EFFECTS OF SUPERMARKETS ON FRESH FRUIT AND VEGETABLES SMALL-SCALE FARMERS IN CENTRAL KENYA.

CLARIS KARIMI RIUNGU

A Thesis submitted to the Graduate School in partial fulfillment for the requirements of the Master of Science Degree in Agricultural and Applied Economics of Egerton University

EGERTON UNIVERSITY

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DECLARATION AND RECOMMENDATION

DECLARATION

I hereby declare that this is my original work and has not been presented in this or any other University for the award of a degree.

Claris Karimi Riungu

Reg. No. KM17/1984/07

Sign: ----------

Date 11/04/2010

RECOMMENDATION

This work has been submitted with our approval as University supervisors.

1. Dr. Bernard K. Njehia (Department of Agricultural Economics and Business Management, Egerton University).

Sign: ----------

Date: ---------- 11/4/2011

2. Dr. Benjamin K. Mutai (Department of Agricultural Economics and Business Management Egerton University).

Sign: ----------

Date: 11/4/2011

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DEDICATION

To my dear family and my daughter Betty thanks for all the love, support and encouragement that helped make this possible. To my Lord, who has taken my limited abilities and made them sufficient in all of my educational pursuits.

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ABSTRACT

Supermarkets have been spreading very rapidly in developing countries for the past decade. Kenya is the second advanced country in terms of presence of supermarkets, after South Africa. Supermarkets in Kenya have been increasing tremendously since 2003 and thus competition has increased. Growth in supermarket business has involved increase in the variety of products offered for sale, including agricultural produce. The effect of supermarkets on small-scale farmers has not been assessed. The main objective of this study was to analyze the effect of domestic supermarkets on small-scale farmers in Kenya. The study was carried out in the three leading supermarkets, their suppliers who included the farmers, traders the traditional channel farmers. Primary data was collected from 100 farmers, 50 from supermarket channel and 50 from traditional channel; 10 traders and eight branches of selected supermarkets. Results revealed that there were current and future opportunities of branches of supermarket of purchasing commodities from small-scale farmers. Fresh 'n' Juici and Uchumi branches interviewed indicated 80% and 60% of their fresh produce respectively was supplied by small-scale farmers either directly or indirectly. Traders indicated that they purchase 100% of the commodities especially the ALVs and green vegetables from small-scale farmers currently. They expected to source larger quantities in future because there has been an increase of branches of supermarkets, for example Uchumi, Tuskys and Nakumatt. A larger percentage of traders and farmer respondents had the opinion that they will sell large quantities in future. Results from multiple regression analysis revealed that farmers' past experience, distance to supermarket, reliability of the market, better prices and reduced risks affects the perception of the farmers about supermarkets. Results further confirmed that 88% of farmer respondents used good production practices and changed their cropping pattern as strategies they use so that they can supply supermarkets. All traders and farmer respondents had the better prices as one of the benefits while 88% and 68% of the traders and farmers respectively had stable market hence lowering post-harvest losses. Results from producer surplus calculations revealed that farmers who supply to supermarkets directly or through traders have higher producer surplus than those who supply to alternative markets except for farmers who sell Spider plant (*Cleome gynadra*) directly. Therefore, more small-scale farmers should find avenues or ways of supplying supermarkets by joining groups. It is also recommended that farmers should begin to add value to their commodities by grading and packaging.

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ACRONYMS AND ABBREVIATION

ALV	African Leafy Vegetables
CMAAE	Collaborative Masters in Agricultural and Applied Economics
FAO	Food and Agriculture Organization of the United Nations
FDI	Foreign Direct Investment
GAIN	Global Agriculture Information Network
GoK	Government of Kenya
IFPRI	International Food Policy Research Institute
KSh	Kenyan Shillings
USA	United States of America
US$	United States Dollars
SC	Supermarket Channel
TCBEL	Tee Cee Banana Enterprises Limited

CHAPTER ONE

INTRODUCTION

1.1 Background Information

Supermarkets have been spreading very rapidly in developing countries for the past decade. During the last years, the role of supermarkets in food distribution in developing countries has increased. The rise in supermarkets was most significant in South Africa, Kenya and Nigeria (Reardon *et al.*, 2003). Kenya is the second advanced country in terms of presence of supermarkets, after South Africa. The growth of supermarkets was 18-20% between 1993 and 2003 (Weatherspoon *et al*., 2007). Kenya's advancement in supermarkets is evident in its top five cities which are Nairobi, Mombasa, Nakuru, Eldoret, and Kisumu. Kenya had over 206 supermarkets and 10 hypermarkets in 2002 (Weatherspoon and Reardon 2002) which have increased to 494 supermarkets and 17 hypermarkets in 2008 (GAIN, 2008). In Kenya the majority of supermarkets are established in Nairobi, but due to further expansion, supermarkets are now outside Nairobi. Supermarkets are being introduced in the medium-sized cities and larger towns (Botha & Schalkwyk, 2007). Supermarkets in Kenya have spread beyond the middle class into the food markets of the urban working poor which build the initial base.

Supermarkets in Kenya have also expanded to other countries within the East African region. For example, Nakumatt is now operating in Rwanda in an attempt to broaden their annual turnover. This pattern of first penetrating upper class urban market and then moving into lower income and rural-town markets shows that there will be a steady and rapid increase in supermarkets in East Africa and specifically Kenya (Weatherspoon and Reardon 2002).

The drivers of supermarkets growth are change of lifestyles, urbanization, policies that attract FDI investment by most of developing countries, and growing economy with an average growth rate of over 5% between 2004 and 2007 and market liberalization (Kamau, 2008). Kinsey (1999) explains how households became more heterogeneous, becoming smaller and richer, and being more likely to have a female household member in the labour force. Longer working hours, diminishing leisure time, the greater role played by women in the work place and greater availability of information have had a significant influence on the world's food market place. Other consumer considerations that have been brought about by information are concerns about food safety and the impact of food production on the environment.

As noted by Neven and Reardon (2003), there were two market leaders in 2003 which were Uchumi and Nakumatt supermarkets, which together controlled nearly 50% of the supermarket sector. However, after the collapse of Uchumi, Nakumatt and Tuskys are now the leading retail market (GAIN, 2008). Nakumatt is now the market leader and it has opened its stores in East and Central Africa, Tuskys is second, Uchumi is the third while Ukwala now ranks as fourth in the retail market. Metro Cash & Carry made an exit in 2005. These modern supermarkets continue to play an important role in transforming Kenya's food distribution system by offering high-quality services such as bookstores, banking services, and fresh agricultural produce section, bakeries.

Supermarkets buy three times more produce from local farmers than Kenya exports to the rest of the world (FAO, 2003). Supermarkets already account for around 5-12 percent of food sold in Kenya and the government is aiming at increasing it to 30 percent by 2012 (Government of Kenya, 2008). Supermarkets have their suppliers which are; preferred list supplier-farmers, specialized wholesalers dedicated to sourcing from farmers and wholesale markets. However, the selection of suppliers by supermarkets is influenced by factors such as traceability, feasibility, potential for production in terms of quantity and quality, prices, proximity, and reliability which tend to raise concern about the exclusion of small-scale producers. Also, supermarkets seek a steady year-round supply and reliable deliveries (Hernandez *et al*., 2006).

In Kenya, most of the supermarket-channel farmers are located in favorable fresh produce zones within a radius of 100km around Nairobi (Neven *et al*., 2005). The small-scale farmers use supermarket supply channels especially in fresh produce, since it can be direct marketed to supermarkets by producers. Neven, focusing on Uchumi and Nakumatt supermarkets noted that 25 percent of the supermarket-channel farmers are small-scale producers.

1.2 Statement of the Problem

Supermarkets have been increasing tremendously since 2003 and thus competition has increased. To survive and make profits in a competitive environment, each firm must deliver a distinct advantage to its customers. Each supermarket has developed its distinct competitive strategies and procurement approaches. Growth in supermarket business has involved increase in the variety of products offered for sale, including agricultural produce. Supermarket businesses are expected to have effects on farmers, and specifically agricultural farmers in the form of increased

market opportunities and economic benefits. How these agricultural producers have responded to these opportunities and the strategies that enable them effectively exploit the potential is not clear.

1.3 Objective of the Study

The main objective of this study was to examine the effects of supermarkets on small-scale farmers.

The specific objectives were;

1. To identify opportunities created by the growth of the supermarkets.
2. To identify the strategies applied by small scale farmers to effectively exploit the potential created by the supermarkets.
3. To determine the economic benefits brought about by the growth of the supermarkets on small scale farmers.

1.4 Research Questions

1. What are the opportunities created by the growth of supermarkets?
2. What are the strategies that are employed by the small-scale farmers to effectively exploit the potential created by the supermarkets?
3. Are there differences in economic benefits between small-scale farmers marketing through the supermarkets and those using alternative channels?

1.5 Justification of the study

The rapid growth of supermarkets in Kenya has widened the market for commodities produced locally. This implies that unless the smallholder farmers perceive it as an opportunity, they will not be able to supply these commodities. This study generated information on opportunities created by supermarkets. This study has also provided the strategies employed so as to supply supermarkets. Supermarkets provide a stable and dependable market for farmers' produce which boost self-employment for farmers in the study area. In addition, this research has also provided a recommendation on how the farmers can network together so as to give them more links to supermarkets. The results generated will also contribute in policy making by ensuring that enabling policies are enacted to support the smallholder farmers by integrating them hence improving supply chain by 2030. This will in turn strengthen the chains between producers,

retailers and consumers and increase market share of products sold through formal channels like supermarkets.

1.6 Limitation and Scope of the Study

This study focused on selected three leading supermarkets in Nairobi which have 80% of the total supermarket share. The study was confined to getting information from smallholder farmers who supply to both supermarkets and traditional markets, in a small geographical area in the peri-urban; the results may not apply to others. This study focused mainly on opportunities created by growth of supermarkets and economic benefits to farmers supplying supermarkets. Peri-urban small-scale farmers, wholesalers, traditional markets and supermarkets that make up the agricultural supply chain formed the target population. The study restricted itself to fresh produce which are commodities that the small-scale farmers directly supply to both supermarkets and traditional markets. The study was restricted to smallholder farmers who sell to supermarket and traditional markets. The farmers were selected from peri-urban areas. The conclusions drawn from the analysis of the effects of the leading three supermarkets may not be valid to other parts of the country.

1.7 Definition of Terms

Small-scale farmers: Farmers whose landholding is less than 2 Hectares (5 acres).

Supermarket: This is a self-service store offering a wide variety food items and household merchandise, organized into departments with a selling area of at least 150m^2. It is headed by board of directors.

Traditional markets: These are other marketing channels other than supermarkets. They include the open-air market, kiosks and others.

Fresh vegetables: These include vegetables for example, cabbages, spinach, African Leafy Vegetables, Asian vegetables, tomatoes, and others.

Supermarket-channel: This is a channel whereby a farmers supply their commodities to supermarket either directly or indirectly.

Traditional-channel: This is a channel whereby farmers supply their commodities to the traditional market either directly or indirectly.

CHAPTER TWO

LITERATURE REVIEW

2.1 Trend of Supermarkets Revolution in Developing Countries

Hagen (2003**)** highlighted that retail modernization can either have positive or negative consequences for some traditional retailers, producers, and distributors. Traditionally, supermarkets were viewed as markets for rich consumers. For a long time, they were only found in large cities of the developed world and middle-income countries. However, urbanization and increasing incomes in the developing world, including the Sub-Saharan Africa (SSA), have inevitably invited supermarkets into the region. Supermarkets have been spreading rapidly in the East and Southern African region since the early 1990s. The development of these supermarkets has taken place in three stages as it appeared in the Latin America and East Asia scenarios ten years earlier. These three stages are discussed below:

The first stage is the development of supermarkets in 'richest' country within the region. The second stage involves the flow of FDI from the rich country, leading to the establishment of supermarkets in poorer countries within the region. The third is the extension of the supermarkets into poor neighborhoods of large cities and towns in all the countries.

In East and Southern Africa, South Africa continues to play the major role in the spread of supermarkets in the region (Weatherspoon and Reardon 2002). The FDI from South Africa, which is the richest country in the region, is the major driving force in the rapid proliferation of supermarkets across East and Southern Africa. Thus, supermarkets started in upper-income niches in large cities of South Africa and then spread into middle-class and then poorer consumer markets, and from large cities to secondary cities to towns within South Africa. Supermarkets then spread from South Africa to 'poorer' and less urbanized countries, like Kenya, Malawi, Zambia, and Mozambique. In Kenya, supermarkets are now slowly spreading to secondary cities and small towns (Neven & Reardon, 2003).

2.2 Diffusion Wave of Supermarkets in Developing Countries

Reardon *et al.,* (2002) noted the diffusion rates have varied over regions and they are characterized by four waves which are discussed below:

The first wave started small in the early-to-mid-1990s and had built to a major force in retail by the end of the 1990s in South America, East Asia outside China and Japan, Northern-Central Europe, and South Africa.

The second-wave countries include parts of Southeast Asia and Central America, Mexico, and Southern-Central Europe, where the share went from circa 5 to 10 percent in 1990 to 30 to 50 percent by the early 2000s, with the takeoff occurring in the mid-to-late 1990s.

The third-wave countries include countries where the supermarket revolution takeoff started only in the late 1990s or early 2000s, reaching about 10 to 20 percent of national food retail by 2003. They include some countries in Central and South America (such as Nicaragua, Peru, and Bolivia), Southeast Asia (such as Vietnam), China, India, and Russia.

The fourth wave has just started in Mozambique, Tanzania, Uganda and Angola.

According to Swinnen et al (2004) diffusion occurs at differential rates over inter-country space. Diffusion also occurs at different rates over the space within a country and over socioeconomic strata. The diffusion path is from large to middle to small cities and then even to rural towns, and from upper to middle class and then even to the poor. Sub-Saharan Africa presents a very diverse picture, with only one country, that is South Africa, firmly in the first wave of supermarket penetration, but the rest of the countries are either in the early phase of the third wave takeoff of diffusion or in fourth wave. Kenya, Zambia, and Zimbabwe are in the early phase of the third wave and have substantial numbers of supermarkets, initiated by both domestic investment and FDI from South Africa (Reardon *et al.,* 2003). In South Africa and Kenya, supermarkets have spread beyond the middle class into the food markets of the urban working poor.

2.3 Evolution of Supermarket Procurement Systems

Many studies such as Weatherspoon *et al*., (2002), Neven *et al*., (2003) and Reardon *et al*., (2003a) have concluded that expansion of supermarkets have led to continuous and rapid change in procurement systems in the supermarket sector in developing countries. The supermarkets choose farmers and wholesalers as well as influence the incentives facing and capacities of farmers regarding participation in the supermarket market channel. However, procurement system change has occurred at sharply different rates over chains in every country, with the three to four leading chains undertaking the lion's share of the procurement innovations.

