FACTORS INFLUENCING COMMERCIALIZATION OF GREEN MAIZE IN NANDI SOUTH, NANDI COUNTY KENYA

BY

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DECLARATION

Declaration by the Student

I declare that this thesis is my original work and has not been presented for the award of degree in any another university. No part of this thesis may be reproduced without prior written permission of the Author and/ or Moi University

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DEDICATION

This work is dedicated to my beloved wife Mercy Cheruiyot, children Kipkoech, Kimaru, Jerop, and Jepkurui. To my parents Sosten Cheruiyot and Anjaline Cheruiyot, siblings and all my friends for their inspiration, encouragement and continuous support throughout the entire process of writing this research thesis.

God Bless you all.

ABSTRACT

The purpose of this study was to assess the factors that influenced the commercialization of green maize in Nandi South, Nandi County. The Study aimed at investigating the reasons why farmers opted to sell green maize rather than wait to sell it as dry cereals. The study aimed at achieving the following objectives; to analyze policies that guide the commercialization of green maize; to assess factors that motivate farmers to sell their green maize, to evaluate the consequences of the sale of green maize and to assess the positive ant the negative results of the sale of green maize. The study utilized purposive sampling and simple random sampling technique. The study employed descriptive survey design with questionnaires and interview schedules as data collection instruments applied to sample of 188 respondents. Both qualitative and quantitative methods were used to analyze data. The findings of the study are as follows: the huge profits realized in the business motivated the farmers to sell green maize, the rising cost of farm inputs, the challenges farmers are facing in the entire business, incidences of corruption, vices and theft cases have been on the rise, lack of clear government policy on commercialization of green maize. Commercialization of green maize harvests has effects on long-term food security. It has attracted unscrupulous business men who con farmers. Government policy is not strong in protecting farmers. Based on the findings, recommendations were made to capture the benefits of commercialization of green maize and their disadvantages. There is need for clear policy framework to help the farmers. To assess the negative consequences of commercialization so as intervene on behalf of farmers.

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DEFINITION OF TERMS

Commercialization of maize: Maize sold for profit other than for subsistence consumption

Green maize: Maize cobs ready for consumption but not dried for milling

Nixtamalization: the process for the preparation of maize (corn), or other grain, in which the corn is soaked and cooked in an alkaline solution, usually limewater (but sometimes wood ash lye) washed and then hulled.

LIST OF ABBREVIATIONS

AFC	Agricultural Finance Corporation
APRM	African Peer Review Mechanism
CGM	Commercialization of Green Maize
FSM	Food Security Measure
GMHS	Green Maize Harvesting and Sale
GMH	Green Maize Harvesting
GMS	Green Maize Sale
KANU	Kenya African National Union
KNBS	Kenya National Bureau of Statistics
KWFT	Kenya Women Finance Trust
NARC	National Rainbow Coalition
NCPB	National Cereals and Produce Board
NEPAD	Northern Economic Partnership and Development
NFS	National Food Security
QPM	Quality Protein Maize
SAP	Structural Adjustment Programme
SPSS	Statistical Package for the Social Sciences.

CHAPTER ONE

BACKGROUND OF THE STUDY

1.1 Introduction

This chapter discusses the background of the study, problem statement, objectives, research questions and significance of the study. Furthermore, it brings out the justification for the study, limitations, delimitations and the scope of the study.

1.2 Background of the Study

The chapter covers the origin of green maize and its different uses. It entails the factors boosting its commercialization, and its value compared to vegetables. Most historians believe maize was domesticated in the Tehuacan Valley of Mexico. Recent research modified this view somewhat; scholars now indicate the adjacent Balsas River Valley of south-central Mexico as the center of maize domestication. The Olmec and Mayans cultivated maize in numerous varieties throughout Mesoamerica, cooked, ground or processed through nixtamalization. Beginning about 2500 BC, the crop spread through much of the Americas. The region developed a trade network based on surplus and varieties of maize crops (Bruce and Hugh, 1990).

After European contact with America in the late 15th and early 16th centuries, explorers and traders carried back maize to Europe and introduced it to other countries. Maize spread to the rest of the world because of its ability to grow in diverse climates. The Sugar-rich varieties called sweet corn are usually grown for human consumption as kernels, while field corn varieties are used for animal feed. The various corn-based human food uses (including grinding into cornmeal or *masa*, pressing into corn oil, and fermentation and distillation into alcoholic beverages like bourbon whiskey) and as chemical feedstock (Head, 2016).

Matsuoka *et al.* (2000), has demonstrated that, rather than the multiple independent domestications model; all maize arose from a single domestication in southern Mexico about 9,000 years ago. The study also demonstrated that the oldest surviving maize types are those of the Mexican highlands. Later, maize spread from this region over the Americas along two major paths. This is consistent with a model based on the archaeological record suggesting that maize diversified in the highlands of Mexico before spreading to the lowlands. Before they were domesticated, maize plants only grew up to 25 millimetres (1 in) long corn cobs, and only one per plant. Many centuries of artificial selection by the indigenous people of the Americas resulted in the development of maize plants capable of growing several cobs per plant that were usually several centimetres/inches long each (Matsuoka *et al.*, 2000).

In Asia, this crop has rapidly become a stable food; this is in addition to the many uses in both the dairy and industrial sector. It has also been used as an alternative source of energy in countries like the United States of America, who consider hydro energy as a more expensive source.

Maize is central to Mexican food. Virtually every dish in Mexican cuisine uses maize. In the form of grain or cornmeal, maize is the main ingredient of *tortillas, tamales, pozole, atole* and all the dishes based on them, like *tacos, quesadillas, chilaquiles, enchiladas, tostadas* and many more. In Mexico even a fungus of maize, known as huitlacoche is considered a delicacy.

Introduced into Africa by the Portuguese in the 16th century, maize has become Africa's most important staple food crop. Maize meal is made into a thick porridge in many cultures: from the *polenta* of Italy, the *angu* of Brazil, the *mămăligă* of Romania, to cornmeal mush in the US (and hominygrits in the South) or the food called *mealie pap*

in South Africa and *sadza, nshima and ugali* in other parts of Africa. Maize meal is also used as a replacement for wheat flour, to make cornbread and other baked products. Masa (cornmeal treated with limewater) is the main ingredient for tortillas, atole and many other dishes of Central American food.

In Kenya, the maize crop is harvested, it is dried and shelled. The maize cereal attained are put to different uses, such as posho flour for making *ugali*. Currently, green maize is becoming popular with the urbanite populations who use the maize to make *githeri* local meal of mixed beans and maize.

In many households in Kenya, dried maize cobs serve as alternative source of energy used for cooking. The maize stoppers are used to make silage for the dairy sector. McCann (2000) pointed out that, by 1920s, maize cereals had become a dominant cereal crop to both African & European farmers in Kenya.

In the recent past, there has been an increase in the harvesting of green maize for sale. Many farmers sold their crop to traders who transport them in large quantities to various towns of Kenya. Others sold green maize to silage makers. These practices may have an effect on the availability of dried corn for *ugali* and hence may impact on food security of the Nation.

Ngethe and Owino, (1990: 34) asserts that, "Policies on food security and self-sufficiency spans all the major policies of increasing agricultural productivity, such as marketing and pricing, research and extension, infrastructure, credit and major input policies". Evidence suggests that the commercialization of green maize affects food security and exacerbates household poverty.

This study therefore sought to establish the factors that make farmers to commercialize green maize in Kenya and in Nandi South in particular.

1.3 Statement of the Problem

Since the late 1980's, green maize has become a new cash crop for many farmers who are now diversifying their crop production due to the new market prices. According to the Ministry of Planning's report of 1989, there is shortage of maize due to the inability of farmers to produce enough maize to satisfy the supply and demand of the growing need of urban population. According to Adebowale (2004), the demand for maize exceeds the supply. Besides being staple food for most households in Kenya it is also used manufacturing livestock feeds, industrial baking and brewing industries.

Maize production is however dominated by the small scale farmers who use traditional methods which do not meet the demand of the society. They use simple, low input technology, resulting in low land and labour productivity, (F.A.O, 1999). This problem is compounded by the absence of tolerant local maize varieties to rust diseases, (Iken et al, 2004). Pests and diseases are important natural factors that limit the production of maize in several cases; pests can account for 100% loss of the green maize in certain case (Sight *et al*., 1997). Despite the challenges facing the production of green maize, farmers in Nandi South have embraced this type of agriculture. This raises questions why farmers engage in commercialization of green maize? What policies encourage or discourage commercialization of green maize? What are consequences of green maize commercialization? These questions have played a role to this industry.

The policy makers need empirical data to guide the development of suitable economic policies that would guarantee the improvement of green maize production systems, for the maximization of the maize farmer's profit margin.

The study raises some of the following questions: What are the socio-economic challenges of commercialization of green maize farmers in Nandi South? Has the

commercialization of green maize in itself increased maize production or resulted to maize reduction? Why did the efforts in the past towards increased maize production fail to yield the desired result of self- sufficiency in maize production? What is the effect of production inputs in maize output in Nandi South?

Main Objectives of the Study

The main objective of the study was to assess the factors that influence commercialization of green maize in Nandi South.

1.4. Objectives of the Study

The specific objectives of the study were to

i. Analyze government policies on commercialization of green maize
ii. Analyze factors that motivate farmers to sell green maize
iii. Assess consequences of commercialization of sale of green maize
iv. To assess the advantages and disadvantages of the sale of green maize

1.5 Research Questions

i. Which policies guide commercialization of green maize?
ii. What factors motivates farmers to sell green maize?
iii. What are the consequences of green maize sale?
iv. What are the advantages and disadvantages of the sale of green maize?

1.6 Significance of the Study

The study is importance because it contributes to knowledge to farmers who par take the commercialization of green maize. The study assesses the profit earned as compared to the dry maize harvest It assesses the profitability as compared to the dry maize

harvesting. The study brings to attention the role of the government in policy formulation towards the entire business of green maize. The study examines to what extent the policy makers in the Ministry of Agriculture educate the farmers on food security and good storage facilities in the farms. The government may use the findings and recommendation in policy making to achieve food security.

1.7 Justification

The purpose of the study was to establish the real causes of green maize commercialization and its long term effects on the country's food security. The rationale behind this study is to provide a functioning system, where information is properly shared. The data attained during the study will be useful and relevant to Kenya in enhancing food security policies. The study highlights the increasing concern on the consequences of commercialization of green maize. Furthermore, the results are helpful to the Ministry of Agriculture and other policy makers in understanding the reasons behind farmers' decision to sell green maize rather than wait for it to dry. The study further adds information to the existing literature on food security and the green maize commercialization. Food insecurity in Nandi South District of Nandi County, the bordering counties and Kenya in general, has been on the rise and conversely a threat to all aspects of National Food Security. On the other hand, green maize harvesting and commercialization offers an alternative to the farmer; though short lived. The information from the study will subsequently be valuable to other scholars and researchers, as point of reference.

1.8 Limitations of the Study

The researcher was constrained by vastness of the area covered and its terrain. To overcome this vastness and its terrain the researcher used several means trucks

transporting maize, motorbikes, bicycles, tractors and walking. There was also suspicion and negative attitude by both the farmers and the middle men towards the research fearing the study may affect their businesses. To overcome this, the researcher had to participate in some of the activities including harvesting and loading with them to cultivate trust.

From the study it was not possible to get a clear picture and the true value paid in the entire transaction. There are incidences of business men colluding with the brokers by reducing measurement of standardized maize fields to meet their interests. There are no clear policies linking to the commercialization of green maize. The intended profit was not realized hence losses incurred.

1.9 Summary of the Chapter

Maize has evolved over the years and will further undergo improvement. Many maize growing nations have developed policies to safeguard both producers and consumers alike. It is in this that the production of maize in a unit area has doubled. From the available materials it shows that profit is the guiding principle in the varied use.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter reviews literature on the factors that influence the sale of green maize ventures.

Specifically, it reviews literatures on policies on the sale of green maize, the factors that motivate farmers to sell green maize, the consequences of selling green maize, and the advantages and disadvantages of selling green maize.

2.2 Policies Guides on Commercialization of Green Maize

Failed government agricultural policies are held responsible for food problems. Mr. William Ruto, the then Minister of Agriculture, proposed maize duty waiver, to remain in place until June 2009. However his proposal was implemented much later in 2011. This was to help build the country's food Strategy Grain Reserve (S.G.R). Mr. Ruto observed that the farmers' plight resulted from unfavorable weather condition. He gave directives that the deficit be imported by the government. However, this was not the case due to the many challenges the government faced. It is alleged that the Government has good policies, but lacked the executing power because of personal interest of political class (Apiyo *et al.,* 2006).

The government of Kenya has had a long term national planning strategy which has always remained unimplemented. The strategy was designed by the Kenya African National Union (KANU) Government and in 2003 was handed over to the National Alliance Rainbow Coalition (NARC) government. Its objective was to be realized by 2018. This long term planning strategy later changed to 2030 and was coined as Vision 2030. Its objective is to make Kenya an industrialized state (www.vision2030.go.ke).

