casual employees**
No. of employees **before** credit		
No. of employees **now after** receiving credit		

Section III(d): Agripreneur Performance: Income

Q1. Has the credit that you have obtained for developing your horticultural business brought any change to your business in terms of increased in income?
1= Yes, 0= No

If yes please complete the table below

Period	**Gross Ksh**	**Net Ksh**
Amount of income **per year before** credit		
Amount of income **per year now** since credit receipt		

Section IV: Respondents' Opinions on other Factors that influence agripreneurs' performance.

Apart from credit from the above mentioned sources, what are the other factors that you think may influence the performance of a horticultural agripreneur?

1.

2.

3.

4.

Appendix III: Data Collection Letter

JOMO KENYATTA UNIVERSITY
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Nairobi CBD Campus

Department of Entrepreneurship and Procurement

Date: 26th May, 2015

Ref:JKU/6/EPD/17a

To Whom It May Concern;

SUBJECT: JAMES NDOLO MAILLU – HD413-B01-1305/2009

This is to introduce to you **James Ndolo Maillu** who is a student pursuing Doctor of Philosophy in Entrepreneurship Programme at Jomo Kenyatta University of Agriculture and Technology, Nairobi CBD Campus. The student is currently undertaking a research Project entitled: **Influence of credit sources on the performance of small holder horticultural agripreneurs in Kenya** in partial fulfillment of the requirement for the degree programme.

The purpose of this letter is to request you to give the student the necessary support and assistance to enable him obtain necessary data for the project. Please note that the information given is purely for academic purpose and will be treated with strict confidence.

Thank you.

Associate Chairman
EPD NAIROBI CBD CAMPUS

P. K. Ngugi (Ph.D)
ASSOCIATE CHAIRMAN, EPD