As supermarket diffusion occurs, the situation reverses, and farmers face a food market dominated by leading supermarket chains that have or are modernizing their procurement systems in ways described below. The patterns of technological, organizational, and institutional innovation observed can be described as the "four pillars" of procurement system change (Berdegué *et al*., 2005; Reardon *et al*., 2003):

The first is a trend toward centralizing procurement, from a fragmented per-store procurement system to distribution centers serving several stores. The second rests on supermarkets increasingly working with specialized wholesalers that can meet their specific needs, thereby transforming the traditional wholesale system. The third is a shift from spot markets to preferred suppliers with implicit contracts, which serve as incentives to suppliers to work with the buyer on a continuing basis. Finally, the fourth is the rapid implementation of quality and safety standards of food products by supermarkets and large-scale food manufacturers. These private standards work as instruments of coordination in the supply chain. Such standards can lower transaction costs, ensure that consumers' demands are met and reinforce the notion that products are superior in quality to that of competitors.

Although the rise of supermarkets may raise returns for small-scale farmers by expanding market size, it also creates several challenges. To stay competitive, farmers must invest in logistics and quality improvements to meet the requirements of supermarkets' procurement systems. This trend of centralization results in a decrease in procurement from and support of regional/local economies, through local agricultural producers, local suppliers, local institutions and local consumers (Senauer and Goetz, 2003).

2.4 Expansion of Supermarkets in Kenya

In East Africa, Kenya is the most advanced in terms of presence of supermarkets. Kenya's advancement in supermarkets is evident from the fact that its top five cities which are Nairobi, Mombasa, Nakuru, Eldoret, and Kisumu have supermarkets (Weatherspoon and Reardon 2002). The Kenyan supermarket sector is composed of five domestic chains: Nakumatt, Tuskys, Uchumi Ukwala and Naivas in descending order of size (GAIN, 2007 & GAIN, 2008). It was noted that the majority of supermarkets are in Nairobi. However, about one-quarter of the supermarkets is already outside Nairobi but it is projected that they are still expanding to major

towns. These major towns include Mombasa, Nakuru, Eldoret, Kisumu, Kisii, Meru and other small towns (Neven and Reardon, 2003).

Over the years, Kenyan retail food sector has been dominated by two major supermarkets namely Uchumi and Nakumatt (Neven & Reardon, 2004). Both chains reportedly had a combined market share of 70 per cent. The other 30 per cent was shared between second tier and independent stores such as Tusker Mattresses (now Tuskys), Ukwala Supermarkets, Skymart, and Woolmart (Neven *et al*., 2003). However, this has changed over time. The sector has experienced rapid growth both in sales volume and number of retail outlets opened countrywide. The market has also experienced dynamic shifts in customer and brand loyalty. This was as a result of competitive pricing, comprehensive product range and introduction of non-traditional conveniences such as pharmacies, bookstores, automated teller machines, and delicatessens, fresh produce section, bakeries and even in-store restaurants (GAIN, 2006). As a result of the rapid growth, some of the less competitive supermarkets such as Metro Cash and Carry (South African) have closed. In addition, local Kenyan supermarkets have become strong enough to make it difficult for foreign competitors to get into the market.

According to Gain Report 2008, the following are the main supermarkets in Kenya:
Nakumatt: This is a privately owned entity that is at the moment the leading and largest supermarket chain in Kenya. It has over 20 outlets strategically situated around the country in major cities like in Nairobi, Mombasa, Kisumu, Meru, Kisii and Eldoret town with annual sales of US$350 million in 2007. There are 10 outlets in Nairobi.
Tuskys: This is a family owned business that targets the middle and low-income consumers. It has 14 outlets with 7 in Nairobi, 2 in Nakuru, 1 each in Eldoret, Meru, Athi River and Ongata Rongai with annual sales of US$ 193 million in 2007.
Uchumi: (Swahili for Economy) was once the largest and most popular chain in the country, and with it a very strong retail heritage. However, the supermarket's popularity and size has waned since the October 30, 2001 earnings announcement of a 68 per cent decline which precipitated a downward spiral. A rescue campaign by the government eventually saw various groups and individuals come together to help revive the once robust Uchumi. The chain has since reopened most of its branches. It has 15 outlets with 10 in Nairobi, 1 each in Eldoret, Nakuru, Meru, Athi River and Ongata Rongai with annual sales of US$ 104 million in 2007.

Ukwala: This is family owned businesses which like Tuskys, targets the middle and low-income consumers. In total the chain store has 12 outlets, 5 in Nairobi, 3 in Eldoret and 1 in Nakuru with annual sales of US$ 120 million in 2007.
Naivas: This is owned by Naivasha stores. It is relatively young but it is emerging to become one of the major players in the fiercely competitive retail business sector in Kenya. They have seven stores all over the country so far and great potential for further growth.
Chandarana is an independent store which is locally owned. It has 4 outlets which are within Nairobi area.

According to GAIN, 2008, the four major supermarket chains which include Nakumatt, Tuskys, Uchumi, and Ukwala account for 80 percent of the total supermarket market share. Therefore the first three supermarkets will be used for this study because they constitute of the largest share of the supermarket. In addition, they offer high quality market services such as fresh produce section, bakeries, bookstores, and pharmacies. The location of branches in strategic places encompassing a good catchment area combined with long operating hours including weekends and public holidays allows everyone especially the working person the convenience to shop. Three Nakumatt stores and one Tuskys stores open 24 hours, Uchumi has extended operations in some of its stores till 10.00 pm, other Tuskys branches and other supermarkets close at 8.30 pm after opening at 8.30 am.

2.5 Supply Factors That Led To Spread of Supermarkets

According to Weatherspoon et al., (2002), there are three main supply factors that led to spread of supermarkets. The liberalization of most African countries' markets was one of the factors. FDI was crucial for the takeoff of supermarkets. Changes and improved political stability in various African countries including Kenya also contributed to more favorable investment opportunities. The 1990's liberalizing international investment policies and the appropriate timing thereof created an enabling environment for expansion of supermarkets. Changes in political conditions also contribute to change in capacity and incentive for FDI to or from certain countries.

The second factor was the revolution of retail procurement logistics technology and inventory management in the 1990s. This was the use of computers for inventory control and supplier-

retailer coordination. That dramatically reduced costs, allowing supermarkets to extend beyond high-price luxury niches in the markets to penetrate the mass market for food.

The third factor is the innovation by domestic supermarkets which has led to centralization of procurement and consolidating distribution in order to cut costs hence increasing profits for supermarkets. For this reason the supermarkets have been able to reduce prices to consumers of essential food products.

2.6 Demand Factors That Led To Spread of Supermarkets

According to Weatherspoon *et al*., (2002) and Kinsey, (1999), the demand factors that drive the diffusion of supermarkets are urbanization where there are more women who are entering into the workforce outside their homes and increased opportunity costs of women's time and their incentive to seek shopping convenience. In Kenya particularly, Nyoro, (2004) indicated that there are more women in gainful employment in the formal and informal sectors. There is increased demand for food in the supermarkets with rise per capita incomes. There is reduction of transaction costs through access or acquisition of private or collective capital that reduce the cost to access supermarkets e.g. ownership of refrigerators, growing access to cars and public transport (Chen *et al*., 2005 and Reardon *et al*., 2003).

The evolving consumer trends such as population demographics and globalization has also led to spread of supermarkets. Consumers have become more health conscious hence they take into consideration food safety and the impact of food production on the environment. According to Hughes (2004), the population has become more educated and informed household numbers are increasing as household size decreases and increasing numbers of women participate in the labour force, resulting in dual-income households. These factors have led to a demand for more convenient and high quality food. The demand has become highly sophisticated and shifted towards added convenience and specific broadened choices. The demand for new foods, new ingredients and high taste profiles are consequences of demographic and lifestyle changes. Lord, (2005) also identified household income increase has led for demand for convenience.

According to Tschirley (2007), changing demand incentives are characterized by the current urbanization and general westernization trend of the African population. Hagen (2002) confirms that trends such as industrialization in developing countries increase consumers' dependency on

supermarket services. Longer working hours, diminishing leisure time, the greater role played by women in the work place and greater availability of information have had a significant influence on the world's food market place.

Hughes (2004) explains that, on a smaller scale, increasing numbers of people in developing countries are relocating to urban areas. The main reason for doing this is their search for more and better educational and employment opportunities. There is change in consumer demographics have been caused by a greater number of women becoming economically active.

2.7 Effects of Expanding Supermarket Industry

The rapid spread of supermarkets is driving many traditional food retailers, such as small corner stores and public market places out of business (Reardon *et al,* 2003). Traditional food retail outlets face serious competition from supermarkets mainly because of their low-price appeal to consumers (Henson *et al*, 2005). Martens *et al*. (2005) stated that shoppers shop at traditional markets less often as they shift some of their purchases to supermarkets, and that this shift is moving sales from small markets to larger ones which are supermarkets and forcing small grocers to close.

Hagen (2003) argues that supermarkets are more buyer-driven as opposed to producer-driven supply chains or value chains. They have sophisticated forms of coordination and integration, and rules of participation.

2.8 Supermarkets and Small-scale Farmers: Opportunities and Challenges for Small- scale Farmers

The growth of supermarkets offers opportunities as well as challenges to small-scale producers. This is an opportunity because there is a scope to increase their revenue if they produce and supply to the supermarkets (Kirsten & Emongor, 2006). They also indicated that in Zambia, small-scale farmers negotiate contracts and supply the supermarkets. They may supply fresh produce directly to the supermarkets or to the distributing centre of each store. In South Africa, local procurement with small farmers triggers benefits in terms of freshness of vegetable produce with an acceptable quality level and low transportation cost (Louw *et al*, 2008). He also indicated that farmers form groups to jointly market outputs hence reducing transaction costs and increasing negotiation power. There are other benefits which include loans, investments in

farming assets, improved technical knowledge, improved fresh quality produce and higher yields hence high income (Vermeulen & Bienabe, 2008)

For small-scale producers and dairy farmers in developing countries, who usually deliver their goods directly to open markets or to local wholesalers, dealing with the procurement system of a supermarket chain can be a painful shock (Balsevich *et al*, 2003). If they succeeded in growing the goods demanded, the supermarket procurement officers might reject a high percentage of produce as being of low quality. For goods that are accepted, payment may often be delayed up to 60 days after product delivery which is too long for many small farmers to wait. The farmers also find it difficult to meet the increasing demand for certification that the goods were produced using sustainable farming practices and strict labor standards. By imposing tough new quality standards for dairy products while also lowering costs, supermarkets in Latin America increased the demand for milk and yoghurt during the 1990s(Vorley, 2004).

Supermarkets have adversely affected smallholder farmers who cannot cope up with stringent requirements for quality, quantity, consistency, and safety standards (Neven and Reardon, 2004; Balsevich *et al*., 2003; Weatherspoon and Reardon, 2003; and Reardon and Berdegué, 2002). According to Reardon and Neven (2004) the rise of supermarkets in Kenya gave rise to a new group of small-scale and medium-sized farms managed by well-educated farmers. They focused on kale and on the two leading supermarkets and showed that supermarket-channel farmers have the capacity to supply larger volumes year round and have transportation vehicles, an irrigation system, a packing shed, a cellular phone which are the capital which farmers must have in order to access supermarkets. While most traditional-channel kale farmers sell to brokers and get a price that lets them break-even at best, supermarket-channel farmers have a 40% gross profit margin (Neven *et al*., 2005). These margins and lower market risks in the supermarket channel have resulted in a strong growth dynamic of supermarket-channel farmers which have doubled the size of their operations over the last five years. There is need for infrastructure to comply with service and logistical requirements, such as delivery trucks, computer and Internet access for product orders (Mainville 2004). However, there is a need for a study to find out if the above still holds after the supermarkets situation changed in Kenya.

The selection of suppliers by supermarkets is influenced by factors such as traceability, feasibility, and potential for production in terms of quantity and quality, prices, proximity, and

reliability. Concerns are based on the efforts of fresh produce procurement managers to provide consumers with a stable, year-round supply of safe, high quality produce at competitive prices. Smallholder farmers are challenged and are unable to remain on preferred supplier lists on a sustained basis. Preferred suppliers differ among supermarkets. For instance; Nakumatt prefers to be supplied by its subsidiary company while medium sized supermarkets prefer to use brokers (Vorley et al, 2004 & Tschirley, 2007). This study will focus on whether this has changed after the supermarkets have grown greatly.

Makoka, (2005) indicated that supermarkets in Malawi offer great opportunities for local producer and small supplies to broaden their markets and increase their incomes. However, they faced several challenges like meeting supermarkets requirements. The supermarket supply channel farmers deliver their products at the backdoor of the supermarkets. He also indicated that suppliers supplying the supermarkets procure the products from small-scale farmers within their neighborhood.

Roe et al. (2005) acknowledges that the rapid adjustment in the food marketing chain associated with the growth of supermarkets has raised concern about the plight of smaller, traditional farmers who cannot meet the more demanding market channel standards, and therefore become the "loser farmers". These farmers will typically supply local, more traditional retail outlets. There are certain noteworthy benefits for the "winning farmers", such as higher prices and more markets.

2.9 Farmers' Perception

According to Smith (1994), marketing mechanisms lead to relationship between producer and retailer. He indicated that farmers' perception is influenced by their current knowledge about a market. There is also a relationship between distance and market awareness. The farther the market, the less interesting it is to the farmers as they pose additional transportation costs. There is evidence that seasonality and perishability of commodities contribute to market choice. Highly perishable commodities are sold to nearby market which the farmers can rely on. Price variation was noted by Schulz (1964). When given a hypothetical choice between two markets with a clear price variation, price was seen as significant. The structure of the market is also important. Thus one large organized outlet is generally favoured over series of scattered markets with irregular demand schedules. Farmers' perception of a market is important in influencing marketing

decisions. Studies such as Neven *et al*., (200) analysed farmers' or farm characteristics as they affect farmer's choice on a market. However, less attention has been given to farmers' perception on supermarkets attributes and opportunities opening through supermarkets. Therefore, this study analysed farmers' perception about supermarkets. These marketing decisions are influenced by factors such as distance, prices, reliability of the market, transportation costs, perishability of commodities, farm size, years of farm experience and terms of payment.

2.10 Review of producer surplus model

Producer surplus is an economic measure of the difference between the amount that a producer of a good receives and the minimum amount that he or she would be willing to accept for the good. It can also be defined as the net gain to producers, the difference between revenue and costs. The difference, or surplus amount, is the benefit that the producer receives for selling the good in the market. Prices are a signal to producers about the return to producing another unit.

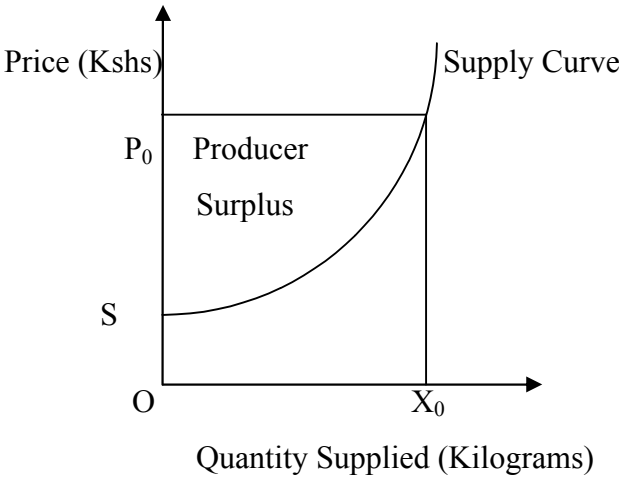

Figure 1: Producer Surplus

The concept of Producer Surplus is illustrated using Figure 1. It is the area above the producer's supply curve which receives the price P_0 and sells the quantity X_0. The size of this area increases as the price for the good increases. It is assumed that the marginal utility of money is constant and all the producers have the same production function.