A state, where basic needs like health and food security would be availed to all its citizens. The vision 2030 is based on three "pillars" (APRM report, 2007: NRB. 1); the economy, the social and political factors. In order to achieve this meaningful development, the state is expected to put emphasis on the very basic ideals of it becoming a source of food; which will pave way to enhance progress and development. The other major challenge towards the realization of a good and working national food security policy and which is a promotion of green maize are vices like corruption, unfair distribution of government resources and also social and political challenges, Omosa (2007).

In a report to the Agriculture Policy Council, Omosa (2007) made a recommendation to the government titled, 'Basic Direction of Agriculture Policy in the 21st Century'. This raised many queries concerning the policy of dealing with prices of farm outputs. The policy looks critically at the prices received by farmers and paid by consumers for farm outputs. As a point of focus by Mellor (1968), output policy revolves around the allocation, income distribution and investment and capital formation in agriculture. If this policy can be enhanced, farmers can get better returns of their investment in agriculture as any other business. Anderson points out a policy that subordinates agriculture to the needs of industrial growth is different from that that treats the agricultural sector as a source of growth employment in its own right (Anderson, 1979).

With an established policy, the government is able to plan its food security measures. With consumption rates of 40,000,000 bags of cereals per year, the surplus would earn the government enough saving, save from the destruction of maize affected by aflatoxins, imported by selfish, corrupt citizens. Putting in place efficient supply chain management by a non – profit making agency and private business investors, the Agriculture Trading and professional promotional pilot project has led to success in

agribusiness in other parts of the sub Saharan countries. The same has been done throughout Kenya and more so, by facilitating through institutions like Agricultural Finance of Cooperation (AFC) to alleviate maize farmers. This is exactly what Nandi County would be doing in the near future, strengthening its monetary power so as to ease problems her farmers experience during the harvesting period (Ellis, 1997, p.69).

"The food policy will need to be sufficiently flexible to adjust to policy decisions taken from other sectors of the economy". Kenya was confronted with food shortages and forced to import maize, wheat and milk. The table below shows the comparison.

Table 2.1: Imported goods (powder) during 1981.

Maize	350,000 tons
Wheat	118,000
Milk	13,000

Table 2.1 above, shows the consumption rate of maize as compared to other food products. The table supports the need to have clear policy on maize importation; it calls for the farmer motivator so as to make the maize farming a business.

The experts are able to calculate the probable maize consumption when green maize finds its way to the market. Good food security planners in many African countries, Kenya included, tend to ignore the consequences. According to Ellis (1997), this leads to what the writer said, "Policies experts are pilling pressure on the government to ban the sale and consumption of the G.M.H. as one of the ways out for the country, on food security"

2.2.1 Credit facility policy.

The government came up with *kilimo biashara* policy meaning commercialization of farming as a bid to earn profit. They encouraged farmers to borrow loans from

institutions with low interest rates. It was for this that the country did register a bumper harvest in the year 2012.The policy called upon the general population to adapt to new types of food, as a way of combating hunger.

According to Anderson (1995.8);

> A policy is what the government ought to do or not do, depending on the demands. Policies are typically instituted to avoid some negative effect that has been noticed in the organization or to seek some positive benefit. A policy is typically described as a deliberate plan of action to guide decisions and achieve relational outcome(s).

Gay (1988.4) observes that;

> Public policy is the sum of the activities of governments, whether acting directly or through agents, as it has an influence on the lives of citizens.

From the argument above, it became notable that unclear policy statements have been formulated and imposed. As a result of the food shortage of 2008- 2009, the government lowered the prices of 5kg of maize flour to ksh.140, but that was not sustainable. This made the government to further formulate policies geared towards eradicating hunger under the policy dubbed "Njaa marufuku". The purpose of "Njaa marufuku" in Kenya was to assist her farmers with affordable farm inputs to grow food and be able to fight poverty, which is associated with hunger *(njaa)*. Its intended purpose was to guarantee food security, and to further ensure self-reliance of staple food supplies. As Gitu, (1992:43) highlights "Maize is the main food for 300 million people in Africa," is in support with the statement above. With the policy in place, the unfavorable climatic conditions have not affected the farmer. However, it has given the researchers, governments, lead companies and farmers the responsibility of ensuring that maize production does not collapse.

Ngethe and Owino, (1990: 34) asserts that, "Policies on food security and self-sufficiency span all the major policies for increasing agricultural productivity, such as marketing and pricing, research and extension, infrastructure, credit and major input policies". Some policies associated with agricultural activities on many occasions, have not been accommodative to the steady and constant supplies of dry maize by farmers to government agency, the National Cereals and Produce Board (N.C.P.B), (Standard Newspaper, 2010 October).

The worst came when the board chose not to buy maize but instead, it offered warehouses for storage to the farmers. This did not solve the farmers' plight, consequentially risked an increase in the country's food insecurity, creating disagreements within the government. Wahome (1994), in her deliberation, said that agricultural policies related to dairy industry which also relies on maize products be in line with agricultural financial services.

Secondly, there is need for a strong and sound sustainable policy on credit assistance, to guide the financial institutions towards lending, to support farming. However some farmers still hope for getting easy and affordable credit to enhance their prosperity. But that has remained a dream. The Government, through Equity Bank and other financial institutions has channeled its financial credit (assistance) to youth and women as a way of encouraging farming and fighting poverty, (IFM, 2011). This has become a success through the policy of "*kilimo biashara*" credit facility. Thirdly, successful policies on both pre and post-harvest activities should ensure an infrastructural development polices and measures ought to be clearly stated and prioritized by the government.

With 'Kilimo Biashara' the Ministry of Agriculture officials were involved in educating these farmers. This led to a new mode of farming. Now, with subsidized credit, farmers

were able to cultivate and plant their farms. This meant that they were able to purchase the right fertilizer for the same unit, unlike the previous years. From previous studies, farmers had been known to cultivate late and only once per year. But when it came to application of fertilizer, less than 25 kgs of fertilizer per acre was applied, (Ministry of Agriculture 2010). This led to poor crop production.

Other contributing factors which help create and stabilize market price include; animal fodder, the green maize harvesting, the dry maize harvesting, which is commonly known as " *Gorgoro*" ; (a 2 kg tin borrowed from Luhya community from the western Kenya). Also, its mixture is used in brewing the local brews commonly known as *"Busaa*" a local alcoholic drink made from fermented millet flour. In addition to the stated factors, farmers are expected to adapt to the new and improved system of farming; that is cultivating twice and it need be the dry ploughing. It is expected of the farmer to plant before the start of the rain (dry planting). In order to realize good harvest, farmers were supposed to buy certified seeds and recommended fertilizers for good (Ministry of Agriculture 2010)

Secondly, launching of the poverty eradication program and the *Kilimo biashara* credit facility, impacted on the general development of agriculture. The effect of global world trade shift has had enormous negative impact on the local farmers and as a result of none governmental intervention, many farmers are demoralized (Maarifa vol. 2 no 1: 2007). And for this reason, many have opted to diversify in new areas whose risk cannot be anticipated. It is unfortunate to the farmers that good arable lands, in most parts, are being converted to plant trees in expense of maize or any other food stuff.

On the same view, Mwaniki (2009) highlights the enormous investment by farmers. The farmers are anticipating an improvement in their production and recover

investment borrowed from financial institution. The green maize becomes handy by offering an immediate solution towards honoring the borrowed financial obligation. Farmer's problems are the businessman's joy. The businessmen are after make quick profits whereas the farmers' intention is to service their loans and meet their other obligations.

Recently, in the Kenyan media, the minister of Special Programmes said that the imported maize infected with aflatoxin be used for animal feed. This shows the level of consideration between imported and local crops. They can still afford to risk human life, yet it is known that has happened in many parts of Africa and Asia where maize has become a dominant crop for agricultural economy for many countries.

Mwiniki's report shows that every successful farming activity, be it cereals or any other, are determined by good markets. As a matter of principle, most developed countries have taken good care of their farmers unlike the developing countries.

2.2.2 Analysis on price reduction policy

Some of the food policies instituted in Kenya have played a significant role in promoting better food production. Farmers were supplied with one bag of fertilizer and a 10 kg of Hybrid seed). This, according to literature, has discouraged the commercialization of their farming activities (example of literature here. The year 2010 was a good year for those living in urban areas more so in slums; the Government lowered maize flour to ksh.52 for two kilograms. An extract from the World Bank said, "As governments have reduced their intervention in agricultural markets, there has been a corresponding reduction in the share of public expenditure directed toward agriculture" (Geier, 1995). This can be fully contested with thousands of acres lying

fallow (Ministry of Agriculture 2011). It has therefore compromised the country its food production and an increase in C.G.M.

Policies can be categorized into two ways, either, to give the farmer freedom to do what he or she likes best. And second is that the government to impose restrictive policies. The cost incurred in farming has shot up in recent years as in the 1980s following the global economic crises and the introduction of the S.A.P.S. (Structural Adjustment Programs). The SAPS favored the western states whose investments are more technological (Arunachalam, *et al.,* 1995).

Reports based on some experts, policy matters have ended up being a setback to farmers, and calls for urgent review. But this is a lot easier said than done. It is difficult to reverse the changes, bearing in mind that some sectors are manned by government officials who are instrumental in the green maize business and are found to be discouraging policy formulators and implementers (Apiyo and Omolo 2006). The worst scenario was when Kenya was going through a hard time in 2011 as a result of severe drought. The country, in 2010, had seen a lot of C.G.M. taking place, Gituku, (1992).

The government has not openly acknowledged that the per capita consumption of maize is increasing every year while the production is stagnating. The country has been suffering from structural food deficit Since 1990s." (Ministry of Agriculture, 2011). If the government in future is to push for a ban of the CGM, the first causalities will be farmers. In the wider view and advice to the state, first, is to budget for and consider the domestic food security of the farmers. By so doing, food security shall have been checked. Commercialization of green maize appears a small issue and that can get a quick solution, but slowly undermining the ability to tame food insecurity.

Several policy makers brought on board the need for the government to ban the sale and consumption of green maize as a measure and an effort of lifting the country out of food insecurity. The government side insists that farmers have the free hand to decide. This is true but there shall be a moment when the government will shoulder all the burden of hunger and poverty. But besides all policies, this seems to contradict the Article 39 of the Rome treaty where it emphasizes on the purpose of market stabilization on common agricultural policy (Neville and Mordaunt, 1993). The food analyst pointed out the planned roll-out of grain warehouse system (GWS) by the National Cereals and Produce Board (N.C.P.B.), as it presents an opportunity to formulate policy that would limit the sale of green maize. This Grain Warehouse System policy became a supporter to CGM.

However, it raises contentious issues from the proponents who argue that the enactment of such policy will be against the free market principles. "Governments were once active in production, processing, and trade, but the rise of supply chains and the application of more rigid grades and standards. Hence, it would require governments to act more as facilitators by developing and enforcing the rules (The World Bank, 2005)". To shed more light on policy understanding, it was able to, "…to evaluate the effectiveness and morality of the policies" (Guy, 1986). In the fight against hunger, the food security experts, such as *Tegemeo,* view CGM as a waste. The roasted/ boiled maize is eaten as snacks and a consumer ends up eating the expected moment's meal. But that is not the case for struggling Kenyans. "The sale of green maize by farmers in Nandi County is likely to compromise food security".

Thus "farmers in the region risk hunger next year unless they stopped selling their green maize. Tens of lorry loads of green maize leave Aldai constituency daily for Eldoret, Nakuru, Nairobi and neighboring towns of Kisumu and Kakamega. This was

lamentation by a woman who has been subjected to hunger by her neighbors (Ministry of Agriculture Nandi South, 2012).

Nandi county, and particularly Nandi South District, receives adequate rains sufficient for maize growing as compared to other areas where there is shortage of rain. Local farmers who make large amounts of money daily from selling green maize, are not about to stop selling green maize. Pricing policy is one of the decisions at the heart of Africa's agricultural growth in many African countries (Rukuni and Eicher, 1994).

However, on some occasion the same piece is going for as low as ksh.1500. Green maize harvesting is a threat to food security as published on 01/07/2009, (Ministry of Agriculture Nandi South, 2012). "Come September, we are likely to see yet another failed harvest in marginal areas, and low production in the Rift valley and Central province the grain basket". The then Minister of Education, Dr. Sally Kosgei and Agriculture minister, Mr. William Ruto, were appealing to the farmers to be patient until the crops mature for harvest. With the current price, farmers are not in a position to store any cereals.

2.3 Factors that motivate farmers to sell green maize

Behavioural influences have played a major role in enhancing the growth of commercialization of green maize. Maize farming in Nandi County has varied planting times and harvesting. From the variant time, it is argued that influence depends on the time and event. Omosa (2007), stated that when maize cereals are produced abundantly, farmers are likely to adopt group behaviour. Like Omosa and Omondi (2009), called for a Kenya campaign for ban of green maize commercialization. According to him, green maize commercialization hurt the state and the farmers alike. This business impoverishes the farmer in two ways, the short and long term. Farmers' investment can

be exhausted in a very short time. For instance, farmers have been paid with fake currency notes. The collective behavior has allowed middlemen to exploit farmers. This has given corrupt individuals an opportunity to exploit the situation. Losing all income in one harvest strains the farmer who may not be able to acquire farm inputs for the next crop.