Let $P = f(x)$ be the supply function or supply curve. It represents the relationship between the quantities of a commodity supplied by a producer and the corresponding prices at which such quantities are supplied (Mukras, 1986). This shows the amount of produce that can be supplied at a given price P. It also shows the lowest price at which the producers are willing to sell. The

lowest price at which producers would be willing to sell is the marginal cost of production, that is, the cost of producing another unit of good. Suppose the price P_0 and the quantity X_0 is set at a competitive market system. The competitive price does not necessarily reflect the price every producer may be willing to accept for his products. For instance, if a producer is willing to supply his price at a price level below P_0, then that producer will gain if he sells at P_0. The area $OSTX_0$ is the total cost of variable factors or the producers' total revenue when he sells the produce at a lower price than P_0. The area OP_0TX_0 is the gross revenue. The difference between the two areas, SP_0T is the revenue above the variable costs which is the producer surplus (Sadoulet and Janvry, 1995). The standard method of measuring producer surplus using market price and quantity data was used. The assumption was the farmers will not change their marketing behavior in the short run. Variable costs vary with output. This required a detailed costs and earnings for a representative farmer.

The total cost of X_0 units of production for a particular firm, is the area under producers' supply curve between zero and X_0. Marginal cost is the cost of producing one more unit of the product, given a particular level of production already. Marginal cost is approximated by the height of the supply curve as long as the definition of an extra unit is sufficiently small.

Conclusion

Studies have been done in different areas touching different aspects of the rapid rise of supermarkets. Most studies have concluded that adherence to strict supermarkets requirements by the suppliers lead to being listed by the supermarkets, hence making it possible for some farmers to be left out supplying supermarket. However, there are small-scale producers who are supplying supermarkets directly especially the fresh produce. Given the fact that there may be economic benefits that come with selling in the supermarkets and there are many small-scale farmers in Kenya, it was important to verify if indeed they are benefitting from supplying the supermarkets hence filling the information gap.

2.11 Conceptual Framework

A conceptual framework for the implication of growth of supermarkets on small-scale farmers is presented in figure 2.

It is conceptualized that the growth of supermarkets has led to increase in number of suppliers. There are producers' characteristics, for example education level, proximity to the supermarket

that influences a producer to use supermarket channel or not. Institutional factors, for example, group membership and access to information affect the farmers' perception about supermarkets in comparison to other channels which in turn lead to a decision on which channel to use. In addition, the producers' characteristics influence the marketing channel decision.

Price has a central role in influencing a farmer's decision to produce and what product to produce. After production the producer decides on which marketing channel to use. The producers' perception about supermarkets also affects the decision of market channel. The producer may use supermarket or traditional channel. The producer may supply to the supermarket or traditional channel directly or through wholesalers. If the producer uses the supermarket channel, it will lead to increase in food products share in the supermarket. Each channel has economic benefits. Generally, farmers' participation in either channel has its own benefits, for example, reliable markets and better prices hence increase in the level of revenue and income.

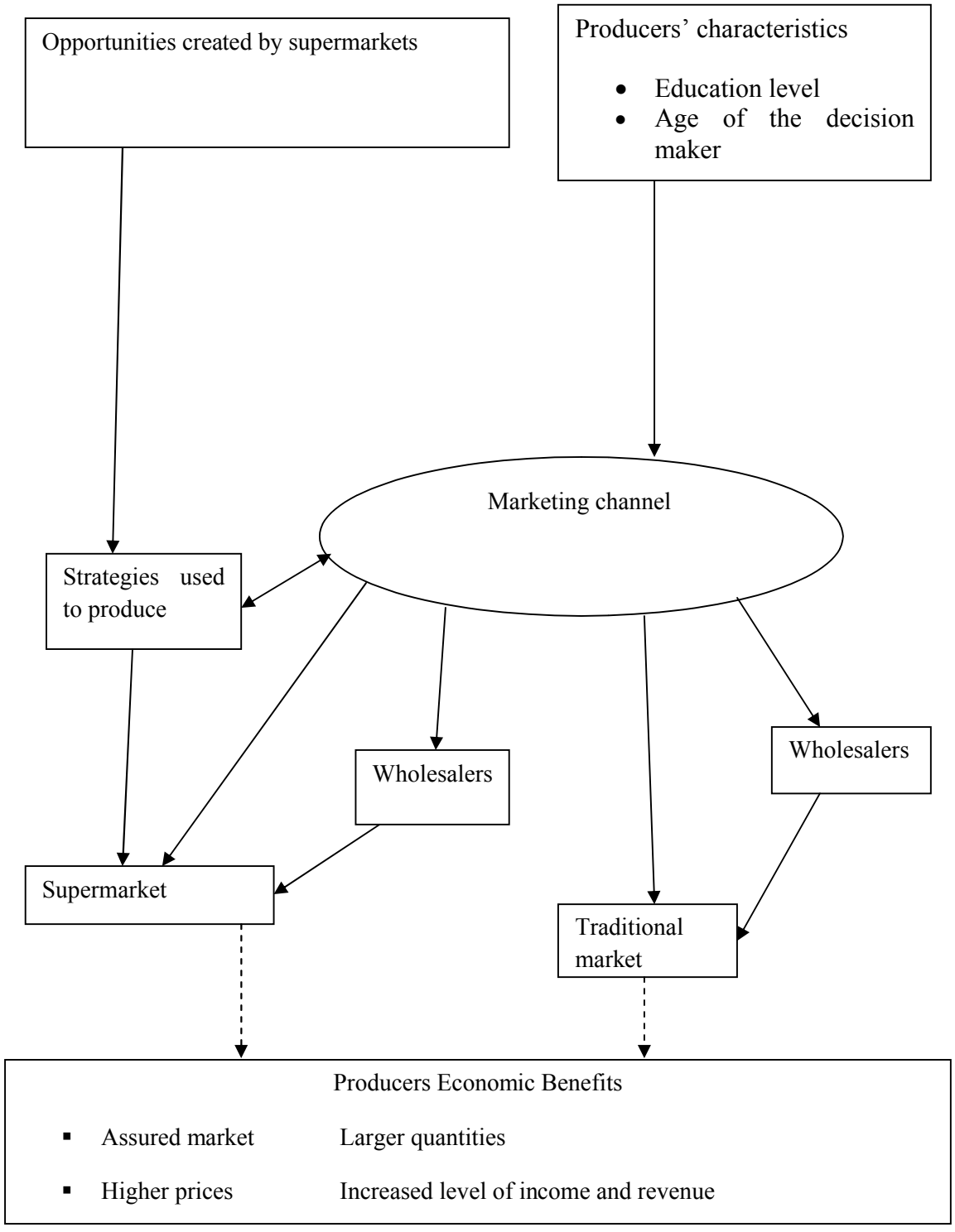

Figure 2: Conceptual Framework

Source: Own

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Study Area

This study was conducted in Nairobi city and its peri-urban areas. The supermarkets located in Nairobi city and producers in its peri-urban areas were sampled. Nairobi is the capital city as well as the largest city in Kenya. Nairobi was purposely selected because it is a fast growing and highly populated urban town and the supermarkets have rapidly increased over the last five years. The large population implies that the city offers a huge market for food commodities compared to other towns. There are numerous supermarkets that have been established in Nairobi city which include: Nakumatt, Tuskys, Ukwala, Uchumi and Naivas. There are large traditional markets where agricultural produce are traded. These markets include Wakulima, Githurai, Kangemi, Kawangware, City Park, Korogocho, Toi, Dagoretti and Ngara. There are peri-urban markets which are also sources of agricultural commodities to the supermarkets and traditional markets in Nairobi. Peri-urban areas are also the key production area for fresh produce. They therefore serve as an important source for the agricultural commodities marketed and consumed in Nairobi. Some of the production areas of agricultural produce around Nairobi include Githunguri, Wangige, Limuru, and Lari.

3.2 Sources of Data

Both primary and secondary data were used. Secondary data was obtained by reviewing supermarket reports, GAIN reports, journal articles publications and others. Primary data was obtained from supermarkets, traders and farmers.

3.3 Sampling Methods and Sample Size

The target population of this study was supermarkets, traders and farmers. Multistage sampling was used in this study. First, purposive sampling was used to select the 3 leading supermarkets. Secondly, using secondary data from GAIN report (2008) to identify the three leading supermarkets in Nairobi. Table 1 indicates the spread of the supermarket chains in terms of branches in 2009. Using a 30% of population thumb rule on the number of branches for each supermarket, a Proportionate stratified sampling method yielded a sample size of 8 branches.

Table 1: Calculation of branches sample size

Strata	Population (Branches)(N)	Sample(30% of N)
Nakumatt	10	3
Tuskys	7	2
Uchumi	10	3
Total	27	8

The respective numbers of sample branches were selected randomly among the supermarkets within the city. If a branch does not sell fresh agricultural produce the next branch was selected.

Thirdly, Uchumi and Fresh 'n' Juici provided the information of the suppliers. The traders who supply to supermarkets and other retail markets were purposively selected from Wakulima, Wangige, Ngara and Kangemi markets. These traders provided information of the possible farmers in the peri-urban areas where they source their commodities. Snowball sampling was used to attain a sample of fifty farmers who supply supermarkets. Fifty farmers who supply to traditional markets were selected randomly in the same areas. This resulted to a sample of 100 respondents for the study.

The desired sample size was determined as per formulation by Fisher et al (1973) in Mugenda & Mugenda (1999). Since there was no estimate available of the proportion in the target population assumed to have the characteristics of interest, 50% was used. In this study the target proportion of the population was assumed to have the characteristics of interest supermarket suppliers who are producers. To determine a sample size from the population, the formula below was used:

$$n = \frac{Z^2 pq}{d^2}$$

Where:

n = the desired sample size.

Z = the standard normal deviate at the required confidence level.

p = the proportion in the target population estimated to have characteristics being measured.

q = 1- p

d = the level of statistical significance set (precision).

Since the proportion of the population is not known $p=0.5$, $q=1-0.5=0.5$ the Z statistics = 1.96 and a desired accuracy level at the 9.8%. This results to a sample of 100 respondents.

$$n=\frac{(1.96)^2\,(.5)(.5)}{(0.098)^2}=100 \text{ respondents.}$$

3.4 Data Collection

Secondary data and other relevant information were collected from supermarkets reports, journals, publications and others.

Primary data was collected by direct observation and use of questionnaires. Direct observation was used to see if the branch stocks and sells fresh produce. Three sets of questionnaires were used to collect information; one for supermarket managers, one for wholesalers/traders and the other for farmers. The managers of supermarkets were interviewed about the suppliers, and the products they procure directly from the farmers and wholesalers. The farmers' questionnaire focused on opportunities brought growth of supermarket, the strategies they use so as supplying the supermarkets and the economic benefits. The interviews took place on the farm for both farmers who supply to supermarket and traditional market. The wholesale suppliers were interviewed at their premises.

3.5 Data Analysis and Procedure

Data was analyzed using descriptive statistics, likert scale techniques and producer surplus. A Likert scale was used to assess perception of farmers about supermarket. Producer surplus was used to determine the economic benefits that the farmer gets if they supply product to the supermarket respectively. The statistical package for social scientists (SPSS) computer software was used to generate summary statistics.

Descriptive analysis was used to analyse characteristics of the respondents, opportunities created by the growth of the supermarkets and strategies employed by the farmers to effectively exploit the potential created by the supermarkets. The mean, median, percentages and crosstabs were used for analysis.

Likert scale was used to estimate perception of the producers about perceptions about supermarkets. Predetermined opinions were presented to the respondents and the likert scaling technique was used to rate the opinions. Each opinion was given a scale of one to five such as

strongly agree will take a scale of 5, agree a scale of 4, no idea a scale of 3, disagree a scale of 2, and strongly disagree a scale of 1. Supermarkets attributes that were used in this study are reliable market, better prices, supply of inputs/credit, knowledge transfer, reduced risks and distance to supermarket.

Estimate of Economic Benefits

Producer surplus concept as used by Sadoulet and Janvry, (1995) and Mukras, (1986) was used to analyse the economic benefits accrued by farmers from marketing. In this study, the arithmetic method was used to calculate producer surplus. Producer surplus was calculated as follows:

Using Figure 1 in chapter 2, if a producer sells a quantity X_0 at price P_o then the total producers gross revenue $= P_o X_o$. Let $P = f(x)$ be the supply curve. It shows the lowest price at which the producers are willing to sell his/her produce. The area under the supply curve is the producer total revenue when he sells the produce at a lower price than P_o and it is calculated as:

$$\int_0^{x_0} f(x)dx.$$

Consequently, Producer's Surplus = $P_0 X_0 - \int_0^{x_0} f(x)dx$

Producer Surplus (P_0TS) = Area of the whole triangle (OP_0TQ_0) – Area under the supply curve ($OSTQ_0$)

$$= P_o X_o - \int_0^{x_0} f(x)dx$$

$$= P_0 X_0 - \int_0^{x_0} P.dx.$$

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1 Characteristics of the farmer respondents

4.1.1 Gender of the Farmer Respondents

Forty percent of the farmer respondents from supermarket-channel were female while 60% were male. In the traditional-channel, 46% were female and 54% were male as shown in table 1 below.

Table 1: Gender Status of Farmer Respondents

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Male	30	60	27	54
Female	20	40	23	46
Total	50	100	50	100

Source: survey data, 2009

4.1.2 Age of the Farmer Respondents

Table 2 below shows the distribution of age between the supermarket-channel and traditional-channel. As shown below that 6% of supermarket-channel farmers were aged between 20-30 years, 36% was aged 30-40 years, 34% aged between 40-50 years, 22% were aged between 50-60 years and 2% over 60 years. 4% of traditional-channel farmers were aged between 20-30 years, 8% were aged 30-40 years, 44% aged between 40-50 years, 34% were aged between 50-60 years and 10% over 60 years. About 98% of the supermarket-channel farmers were aged between 20-60 years. The majority of supermarket-channel farmers are relatively young. Chi – square tests was conducted to assess if there was any significant difference between supermarket-channel and traditional-channel farmers with respect to their age and the results were not significant at 95% confidence interval ($\chi 2= 4.291$, $p = .008$) as represented in table 2 below.

Table 2: Age of Respondents

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
20-30 years	3	6	2	4
30-40 years	18	36	4	8
40-50 years	17	34	22	44
50-60 years	11	22	17	34
>60 years	1	2	5	10
Total	50	100	50	100

χ^2 =13.702 p=.008

Source: survey data, 2009

Farm activities are greatly affected by age. Most supermarkets farmers are relatively young hence wanted to do farming as a business other than for subsistence. They also tend to be innovative entrepreneurial farmers who produced in response to the supermarket demands (Kamau, 2008).