2.3.1 Higher returns to farmers

Commenting on the exploitative nature of C.G.M., Omondi notes that it benefitted the middlemen and businessmen than the farmer. The C.G.M. business had more adverse impact on most farmers. The high return depends on proper farm preparation. Well-tended farms have been known to fetch up to ksh 50,000 per unit acre. In Nandi South District, most average farms fetch between ksh 20,000 and ksh 30,000 in the same unit area, (Ministry of Agriculture-Nandi Kapsabet, 2012).

Mathenge (2004), in her study, reported that C.G.M. has eaten into the country's basket and is claiming up to 40 to 60% of maize produced in Nandi County. This may be an indicator of quick reforms. For farmers, it is the expansion of production per unit area of green maize. The Ministry of Agriculture maintained that banning of green maize commercialization will put the government in a worse situation in its fight against poverty and unemployment. The then director's sentiments were echoed by many farmers who said that it is upon the government to come out clearly on the market policies. If anything, it is the farmers who have taken the burden of feeding the hungry and poor. Still on the same, the Ministry of Agriculture insisted that the state should ban C.G.M. as a measure of building food security, as this will boost the price value after harvest in the corn oil production.

In the literature, it was noted that '*githeri*,"a local meal of the mixture of maize cereals and beans have become popular country wide. The basis of the argument before tabulation may seem not to be realistic but the argument itself is real. An estimated 23 million bags is consumed as C.G.M.as compared to the annual national consumption of 37 million bags (www.ascleiden.nl/pdf/paper07112002.pdf). This leaves behind about 14 million bags as dry maize harvest.

Public officers and politicians do not seek to win the trust of farmers. For example, Kenya's Finance Minister proposed the need to reduce import duty on maize, wheat, and rice. Farmers thought of this as an attempt to empower the importers at the expense of the farmers whose maize and other cereals have not been bought by the government.

2.3.2 Spread of Commercialization of Green Maize

The Ministry of Agriculture report of 2012 pointed out that commercialization of green maize has become popular and backed by farmers' demands. Harvesting periods is varied. In areas like Kaptumek, Kongoro, Kobujoi and other neighboring areas, harvesting starts in the months of January to March. This is unlike Kaptumo, Kaboi and Mugundoi whose's harvesting ends in April. Business delay as one move towards the eastern part of the county like Lessos and Ndubeneti areas where harvesting occurs in months of August and September. Looking by the trends a natural calendar for maize harvesting while still fresh in Nandi County comes to being as indicated by the Ministry of Agriculture Nandi County. The report from the ministry showed popularity of C.G.M. and is cutting across the country. The study therefore looks at counties like Narok, Bomet, Nakuru, Kisii, Kakamega, Bungoma, Vihiga Trans Nzoia, Elgeiyo Marakwet and Uasin Gishu. Similar activities have been noted in other countries.

A report from UN-OCHA (2010) on Ethiopia's food crisis showed that green maize is empowering the farmer, but this does not sustain the farmer as well as the state. The report indicates that, "In a time span of only three and half hours the mission observed 16 trucks filled with green maize traveling from Boditi via Shashheme to Addis in 1984." This shows the popularity of the commercialization of green maize and how widespread this economic activity has broadened.

2.3.3 Profits in the Green maize business

Green maize commercialization, like any other business is profit engineered. This profit as such, is enjoyed by many players, the middlemen, businessmen, the farmers and lastly, those at the market environment (Muller, 2001, p.25). The green maize has its own success and challenges and affects the farmer in several ways including, the decrease in the amount of subsistence maize for the farmer. Despite the enormous challenges, the farmer still earns some profit. As stated above, the little and unsteady income and the land holding capacity has reduced dry maize production. That is why each year; the number of farmers selling their maize has increased by three folds. However, it highlighted the government's involvement especially when deaths, resulting from hunger, are published in Kenyan papers.

2.3.4 Production as a Motivator

The standard measurement of production per acre during harvesting is varied. According to businessmen buying green maize, their measurement is based on seed dispersal. There is an allowable margin of 0.2 acre over and above the normal acre. Well sowed seeds fetch a good price. This sounds negative, but in the long run, it affects production and price of dry maize harvesting.

Kiruki (2004), argues that man is a social being and it is this perspective that entrusts compels man to provide for the whole society. By assumption, this social being has failed on the duty vested upon him by the country's constitution. Thus, his failure as a role model in the society has created his own destiny. He said: "society hence is proper to man on account of his rationality and that is also to the state" (Kiruki, 2004: pg 228).

Upton (1996) notes that farmers' constraints are: land, planting and weeding labor. All other problems from financial, poor seed production, cost in digging are part of the farmers' misery whereas the government is busy with the vision 2030. However, the vision has set a road map to development. This is a reality and is the story that must be told. Food should be found on every table. The set constraints attributed to land, planting labor and weeding labor are showing how the farmers are suffering. This explains the amount of seeds planted per acre, and how farmers, being human, may decide to congest the seeds in the field, for better harvest.

2.4 Consequences of Commercialization of Sale of Green Maize

Maize is a staple food, with a big demand Maize was, and still is grown, to supplement human food and fodder for dairy animals. Its products are used in industries, maize cereals also provide for the extraction of products that are used in industries as a source of energy and for brewing alcoholic beverages i.e. beer and local brews.

In Asia, this crop has rapidly become a stable food, this is in addition to the many uses in both the dairy and industrial sector. It has also been used as an alternative source of energy in countries like the United States of America, who consider hydro energy as a more expensive source (Peters, 1986).

It supports other sectors, such as livestock, poultry and other farm animals.

Table 2.2: Value (millions of tons) of maize compared with vegetables

Vegetable	**Global**	**Total Value**				
Value	U.S.A.	Mexico	Peru	Kenya	Thailand	China
Vegetables	13,300	904	157	276	4278	
Maize	32500	3101	1594	298	277	9072

Source: ***Peter*** **(1986)**

According to FAOSTAT, maize is grown in about 1.6 million hectares. This shows that the green maize production is growing fast as compared to vegetables and is consumed by more than half of the world's maize producing countries. "Elite" and *"choclo"* are green maize types of Mesoamerica and the tribes (faostat.fao.org/site/339/default.aspx)

It is evident that factors like profit earned, quick cash payments, cheap source of food and nutrition, made commercialization of green maize attractive. With the availability of a ready market and high demand of it, the farmers sell their green maize which frees the fields, for planting new crops thereby doubling their profit. This makes Nandi South to harvest two maize crops in one season. The profit realized from both crops make other farmer sell their crops too. About the readily available cash, the farmer gets the money when he/she desires, based on the demands. The green-maize-based foods are considered a source of cheap food. Preparing roasted and boiled maize takes the least time and is popular. The green maize food in many countries offer delicious meals offered as a snack.

2.5 Advantages and Disadvantages of the Sale of Green Maize

The green maize is eaten with vegetables and is mixed with other food stuffs. Judith (2005), saw scarcity of food in Africa, as an enticement to green maize commercialization. Given the rising growing popularity of Commercialization of Green

Maize (C.G.M) in Kenya, the study focused on Nandi South District of Nandi County. Although farmers know the traditional farming methods, Upton (1996) argues that uncertainty in farming has affected farmer's production. This has given the farmers an opportunity to think otherwise; selling their crops at whatever stage of maturity. Kimuyu (2009) argues that there are distinct business communities competing for similar market commodities, in the absence of external influence; with a social network, capital generates the greatest private gains and cost reduction grows at the expense of others. The local businessmen have been enjoined into the business by other traders and are now transporting their produce to urban centers, (Fotosearch, 2008)

The leafy stalk of the plant produces separate pollen and *ovuliferousin florescences* or ears, which are fruits, yielding kernels (often erroneously called seeds). Maize kernels are often used in cooking as a starch. Green maize is eaten by more than half of the world's maize producing countries, as a source of nutritious and staple food. The odd thing is that, it is eaten sometimes as snacks and not as a main course of the meal. This does not mean that others are not having it as their only daily meal.

According to, Mkandawire (1987), roasted dried maize ears with semi hardened kernels, coated with a seasoning mixture of fried chopped spring onions with salt added to the oil, is a popular snack food in Vietnam. Cancha, which are roasted maize chulpe kernels, are a very popular snack food in Peru, and also appears in traditional Peruvian ceviche. Unleavened bread called *makki di roti* is a popular bread eaten in the Punjab region of India and Pakistan.

Chicha and *chicha morada* (purple *chicha*) are drinks typically made from particular types of maize. The first one is fermented and alcoholic, the second is a soft drink commonly drunk in Peru. Corn flakes are a common breakfast cereal in North America

and the United Kingdom, and found in many other countries all over the world. Maize can also be prepared as hominy, in which the kernels are soaked with lye in a process called nixtamalization; or grits which are coarsely ground hominy. These are commonly eaten in the Southeastern United States, foods handed down from Native Americans, who called the dish *sagmaite.*

The Brazilian dessert *canjica* is made by boiling maize kernels in sweetened milk. Maize can also be harvested and consumed in the unripe state, when the kernels are fully grown but still soft. Unripe maize must usually be cooked to become palatable; this may be done by simply boiling or roasting the whole ears and eating the kernels right off the cob. Sweet corn, a genetic variety that is high in sugars and low in starch, is usually consumed in the unripe state. Such corn on the cob is a common dish in the United States, Canada, United Kingdom, Cyprus, some parts of South America, and the Balkans, but virtually unheard of in some European countries.

Maize cereals are also used to make *githeri* (a Kenyan local meal of mixed beans and maize). The green maize is either eaten as boiled, roasted or served with other cereals like beans, peas and snow peas. This type of food is readily available in most markets in Kenya. For it is cheap and easy to cook. The guiding principle is the nutrients got from the fresh maize meal. This gives the maize growers an opportunity to sell their produce, whereas those in power anticipate food insecurity. But to the businessmen and middlemen, they see an opportunity to exploit.

Green maize harvesting has constantly been influenced by price, with relation to resource allocation in both production and consumption. This is an agreement with Bourenane (1987) says as stated in another context on price policy that the market trace

effect has changed price levels and especially of food grains, by consumers, producers and the government budget, as a result of food shortage.

In Nandi County, green maize stoppers are used as fodder for animals, this is done especially when there is a dry spell and the crop has not matured to produce ears which can then either be commercially sold or domestically eaten in form of roasted maize or as boiled, or as popularly known *githeri.*

2.6 Theoretical Framework

The theoretical approach which the research utilized in the green maize sale is the expectancy theory. The theory was coined by Victor Vroom in 1964. The reward is attained where goods (Green maize), become a source of profit. The theory, like various theories have suggested that individuals chasing profits are in line with the outcomes expectancy. This expectancy theory explains the farmer to go after profit earned by the maize sold. As indicated by the statement –motivation, the study highlights the merits of the green maize as a reason why many are attracted. This theory does not explain the perceived benefits or constraints to the business. Hence the study remains to satisfy the farmer needs as the schematic framework, it provides a basis for the study on factors that shape this theory, Rodgers (1995). This also complements the schematic understanding which highlights benefits earned by the farmer and thus posed a serious look at the state. Some of the factors that were looked at are: the motivation theory bridges the gap related to the farmers' satisfaction.

2.6.1 Motivation factor

The term motivation is basically the driving force to perform. Motivation is embodied on the degree of intensity and direction where the theory proposes the force performs

on an action(E-P Expectancy) and the outcome tends to lead to another outcome (P-O Expectancy) holding a higher value" (Orodho, 2005).

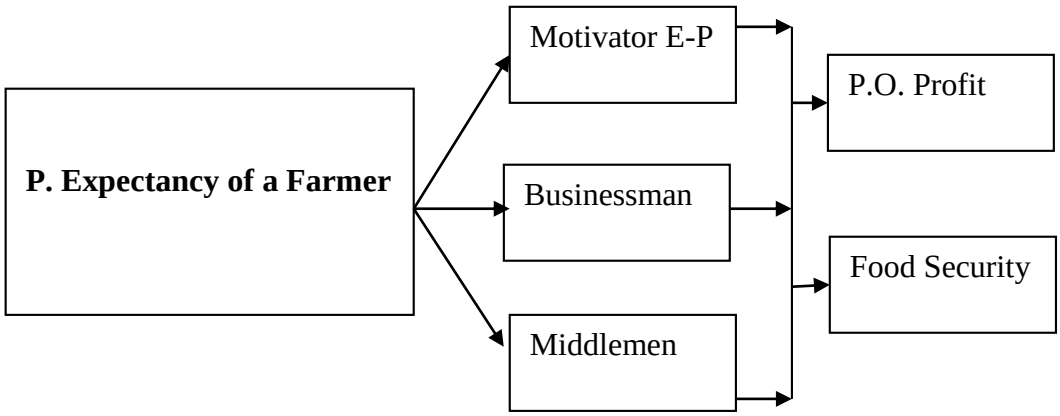

Figure 2.1: Motivation Theory

The study illustrates out the motivating factor in relation to green maize sale. This theory offers suggestions where price and the goods are in harmony to a good pay, job security, and food availability. Where the support E-P effort (performance expectancy leads to P-O, performance and realizes outcome expectancy). This puts more emphasis and focus in the value and its benefits against the outweighing costs. Movements of goods from a certain point to another are expected to take the centre stage. The end result is goal oriented. McCarthy and Mayer (1970) support earnings by the farmer depending on the approach. Motivations as based on farmers approach are shaped by understanding the price mechanism paid promptly by the businessman and how this has influenced the same. There are three factors in understanding motivation theory, valence, expectancy and instrumentality. An individual is motivated to perform a certain task, and it is this reward that has made; what we rarely see, the green maize commercialization, thus leading to the achievement.