4.1.3 Level of Education

In the Table 3 below 10% of the supermarket-channel had attained an education level of standard 6-8, 32% had secondary school education, 48% had tertiary education and 10% had adult literacy. In the traditional-channel farmers, 4% had attained standard 1-5, 40% standard 6-8, 46% secondary education, 10% tertiary education. Chi – square tests was conducted to assess if there was any significant difference between supermarket-channel and traditional-channel market with respect to their education level and the results were significant at 95% confidence interval ($\chi 2$ = 9.949, p = .041) as represented in table 5 below. 80% of supermarket-channel farmers had at least secondary education. This means that the supermarket-channel farmers were elite and more informed. These farmers have the ability to negotiate contracts. They also tend to understand the requirements of the contracts. Higher education also means more information on potential sources of credit for investment in farming and better management of credit facilities as shown in Table 8. Hassine (2008) focused on the agricultural sector and found strong evidence that the level of education affects agricultural productivity growth by increasing the capacity to adopt foreign technologies.

Table 3: Level of Education

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Std 1-5	0	0	2	4
Std 6-8	5	10	20	40
Secondary	16	32	23	46
Tertiary	24	48	5	10
Adult literacy	5	10	0	0
Total	50	100	50	100

$\chi 2 = 9.949$, $p = .041$

Source: survey data, 2009

4.1.4 Land Tenure Systems

Land tenure system is the law or custom that relates to control and use of land by an individual or group of people. The tenure system greatly influences the organization and efficiency of agricultural production and the efficient allocation of production resources (Ahmed et al., 2002). Forty percent of supermarket-channel farmers owned the land while only 26% of traditional-channel farmers owned the land. Customary tenure system was the main tenure system with 48% of the supermarket-channel farmers and 68% of the traditional-channel farmers cultivating on customary land. In the study area, the most frequent way of land acquisition was through inheritance from parents. Land inheritance from parents was more prevalent among the farmers. Rented land was the least frequent way of acquiring land. About 12% of the supermarket-channel farmers and 6% of the traditional-channel farmers cultivated on rented land. Land was rented for a small amount of money. Table 4 below illustrates the above information.

Table 4: Land Tenure Systems

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Owned	20	40	13	26
Customary	24	48	34	68
Leasehold	6	12	3	6
Total	50	100	50	100

Source: survey data, 2009

4.1.5 Land Holding Sizes

The average land holding size for the supermarket-channel farmers was about 1.16 acres. The average land holding size for the traditional-channel farmers was about 1.0 acres. Average farm size among the entire sample was 1.11 acres. About 74% of the supermarket-channel farmers had land holdings between <1 acre. About 76% of the traditional-channel farmers had land holdings falling between <1 acre. Twenty six percent of the supermarket-channel farmers had land holding sizes between 1- 4 acres as represented in Table 5 below.

Table 5: Land Holding Sizes

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Less than 1 acre	37	74	38	76
1-2 acres	8	16	9	18
2-3 acres	1	2	3	6
3-4 acres	4	8	0	0
Total	50	100	50	100

Source: survey data, 2009

The results in Table 5 above suggests that only supermarket-channel farmers (8%) had land holdings sizes between 3 and 4 acres and 6% owned land between 2 and 3 acres in the traditional-channel market. Supermarket-channel farmers had slightly more land than traditional-channel farmers. Majority of the respondents had very small land holdings. Due to these small land holdings farmers cannot increase farm incomes through expansion of cultivated land but only through improved land productivity. This could be achieved among others through technological advancement and efficient and effective use of resources such as fertilizer or labour. The small-scale farms in this study are in line with the fact that 90% of the farms are smallholder in the country as a whole and in Kiambu in particular (MoA, 2007).

4.1.6 Membership of Farmer Group

Farmer groups are organized around commodity crops and involve production and marketing (Nguthi, 2007). From the Table 6 below 74% of the supermarket-channel belonged to a group and only 24% from traditional-channel farmers. When the farmers were asked the objectives of their groups, 90% replied that they negotiated the prices while 10% marketed their products by

their own. The farmers organize themselves into groups in order to eliminate the need for supermarkets to deal with a large number of individual small-scale farmers. The farmers in groups are more focused on quality and consistency of delivery. This is made easier through contractual and partnership arrangements with supermarkets or traders/lead farmers. The farmers in groups worked with development agencies such as Family Concern International and Africa Harvest International. These development agencies worked together with farmers and government extension staff to promote production and marketing of vegetables and bananas. The small-scale farmers are also offered training by the two agencies on issues like agronomy, record keeping, scheduled production, evolution of subsistence to commercial units (training in farming as a business), group dynamics and management of working capital. Africa Harvest International focuses more on tissue culture bananas (www.ahbfi.org). In Wangige there is Tee Cee Banana Enterprises Limited (TCBEL), a farmer owned marketing company which helps in harvest handling, packaging and marketing their produce. This has empowered farmers by organizing them into groups and marketing their bananas in supermarkets.

Table 6: Member of Farmer Group

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Member	37	74	12	24
Non-member	13	26	38	76
Total	50	100	50	100

Source: survey data, 2009

4.1.7 Access to Extension Services

Seventy percent of supermarket-channel farmers and only 10% of traditional-channel farmers indicated that they received extension services. The farmers received the extension services from District Agricultural Office, Family Concern International and Africa Harvest International. There are farmers who received these services from more than two sources. 34% received extension services from District Agricultural Office, 35% from Family Concern International and 29% from Africa Harvest International. The below results are in line with other studies done recently that supermarkets do have farm assistance programs that improve the productivity of local suppliers (Stokke, 2009).

Table 7: Access to Extension Services

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Yes = 1	35	70	5	10
No = 0	15	30	45	90
Total	50	100	50	100

Source: survey data, 2009

4.1.8 Accessibility to Credit

Sixty four percent of supermarket-channel farmers acquired loans so as to finance agricultural activities while none of the traditional-channel farmers had acquired loan from any organisation. This is probably because the supermarket-channel farmers are more educated. Eighteen percent of the farmers who acquired credit got it from Africa Harvest International, 40.6% from microfinance institution, and only 1% from the bank. Most of the farmers had access to credit in Africa and microfinance institutions because collateral is not needed as long as one is in a group. However, supermarkets do not extend credit to producers. The farmers had acquired credit so as to purchase inputs and other assets.

Table 8: Accessibility to Credit

	Supermarket		Traditional market	
	Frequency	Percentage	Frequency	Percentage
Yes=1	32	64	50	100
No=0	18	36	0	0
Total	50	100	50	100

Source: survey data, 2009

4.1.9 Ownership of Farm Machinery and Equipment

None of the households owned tractor. Table 9 indicates that most respondents owned panga and Jembe (100% and 98% from supermarket and traditional market and 96% and 66% from supermarket and traditional market respectively). Ninety six percent of supermarket-channel farmers own mobile phones, 46% have sprinkler irrigation while 62% of traditional-channel farmers own mobile phones and only 12% had sprinkler irrigation. Ninety four percent of supermarket-channel farmers had watering cans to irrigate the products. This is because they had

to provide to consistently supply supermarkets. Most farmers planted along the rivers while some of them dug boreholes so as to enhance access of water. Twenty percent of the supermarket-channel farmers who owned the irrigation system had access to electricity which they used to pump the water. The above results are in line with empirical evidence from other studies. Hernandez et al. (2007) found that farmers supplying supermarkets had more irrigation initially and also invested more in irrigation over time than farmers in the traditional channel.

Table 9: Ownership of Farm Machinery and Equipment

Farm Equipment and Tools	Households owning it (%)	
	Supermarket	Traditional market
Watering cans	94	52
Bicycle	44	24
Wheelbarrow	64	48
Irrigation system	46	12
Vehicle	18	2
Mobile phone	100	62
Panga	100	98
Jembe	96	66

Source: survey data, 2009

4.1.10 Types of Commodities Produced By Farmers

The main agricultural crops grown in the study area are maize and leafy vegetables. Small-scale farmers interviewed supplied mainly greens, Africa leafy vegetables and bananas. The main vegetables that are grown in the study area are kales, spinach, Black Night Shade (*Solanum spp*), Amaranthus (*Amaranth*), Spider plant (*Cleome gynadra*), cauliflower, lettuce, tomato, cabbage, and bananas as shown in Table 10. These products were delivered either daily, weekly, fortnightly or monthly. The farmers either delivered the products by themselves (as an individual or group) or a trader. The lead farmer/trader obtains a contract with supermarkets which he then sub-contracts the small-scale farmers to produce the commodities which he supplies to the supermarkets. Traders interviewed are located in Wakulima, Wangige, Ngara and Kangemi markets. The percentages of farmers who produce these commodities are shown in Table 10 below.

Table 10: Types of Commodities Produced By Farmers

Product	Supermarket		Traditional market	
	Count	%	Count	%
African Night Shade (*Solanum spp*)	17	34	17	34
Amaranthus(*Amaranth)*	15	30	14	28
Kales	22	44	19	38
Spinach	27	54	20	40
Spider plant(*Cleome gynadra*)	14	22	12	12
Cauliflower	7	14	3	6
Lettuce	9	18	5	10
Cabbage	6	12	4	8
Tomato	3	6	4	8
Bananas	10	20	10	20

Percentages may be more than 100 because of multiple responses.

Source: survey data, 2009

4.2 Characteristics of Trader Respondents.

The mean age of traders was 36 years which means that they were relatively young. This made it easier to understand the terms of contracts and negotiate prices. Twenty percent of these traders were females while 80% were males. The traders had marketing identity card that they used to market their commodities. However, one trader did not have the marketing card. They were issued these cards which they used as license. All the traders who sold to supermarkets collaborated with each other. When asked which information they shared, 90% replied that it was the prices. They bought these products from small-scale farmers which they later delivered to supermarkets and other markets including schools, hotels and hospitals. However, four of the traders interviewed solely delivered their commodities to supermarkets only.

Eighty percent of the traders had their own stores where they kept the commodities before delivering them. Eighty percent of traders dealt with fresh products alone while the remaining 20% dealt with 40% of fresh produce and 60% staples. Ten percent of the trader respondents supplied supermarkets for less than a year, 40% supplied for 2-3 years, 20% supplied for 3-4

years and 30% supplied for more than 4 years. About 60% of the respondents supplied to supermarkets and other channels which are hotels, schools and hospitals.

4.3 Procurement Systems of Supermarkets

The procurement system of Uchumi supermarket branches are decentralized while Nakumatt and Tuskys branches are centralized to Fresh 'n' Juici. Fresh 'n' Juici had more farmers who supplied to them than Uchumi. In Uchumi, the supplier should have the capacity to fully supply orders issued by the Uchumi supermarkets (Uchumi, 2010). Farmers deliver directly or through traders/lead farmers to Uchumi supermarket respondents. Uchumi procurement managers give orders to its suppliers through telephone. The suppliers must meet the requirements needed by supermarkets, quantities to be delivered and conditions pre-agreed by supermarkets and suppliers. These suppliers include large-scale farmers, small-scale farmers and traders.

Nakumatt supermarkets have a subsidiary company by the name Fresh 'n' Juici which is responsible for sourcing fresh fruits and vegetables. Fresh 'n' Juici procures from preferred individuals who are either farmers or traders. The farmers or traders deliver FFV to Fresh 'n' Juici, depending on the quantities and quality agreed upon. It then packages and distributes to Nakumatt and Tuskys branches within Nairobi using its own trucks.

Uchumi branches and Fresh 'n' Juici indicated that the preferred suppliers should be able to supply consistently and normally in large quantities so as to reduce transaction costs. This is because supermarkets want supply chains that ensure quality and traceability. Moreover, supermarkets sought a steady year-round supply and reliable deliveries. Supermarkets usually use the traders/lead farmers or groups so as to reduce the number of suppliers they deal with hence reducing the transaction costs.

Nakumatt branches had an average of 30% proportion of fresh produce, 30% of staples and 40% of processed products, Tuskys branches had 35% of fresh produce, 30% of staples and 35% of processed while Uchumi had an average of 35% of fresh produce, 30% of staples and 35% of processed products. The fresh produce included fresh fruit and vegetables and fresh meat products, staples included rice, legumes, maize flour etc. while processed foods included dairy products, beverages, soft drinks and others. Uchumi supermarket branches and Fresh 'n' Juici purchased some of the fresh produce from small-scale farmers through individuals or traders

while they imported others. The commodities that are sourced from small-scale farmers include spinach, kales and ALVs while those imported are apples.

The supplies must meet the standards and grades for the commodities, quantities to be delivered and transaction conditions pre-agreed between supermarkets and suppliers/farmers. The commodities were delivered at the supermarkets premises between 6.00am and 7.00am. The commodities that do not meet supermarkets quality specifications are rejected.

4.3.1 Trade Involvement of Farmers with Supermarkets

Eight percent indicated that they had farm experience of less than one year, 14% had 1-2 years' experience, 42% had 2-3 years' experience, 20% had 3-4 years' experience and 16% had more than 5 years' experience. Only 12% supermarket-channel farmers interviewed supplied the supermarkets before the year 2003. More than half of them started supplying supermarkets between 2004 and 2008. In addition the supermarket-channel farmers produce more than one commodity to the market compared with traditional-channel farmers. Most of small-scale farmers supplied supermarkets for more than two years and therefore they had formed relationships of trust with traders/supermarkets.

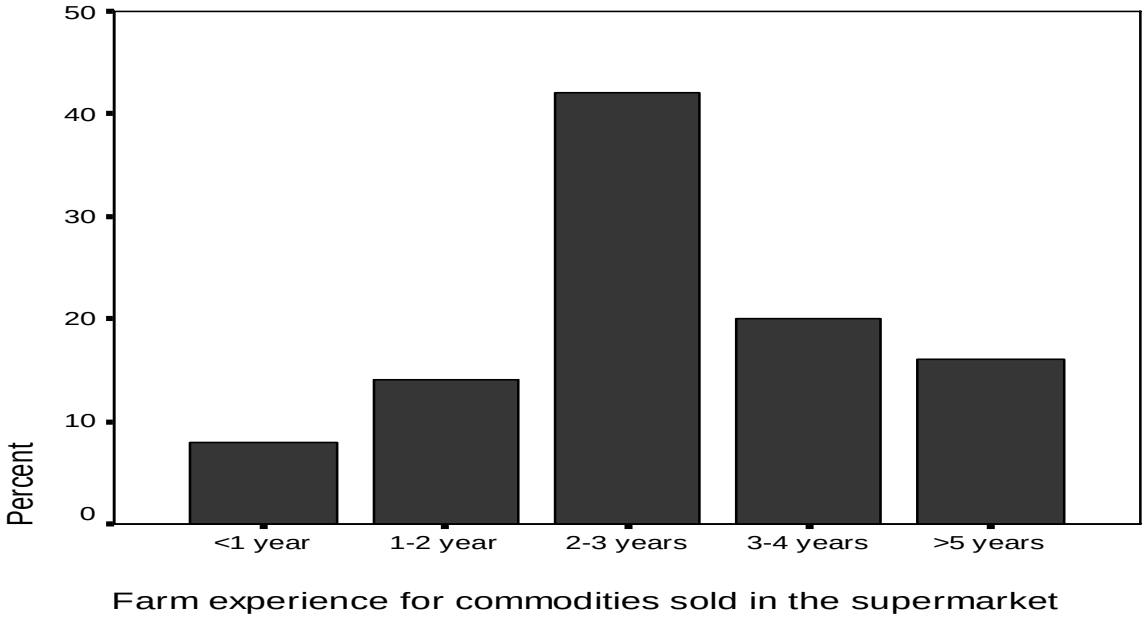

Figure 3: Farm experience for commodities sold in the supermarket

Source: survey data, 2009

4.3.2 Access to Information about Supermarkets

Some of the farmers respondents indicated that it was through friends or groups that they got access to supply supermarkets. The rest of the farmers used self-inquiry to get access. Fifty two percent of supermarket-channel farmers assessed information about supermarkets from their friends and groups who already supplied to supermarket while 48% made self-inquiry. Self-inquiry involved approaching the trader or supermarket for a contract.

Table 11: Access to Information about Supermarket

	Frequency	Percent
Friends/Group	26	52
Self-inquiry	24	48

Source: survey data, 2009

More than half of the farmers interviewed started supplying the supermarkets between 2004 and 2008. This could be because small-scale farmers started penetrating supermarkets through groups or traders who offer better prices than brokers. Most of the lead farmers/traders sourced the products from small-scale farmers organized in a group or as individual. The market information that was necessary to farmers was about quality, quantity demanded, time and prices. These helped them to plan production and negotiate prices in turn leading to consistency in supply.

4.3.3 Supermarkets' Terms of payment

There were various types of transactions reported by supermarket-channel farmers: cash on delivery, fortnightly, weekly and monthly. Thirty four percent of the supermarket-channel farmers are paid on cash-on-delivery terms, 22 % were paid on monthly basis, 10% were paid fortnightly and 34% were paid weekly as shown in table 12. On the hand, all the traditional-channel farmers were paid on cash-on-delivery basis. Weekly basis is the most used term of payment while fortnightly was the least used. These terms were expressed in contracts negotiated by traders or supermarkets/Fresh 'n' Juici. These findings suggest that various supply terms of payment exist and they differ among supermarkets as shown in the table below.

Table 12: Supermarkets' Terms of Payment

	Supermarket/dedicated wholesaler			
	Uchumi		Fresh 'n' Juici	
Terms of payment	Frequency	Percentage	Frequency	Percentage
Cash on delivery	8	16	11	22
Fortnightly	3	6	3	6
Weekly	12	24	16	32
Monthly	5	10	7	14
Total	28	56	37	74

Source: survey data, 2009

4.4 Opportunities Created By the Growth of Supermarkets

4.4.1 Assessment of the Current and Future Opportunities of Purchasing of Commodities From Small-scale Farmers

Uchumi supermarket branches and Fresh 'n' Juici source their fresh commodities from small-scale farmers, medium-scale, large-scale farmers and traders. The fresh commodities commonly sourced from small-scale farmers were bananas, green vegetables such as kales, spinach and ALVs such as African Night Shade (*Solanum spp*), Amaranthus (*Amaranth)*. The number of farmer respondents utilizing the opportunity of supplying supermarkets is shown in Table 10. There also 10 traders respondents utilizing these opportunity. Fresh 'n' Juici indicated that 80% of their suppliers were small-scale farmers currently while Uchumi had 40% of their suppliers as small-scale farmers currently. In addition, Fresh 'n' Juici acquired 80% of their fresh produce commodities from small-scale farmers and Uchumi branches acquired 60% of their fresh produce from small-scale farmers either directly or indirectly. This is true because supermarkets indicated that there is high current opportunity of purchasing fresh commodities from small-scale farmers. Traders indicated that they purchase 100% of the commodities especially the ALVs and green vegetables from small-scale farmers currently. TCEBL also pointed out that they purchased the bananas from small-scale farmers.

Green vegetables and ALVs are mainly supplied by small-scale farmers either directly or through traders in large quantities currently. They expect to purchase large quantities of the same commodities in future. They also purchase cauliflower, lettuce, cabbage and tomato currently

from few farmers as indicated in Table 10. This means that the variety of commodities purchased from small-scale farmers is increasing. The supermarkets had the opinion that this trend is going to continue even in future. Consequently, there are greater opportunities in future for small-scale farmers to supply the mentioned commodities to Uchumi supermarkets and Fresh 'n' Juici.

Supermarket branches and Fresh 'n' Juici had the opinion that an opportunity of small-scale farmers supplying them in future was very high. In addition, small-scale farmers have an opportunity of supplying large quantities and a variety of commodities in future. This is because there has been increase in branches of Uchumi and Nakumatt in Nairobi for example, Uchumi Jipange and Tuskys T-mall. In addition, consumers have been increasingly aware of nutritional and medicinal value of vegetables and the demand has been on the rise especially in major urban centres (Ngugi *et al*., 2006). Therefore the farmers should specialize in producing commodities such as ALVs, cauliflower and lettuce vegetables. The above findings are in line with Reardon and Neven, (2004) found out that in Kenya there was a rise of a group of new group of small-scale farms who supply supermarkets. Kirsten & Emongor, (2006) also found out that in Zambia small-scale farmers negotiate contracts and supply fresh produce to supermarkets.

4.4.2 Assessment of the Current and Future Opportunities of Supplying Commodities to the Supermarkets By Traders

Table 13 below presents information on the assessment the current and future opportunities of supplying commodities to the supermarkets.

Table 13: Assessment of the Current and Future Opportunities of Supplying Commodities to the Supermarkets

		Current opportunity			Future opportunity	
	Number of respondents	Number of the respondents			(Number of the respondents)	
		4=Very high	3= High	2= Low	4=Very high	3= High
African Night Shade (*Solanum spp*)	7	2	5		5	2
Amaranthus (*Amaranth)*	4	4			2	2
Kales	4	4			4	
Spinach	7	4	3		5	2
Spider plant (*Cleome gynadra*)	4	2	2		4	
Cauliflower	3	2		1	2	1
Lettuce	5	2	2	1	2	3
Cabbage	2	1		1	1	1
Tomato	4		2	2	2	2

Source: survey data, 2009

In the case of African Night Shade (*Solanum spp*), of 7 traders who responded, 2 of them had the opinion that they had very high opportunity and the rest had high opportunity of supplying African Night Shade (*Solanum spp*), to supermarkets currently. For future opportunities, 5 of them had very high opportunity and 2 of them had high opportunities of supplying supermarket.

In the case of Amaranthus (*Amaranth)*, all the 4 traders who responded indicated that they had very high current opportunity of supplying to supermarket. For future opportunities, 2 of them had very high opportunity and the remaining 2 had high future opportunities of supplying supermarket.

Regarding kales all the 4 traders who responded indicated that they had very high current and future opportunities of supplying kales to supermarkets.

In the case of spinach, of 7 traders who responded, 4 of them indicated that they had very high current opportunity and the other 3 had high current opportunity of supplying supermarket. For future opportunities, 5 of them had very high opportunity and 2 of them had high future opportunities of supplying supermarket.
In the case of Spider plant (*Cleome gynadra*), of the 4 traders who responded, 2 of them indicated that they had very high current opportunity and the rest had high current opportunity of supplying supermarket. All of the traders had very high future opportunity of supplying supermarket.
In the case of cauliflower, of the 3 traders who responded, 2 of them indicated that they had very high current opportunity and the remaining one had low current opportunity of supplying supermarket. For future opportunities, 2 of them had very high opportunity and the remaining one had high future opportunities of supplying supermarket.
In the case of lettuce, of 5 traders who responded, 2 of them indicated that they had very high current opportunity, the other 2 had high current opportunity and the other 1 had low current opportunity of supplying supermarket. For future opportunities, 2of them had very high opportunity and 3 of them had high future opportunities of supplying supermarket.
In the case of cabbage, of 2 traders who responded, 1 of them indicated that they had very high current opportunity and the other one had high current opportunity of supplying supermarket. For future opportunities, 1 of them had very high opportunity and the other had high future opportunities of supplying supermarket.
In the case of tomato, of 4 traders who responded, 2 of them indicated that they had very high current opportunity and the other two had high current opportunity of supplying supermarket. For future opportunities, 2 of them had very high opportunity and 2 of them had high future opportunities of supplying supermarket.
In case of bananas, TCEBL indicated that the current opportunity of supplying bananas to supermarket was high and very high in future.

From the above results above there is an indication that most of the traders had an opportunity of supplying commodities to supermarkets except four who had the opinion that they had low opportunity. However, all farmers had very high future opportunity of supplying the named commodities to supermarkets. Traders made inclusion easier for small-scale farmers who cannot supply vegetables directly to supermarkets. This disagrees with studies such as Tschirley (2007),

who emphasized that small-scale farmers are excluded from supplying supermarkets because they cannot meet conditions given by supermarkets such as quality, timeliness and safety.

4.4.3 Assessment of the Current and Future Opportunities of Supplying Commodities to the Supermarkets by Farmers

Table 14 below presents information on the assessment the current and future opportunities of supplying commodities to the supermarkets.

Table 14: Assessment of the Current and Future Opportunities of Supplying Commodities to the Supermarkets by Farmers

		Current opportunity				**Future opportunity**		
	Number of respondents	(% of the respondents)				(% of the respondents)		
		4=Very high	3= High	2= Low	1=Very low	4=Very high	3= High	2= Low
African Night Shade (*Solanum spp*)	34	20.6	47.1	23.5	8.8	41.2	58.8	
Amaranthus (*Amaranth)*	30	23.3	36.7	33.3	6.7	53.3	26.7	20
Kales	44	20.5	47.7	22.7	9.1	45.5	45.5	9.1
Spinach	54	18.5	55.6	25.6		53.7	44.4	1.9
Spider plant (*Cleome gynadra*)	30	20	53.3	26.7		46.7	53.3	
Cauliflower	14	14.3	78.6	7.1		35.7	64.3	
Lettuce	18	16.7	61.1	22.2		25	75	
Cabbage	12	16.7	66.7	16.7		33.3	66.7	
Tomato	8	16.7	66.7	16.7		25	75	
Banana	22	15	60	15	10	54.5	45.5	

Source: survey data, 2009

Of 34 farmers who responded, 20.6% indicated that they had very high current opportunity, 47.1% had high, 23.5% low current opportunity and 8.8% had very low opportunity of supplying

African Night Shade (*Solanum spp*), supermarket. For future opportunities 41.2% had very high and 58.5% had high future opportunities of supplying supermarket.

Among 30 farmers 23.3% indicated that they had very high current opportunity, 36.7% had high opportunity, 33.3% of Amaranthus (*Amaranth)* farmers had low current opportunity and 6.7 % had very low current opportunity of supplying supermarket. In terms of future opportunity 53.3% had very high opportunity, 26.7% had high opportunity and only 20% had low opportunity of supplying supermarket.

Among the kales farmers 20.5% indicated that they had very high current opportunity, 47.7% had high opportunity, 22.7% of kales farmers had low current opportunity and 9.1 % had very low current opportunity of supplying supermarket. In terms of future opportunity 45.5% had very high opportunity, 45.5% had high opportunity and only 9.1% had low opportunity of supplying supermarket.

Among the spinach farmers 18.5% indicated that they had very high current opportunity, 55.6% had high opportunity and 25.6% of spinach farmers had low current opportunity of supplying supermarket. In terms of future opportunity 53.7% had very high opportunity, 44.4% had high opportunity and only 1.9% had low opportunity of supplying supermarket.

Among the Spider plant (*Cleome gynadra*) farmers 20% indicated that they had very high current opportunity, 53.3% had high opportunity and 26.7% of Spider plant (*Cleome gynadra*) farmers had low current opportunity of supplying supermarket. In terms of future opportunity 46.7% had very high opportunity and 53.3% had high opportunity of supplying supermarket.

Among the cauliflower farmers 14.3% indicated that they had very high current opportunity, 78.6% had high opportunity and 7.1% of had low current opportunity of supplying supermarket. In terms of future opportunity 35.7% had very high opportunity and 64.7% had high opportunity of supplying supermarket.

Among the lettuce farmers 16.7% indicated that they had very high current opportunity, 61.1% had high opportunity and 22.2% of lettuce farmers had low current opportunity of supplying supermarket. In terms of future opportunity 25% had very high opportunity and 75% had high opportunity of supplying supermarket.

Among the cabbage farmers 16.7% indicated that they had very high current opportunity, 66.7% had high opportunity and 16.7% of had low current opportunity of supplying supermarket. In

terms of future opportunity 33.3% had very high opportunity and 66.7% had high opportunity of supplying supermarket.

Among the tomato farmers 16.7% indicated that they had very high current opportunity, 66.7% had high opportunity and 16.7% of had low current opportunity of supplying supermarket. In terms of future opportunity 25% had very high opportunity and 75% had high opportunity of supplying supermarket.

Among the banana farmers 15% indicated that they had very high current opportunity, 60% had high opportunity, 15% of had low current opportunity and 10% had very low current opportunity of supplying supermarket. In terms of future opportunity 54.5% had very high opportunity and 45.4% had high opportunity of supplying supermarket.

The results above show that some farmers felt that that there were low opportunities in supplying supermarkets currently. However, a small percentage of farmer respondents felt that there will be greater opportunities in future except for Amaranthus (*Amaranth)*, kales and spinach. This means that farmers were optimistic that they would have a chance of supplying supermarkets in future.

4.5 Perception on the Quantities of Commodities Sold or Expected To Be Sold To Supermarkets

4.5.1. Traders

Table 15 below present information on the traders' perception on the quantities of commodities sold or expected to be sold to supermarkets.

Table 15: Quantities Sold or Expected To Be Sold To Supermarkets by Traders

		Currently		In Future	
	Number of respondents	(Number of respondents)		(Number of the respondents)	
		3= Large	2= Small	3= Large	2= Small
African Night Shade (*Solanum spp*)	7	6	1	7	
Amaranthus (*Amaranth)*	2	2		2	
Kales	4	4		4	
Spinach	7	4	3	7	
Spider plant (*Cleome gynadra*)	4	4		2	2
Cauliflower	3	2	1	3	
Lettuce	3	2	1	3	
Cabbage	2		2	2	
Tomato	2	2			2
Banana		1		1	

Source: survey data, 2009

Regarding the traders' opinion about the quantities they expect to sell to supermarkets, out of 7 traders who supply African Night Shade (*Solanum spp*) to supermarkets 6 of them felt that they sell large quantities and only 1 trader small quantities currently. All the 7 traders expected to sell large quantities in future.

For Amaranthus (*Amaranth)*, all the 2 traders had the opinion that they sell large quantities currently. They also had the view that they will still supply large quantities in future.

In the case of kales all the 4 traders had the opinion that they sell large quantities currently. They also had the view that they will still supply large quantities in future.

Out of 7 traders who supply spinach to supermarkets 4 of them had the opinion that they sell large quantities and 3 of them sell small quantities currently. All the traders expected to sell large quantities to supermarkets in future.

All of the 4 traders who supply Spider plant (*Cleome gynadra*) to supermarkets felt that they sell large quantities currently. However, 2 of them expected to sell large quantities and the remaining 2 expected to sell small quantities in future.

Out of 3 traders who supply cauliflower to supermarkets 2 of them sell large quantities and only 1 trader sell small quantities currently. All the traders expected to sell large quantities in future.

Out of 3 traders who supply lettuce to supermarkets 2 of them sell large quantities and only 1 trader sell small quantities currently. All the traders expected to sell large quantities in future.

All the 2 traders who supply cabbage to supermarkets sell large quantities currently and they expected to sell large quantities in future.