The motivation process in this aspect of green maize sale is fetching high returns through the farm availability, labor intensity, plenty of sweet food as expected of by the theoretical framework.

2.6.2 Conceptual framework

The study adopted a conceptual framework which helped examine and assess the developmental growth of commercialization of green maize business in guidance with the stated objectives. The study focuses on two key variables namely commercialization of green maize harvest and sale (dependent variable) and the profit (independent variable). This helps in understanding the farmer's knowledge and perception commercialization of green maize, the implication and its impact to research that was undertaken. Commercialization of green maize being farmer option is controlled by the profits earned. The incurred cost in pre- harvesting is less compared to post harvesting. This harvesting is purely adaptive in nature and in such a manner, has become a transitional process passed over on the market conditions. Those who have transacted, believes that the people in control of the business have overlooked the risk taken Rodgers (1995).

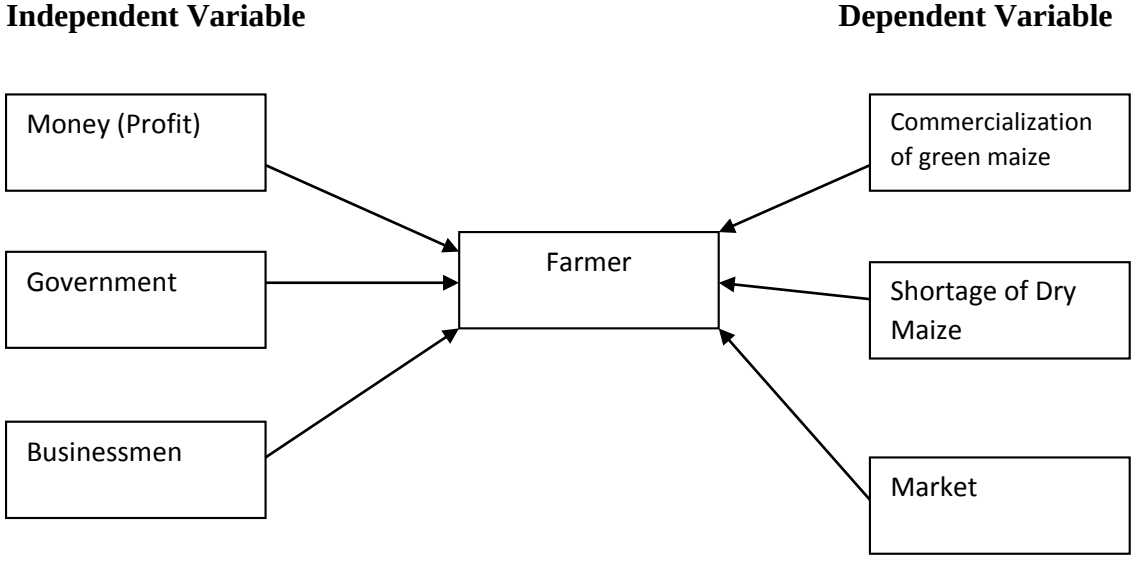

Figure 2.2: Conceptual Framework

The business model above explains how green maize is making farmers consider CGM. It links individuals in a community despite their education, gender, wealth, accessibility to credit facilities, information and so on. The variation thus hastens the green maize harvesting business and therefore ensures prosperity. In line with the statement, social factors tend to force matters related to economic prosperity. It is unfortunate that majority of the farming communities are notably poor and are forced to cope up with new changes. The high price offered for green maize acts as an inducement towards selling the crops while still green. The framework is basically developed to analyze and focus on the projected profit in so doing the commercialization of green maize, what is the missing link to the maize business.

2.7 Summary of the Chapter

Maize was and is still grown in Mexico, Brazil, North America and a few countries in Europe, Asia and Africa, Kenya included. Food security and food insecurity go hand in hand with the problems the farmer face at its inception on planting more maize crops. From the deliberations, factors that have promoted commercialization of green maize have been looked into. It further highlights the consequences to the stated problem. Secondly, it is the obligation of the government to come out clearly to protect her farmers. Third, there is need to review the irrelevant policies which keeps policy makers at the service of the country and not to themselves. From the latest strategy, it has been taken in to consideration by Regional and International initiatives such as Comprehensive African Agricultural Development Programme (CAADP), an initiative of NEPAD that recognizes agriculture's contribution to faster economic growth in Africa. Green maize is becoming a tricky issue. At one time, farmers have cried foul of the whole exercise and the year that followed they were happy and are not willing to deny the profit they ripped from the green maize.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 Overview

This chapter presents the research design, study area, target population, sample size sampling procedures and data collection instruments. The latter comprise interviews and questionnaires. Finally, data analysis techniques are discussed.

3.2 Research Design

The study adopted a descriptive research design. According to Kothari (1990), descriptive research studies are concerned with the description of characteristics of an individual or a group of people. Similarly, Schinler and Coopers (2004) posit that descriptive research studies are concerned with the characteristics of the said individual or group. In this study, a description of issues related to the commercialization of green maize is described. Mugenda (2003), notes that descriptive design is unique as it involves and offers an in-depth study of a social unit. From descriptive survey, the research design in the study was able to offer information with more emphasis on variables related to the green maize business in the design. The aim of the study was to assess the factors influencing the green maize commercialization. Secondly, it investigated the impact and consequences of green maize harvesting and commercialization.

3.3 Study Area

The study was carried out in Kobujoi, Kibwareng, Kaptumo and Kaboi in locations of Nandi South district in Nandi County. The area of study has a population of about 33,000, as per the 2009 census (KNBS, 2010). The District has a high altitude and is characterized by favorable rainfall and temperature which are suitable for crop farming

and Livestock keeping. Nandi County lies 3 degrees longitude and 37.5 Latitude. The county covers an approximate 3525km2 with different topographical features. The Equator line passes at the extreme south of the county. To the west is the famous Nandi Escarpment. The central part of the county is the *Kingwal* swamp known for the rare Statunga animals. Commercialization of the green Maize thrives in the district. Maize covers an area of about 1273.2sqkm. Another 1000 sq km is under Tea, Maize, Beans, Vegetables and grassland.

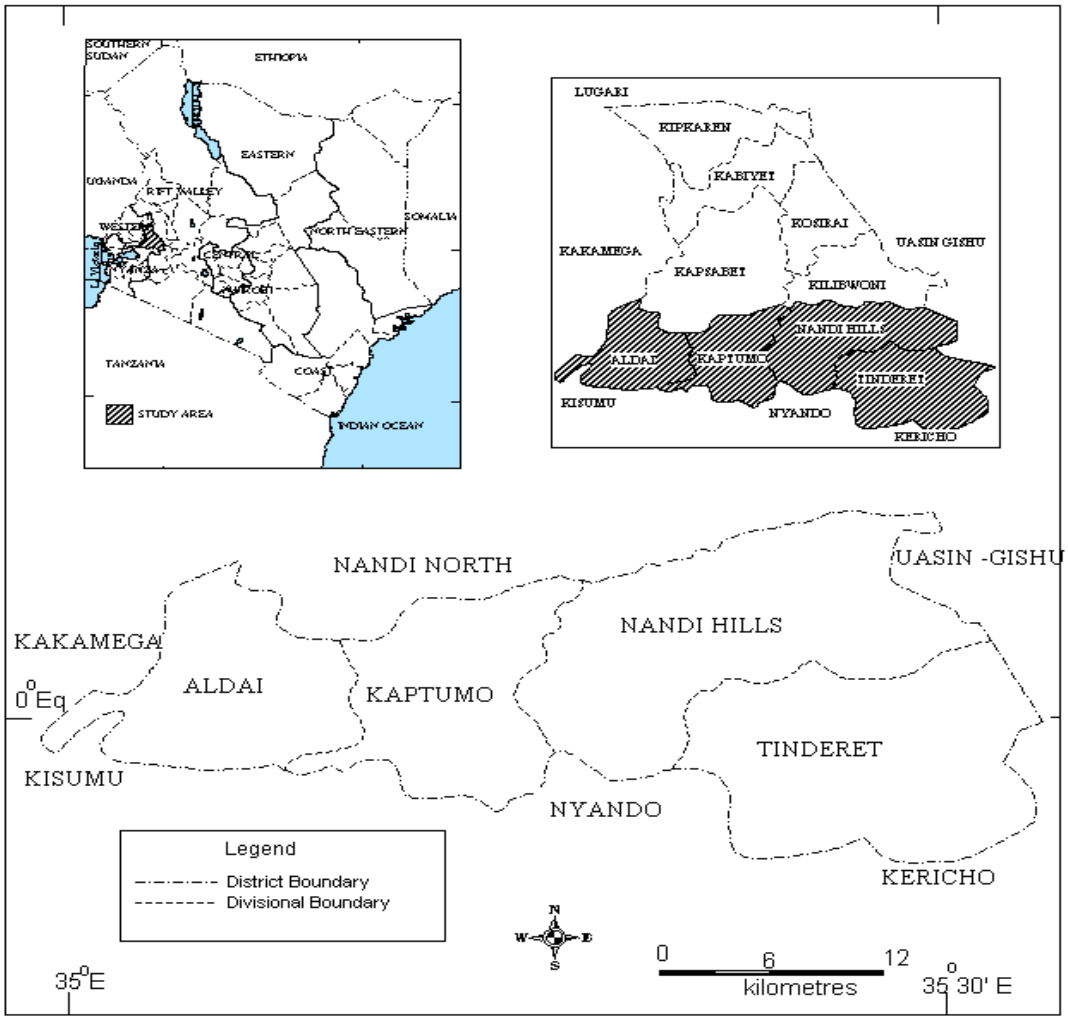

Figure 3.1: Map of Nandi South District.

3.4 Target Population

The target population of the study was the farmers. However, businessmen, middlemen and government officials in Nandi South district were part of the target population and particularly in Kaboi, Kaptumo, Kibwareng and Kobujoi. The records availed from the Ministry of Agriculture indicated that there were 536 registered farmers. The table below shows the target of population of all the participants in Commercialization of green maize. Patton (2002) suggests the use of 30% of the total available samples to get a clear picture of the situation and hence the researcher arrived at 161 farmers, out of the 536. The green maize famers in the study area came from the same ethnic

background. However, they had different levels of education and this enabled them partake the commercialization of green maize differently. This population excluded the children. Other targeted individuals were 3 officials from ministry of Agriculture, 6 from ministry of health and 18 businessmen and women.

Table 3.1 Category Respondents

S/no	Respondents	Frequency
Farmers	161	85.5
Ministry of Agriculture	3	2
Ministry of Health	6	4
Businessmen/ Middlemen	18	8.5
Total	**188**	**100**

3.5 Sample Size and Sampling Procedures

Sampling is important for it involves a fewer respondents instead of the target population. The sampled size helped save time and more so it minimized errors. According to the study the participants were the farmers, public administration, agriculture ministry, businessmen/ middlemen both at farm level and those in the field. The records from Ministry of Agriculture had given the number of registered farmers as 536. Patton (2002), points out that a representative sample should be a least 30%.And from this (536), the researcher obtained 161 farmers and 27 who were the officials in public service and the businessmen/middlemen. Thus, it gave a total of 188 participants as the representative sample for the study. This became the sample size which the researcher used in the study. The researcher employed both quota and purposive sampling techniques. In order to ensure a representative result, the researcher

subdivided the Nandi South District into 4 locations of 40 participants. Neumann (2006); argues that, "the main factor considered determining the sample size is the need to keep it manageable enough". Patton (2002) argued that the sample size depends on what one wants to know, the purpose of the inquiry, what is at stake, what will be useful, what will have credibility and can be done within available time and resource. The researcher interviewed 188 in Nandi South District which in qualitative research was adequate population for the study.

3.6 Data Collection Tools and Instruments

Both the primary and secondary sources were used to collect data for the study. Coopers and Schinler (2001) stated that the primary data is sought due to its nearness to the real facts and truths and errors are able to be controlled in the study.