All the 2 traders who supply tomato to supermarkets sell large currently. However they expected to sell small quantities in future.

TCEBL indicated that they sell large quantities of bananas currently and expected to sell large quantities in future.

The majority of trader respondents had the opinion that they will supply large quantities compared to what they supply currently. The number of traders that expected to sell large quantities in future is bigger than the ones selling large quantities currently except for sarget and tomato.

4.5.2. Farmers' Perception on the Quantities of Commodities Sold or Expected to be Sold to Supermarkets.

Table 16 below present information on the farmers' perception on the quantities of commodities sold or expected to be sold to supermarkets.

Table 16: Quantities Sold or Expected To Be Sold To Supermarkets by Farmers

		Currently			**In Future**		
	Number of respondents	(% of the respondents)			(% of the respondents)		
		3= Large	2= Small	1= Stagnant	3= Large	2= Small	1= Stagnant
African Night Shade (*Solanum spp*)	17	88.2	11.8		88.2	11.8	
Amaranthus (*Amaranth)*	15	80	20		100		
Kales	22	57.1	28.6	14.3	85.7	14.3	
Spinach	27	63	33.3	3.7	96.1	3.7	
Spider plant (*Cleome gynadra*)	15	86.7		13.3	86.7	13.3	
Cauliflower	7	42.9	28.6	28.6	71.4	28.6	
Lettuce	8	62.5	25	12.5	75	25	
Cabbage	6	33.3	33.3	33.3	50	50	
Tomato	3	100			100		
Banana	10	45.5	54.5		90.9	9.1	

Source: survey data, 2009

Out of 17 farmers who supply African Night Shade (*Solanum spp*) to supermarkets 88.2% large quantities and 11.8% sell small quantities currently. This was the same for future expectation to sell to supermarkets.

Out of 15 farmers who sell Amaranthus (*Amaranth)* to supermarkets 80% sell large quantities whereas 20% sell small quantities. In future all these farmers expected to sell large quantities.

Out of 22 farmers who sell kales to supermarkets 57.1% sell large quantities, 28.6% sell small quantities while 14.3% sell the same quantities. In future 85.7% of these farmers expected to sell large quantities and only 14.3% expected to sell small quantities.

Out of 27 farmers who sell spinach to supermarkets 63% sell large quantities, 33.3% sell small quantities while 3.7% sell the same quantities currently. In future 96.1% of these farmers expected to sell large quantities and only 3.7% expected to sell small quantities.

Out of 15 farmers who sell Spider plant (*Cleome gynadra*)to supermarkets 86.7% sell large quantities while 13.3% sell the same quantities currently. In future 86.7% of these farmers expected to sell large quantities and only 13.3% expected to sell small quantities.

Out of 7 farmers who sell cauliflower to supermarkets 42.9% sell large quantities, 28.6% sell small quantities while 28.6% sell the same quantities currently. In future, 71.4% of these farmers expected to sell large quantities and 28.6% expected to sell small quantities.

Out of 8 farmers who sell lettuce to supermarkets 62.5% sell large quantities, 25% sell small quantities while 12.5% sell the same quantities currently. In future 75% of these farmers expected to sell large quantities and 25% expected to sell small quantities.

Out of 6 farmers who sell cabbage to supermarkets 33.3% sell large quantities, 33.3 sell small quantities while 33.3% sell the same quantities. In future 50% of these farmers expected to sell large quantities and 50% expected to sell small quantities.

All the 3 farmers who sell tomato to supermarkets sell large quantities currently. They expected to sell large quantity in future.

Out of 10 farmers who sell bananas to supermarkets 45.5% sell large quantities while 54.5% sell the same quantities. In future 90.9% of these farmers expected to sell large quantities and only 9.1% expected to sell small quantities.

From the above findings, the majority of farmer respondents had the opinion that they will supply large quantities compared to what they supply currently. The number of farmers that expected to sell large quantities in future is bigger than the ones selling large quantities currently. The commodities that more than ¾ of the farmers felt that they would supply large quantities in future included African Night Shade (*Solanum spp*), Amaranthus (*Amaranth)*, kales, spinach,

Spider plant (*Cleome gynadra*), lettuce, tomato and bananas. This is in line with the findings that supermarkets purchase green vegetables mostly from small-scale farmers.

4.6 Farmers' Perception on the Ease of Selling Commodities to Supermarkets

Table 17 below presents information of the farmers' perception on the ease of selling their commodities to supermarkets.

Table 17: Farmers' Perception on the Ease of Selling Commodities to Supermarkets

Product	Directly			Through a trader			Through group		
	Very easy %	Easy %	Difficult %	Very easy %	Easy %	Difficult %	Very easy %	Easy %	Difficult %
African Night Shade (*Solanum spp*)	11.8	17.6	70.6	40	60		46.7	40	13.3
Amaranthus (*Amaranth)*	13.3	26.7	60	46.7	53.3		40	40	20
Kales	9.5	14.3	76.2	28.6	71.4		42.9	33.3	23.8
Spinach	11.1	48.1	40.7	22.2	66.7	11.1	44.4	22.2	33.3
Spider plant (*Cleome gynadra*)	6.7	6.7	86.7	40	60		40	46.7	13.3
Cauliflower		33.3	66.7	14.3	57.1	28.6	14.3	28.6	57.1
Lettuce		25	75	25	50	25	25	37.5	37.5
Cabbage	16.7	33.3	50	16.7	66.7	16.7	16.7	16.7	66.7
Tomato			100		100		33.3		66.7
Banana		9.1	90.9	27.3	54.5	18.2	72.7	18.2	9.1

Source: survey data, 2009

Most of the farmer respondents found it difficult to sell their commodities directly as shown in Table 17 above by the high percentages. More than 70% of the respondents found it difficult to sell African Night Shade (*Solanum spp*), kales, spider plant (*Cleome gynadra*), lettuce, and bananas directly. In addition, 50% of the respondents found it difficult to sell cabbage, cauliflower and Amaranthus (*Amaranth)* directly while less than 50% (40.7%) found it difficult

to sell spinach directly. They found it very easy and easy to sell through traders and marketing groups. In all the products, more than 50% found it difficult to sell their products directly and found it easy to sell through traders. Farmer respondents indicated that cauliflower, cabbage and tomato were difficult to be sold through marketing groups. They also indicated that it was very easy and easy to sell commodities such as African Night Shade (*Solanum spp*), Amaranthus (*Amaranth)*, kales, Spider plant (*Cleome gynadra*) and spinach through marketing groups. This is because most of these farmers belong to a group who train and help them market their commodities. All the respondents it was difficult to sell tomato directly and it was easy to sell through traders. It was also very easy to market bananas through marketing groups. This is shown by 80.9 % of the respondents who indicated that it was easy for them to sell through marketing groups. This is because most of the banana farmers take their products to TCEBL who later sell them on their behalf.

From the above results, it shows that most of the small-scale farmers are not able to sell their commodities directly to supermarkets. This concurs with Makoka, (2005) who indicated that supermarket suppliers (traders or farmers) procure the commodities from small-scale farmers within their neighborhood and then supplies to supermarkets.

4.7 Perception of the Farmers about Supermarkets

A summary of the likert scale on the farmers' perception towards supermarkets is presented below. Most of the respondents indicated that supermarkets offer reliable market. Thirty percent and 66% of supermarket-channel farmers strongly agreed and agreed respectively and 82% of traditional-channel farmers agreed. This was the case because supermarket-channel farmers were assured to sell their products once they entered a contract with the trader or supermarket. 66% of supermarket-channel farmers and 58% of traditional-channel farmers indicated that supermarkets offer better prices. This in turn increases the farm income as indicated by 76%, 16% and 58% of supermarket-channel and traditional-channel farmers respectively. 46% and 21% of supermarket-channel farmers strongly disagree and disagreed respectively that supermarkets supply inputs to the farmers. Farmers buy inputs as a group or individual in the nearby shopping centre. Most respondents in the study area indicated that there was no or little knowledge transfer offered by supermarkets. The training is done by organizations such as Africa Harvest International and Family Concern International.

Table 18 below presents a summary of the likert scale on the farmers' perception towards supermarkets. The table shows that farmers who supply to both supermarket and traditional market agreed that supermarkets offer reliable market. This was the case because supermarket-channel farmers were assured to sell their products once they entered a contract with the trader or supermarket. Supermarket-channel farmers agreed that they get better prices but traditional-channel farmers were uncertain. This in turn increases the farm income as indicated by supermarket-channel and traditional-channel farmers respectively. Supermarket-channel and traditional market farmers strongly disagree and disagreed respectively that supermarkets supply inputs to the farmers. Farmers buy inputs as a group or individual in the nearby shopping center.

Table 18: Perception of the Farmers about Supermarkets

	Supermarket			Traditional market			F	P
	Mean	S.D	Descriptor	Mean	S.D.	Descriptor		
Supermarkets offer reliable market	4.26	.527	Agree	3.82	.388	Agree	22.587	.001*
Supplying products to the supermarket can increase farm income	4.06	.550	Agree	3.60	.782	Agree	11.567	.001*
Supermarkets offer better prices	3.74	.751	Agree	3.48	.839	Uncertain	2.667	.016
There are reduced risks when supplying supermarkets	3.66	.872	Agree	3.28	.757	Uncertain	5.418	.022*
There is knowledge transfer	2.66	1.599	Uncertain	2.80	.833	Uncertain	.302	.584
Supermarkets supply inputs to farmers	1.46	.762	Strongly disagree	2.36	.921	Disagree	28.374	.001*

*p<.05

Source: survey data, 2009

As shown in the table 18, analysis of variance by classification by market showed significant differences between supermarket-channel and traditional-channel farmers except in training of

farmers/knowledge transfer. Supermarket-channel farmers had more favourable perceptions about each item except for supply of inputs and knowledge transfer by supermarket.

4.8 Strategies Used By Farmers Supplying Supermarket

Supermarket respondents were asked what small-scale farmers should do so as to take advantage of the opportunities available to them. The findings show that Uchumi supermarket branches and Fresh 'n' Juici said that they should do so by practicing good production practices, contracting, grading/packaging, meet the required quality standards and good timing. This shows that there is need to make small-scale farmers aware of the opportunities available to them and the strategies they can use to take advantage of them. The farmers were also asked what they do so as to take advantage of the opportunities created by supermarkets. Table 19 below shows the findings on the strategies that farmers used to take advantage of the opportunities.

Table 19: Strategies Used By Farmers Supplying Supermarket

Strategy	Frequency	Percentage
Change in cropping pattern	44	88
Good production practices	44	88
Grading/ packaging	10	20
Contracting	36	72
Timing	49	98

Percentages may be more than 100 because of multiple responses.

Source: survey data, 2009

Eighty eight percent of farmer respondents in supermarket-channel had changed their cropping pattern by increasing the land allocated to commodities sold to supermarket by 34% so as to take up the opportunities available currently. Eighty eight percent used good production practices, 20% graded and packaged, 72% had contracts and 98% produced at right time. Contracts included crop specific arrangements with traders or supermarkets. Boselie *et al.* (2005) confirmed that there are crop-specific arrangements between producers and local markets. The contractual arrangements are also important because it is an important tool for organizing agricultural production in line with market demands (Vellema, 2002).

The traders were also asked what they do so as to take advantage of the opportunities so as take advantage of opportunities created by supermarkets. Seventy percent of the traders respondents

graded and packaged the commodities and 90% used good timing as a strategy. This means that most of the traders added value to commodities by grading and packaging. In addition, all the traders had contracts with Uchumi supermarket branches or Fresh 'n' Juici.

According to Jackson (1995), market oriented farmers will seek to identify their prime customer and then, by understanding what is wanted, establish a common interest. This provides the foundation on which to build a relationship based on a mutual understanding of customer needs with their suppliers and assess their ability to meet those needs. This can be done through contractual relationship with supermarkets so as to have supply commodities consistently and of quality that meet customers' needs. According to supermarkets and Fresh 'n' Juici, the contracts exist in both unwritten and written form. Contracts yield benefits to farmers because they are assured that the products will be bought, price risk is reduced and lower marketing costs.

Good production practices such as the correct amount of pesticides also helps the farmers to produce in accordance with the rules hence producing high quality products. Better crop husbandry and management, more careful handling of commodities during and after harvesting helps in reducing wastage due to post- harvest losses. Farm Concern International in collaboration with Uchumi provides extension service through their field staff.

Grading and packaging is one of the value addition processes. The farmers should be encouraged to grade and package their commodities so as have higher returns. When commodities are graded the prices also vary, the better the grade the higher prices. Timing is also an important strategy used by small-scale farmers and traders. They are able to produce or procure the right amount of a commodity at the right time hence consistency in supply which satisfies supermarkets' customers demand.

4.9 Economic benefits

There are both qualitative and quantitative benefits that are associated with the supermarket-channel farmers.

Qualitative benefit for 88% traders and 68% of supermarket-channel farmers is the secure and stable market. This is because these traders and farmers are in contracts whether written or unwritten to supply the commodities. In addition, all the farmers and traders agreed that they had better prices. This directly improved farmers' income and the farmer can consolidate their

farming system in response to supermarket requirements. Seventy two percent of farmers and 45% of traders attained self-employment by supplying to supermarkets. Unemployment being a major problem in Kenya, this has help many people to have a source of income. However, only 6% of the farmer respondents and 20% of the trader respondents were provided packaging materials by supermarkets. This means that other suppliers had to purchase their own packaging materials which leads to incurring extra costs.

The quantitative benefit was calculated using producer surplus which signifies the economic returns above variable costs of production that is identified as a measure of producer welfare, from farm level production and farm prices. The most produced and marketed five products named in Table 10 were used to analyze producer surplus. This is because most farmers were involved in producing them (127% and 144% in supermarket-channel and traditional-channel respectively). Bunches of vegetables weighed about 500-700 grams. For easy calculation a mean weight was calculated hence 600 grams per bunch and the mean weight of 1bag was 75 kilograms.

There was no fixed price at which the products were sold. The average prices were used for calculations. The mean prices for farmers who sell to supermarkets were higher than those who sold to traditional markets. The standard deviation of the prices was relatively small in most cases. This means that there was observed prices were bunched closely to their means and there was no major differences in prices to farmers who sold through the same channel. The mean quantities for farmers who sell to supermarkets were higher than those who sold to traditional markets except in the case of Spider plant (*Cleome gynadra*). This is because the former used good production practices in their farms. This is consistent with Reardon and Neven (2005), results which indicated that the prices paid by supermarkets were 10-15% higher than prices paid in traditional-channel markets.

Table 20: Means and standard deviations of the prices and quantities for the first five products sold by farmer respondents

Variable	Supermarket				Traditional market			
	Directly		Indirectly		Directly		Indirectly	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Price of African Night Shade (*Solanum spp*)	15.00	.003	13.53	.915	10	.000	8.07	.267
Price of Amaranthus (*Amaranth)*	15.2	.000	13.33	.778	10	.000	8.09	.302
Price of Kales	14.67	1.633	13.00	.000	10.17	.408	7.92	.641
Price of Spinach	15.13	.816	13.40	.843	10	.000	7.80	.632
Price of Spider plant(*Cleome gynadra*)	14.5	.013	13.55	.934	10	.000	8.00	.000
Quantity of African Night Shade	1344	.045	1950.00	588.839	1560	173.205	2547.70	189.997
Quantity of Amaranthus	1263.18	224.264	2449.80	143.495	1482	212.132	2313.96	858.190
Quantity of Kales	4736.84	396.636	1543	436.144	1950	233.152	1161.6	174.268
Quantity of Spinach	2315	284.348	1137.01	398.510	1170	296.985	1303.84	111.018
Quantity of Spider plant	1059.3	265.682	2430.18	194.001	1404	245.142	2883.75	106.066

Source: survey data, 2009

The costs of supermarket-channel farmers were higher than that of traditional-channel farmers. This is due to the need for inputs and improved crop management. However, even with the higher costs, the producer surplus is higher in all the products from supermarket-channel farmers. The supermarket-channel farmers had stability in prices and quantities demanded. Fresh 'n' Juici and Uchumi supermarkets purchase more consistent quantities of vegetables than the traditional markets. These quantities demanded however varied among Uchumi branches and Fresh 'n' Juici. The prices and quantities demanded are reflected in contracts that are negotiated weekly, fortnightly or monthly.

For easy calculation of producer surplus the mean prices and quantities were rounded off to the nearest one. The producer surplus for supermarket-channel farmers is lower than for traditional-channel farmers who sell directly. In addition, the benefit of supermarket-channel farmers is higher than the traditional-channel farmers as shown in the Table 21 and Table 22 below. This is because the prices are high hence increasing the producer surplus. Additional income to the supermarket-channel farmers improves the economic status of the farmers. In addition, vegetables are grown throughout the year by irrigation provides an almost continuous income flow throughout the year. The production of vegetables in the study area and supply to supermarkets not only increases the income but also provides employment and economic/business opportunities to small-scale farmers.

However in the case for African Night Shade (*Solanum spp*), Amaranthus (*Amaranth)* and Spider plant (*Cleome gynadra*) the producers' surplus for both supermarket-channel farmers and traditional-channel who sell through traders is higher than for those who sell directly and vice versa for kales and spinach. This is mainly due to most farmers selling through traders or other farmers rather than directly. The supermarkets and fresh 'n' juici represented lower risks because farmers sell to them all year round. They also incur less transaction costs compared to their counterparts who have already been contracted or sub-contracted. Some traders indicated that they offer credit to farmers to resolve the problem in case of delayed payment.

The above results are consistent with Reardon and Neven (2005), which concluded that supermarket-channel kale farmers had a 40% gross profit margin. Vermeulen & Bienabe, 2008; Roe *et al*. (2005) also reported that supermarket-channel farmers had noteworthy benefits such as higher yields hence high income.

Table 21: Summary of Producer Surplus for Farmers Who Supply Directly

	Supermarket			Traditional market		
	P_0X_0	$\int_0^{x_0} P.dx.$	Producer surplus (KSh)	P_0X_0	$\int_0^{x_0} P.dx.$	Producer surplus (KSh)
African Night Shade (*Solanum spp*)	20160	16380	3780	15600	12000	3600
Amaranthus (*Amaranth)*	19200	15600	3600	14820	11400	3420
Kales	72000	58500	13500	19500	15000	4500
Spinach	35040	28470	6570	11700	9000	2700
Spider plant (*Cleome gynadra*)	15360	12480	2880	14040	10800	3240

Source: Own calculation with survey data

Table 22: Summary of Producer Surplus for Farmers Who Supply Through Traders

	Supermarket			**Traditional market**		
	P_0X_0	$\int_0^{x_0} P.dx.$	Producer surplus (KSh)	P_0X_0	$\int_0^{x_0} P.dx.$	Producer surplus (KSh)
African Night Shade (*Solanum spp*)	26390	20300	6090	20560	16448	4112
Amaranthus (*Amaranth)*	32656	25120	7536	18720	14976	3744
Kales	20059	15430	4629	9200	7360	1840
Spinach	15236	11720	3516	10170	8136	2034
Spider plant (*Cleome gynadra*)	32929	25330	7599	23070	18456	4614

Source: Own calculation with survey data

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

5.1Summary

This study was aimed at assessing the effect of growth of supermarkets on small-scale farmers in central Kenya. The specific objectives of this study were to identify opportunities created by the growth of the supermarkets, to examine the perception of small-scale producers about opportunities opening through supermarkets, to identify the strategies applied by small scale producers to effectively exploit the potential created by the supermarkets, to determine the economic benefits brought about by the growth of the supermarkets on small scale producers. Data was analyzed using descriptive statistics, chi-squares and likert scale technique. Producer surplus was used to analyze economic benefits of small-scale farmers.

Primary data in this study revealed that there was significant difference in education level at 95% confidence interval between supermarket-channel and traditional-channel market. The supermarket-channel farmers were found to be better educated. Supermarket-channel farmers had slightly more land than traditional-channel farmers. However, majority of the respondents had very small land holdings. Supermarkets had high current opportunities and very high future opportunities for small-scale farmers in terms of market, quantities and varieties of commodities. Most of the traders and farmers were optimistic about the opportunities created by growth of supermarkets. Participation in supermarket-channel was found to bring about higher economic benefits. This study has documented that the supermarket-channel farmers has influenced on farming activities, ownership of assets, reliable market and access to extension services.

5.2 Conclusion

The following conclusions are drawn from this study:

First, the results show that most of the supermarkets were supplied green vegetables and ALVs by traders and small-scale farmers. The result further demonstrates that traders also purchased these commodities from small-scale farmers. Small-scale farmers had a chance of selling large quantities to supermarkets currently and in future. They also had the chance of increasing the variety of commodities sold to supermarkets. The growing opportunities imply that more small-scale farmers need to penetrate the supermarkets by supplying them to build a long timt relationship trading relationship. Secondly, the results show that the supermarket-channel

farmers have higher producer surplus than the traditional-channel farmers therefore higher net benefits. Increased income could be achieved by reliable markets and higher prices. The higher incomes have been a powerful determinant of strong self-motivated amongst supermarket-channel farmers. Thirdly, education level of farmers was significant for those who supplied supermarket. The supermarket-channel farmers had access to training. Most of them used good production practices, changed their production practices and contractual strategies therefore there was little post-harvest loss because they were assured of the market. However, there were limited land sizes and limited access to credit affect the production of agricultural products in the study area. This implies that small-scale farmers need to use good strategies in order to supply their products to supermarkets. since their land sizes are small the supermarket-channel farmers used good production practices to increase their yield.

5.3 Recommendations

The following recommendations have been made from the study.

i. The small farmer groups need to network together to market their produce. These will give them more links to supermarkets and opportunities for training.
ii. Supermarkets should encourage farm-nonfarm linkages to assist the small-scale farmers market their produce. They can link farmers to input suppliers and micro-finance institutions. This will not only enable the farmers to access credit and capital to enhance their production potential but also have high yielding and better crop varieties at a subsidized rate.
iii. Supermarkets should promote value addition. They should introduce value addition techniques, for example grading and packaging to the farmers.
iv. The government should consider policies to that give small-scale FFV farmers to be able to penetrate modern channels such as supermarkets according to vision 2030.
v. Further research on the growth of supermarkets is recommended to capture other issues which this study has not been able to capture due to its limitation for example, its effects on consumers.

REFERENCES

Africa Harvest International (2010). Available at www.ahbfi.com, accessed 10 February 2010.

Balsevich, F., J.A. Berdegué, L. Flores, D. Mainville, and T. Reardon. (2003). "Supermarkets and Produce Quality and Safety Standards in Latin America." *American Journal of Agricultural Economics* 85:1147-1154.

Botha, L. & Schalkwyk, H.D. (2007). *An inquiry into the evolving supermarket industry in Africa.* Paper submitted for presentation at the International Food & Agribusiness Management Association 17th Annual World Symposium, Parma, Italy, June 23-24, 2007.

Boselie, D., H.Spencer and W. Dave (2003). "Supermarket Procurement Practices in Developing Countries: Redefining the Roles of the Public and Private Sectors." *America Journal of Agricultural Economics* 85:1155-1161.

Chen, K., W. Shepherd and C Da Silva, (2005). Changes in food retailing in Asia: implication of supermarket procurement practices for farmers and traditional marketing systems. AGSF Occasional paper. *Food and Agriculture Organization of the United Nation*, Rome.

FAO (2003). *Rise of Supermarkets Across Africa Threatens Small Farmers: Opportunities and Challenges in a Changing Market.* Workshop on Globalization, Urbanization and Food Systems in Developing Countries.

Global Agriculture Information Network. (2008). *Kenya Retail Food Sector. Kenya's Retail Sector Update 2008*. Global Agriculture Report Network Report- KE8030.

Global Agriculture Information Network. (2007*). Kenya Retail Food Sector. Kenya Retail Sector Market Brief 2007.* Global Agriculture Report Network Report- KE7018.

Global Agriculture Information Network. (2006). *Kenya Retail Food Sector. Market Dynamics in Kenya's Retail Food Sector (Supermarkets).* Global Agriculture Report Network Report- KE6006.

Gujarati, D (2003). *Basic Econometrics*. New York, Mc Graw Hill.

Government of Kenya, (2002). *Food Security District Profile. Kiambu District, Central province.* Government printers, Nairobi.

Government of Kenya, (2003). *Ministry of Agriculture, Annual Report.* Government Printers, Nairobi.

Government of Kenya, (2008). *Kenya Vision 2030: The Popular Version.* Government Printers, Nairobi.

Hagen, J.M. (2003). *Agrifood innovation in developing countries: the role of retailers.* Paper presented at 13th Annual World Food & Agribusiness Forum and Symposium, Cancun, Mexico. June 21-24, 2003.

Hassine, N.B. (2008). Trade, human capital, and technology diffusion in the Mediterranean agricultural sector. *Economie Internationale* 113, 115–142.

Hernandez, R. and Julio, B. (2006). Supermarkets, wholesalers and tomato growers in Guatemala*. Journal of Agricultural Economics*, Volume 36 pp 281-290.

Hughes, D. (2004). *Consumption trends.* AMT/Landbouweekblad/Vleissentraal Seminaar: Castle Kyalami, Pretoria.

Jackson, G. (1995). *Farmer Strategies for Market Orientation in ACP Agriculture.* Summary Report. Centre for Agricultural and Rural Cooperation. The Netherlands.

Kamau, F. (2008). *The Growth of Supermarkets in Kenya. Opportunities and Challenges for Small-scale Pineapple Producers*. Staff Paper, ESAMI.

Kinsey, J.D. (1999). *The big shift from food supply to a food demand chain.* Reviewed paper. Retail Food Industry Center, University of Minnesota. September, 1999.

Kirsten, J.F. and R.A. Emongor (2006). Supermarkets in the Food Supply Systems in southern African Development Community: A Case of Zambia*. Journal of Applied Sciences* 6(4):800-809, 2006. ISSN 1812-5654.

Lord, J.B. (2005). *How the changing consumer drives food retailing strategy and structure.* Presentation at the Saint Joseph's University, Philadelphia.

Louw,A., Jordaan,D., Ndanga,L., and Kirsten,J.F.(2008). *Alternative Marketing Options for Small-scale Farmers in the Wake of Agri-food Supply chains in South Africa.* Agrekon, Vol 47, No 3 (September 2008).

Lundy, M., Berdegue, J.A., Schutz, P., Balsevich, F., Hernandez, R., Perez, E., Jano, P. and Wang, H. (2004). *Supermarkets and rural livelihoods: A research method.* Staff paper, Michigan State University, September.

Mainville, D., and Reardon, T. (2004). *Modeling relations among supermarkets, intermediaries, and produce farmers in Brazil.* Paper presented at EAAE Conference on Retailing and Producer- Retailer relationships in the Food Chain, Paris, 5-6 May 2004.

Makoka, D. (2005). *The Emergence of Supermarkets in Malawi: Implications for Agrifood Markets and the Small Farmer,* MSc. Thesis .Bunda College of Agriculture, University of Malawi.

Martens, B., Florax, R.J.G.M. and Dooley, F. (2005). *The effect of entry by supercenter and warehouse club retailers on grocery sales and small supermarkets: A spatial analysis.* Paper presented at the American Agricultural Economics Association Annual Meeting, Providence, Rhode Island, July 24-27, 2005.

Mugenda, O.M. and Mugenda, G.A. (1999). *Research Methods: Quantitive and Qualitative Approaches.* Nairobi. Acts Press. Laba Graphics services.

Mukras, M.S. (1986). *Elements of Mathematical Economics.* Nairobi, Kenya Literature Bureau.

Mukras, M.S. (1993). *Elementary Econometrics: Theory, application and policy*. Nairobi, East African Educational Publishers. Kenya.

Neven, D. ,Reardon, T. , Chege, J., Odera, M.M., and Mwaura, F.O.(2005). *"The Rapid Rise of Supermarkets in Kenya: Impact on the Fresh Fruits and Vegetables Supply System.* Final Report. Michigan State University and Kenya Agricultural Research Institute.

Neven, D. and Reardon, T. (2004). "The Rise of Kenyan Supermarkets and the Evolution of their Horticulture Product Procurement Systems". *Development Policy Review*, Vol. 22, Number 6: pp. 669-699.

Ngugi, I.K., Gitau, R., Nyoro, J. (2006). *Regoverning Markets: Access to High Value Markets by Smallholder Farmers of African Indigenous Vegetables in Kenya.* Summary Report, Tegemeo Institute, Egerton University.

Nguthi F.N. (2007). *Adoption of agricultural innovations by smallholder farmers in the context of HIV/AIDS: The case of tissue-cultured banana in Kenya.* Ph.D. Thesis, Wageningen University.

Nyoro, J. (2004). *Re-governing Markets: Securing Small-Scale Producer Participation in Restructured National And Regional Agri-Food Systems. Case of Supermarkets as Outlet for Fresh Fruits and Vegetables (FFV) and Dairy in Kenya and Uganda. East Africa* Summary Report, Tegemeo Institute, Egerton University.

Reardon, T. and Berdegué, J.A. (2002). The rapid rise of supermarkets in Latin America: Challenges and opportunities for development. *Development Policy Review* 20 (4), 371-388.

Reardon T., Timmer, C.P. Barrett, C.B. And Berdegué, J. (2003). "The Rise of Supermarket in Africa, Asia, and Latin America". *American Journal of Agricultural Economics*, Vol. 85, Number 5, pp. 1140-1146.

Roe, T., Shane, M. and Somwaru, A. (2005). *The rapid expansion of the modern retail food marketing in emerging market economies: Implications to foreign trade and structural change in agriculture.* Paper presented at the American Agricultural Economics Association Annual meeting, Providence, Rhode Island, July 24-27, 2005.

Sadoulet, E. and A. De Janvry (1995). *Quantitative Development Policy Analysis.* The John Hopkins University Press, Baltimore and London.

Senauer, B. and Goetz, L. (2003). *The growing middle class in developing countries and the market for high-value food products.* Working paper, The Food Industry Center, University of Minnesota. March, 2003.

Smith, W. (1994). *Market-Farm Linkages and Land Use Change: A Quebec Case Study.* Working paper. Yale University.

Stokke, H.E., (2009). "Multinational supermarket chains in developing countries: does local agriculture benefit?" *Journal of Agricultural Economics*, Vol. 40, pp. 645-656.