3.6.1 Primary data collection

Interview schedules were used to collect primary data. This was administered to farmers who were selected from each of the four locations, after using Patton (2002) model of 30% of the registered farmers. Mugenda (2003; 46) stated that an interview is an oral submission of questionnaires or interview schedule. This is the most relied evident though it may create problems. Open ended questions permitted respondents to avoid biasness and to answer the questions in their own understanding. Closed and open ended questions were also administered to interview key informants as well (Kothari 2003:33). These instruments were supplemented by informal interviews in form of discrete discussions on different occasions and places where the researcher engaged respondents in discussion in the area of study. Interview schedules required the researcher at times to probe the informant especially where responses were unclear or evasive. This model of data collection is the best and offers qualitative questions as, the

researcher was in aid to the respondent. For unclear questions would have yielded unclear answers.

3.6.2. Use of questionnaires

According to Salasya (2005), a farm house is considered appropriate unit of analysis because it's structured nature of farm activities. This study focused on all farmers, but, specifically the educated ones to enable the researcher reach his entire anticipated target. Questionnaires with structured and semi-structured nature of questions were distributed to the participants. Questionnaires are economical to use in terms of time and money.

3.6.3. Observation

According to Kothari (2003), observation is a tool and method of collection of data for the researcher to employ. It is during this process that the researcher records all the events taking place. The unnecessary events are eliminated by the researcher. From these observations, it yielded an opportunity to study the trends at which commercialization of green maize business. This is a vivid experience.

3.6.4 Photography

The researcher used a camera to capture the practical activities so as to illustrate the data.

3.6.5. Secondary data collection

For secondary data, libraries were visited before, during and after the research to get information, clarity, on policy issues on the area of study. Data from other relevant written materials such as dictionaries, encyclopedias, commentaries, books, journals and newspapers were reviewed.

3.7 Data Processing and Analysis

Analysis here refers to computation of certain measures in search for patterns of relationship that exists among data groups.

The data collected was subjected to a process of editing, coding, classification and tabulation so as to clean the data collected. The collected raw data was edited, so as to detect errors and omissions. Coding was assigning numerical or other symbols in the study to help reduce the bulk of information used. Classification was used to reduce the volume of raw data in the research. It helped to arrange data in groups on the basis of common characteristics. The next step is data processing and analysis with the tabulation where the focus was on summary of raw data in compact form for further analysis (Kothari 2003).

CHAPTER FOUR

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 Introduction

This chapter presents the collected data of the study. The raw data was subjected to analysis and interpretation as per the study objectives. The data put a focus on factors, impact and the consequences of commercialization of the green maize in Nandi South District. Thus captures the response of all participants who were engaged in green maize commercialization. The background information of the respondents was also sought and reported in this chapter.

4.2 Characteristics of Respondents

The response rate of the study was good. The respondents comprised of 161 farmers who were both men and women. They included farm owners, businessmen, middlemen and officials from the Ministry of Agriculture, health and the public administration. The study looked critically on gender participation in the four locations of Nandi South, Nandi County on commercialization of green maize.

Table 4.1: Response Rate among Farmers

	Male	**Female**	**Frequency**	**Percentage**
Kibwareng	21	14	35	22
Kaboi	27	19	46	29
Kaptumo	20	18	38	24
Kobujoi	19	23	42	25
Total	**87**	**74**	**161**	**100**

Table 4.2: Response among Government Officials

	Male	Female	Frequency	Percentage
Ministry of Agriculture	4	1	5	34
Public Administration/health	6	4	10	66
Total	**10**	**5**	**15**	**100**

Response among Business persons and middlemen

	Male	Female	Frequency	Percentage
Business persons	4	1	5	44
Middlemen	6	1	7	56
Total	**10**	**2**	**12**	**100**

Source: Field data 2013

A sample of 161 respondents participated in the study. The table above shows indirect participants who adds to the sampled population of 161. Government officials from relevant ministries totaled 27 in number. The study was carried out in four locations of Kibwareng, Kaptumo, Kaiboi, and Kobujoi of Nandi South district. A total of 161 questionnaires were distributed with each location receiving 40 questionnaires.

In Kibwareng location, the study received a 100% response rate. They farmers heavily depend on commercialization of green maize. The study therefore attributed this response rate to some factors like farmers' awareness and the general knowhow concerning farming as a business enterprise. They argued that the business have rewarded them with good returns each year. The assessment revealed that Kaptumo and Kaboi locations performed equally well on the green maize business related activity. Kobujoi, as indicated in the table showed that both male and female engaged in farming as a business adopted the willing buyer willing seller approach.

4.2.1 Age Bracket

Age is important in the study because it may assist in determining the age range of those involved in commercialization of green maize. It also helps to inform the target of any proposed policy. The question is raised on their usefulness to the study. The study shows of that many youths, middle-aged people are actively involved in the C.G.M. school dropout may be directly linked to commercialization of green maize.

Table 4.3: Age and Gender of Respondents

	Male	**%**	**Female**	**%**	**Frequency**
18-24	10	11	1	1	11
25-31	20	23	10	14	30
32-38	33	39	23	31	56
39-45	20	23	20	27	40
46 above	4	4	20	27	24
Total	**87**	**100**	**74**	**100**	**161**

Source: Field Data; 2013

Table 4.3 indicates that male participants were active in Commercialization of Green Maize (CGM). From the table above, the most active age bracket is those between 32-38 years. Their involvement takes the 70% of the entire business. In the age bracket (25-31), the youthful men are attracted to trade through the company of successful middle men, transporters and farmers who sell their maize. It is evident from the table that, as men advance in age, they become less involved in CMG. This study indicates the number of men and women participants in this green maize enterprise ranged between the ages of 32-38, forming 70% of the entire business activity, whereas those aged of 39-45 formed 50%. The respondents engage in CGM for several reasons; green maize fetches high returns as compared to dry maize harvesting. It offers employment to youths within the maize harvesting area. Also the harvested field is used for planting

other crops, hence a double profit. The stalks out of harvested crops are used as feeds for dairy animals.

4.2.2 Gender distribution of respondents

Plate 4.1: Gender distribution showing green maize sold.

Source: Field data, 2013

From data received from questionnaires, the researcher observed that both male and female participated in the sale of green maize. However, the number of female respondents was low in nearly all the locations, other than in Kobujoi where they nearly equaled men participants. The plate 4.1 above justifies the role played by gender in ensuring that C.G.M. is what it takes to be. This plate is related to the second objective on the motivation towards commercialization of green maize

It was further established that, the male farmers took the centre stage during the negotiation and payment period. From the respondents, it showed the women were challenging the men dominance in the green maize business.

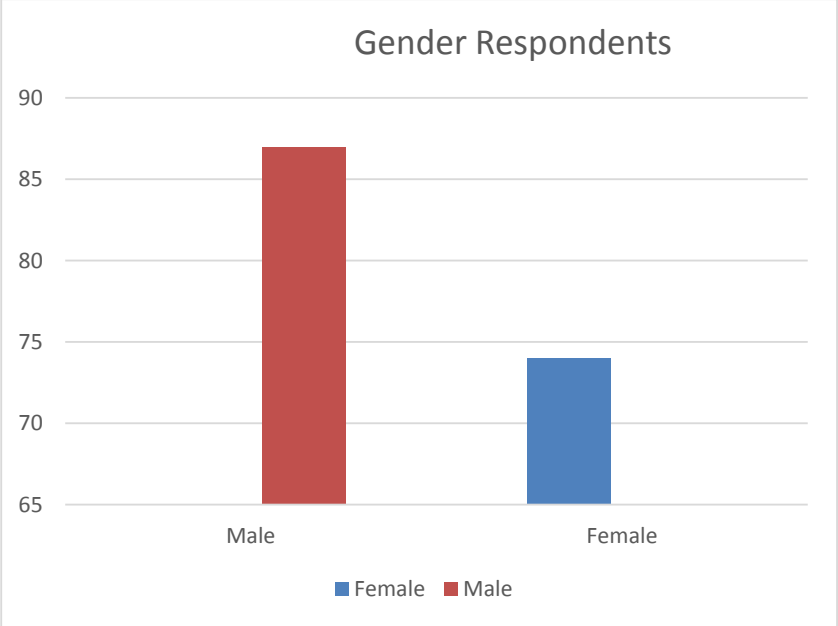

Figure 4.1: Gender of participants in green maize sell

Figure 4.1 shows the distribution of men and women in the sale of green maize. From the study this shows that women participants in the business were lower than that of men. The figure is more inclined to harvesting or when the ripe maize is sold to the businessmen. However the trend will be vice versa when doing the boiling or roasting of maize.

4.2.3 Occupation of Respondents

Table 4.4: Occupation of the Respondents in the Area of the Research

	Male	**Female**	**Frequency**	**%**
Farmers	75	86	161	100
Total	**75**	**96**	**161**	**100**

Source: Field Data; 2013

Table 4.5: Middlemen and Business Persons

	Male	**%**	**Female**	**%**	**Frequency**	**%**
Business Persons	4	38	1	50	5	44
Middlemen	6	62	1	50	7	56
Total	**10**	**100**	**2**	**100**	**12**	**100**

Table 4.6 Government officials

	Male		**Female**		**Frequency**	**%**
Ministry Agriculture	4	57	1	50	5	34
Public administration/ health	6	43	4	50	10	66
Total	**10**	**100**	**5**	**100**	**15**	**100**

Source: Field Data; 2013

The study expected the respondents to state their occupation. The purpose of this was to get comments and responses from the different groups of respondents engaged in CGM. It was noted that commercialization of green maize has influenced many people irrespective of their occupation. The respondent's occupation reflected why the problem is persistent. In the responses, it was however established that among those receiving salaries, especially from the civil service, were the least involved in CGM business. Those involved in CGM had a compelling force for urgent and large amount of money, for instance, payment of medical fees, children admission to tertiary or university colleges where large amount of money was needed at ago. It was further reported that; the unemployed youth were constantly involved in the business to meet their needs such as clothing, and daily upkeeps.

Table 4.4 illustrates that 85.6% of farmers participated in commercialization of green maize. Nonetheless this may not be a true picture among the Nandi community where men held a lot of authority. Some respondents reported that some irresponsible men

sold out the entire maize fields. The response provided information that 52.5% against 47.5% women and men respectively, were highly involved in the green maize business at whatever dealings.

In the process of analyzing this report, it was established that men controlled 66.5% of trading in green maize sales, as compared to their female counterparts with 33%. This shows that 27.5% of women participated in commercialization of green maize. Lack of finance has been an impediment to the middlemen who were the ones that did the tiring jobs. To add on this point, conditions tend to favour men who are physically able to carry loads for longer distances.

Table 4.7: Education level of Respondent of farmers

RESPONDENTS	**MALE**		**FEMALE**		**TOTAL**	
	frequency	%	frequency	%	frequency	%
Primary	39	45	31	42	70	43
Secondary	21	24	25	34	46	29
Tertiary	18	21	14	19	32	20
University	9	10	4	5	13	8
Total	**87**	**100**	**74**	**100**	**161**	**100**

Table 4.8: Education level of Business persons and middlemen

RESPONDENTS	MALE		FEMALE		TOTAL	
	frequency	%	frequency	%	frequency	%
Primary	5	34	0	0	5	28
Secondary	4	32	3	60	7	38
Tertiary	2	16	1	20	3	17
University	2	16	1	20	3	17
Total	**13**	**100**	**5**	**100**	**18**	**100**

Table 4.9: Education level of Government officials

RESPONDENTS	MALE		FEMALE		TOTAL	
	frequency	%	frequency	%	frequency	%
Primary	0	0	0	0	0	0
Secondary	0	0	0	0	0	0
Tertiary	2	29	1	50	3	33
University	5	71	1	50	6	67
Total	**7**	**100**	**2**	**100**	**9**	**100**

Source: Field Data; 2013

Levels of Education

The respondents were required to state their educational background. The reason is that the farmers in the study area comprise of both the learned and those who have undergone all stages of education. They participate in the business. From figure 4.7, the data shows the level of education of respondents in the green maize business. Figure 4.7 indicates that 22% of respondents had primary level of Education. Respondents who

had university education were 18%, while those who had secondary education were 27%. Lastly those who had tertiary education were 33% who engage with the business.

Farmers with primary education formed 14.9%. From this 4%, showed the older members of the society who had Tertiary Education, and put emphasis on good farming and are accommodative of CGM. They still believed that all farmers are supposed to have storage facilities so as to fight future hunger. Their responses were demand driven. From table 4.7, farmers saw it wise for the government to support the farmer to reclaim his lost glory of being a commercialized farmer. Failure to this has led to the growth of green maize commercialization.

Lastly, the remaining respondents were those with advanced level of education; the Tertiary and university education. The report showed that; farmers were motivated by profit in the CGM as we see their role in the business. Most actors in the green maize business are those who attained Tertiary and secondary education. These categories include farmers and businessmen/women. The greatest bulk of the middlemen in the business were found to be those with the primary education. They stated that with little education this business serves them by being actively engaged in identification, coordination and quantification of acres of green maize, they being the brokers. As stated above most businessmen and women had the secondary education. They pointed out that with this level of education the business have served them equally as any other business.

4.3 Objective I: Policies on Commercialization of Green Maize

4.3.1 Influence of Commercialization through Government Policy

The study showed that majority of the respondents agreed with the government subsidy on fertilizer, this was a relief to the farmer. This pointed out the commitment by the

government in encouraging the farmer towards building a food secure country. The green maize sale therefore would pose a threat to the community. In the end, production would be high and create an enabling environment for the government to assist the farmer in purchasing harvested cereals by N.C.P.B.

Table 4:10 Response to government ban of green maize sale

Responses	**Male**	**%**	**Female**	**%**
Strongly agree	51	59	51	69
Agree	16	18	-	-
Not sure	11	13	12	16
Disagree	-	-	9	12
Strongly disagree	9	10	2	3
Total	**87**	**100**	**74**	**100**

The study showed that 69% among female farmers preferred the ban. However, 12 % of them disagreed with the statement. But the study found another 16 % who were not sure whether a ban would affect food security or not. The study indicated that profit realized has been attributed to increase in green maize sale. This goes in hand with one of the objectives of the study which was intended to establish the root cause of commercialization of green maize among the farmers. The male respondents of about 10% strongly disagreed with the ban as a remedy. The basis of this argument was in line with the market preferences since the sale of C.G.M in the year 2007, which were only 9 farmers per location whereas this year the number increased to 13 farmers.

According to respondents, it is assumed that those entrusted with responsibility of ensuring food sufficiency have turned to food importation choosing to ignore food

production policy, which is against the farmer's wishes. Some Kenyan maize farmers, for more than 10 years, have been wading in abject poverty. Mr. Ruto, then Minister for Agriculture, under the Kibaki government, was given autonomy to exercise his ministerial powers and policy, to deliver subsidized fertilizer. This was a relief to the farmers. The farmers' happiness within this area was short lived. The reason is that the government failed to buy dry maize from them. However by allowing the importation of maize by millers and businessmen, government officials ensured that the farmers did not enjoy increased earnings from their crop.

The failure to buy dry maize from farmers gave a huge impetus for to the commercialization of green maize in the next season. Furthermore farmers were no longer happy with the price given by NCPB. The pride of the Kenyan farmer was slowly killed. And the result is the price of a two kg of maize cereals selling for Ksh. 160. It is therefore a fact that green maize sale can no longer stop the sky rocketing price of dry maize. This was only viewed as a policy matter and is best handled by the government policy, (Ministry of Agriculture 2012).

The Nandi south farmers were in yet another awkward situation from the report of the unpredictable weather conditions in 2013. They were there to see yet another crop failure. Secondly, the expenses incurred during the whole process (cultivating, seed and fertilizer costs, planting, weeding and harvesting, shelling and transporting the cereals to the N.C.P.B) could not be recouped in the coming year. However, they claimed that the commercialization of green maize had direct benefits to the farmer, unlike the dry maize. Most of the respondents were of the opinion that the government should have come out clearly on policy issues so as to safe guard them against the scrupulous businessmen. On that note, they claimed that farmers were comfortably diversifying their crop production. This harvest cum sale, has promoted the dairy sector through

animal feed preparation (silage). In this research study, it became evident that most farmers a strongly appealed to the government to help them promote the maize production, through constant supply of subsidized fertilizer.

The policy on banning of the green maize nationally and at the county government level is not clear. While the national government role in subsidizing on fertilizer has helped in increasing maize production, the strategic grain store facility is not helping the farmer in marketing maize.

Table 4.11 Farmer's expectation on government role.

Response	**Male**		**Female**		**Total**	
	Frequency	**%**	**frequency**	**%**	**Frequency**	**%**
Very high	-	-	-	-	-	
High	17	19	8	11	25	16
Average	11	13	16	22	27	17
Low	12	14	34	45	46	28
Very low	47	54	16	22	63	39
Total	87	100	74	100	161	100

Source: Field Data; 2013

In table 4.11, a response rate of 16 % believed that the government has participated in checking the C.G.M, 17% seem to believe that it is working. But a sizeable number of 28% had low opinion of government involvement, while majority, 39% of respondents believed the government was not involved their participation. They further argued that the negativity by these officials weaken the state policies in advocating the diversity.

Table 4.12: The opinion on government role in commercialization of green maize

Response	Male		Female		General total	
	Frequency	%	Frequency	%	Frequency	%
Strongly agree	18	21	16	22	34	21
Agree	19	22	10	14	29	18
Not sure	7	8	16	22	23	14
Disagree	11	13	10	14	21	13
Strongly disagree	32	37	22	30	54	34
Total	**87**	**100**	**74**	**100**	**161**	**100**

Source: Field Data; 2013

From table 4.12, 21% of the respondents strongly agree that the government had done some commendable job in safe guarding the country's food security. The first role of the government was more on clear food policy statement by the government policy makers. Another 18% still agreed on the government seriousness on ensuing food security, while 14% were not sure whether or not the government has done any recommendable job on food security.

Based on the analyzed table 4.12, the respondents who strongly disagree,34% are the ones who are in control of farming activities. The respondents felt that farming is like experimentation; and that the government has not been serious with farming in general. They went further ahead in justifying their statement by highlighting the several failed crops like pyrethrum, cotton, rice, sugar etc. They linked this to most districts lagging behind in almost all departments that deal with farmers' plight. To the respondents farmers have remained poor despite the long years they have farmed.

From the discussion above, farmers blamed the state. They added that, people were dying, for not having food whereas other parts of the country have surplus food. In allowing the principles of liberalized market, the government is taking the right path but it should have a say in safeguarding food security. Over the years, the CGM business has grown and this can be noted in the number of Lorries ferrying green maize to major towns.

Majority of farmers are no longer interested in farming and are considering opting out to do other businesses.. The study therefore agrees with the hypothesis, that farmers are embracing CGM as a substitute to selling dry maize. Hence, the respondents, as indicated below and within the bracket of 1-5 years of farming experience, are more adventurous and are probably the newly married men and women who are attracted, or forced by their new status. The study shows that the same group found farming, are business persons who take risks. Secondly, among some of the respondents are the middlemen/women acting as a go-between, between the external buyer and the farmer.

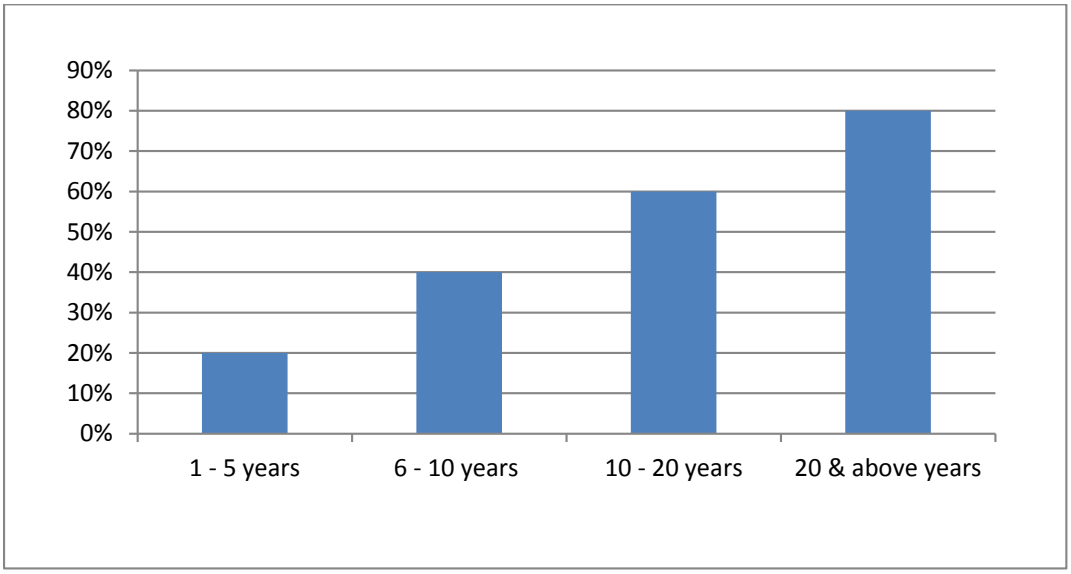

Figure 4.2: Period of farming
Source: Field data; 2013

The study, as illustrated in figure 4.2, shows that there were 135(72%) farmers who have farmed for more than 20 years and showed their stability in the same. The study showed that the new comers are only about 12 (6%) which means that farming is becoming less attractive. The study shows that within the family context one gender, did not participate in the business.

In figure 4.2 above, an ascending trend is seen where, the highest point stands for those who are 6-10 years in business. The possibility of continuity reaches its entire end at the 20th year, as the study suggests. This is in addition to the 41 (22%). The purpose of this is to show the government's involvement over the years and its position on farming.

4.3.2 Government Position on Food Security

The respondents created a scenario where they put a share of blame to the government on the food insecurity, whether deliberate or not. Farmers argued amongst themselves on the best practice. Questions such as, why there is laxity and the N.C.B.P not buying dry maize cereals (90kg) now (50 kg) from the year 2014 are asked. This became a blame game and eventually demoralizing the farmers. One farmer observed that, "I had 40 bags of 90kg which was enough for my three children in high school. When the N.C.P.B failed to buy the cereals, all the farmers were at the mercy of the businessmen. I end up losing 7 bags at the end of the transaction. This forced me even to sell what was to have remained, as my food security. I am now one of those looking for food assistance." Who is to blame? It is the government. This forced me to remove my strategic reserve so as to enable my three children to go to their schools".

Plate 4.2: A man selling dry maize.
Source: Field data; 2013

Plate 4.3: A ready farm for sale
Source: Field data; 2013

The plate 4.3 shows a ten acre maize field with which the owner sold for Kshs. 60,000 per acre. Hence for ten acres, he was paid ksh.600, 000. This has attracted more farmers to sell their crops. Plate 4.2 shows the dry maize cereals sold in the neighborhood at ksh.150 per two kilo tin. This is yet another hot business. The effects of green maize commercialization is felt by the buyer and the profits are enjoyed by green maize seller. "The N.C.B.P depot is hardly 200 meters from the market at Lessos." This was the lamentation of a farmer. 'There are many who have passed the same misery I underwent.' Some of the children, whose parents had not had enough maize, saw their children sent home. Secondly, there were reports of poor seed dispersion and fertilizer

distribution. Importation of fertilizer was as if it was not meant for farmers since it arrived three weeks after the planting season.

Table 4.13: Evaluation of Government's role in commercialization of green maize

Response	**Male**		**Female**		**Total**	
	Frequency	%	Frequency	%	Frequency	%
Strongly agree	-	-	3	3.1	3	1.6
Agree	2	2.3	5	5.2	7	3.7
Not sure	-	-	-	-	-	-
Disagree	11	12.0	18	18.8	29	15.4
Strongly disagree	79	85.7	70	72.9	149	79.3
Total	92	100	96	100	188	100

Source: Field data 2013

In table 4.13, 85.7% of farmers strongly disagreed with the government on its role in promoting investment in agriculture. Some of the respondents did exonerate the blame from the government. They said that the expected Ministries and Ministers charged with the responsibility have failed in their respective duties.

Those who believed that the government had not done much are 15.4%, while 3.3% and 1.1% respectively, strongly believed that the government had done a commendable job. They gave tangible examples, including the revival of New K.C.C (Kenya Cooperative Creameries'), fertilizer subsidy, the funding of irrigation fields throughout the country for instance the Bura, Mwea Tabere, Berkera and so on. From the enormous challenges ranging from hunger in the entire region and especially the northern part, the Government revived the stalled irrigation farms in the area. Food insecurity is eating

deeper into the country's economy and it is now clear why they are contemplating the measures they would take on the green maize sell. The study shows that, on some occasions, the government only felt the need to ban the sale of green maize as a remedy for the food shortage.

Plate. 4.4: A clip from the nation papers
Source: Daily Nation: 2013

Plate 4.4 shows an irrigation project sponsored by the Catholic Church in Lodwar, the study saw green maize I areas like Transmara, Meru, Narok, Tanzania and Uganda The relevance of this plate to the study is to compare irrigation development in Lodwar and many other parts of the country on food security. If the scheme succeeded in Lodwar, then why not in Nandi County, in dry months? In conclusion, on expected service delivery, the Government is expected to owe up responsibility in ensuring food stability to all Kenyans.