Swinnen, J.F.M. and Dries, L. (2004). The rapid rise of supermarkets in Central and Eastern Europe: Implications for the agrifood sector and rural development. *Development Policy Review.*

Tschirley, D. (2007). *Supermarkets and Beyond: Literature Review on Farmer to Market Linkages in Sub-Saharan Africa and Asia.* Michigan State University July 28, 2007.

Uchumi (2010). Available at www.uchumi.com, accessed 10 February 2010.

Vellema, S. (2002). *Making Contracts Farming Work?* Society and Technology in Philippine Transnational Agribusiness. Maastricht. Shaker Publishing.

Vermeulen, H. and Bienabe, E. (2008). *New trends in supermarkets procurement system in South Africa: the case of local procurement schemes from small-scale farmers by rural-based retail chain store.* University of Pretoria and CIRAD, UMR Innovation.

Vorley, B., Andrew, F and Derek, R. (2004*). A Place for Small-Scale Producers in Modern Agrifood Chains?* International Institute for Environment and Development.

Vorley, B. and Fox, T. (June 2004). *Global Food Chains—Constraints and Opportunities for Smallholders.* OECD DAC POVNET. Helsinki Workshop.

Weatherspoon, D.D. and Reardon, T. (2002). The Rise of Supermarkets in Africa: Implications for Agrifood systems and the rural poor. *Development Policy Review,* 21(3), 333.

Wiggerthale, M. (2008). *Supermarket Expansion in the South-A Threat to Small Farmers?* English Summary. EED (Church Development Service). Germany.

APPENDICES

Appendix 1: Manager Questionnaire

1. Name of supermarket ……
2. Branch……..
3. Location ……

Food Procurement Systems

4. What types of agricultural food products do you deal in and what are their respective proportions?

i) Fresh ……..% ii) Staples ……. % iii) Processed ……. %

5. How is the food procurement system organized? (In case of supermarkets with many outlets, is the system centralized or decentralized to the local outlets particularly in terms of fresh produce?)

…….....…….

6. If decentralized, from what sources do you procure your food products?

Five major food products					
Small-scale farmers					
Large scale farmers					
Traders					

7. What proportion of your suppliers is from

a) Small scale ……. % b) Medium sized…....% c) Large scale ……%

8. Please indicate proportion of food products you source from the following sources

	a) Small-scale farmers	b) Large-scale and medium scale farmers
i)	Fresh Produce ….....%	……%
ii)	Staple Food ……%	……%

9. Please provide the list of small-scale farmers who supply fresh agricultural food products for the past year

10. To supply food to your supermarket, what requirements must intending suppliers fulfill?

i. …… iii. ……

ii. ……...…… iv. ……..

10. What problems do you normally encounter during food procurement from?

	Reliability	Quality	Quantity	Frequency of trade
Small-scale farmers				
Large-scale farmers				
Traders				

11. What assistance does your supermarket extend to your suppliers?

	Small scale	Large scale	traders
Service			
i) Credit			
ii) Extension services			
iii) Inputs			

12. What is your assessment of the current and future opportunities of purchasing commodities from small-scale farmers?

	Current opportunity				Future opportunity			
	4=Very high	3= High	2= Low	1=Very low	4=Very high	3= High	2= Low	1=Very low

African Night Shade (Managu)								
Amaranthus (Terere)								
Kales(Sukumawiki)								
Spinach								
Spider Plant (Sarget)								
Cauliflower								
Lettuce								
Cabbage								
Tomato								
Dania								
Bananas								

13. What are your chances of increasing the variety of commodities bought from small-scale farmers?

Currently				In future			
4=Very High	3=High	2=Low	1=Very low	4=Very High	3=High	2=Low	1=Very low

14. What is your assessment of the current and future opportunities of purchasing the listed commodities from small-scale farmers?

	Currently			In future		
	3=Large	2=Small	1=Stagnant	3=Large	2=Small	1=Stagnant
African Night Shade (Managu)						
Amaranthus (Terere)						
Kales(Sukumawiki)						
Spinach						
Spider Plant (Sarget)						
Cauliflower						
Lettuce						
Cabbage						
Tomato						
Dania						
Bananas						

15. If taking advantage of the opportunities by small scale farmers is not going to be easy, what are the reasons?

……

……

16. What would small scale farmers need to do to take advantage of the opportunities created by your business?

i) Good production practices
ii) grading/packaging
iii) Contracting
v) Timing

Appendix 2: Questionnaires for traders/ wholesalers

Enumerator's name…… Date……

Location…… District……

General Information

1. District …….
2. Division ……..…...….
3. Name of the trader……
4. Gender of the trader i) Male ii) Female
5. Age of the trader……
6. Are you licensed? i) Yes ii) No
7. How long have you supplied to the supermarket?

i) <1 year ii) 1-2 years iii) 2-3 years iv) 3-4years v) >4 years

8. Do you collaborate with other traders who sell to the supermarkets? i) Yes ii) No
9. If yes, what information do you share e.g. prices?
10. What types of agricultural food products do you deal in and what are their respective proportions?

i) Fresh ……..% ii) Staples ……. % iii) Processed ……. %

11. What proportion of food products do you supply to the supermarkets?

Product	Quantity

12. Who supplies the products to you?

	Product	Quantity	Price
Small-scale farmers			
Large-scale farmers			

13. Please provide the list of small-scale farmers who supply fresh agricultural food products for the past year

……

14. Apart from the supermarket you supply your produce to, what other channels do you use?

Product	Channel	Volume/quantity	Frequency	Prices	Institution supplied

15. Do you store some of the products before selling to the supermarkets? i) Yes ii) No
16. If yes, how and where do you store it?

……

……

17. Do you experience any problems in storage?

i) Loss of products ii) Lack of proper storage iii) Loss in value iv) Others(specify)

18. What conditions do supermarkets require for you to supply the food products?

……

……...

19. What means of transport do you use?

i) Own ii)Hired iii)public transport iv)others(specify)

20. Are you a member of an organization? i) Yes ii) No

21. If yes, what are the benefits?

i) Negotiation of better prices ii) Access to storage facilities iii) others (specify)

22. If no, why?

i) High registration fee ii) Have capability of marketing on my own) iii) Others (specify)

23. Do you encounter any problems when dealing with farmers?

i) Poor quality of product ii) Do not meet the demand iii) Other (specify

24. Do you offer any extra service to farmers? i) Yes ii) No

25. If yes, which one?

i) Transportation ii) Credit iii) Storage iv) Others (specify)

26. What are the constraints that farmers face when supplying products to you?

i) Transportation ii) Good handling of the products iii) Packing iv) others (specify)

27. Are you aware of opportunities created by growth of supermarket? i) Yes ii) no

28. What is your assessment of the current and future opportunities of supplying commodities to the supermarkets?

	Current opportunity				Future opportunity			
	4=Very high	3= High	2=Low	1=Very low	4=Very high	3=High	2=Low	1=Very low
African Night Shade (Managu)								
Amaranthus (Terere)								
Kales(Sukum awiki)								
Spinach								
Spider Plant (Sarget)								
Cauliflower								
Lettuce								
Cabbage								
Tomato								
Dania								
Bananas								

29. If taking advantage of the opportunities is not going to be easy, what are the reasons?

a) requires heavy investment
b) delayed payment
c) not reliable

30. On a scale below, with 3=high, 2=small and 1=stagnant, how would you rate the quantities of products you a) sell currently to supermarkets?

b) Expect to sell in future? (Large, small, and stagnant)

	Currently			In future		
	3=Large	2=Small	1=Stagnant	3=Large	2=Small	1=Stagnant
African Night Shade (Managu)						

Amaranthus(Terere)						
Kales(Sukumawiki)						
Spinach						
Spider Plant (Sarget)						
Cauliflower						
Lettuce						
Cabbage						
Tomato						
Dania						
Bananas						

31. What do you need to do to take advantage of the opportunities created by supermarkets?

i) grading/packaging iii) Timing

ii) Contracting

32. What are the benefits of supplying supermarket?

i) Better price iii) Transport

ii) Credit iv) Packaging materials

Thank you for your participation

Appendix 3: Producer Questionnaire

Enumerator's Name…… Date……

General Information

1. District …….
   Division ……...…...….
2. Gender of respondent (please tick one) i) Male ii) Female
3. Age …….
4. Highest level of education you have achieved

i) None ii) Std 1-5 iii) Std 6-8 iv) Secondary v) Tertiary iv) Adult literacy

5. Please indicate your occupation…….
6. Type of land tenure system i) Owned (title) ii) Customary iii) Leasehold
7. What is the total acreage of your farm? ……
8. General farming experience in years

i) <5 years ii) 5-10 years iii) 10-20years iv)>20years

9. Where do you sell your commodities?

i) Supermarket ii) Trader iii) Traditional market

10. How much land is allocated to the product sold to the supermarket/market…….....?
11. Farming experience for commodities you supply to supermarket/market

i) < 1 year ii) 1-2 years iii) 2-3 years iv) 3-4 years v) > 4 years

12. Are you a member of any farmers' organization or cooperative? i) Yes ii) No
13. If yes, what is the name of the farmers' organization you belong to?

.....…….

14. What are the objectives of the organization?

i) To negotiate for better prices ii) Offer storage facilities iii) Marketing of your product
iv) Offer inputs v) Other (specify)

15. Do you receive any extension service in your farm? i) Yes ii) No
16. If yes, what are the sources of extension services?

a) District Agricultural Office b) Farmers Organization
c) Supermarkets d) Others

17. Have you ever borrowed a loan to finance in growing the product sold in the supermarket?

i) Yes ii) No

18. If yes, which organization gave the loan?

i) Microfinance institution ii) Co-operative/association iii) Bank iv) Supermarket v) Others

19. When did you commence supplying products to supermarket? ……..…
20. How did you first get access to supply this supermarket?

i) Media ii) Internet iii) Friends/Group iv) Self-inquiry v) Others(specify)

21. Acreage of major crops you grew and supplied to supermarket last season and before supermarket trade.

Land allocated to crop	Current	Before

22. Which supermarket(s) do you supply produce to?

Name of supermarket	Product	Quantity	Maximum Price	Minimum price

23. How often do you supply to the supermarket or market?
a. Daily ( ) b. Weekly ( ) c. Fortnightly ( ) d. Monthly ( )
24. How do you deliver the products to the supermarkets or market?
i) Self ii) Supermarket picks them iii) Through the trader iv) Through group
25. If self, what means of transport do you use to deliver your product to the market?
i) Own vehicle ii) Hired vehicle iii) Public transport iv) other (specify)
26. What is the distance in kilometers to supermarkets? ……
27. Is there any credit advanced by transport? a) Yes b) no
28. Which problems do you encounter when delivering the products to the supermarkets or market?
i) Road ii) Cess iii) Handling of products iv) Perishability of the product
v) Late delivery
29. Under what terms do you supply food products to the supermarket?
i) Cash on delivery ii) Monthly payments iii) Fortnightly iv) Weekly
30. The type and value of farm equipment owned

Type of equipment	Value of equipment
Tractor	
Plough	
Irrigation system	
Panga	
Fork jembe/Jembe	

31. Other type and value of assets

Type of asset	Value of asset(Ksh)
Vehicle	
Bicycle	
Wheelbarrow	
Mobile phone	
Others, specify	

32. What amount of the following inputs did you use last year?

Input	Amount	Price
Labour(man-days)		
Fertilizer(kg/ha)		
Seed(kg/ha)		

33. Apart from the supermarket you supply your produce to, what other channels do you use?

Product	Channel	Volume/quantity	Frequency	Prices	Institution supplied

34a. Do you store, pack or grade some of the products before selling them?
i) Yes ii) No
b. If yes, how and where do you do it?

……
……
35. Do you experience any problems in storage?
i) Loss of products ii) Lack of proper storage iii) Loss in value iv) Others
36. What challenges do you face when supplying the supermarkets?
i) High standard of quality ii) High quantity
iii) High level of frequency iv) Late payments

Perception about supermarket.
The following questions will be used to measure farmer's perception about supermarkets. Please answer all questions by ticking appropriately and scaling them. Strongly agrees is given a scale of 5, agree 4, uncertain 3, disagree 2 and strongly disagree 1.
37. Supermarkets offer reliable market
Strongly agree ( )
Agree ( )
Uncertain ( )
Disagree ( )
Strongly disagree ( )
38. Supermarkets offer better prices.
Strongly agree ( )
Agree ( )
Uncertain ( )
Disagree ( )
Strongly disagree ( )
39. Supermarkets supply inputs to the farmers
Strongly agree ( )
Agree ( )
Uncertain ( )
Disagree ( )
Strongly disagree ( )
40. There is training of farmers/knowledge transfer when producing products to sell to the supermarkets
Strongly agree ( )
Agree ( )
Uncertain ( )
Disagree ( )
Strongly disagree ( )
41. There are reduced risks when supplying to the supermarkets compared to other markets.
Strongly agree ( )
Agree ( )
Uncertain ( )
Disagree ( )
Strongly disagree ( )
42. Supplying food products to the supermarkets increases farm income
Strongly agree ( )
Agree ( )
Uncertain ( )

Disagree ( )
Strongly disagree ( )

43. What is your assessment of the current and future opportunities of supplying commodities to the supermarkets?

	Current opportunity				Future opportunity			
	4=Very high	3=High	2=Low	1=Very low	4=Very high	3=High	2= Low	1=Very low
African Night Shade (Managu)								
Amaranthus (Terere)								
Kales(Suku mawiki)								
Spinach								
Spider Plant (Sarget)								
Cauliflower								
Lettuce								
Cabbage								
Tomato								
Dania								
Bananas								

44. On a scale below, with 3=high, 2=small and 1=stagnant, how would you rate the quantities of products you a) sell currently to supermarkets?
b) Expect to sell in future? (Large, small, and stagnant)

	Currently			Available in future		
	3=Large	2=Small	1=Stagnant	3=Large	2=Small	1=Stagnant
African Night Shade (Managu)						
Amaranthus (Terere)						
Kales(Sukumawiki)						
Spinach						
Spider Plant (Sarget)						
Cauliflower						
Lettuce						
Cabbage						
Tomato						
Dania						
Bananas						

45. What do you think about the ease of selling to the supermarkets your commodities to supermarkets?

a) Directly b) Thru' traders c) Thru' farmer group	Directly			Thru traders			Thru farmer groups		
	1= Very easy	2= Easy	3= difficult	1= Very easy	2= Easy	3= Difficult	1= Very easy	2= Easy	3= Difficult
African Night Shade (Managu)									
Amaranthus (Terere)									
Kales(Sukum awiki)									
Spinach									
Spider Plant (Sarget)									
Cauliflower									
Lettuce									
Cabbage									
Tomato									
Dania									
Bananas									

46. If taking advantage of the opportunities is not going to be easy, what are the reasons?
    a) requires heavy investment
    b) delayed payment
    c) not reliable

47. What do you need to do to take advantage of the opportunities created by supermarkets?

i) Change in cropping pattern
ii) Good production practices
iii) grading/packaging
iv) Contracting
v) Timing

48. What are the economic benefits of supplying supermarket?

i) Better price
ii) Credit
iii) Transport
iv) Packaging materials

Thank you for your participation