4.3.3 Ministry of Public Health

Commercialization of Green maize may seem to have no link to Public Health docket, but it is crucial on matters concerning people's health. Contamination and food poisoning has led to the Ministry implementing measures to curb diseases like cholera. With reference to this, green maize commercialization deals with handling of roasted and boiled maize and if not handled well, becomes a health hazard. It calls for those handling food to have health certificates and also have a decent place to practice their business. It is also mandatory to have disposal areas of waste. All these can be in policies, but if not implemented, could lead to health hazards. The problem is basically attributed to a "Kenyans culture" where people expect "free services" and wish to realize high profits of 100%. Most respondents cared less about the role played by the public health docket. To them, CGM is like any other business and the seller is free to do the business as long as one observes hygiene

Table 4.14: Public health officials comment on commercialization of green maize

Responses	Male	%	Female	%	Total	%
Strongly agree	5	44.5	5	55.5	10	100
Agree	2	18.2	2	22.2	4	40.4
Not sure	2	18.2	1	11.1	3	29.3
Disagree	2	18.2	1	11.1	3	29.3
Strongly disagree	-	-	-	-	-	-
Total	**11**	**100**	**9**	**100**	**20**	**100**

Source: Field Data: 2013

Table 4.15: The respondents view on role played by provincial administration on commercialization of green maize

Responses	Frequency	%
Strongly agree	33	20
Agree	34	21
Not sure	24	15
Disagree	27	17
Strongly disagree	43	27
Total	**161**	**100**

Source: Field Data; 2013

The members of the public believed that CGM is a farmer's business but still felt the need to have the regional forces to safeguard them from bad businessmen. The respondents from members of the National (local) administration were mesmerized by the questions posted to them by the research assistant. They had not seen the role that involved them in this business; their involvement and the never ending squabbles which were shared by many respondents among the members of the public. Others were made to believe that they were not directly involved. Thus, it prompted claims on their negative attitude to duty and ensure that security and prosperity issues were not to be curtailed. Being the government agencies in the region, they had to provide security.

The response further accorded the benefit of doubt on law enforcers. In the study, it showed that the provincial administration were ready to enforce the law. However, this could not be so. The constitution opened up a new curtain where it checked the willing seller, willing buyer principle adopted by the government. The farmers, the

businessmen and the middlemen would see this as an opportunity to conduct checks on their paying business.

The respondents did indicate some certain level of corrupt vices among members of the public officers in administrations (mostly the chiefs and asst. chiefs). According to these respondents, it came to the realization that, they shared information among themselves.

4.4 Objective II: Factors that motivate farmers to sell green maize

4.4.1 Farm Size and Its Fertility

On the issue related to farm size and fertility those who had tested their soil fertility, the respondents recommended that the government to come up with radical land use policy. They expressed concern that life in rural areas was expensive. Their farms had been sub divided to a point that they were no longer viable for farming. This is the reason why they were looking for a long term solution. The size of land under maize has drastically gone low in many parts of the country. The average household in Nandi County used to be about five (5) acres for a family of Eight (8) children. On further subdivision, land capacity has reduced to a quarter acre for three children. In the long run each child will remain with what cannot accommodate dairy and maize farming. The commercialization of green maize provided a solution. Previously, green maize commercialization was believed to be for the poor, but now, the trend has changed.

Table 4.16: Factors motivating commercialization of green maize

Factors contributing to commercialization of		SA	A	U	D	SD	TOTAL
Available Market	Frequency	42	37	23	29	30	**161**
	Percentage	26	23	15	18	18	**100**
There are no wastes from sale of green maize	Frequency	46	31	21	36	27	**161**
	Percentage	29	18	13	23	17	**100**
There is high returns	Frequency	43	40	29	30	19	**161**
	Percentage	26	25	18	19	12	**100**
There is ability to plant maize twice	Frequency	49	38	19	31	24	**161**
	Percentage	31	23	12	19	15	**100**

Source: Field data; 2013

From the study above, 26% strongly agreed, 23% agreed, 15% were undecided, 18% disagreed while 18% strongly disagreed with the idea that That there is availability of market for green maize harvested from the fields, the farmers use maize stalks as maize stalks for their animal feeds (silage).

On the other hand, 29% strongly agreed that after the harvest, the field is put to use like planting beans. Asked on profitability, 18% agreed, 13% were undecided, 23% disagreed while 17% strongly disagreed with the idea that commercializing of the green maize yielded high returns as compared to sale of dry maize which involved waiting for four months and incurring extra costs. Further still, the farmer is paid an extra shilling for the maize stoppers.

Nevertheless, 26% strongly agreed, 25% agreed, 18% were undecided, 19% disagreed while 12% strongly disagreed with the idea that Furthermore, it was pointed out that serious farmers were to plant the same parcel of land, the following season.

Gaining profit is the underlying motivation in the commercialization of green maize. It points out the source to areas like Kapkenduiywo, Kapsaos and finding its markets afar. The study indicates that there is a huge market for green maize surrounding Nandi County. For example within a span of 62 kilometers, there are over 100 market centres within Nandi county borders. And in each of these markets, there are charcoal *jikos* for roasting and boiling maize cobs. From the study, green maize from about 50 acres is sold a day. . This translates to about 1500 acres sold countywide. The maize growing in the Nandi County is of different varieties and difference in maturity can spread for over four months. Hence between six to ten thousand acres are sold. This is a clear indication that commercialization of green maize is profitable and lucrative.

Plate 4.5: Green maize and the dried cobs at Kaptumo market
Source: Field data; 2013

Finally, 31% strongly agreed, 23% agreed, 12% were undecided, 19% agreed while 15% strongly agreed with the idea that the only cost which they meet is that of harvesting the maize stoppers. The farmers therefore save other unnecessary cost of stalking, buying of gunny bags, harvesting, transporting to gunnery, shelling and later transporting to the National Cereals and Produce Board.

The respondents stated that well-tended maize farms have been fetching them between Kshs 50,000 and 60,000 as compared to 20,000 and 25,000 for dry maize per acre. The return from green maize was therefore twice the input. A single parent can't deal with psychological needs of different gender of the students. Ndurio centre is a high way centre on the Kipsigak-Serem road and therefore is a stopover for many buyers. The green maize business is profitable and that is why each year, CGM attracts many customers. The sellers were happy with their business for they claim that it was paying good amounts of money, "we are able to send our children to school by selling green maize". As stated earlier, our customers are many and cut across all walks of life; those passing by, Kobujoi centre, traveling far and residents within the shopping. The customers proudly said that the green maize has provided them with a cheap and a nutritious meal.

Plate 4.6: A business at Kapsaos centre

Source: Field data; 2013

From the study above its apparent that the motive of commercialization of green maize was to obtain school fees for their children. It was also argued that commercialization

of Green maize over the years has been influenced by the demand for green maize by the urban population. The many fields sold find their way to either Nairobi, Mombasa and other towns. They are used to prepare *githeri, nyoyo,* and for dairy products. The plate below shows businessmen who engage in GMS transport using huge trucks plate 4.7 shows one of the trucks spotted by the researcher.

Plate 4.7: Green maize truck lorry at Kobujoi Trading Centre.

Source, Field data, 2013

The plate 4.7 shows a busy transporter and a customer of green maize at one of the destination (Kobujoi) where the number of consumers of the same has increased. This business is promoted by a ready market elsewhere. Looking at the proximity of the market from the point of harvest, Kibwareng, Kapkenduiwo and neighboring areas is far and wide. As a conduit to other centres, it has served other hundreds of shopping centers.

The lorry in plate 4.7 is a ten ton capacity and is carrying green maize harvested from Kesegon in Nandi County. It is a replication of other areas that have benefited in the same business. The Lorrie's load capacity from two acres of harvested green maize depends on the quality of the green maize. From the plate 4.6, as shown above, the respondents claimed that over ten Lorries of same capacity transport green maize to many destinations all over the country. The number of pickups is as many as Lorries. However, tractors were few in number.

They further said that poverty has contributed immensely towards the sale of green maize and comprised of (106) 66%. This is due to the dysfunctional marketing system. The respondents in the stated areas were dissatisfied with the failed government responsibility of buying harvested cereals. They believed that most of those who were expected to discharge their responsibilities had failed. They blamed the N.C.P.B (National Cereals Produce Board). Thus the possible causes for green maize sale were varied (Ministry of Agriculture 2012)

4.4.2 Factors That Motivate Farmers to Sell

The individual participation in the study was important. It provided relevance and proper reasons for farmers engaging in commercialization of green maize. Before the reasons for sale or commercialization of green maize were sought, the researcher attempted to find out the level of sale of green maize business.

One of the questions posed to respondents was; do you think green maize sale is on the rise? The respondent's responses were as follows:

Yes= 70 %(113)

No =30 % (48)

The percentage given suggests that CGM was on the rise. The farmers were categorical and said that in the months of January and March 2012, more than 50% of the total maize fields had been sold. They said that in a way it provided space for second crop. This shows that green maize business was booming. Disposing off of ready maize met urgent needs. Farmers 'sold the green maize because of the high pay it fetches. The respondents who agreed that farmers sold green maize because of high returns were (55)34%.

The data drawn indicates that majority of youth; women and men participated in the green maize to meet their demands. A good number, 107 (56.6%) of men and women believed that commercialization of green maize was attributed to finance. From the same farmers 106(56%) said that poverty influenced the commercialization of green maize. The respondents pointed out that the 150 (83.79%) farmers sold their crops to cover school fees for their children. Peer influence as a factor in commercialization of green maize was reported by 44 respondents (24.58%).

4.4.3 Information on Factors Influencing C.G.M and Impending Challenges.

The study posted varied questions on the general information about maize farming and their understanding of cost realized from commercialization of green maize under (proper) utility of questionnaires raised. It further showed that the public were aware of area under maize sale. At the same time, the study focused on the challenges needed to generate a diversified measure in order to address food security by not having an open free market policy.

4.5 Objective III: Consequences of commercialization of sale of green maize

4.5.1 Impact of Commercialization of Green Maize

a) Exploitation

The respondents were able to report some cases linked to commercialization of green maize this comes to being as a result of moral decay in the society. They indicated that will impact to the farmer, the society and the entire nation in the long run. They pointed out the measures used in the process during harvesting as disproportional to the standardized acreage. The businessmen however had their own ways of measurements and thus try to justify this by blaming seed dispersion; space from plant to plant, as not uniformly spaced. This creates an avenue towards exploiting the farmer. Farmer loses 2 points in acre agreed to commercialize the green maize.

b) Anti-social behavior

The study noted that fake money in circulation was on the rise in the green maize business. The respondents reported a case a farmer in Nandi central, Nandi County Arwos who lost his money amounting to Kshs. 102,000 because he was paid in fake currency. The farmer discovered this when depositing his money at a bank. This would have landed the farmer into the Kenyan jails were it not for his and astute farmer.

C.G.M. has bred a new brand of green maize thieves. Respondent noted that there were rising cases of green maize harvesting theft. In one specific case, the (Daily Nation newspaper), reported that thieves were caught at Segemiat in Uasin Gishu County having sold stolen green maize amounting Kshs. 50,000. The maize field belonged to a woman farmer in the stated area of Segemiat.

c) Family Disputes

According to respondents the family disputes were on the rise. A lot of money is in circulation and majority of men who sell their maize end up going to urban centers to

have fun with call girls. They end up returning minus the year's earnings. Such incidences, to some extent, are related to other cash crops which have become a source of family joy and sorrow. This is similar to what occurs in tea bonuses in Kericho, Kiambu and Nandi districts, wheat in Narok and Uasin- Gishu counties.

This same cash flow has led to a number of school drop outs. The reason raised by respondents, did justify this statement. The money earned was available for a long time; budgeted for school fees the following year, yet with numerous problems accompanying the farmer, they opted to squander the money. Secondly, many school going children drop out to get employed during the harvesting seasons. Commercialization of green maize is a national activity and needs a lot of government intervention and commitment to address this issue. This shall help the farmer be able to send his children to school.

Anti green maize commercialization proponents claim that the sale poses a threat to food security in the country. They stated that thousands of acres of ready maize crops are being sold to the businessmen daily, in different places. Though viewed as profit driven, are controlled by the effects of a liberalized market. In the long run, the farmers are suffering from food shortage (Ministry of Agriculture 2012).

Green maize sale denies the state /county revenue which would have been sold to the National Cereals and Produce Board. Many people too would be employed and the entire society would have benefitted. However, this is changing and attributed to functional county governments which levy tax to lorries ferrying maize. This being a farm business and no specified government regulations give leeway to scrupulous businessmen and middlemen to exploit the farmer and deny the government its revenue.

This further denies the state its future food security and planning. Though supplied with subsidized fertilizer the farmer looses to enjoy the benefit of the government. It came to public domain that the country is blessed with abundant maize fields, but at the end, does not reflect the cereals received at the National Depots. This becomes a challenge to the government. However, this is the reason why each year, the country imports maize from countries like South Africa, Malawi and even United States of America. Malawi became successful and has become a model country that needs to be bench marked and to be applauded and emulated on her styles to attain maize production stability. The end result is having a serious policy framework (Ministry of Agriculture, 2012).

d) Food Crisis

The county is said to be in food deficit when many factors do occur. Some of the factors are like draught, pests and diseases. However the commercialization in its magnitude contributes to food crisis. But incase of the said factors not occurring. Farmers are there selling their produce. The profit realized at times have become a source of joy to others while sorrow to others. It was noted that the transporters in the business occasionally have hectic time in the hands of corrupt officers who, when not bribed, would delay them. Hence arrive late to deliver their goods.

Table 4.17 Respondents response on food shortage

Response	Male		Female		Total	
	Frequency	**%**	**Frequency**	**%**	**Frequency**	**%**
Strongly agree	30	34	45	61	75	46
Agree	37	43	5	7	42	25
Not sure	9	10	9	12	18	10
Disagree	3	3	15	20	18	10
Strongly disagree	8	10	_	_	18	10
Total	**87**	**100**	**74**	**100**	**161**	**100**

Source: Field data; 2013

Commercialization of green maize as seen in the table shows that 51% of the entire population believed that there is acute food shortage in the county. According to the table 4.6, it would be prudent to implement a serious food security measure. Another 24 % still agree CGM has encouraged food shortage and hence led to food insecurity. However, some still believe that CGM is only blamed for the shortage. That should not be the case. The farmer has an obligation to plan for what is enough for the year.

Plate 4.8: A pick up at market centre.

Source: Field data 2013

The plate 4.8 above shows a driver and his conductor contemplating on their next move after they got a puncture? By the look of things, there is a sign of desperation from the driver whose arms are on waist and conductor in a cap. Their possible customer is this old man seeking to buy one and asking for an addition for free. This delay in the end, blows back its challenges to the farmer by reducing the price value of green maize.

4.6 Objective IV: Advantages and Disadvantages of the Sale of Green Maize

4.6.1 Employment Opportunity

When the maize crops are ready for market use in the said sub county, county and other parts it becomes a source of employment, offering seasonal employment opportunities to hundreds of youths. This informal sector and robust industry like any other form of employment offers opportunities to many school drops outs and those who have completed school. Generally one lorry load needs approximately 15 youths to do the harvesting.

Plate.4.9: Sale of green maize at Ndurio

Source: Field data, 2013

4.6.2 Challenges of commercialization of green Maize

Plate 4.10: A businessman at a trading centre at Chepkongony.

Source: Field data, 2013

The plate 4.10 above shows one of the male businessmen at one of the many shopping centres going on with his business. Having a look on the G.M.S, it was realized that

this enterprise is faced with several challenges that include bad weather, health hazards and corruption.

The Nandi culture confined women to household chores. However, this was changing owing to increasing demands occasioned by household expenses. In addition, there were female-headed household chores and the constant concern of girl child education.

The study established that majority of people who played a significant role in the market place are the women. From the analysis, it was noted that women took their responsibility seriously, unlike men who were motivated by the self gains like money, which they used for entertainment.

As a result of the ever rising economic challenges and constant demands socially, every member of the community is expected to provide for themselves. This calls for a joint effort. It is further noted that there are many single parents who are the head of their families. The Kenya Woman Finance Trust (K.W.F.T) and other financial institutions have enabled women to transact business of any kind and choice.

It was evident that women either boiled or roasted maize while others did both. A significant number of men did the same business. Where it came to transacting a sale agreement in a maize field, men played a pivotal role. The green maize sale undergoes the transaction, agreement, payment and finally harvesting. From these stages, it was found that women took active roles in the negotiations.

Several farmers in the study said that farming is risky and a difficult business considering the challenges they are faced with. The price of fertilizer was Kshs. 6000 per 50Kg excluding transportation costs to the farm. The cost of hybrid maize seeds sold by the Kenya Seed Company too was considered too expensive, an estimate of Kshs. 1200 per 10 Kg. To add on the list of predicaments, the farmers were also forced

to deal with the high prices of farm machinery, tools and spares. The elderly respondents lamented that natural calamities made them poor, citing the drought of 1980's that had ravaged the entire country. They had taken loans from the A.F.C the (Agricultural Finance Corporation) to buy farm inputs. These loans were attached to their properties as collateral. Owing to inability to pay, most farmers lost their properties like land, tractors, and cars among other assets. Coincidentally, during this period, the dairy farmers lost their hard earned money from Kenya Cooperative Creameries. The respondents asserted that, with the way things were going, it would be better off not to incur an unnecessary cost. This shows that maize farmers were dissatisfied people. Some had substituted maize farming with dairy farming and tree farming. This is according to the response from the farmers.

Table 4.18 Are there Challenges faced by the farmers on commercialization of green maize?

Responses	**Frequency**	**%**
Strongly agree	69	43
Agree	28	17
Not sure	21	13
Disagree	3	2
Strongly disagree	40	25
Total	**161**	**100**

Source: Field Data 2013

The proponents of maize ban has attributed commercialization of green maize to increased food scarcity, lack of money in time of paying school fees, high cost of farm inputs, diseases, seed and fertilizer and environmental changes.

Out of the responses, more than 43% (99) indicated they had experienced food shortage. From their discussion, they claimed that the worst months are April, May and June in the entire region (county) resulted from last year's maize sale. According to them, these months are characterized by heavy rainfall and a new planting season. The remaining number of bags had been disposed off to purchase farm inputs. Another 28 (17 %) agreed that there is food shortage. The study provided information showing 21(13%) as not aware whether CGM is a challenge or not. Only 2% of the respondents claimed that they had partially experienced food shortage. From the report, 40 respondents (25%) saw no connection of CGM to any challenge and thus not been affected by food shortage.

Traditionally in Kenya, farmers sell their maize produce to the National Cereals and Produce Board (NCPB). This trend has changed in the recent times the reason being the challenges faced at the NCPB and the upfront payment in the CGM. Selling green maize was seen as a sign of poverty by the elderly and according to them, it should be banned. Most farmers however are driven into the green maize sale by quick economic gains and to avoid the constraints of low prices from the NCPB. The farmers sell to business men at whole sale prices. Thereafter, the latter sell the maize to retailers who roast and/ or boil them as shown in Plate 4.4

4.7 Summary of the Chapter

Although many respondents among farmers, middlemen and civil servants supported CGM, there was a large population that recommended the banning of CGM. Among

them, are elderly people and those who they have had bad experience with brokers. people who had a direct experience or had been victims of hunger. Generally, commercialization of green maize has become like any other business and is a source of employment. It is therefore a business which cannot be banned easily. Despite this, there is need to regulate the business. The study highlighted the policy statements in which the government is expected to partake. However much is still at stake. The reason being. The commercialization of green maize is a willing seller, willing buyer, less can be taken by the government. However, policies will reduce the disparities in price and food security. Being a motivator the price value of CGM need not to create food shortage. Though the fields should provide for new crops as stated in the study.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATION

This chapter presents a summary of the major findings of the study. Based on this findings, conclusion and recommendations are presented so as to create awareness and improve the attainment of food security in Nandi and other districts in the county and Kenya in general.

5.1 The Major Findings

The study attempted to evaluate the factors influencing the sale of green maize by looking at the role played by farmers, businessmen, middlemen and the government agency.

From the analysis here are the major findings:

5.1.1 The government policy on commercialization of green maize

Government budgetary allocation shows lack of commitment to eradication of poverty and hunger. Despite the good policies, the government has done little in as far as allocating enough money to the Ministry of Agriculture and that of irrigation, so as reduce urban migration. This was linked to the point that, you cannot rule an economically endowed mass.

In some parts of the country, taxes are not levied to goods in and out of the district (now county) unlike other counties surrounding the Nandi County. This denies the county her developmental resources. The problem may have been politics but it is upon the Nandi County to seriously collect revenue.

A nation becomes poor as a result of food scarcity hence being prone to many problems. Many school dropouts can be observed in most parts of the country where the Green Maize business is taking place. This finding has a link to the existing literature.

Due to the booming business, certain behaviors' (bad) are cropping up among the members of the community. Incidences like fraud, conning, thefts, fake currency and prostitution has trailed most farmers. Most respondents agree to the statement. It's upon the government to provide for its citizens.

5.1.2 Factors that motivate farmers to sale Green Maize

The study revealed that green maize commercialization has been on the rise since 2004. It became notable that the huge profits earned led to CGM. This consequently led to increased food insecurity. The point on poor planning may arise at some time but not because of maize as the source of income to most peasant farmers. Though to some extent, this has improved farming by having diversity among farmers in the region.

5.1.3 Impact of commercialization of green maize

Farmers highlighted the challenges they underwent and thus made them think otherwise. They pointed out incidences like corruption, which forced them to buy seeds which according to them, did not meeting the set standards of the Kenya Seed Company. This came about when farmers were sold low quality seeds. The seeds have been freely circulated in the Kenyan markets and are packed in the Kenya seeds company's packets. The same poor farmers lost their hard earned money to the corrupt dealers. It brings to the limelight the level of integrity among members of the society. Any incidence of corruption should be dealt with.

On the list of farmers' challenges, the changing cost of farming at every stage and time was one of them. The diesel prices had gone up by almost 200% in the last 3 years (60/=

to 120/=). The cost effect has had a direct effect on the farmers. Tractors cultivating an acre of land three years ago, costed Ksh. 1500 which is hiked to Ksh. 3500 (2013). This is one of the many pocket trainings incurred by the farmers. Just to mention a few, one of them is the price of is Diesel, machinery equipment and the entire farm inputs.

Most families end up not having enough food following the green maize commercialization. Ironically, commercialization of green maize is an avenue of exploitation by the businessmen to the farmer. These farmers had food that lasted less than four months. The rest of the months were spent buying food stuffs.

The commercialization of green maize has no standardization, during harvesting nor at trading. The buyer has the sole monopoly over the farmers. And yet, the farmers has invested heavily, this impedes the farmer's development and thus affects his long hard years of investment.

5.1.4 Advantages and Disadvantages of commercialization of green maize

Their preference for this mode of business was driven by concern on the viability of maize growing. They cited the ever rising farm costs of each year from 2005 to date. They claimed that the government had done little in helping the farmer. This could not be compared to United States of America, where the government protects her farmers from any international threat, (Peters, 1988). Kenya, on her part has not done much at empowering her farmers even when the cost of fertilizer was so high, at Ksh. 6,000 per Kg 50, which was far above the farmers' ability to purchase it. The farmers' behavior was therefore a reaction to the price change of inputs.

Previously, farmers took to the street seeking attention from the Minister of Agriculture and prompted the government to waive prices on fertilizers, to lower and make them affordable at Ksh. 2300. The year 2014 saw the prize of subsidized fertilizer selling at

1800 shillings. The then President of the Republic of Kenya, Hon. Mwai Kibaki launched the new lowered prices at Moi's Bridge trading centre. Farmers applauded the government's effort and support and thus led to increased maize production.

Farmers were dissatisfied by the Ministry of Agriculture's performance. As a result, their yields were poor. As a matter of fact, farming is becoming expensive and that in the future, farmers are altogether contemplating to do away with maize farming not unless the government steps in, in farm input subsidy.

5.2 Conclusions

Despite the many challenges and the government efforts, there is need to improve the welfare of the farmer to ensure food security. One of the responsibilities of a government is to be able to feed her people and thus need to ensure food security. Food security means securing enough food for all her citizens all year round. The existing policies are adequate but they lack strict implementation.

5.3 Recommendation

Following the findings of this study the following recommendations are made:

1. The government should assess the pros and cons in the sale of green maize so that the farmers are not taken advantage by the middlemen.
2. Assess the consequences of commercializing green maize as a way of generating income
3. The government should analyze the policies that will guide farmers on green maize commercialization.
4. There is need for civic education to be conducted among farming communities. This would enable the farmers make wise decisions on green maize sale and the implications.

5. The government at any harvesting time should buy all the farmers cereals at their disposal other than importing which is so costly.

5.4 Suggestion for Further Research

Considering the objectives of the study and the results thereof I recommend the following areas for further research:

1. Since the research is self-exploratory, more research is recommended in the area of food policy and planning and the emerging green maize harvest and sale. The problem of food insecurity is like a time bomb.
2. The link between green maize sale and the poverty in most rural areas
3. How has challenges CGM has created a robust business which is now cutting across many Counties
4. The role played by the “County Administration” and National government in the Green Maize Business.

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APPENDICES

Appendix I: Budgeting For Three Months during Research Period

	No. of days	**Unit costs**	**Total**
Travelling costs	90	400/=	36,000
Accommodation and meals costs	90	1000/=	90000
Typing and printing costs			30,000
Stationery costs/Photocopying			20,000
Communication (email, fax, telephone, internet)	90	300/=	27,000
Research Assistant	30		24000
Total		**800**	**227000/=**

Appendix II: Interview Guide for Information on the Factors Influencing Commercialization of Green Maize

You are kindly requested to respond to all items in the questionnaire as honestly as possible. The information hereby will be treated with outermost confidentiality. Do not write your name or your institution. Your information will help the policy maker (the government) to address the food security locally and nationally. Please answer all questions in all sections.

Part A: Background information (Demographic Data)

1. Gender Male ☐ Female ☐

2. What is your age bracket in years?

18 – 24 ☐

25 -31 ☐

32 – 38 ☐

39 – 45 ☐

46 – Above ☐

3. What is the highest academic level attained

Primary ☐

Secondary ☐

College ☐

University ☐

Other (specify) ☐

4. Status of Farmers

Married ☐

Singles ☐

Windowed/widower ☐

Separated ☐

Not married at all ☐

5. How long have you been a farmer?

1 -5 yrs ☐

6 – 10 yrs ☐

11 – 20 yrs ☐

Above 20 yrs ☐

Section B: Information about the ministry of agriculture and the public administration involvement in Commercialization of Green Maize.

6. Are you a business person ☐ or middle Man/Women? ☐

7. Do you think the business you are engaged in, is on the rise?

Yes ☐ No ☐

8. Who really plays significant role to the growth of this business?

Men ☐ women ☐ youth ☐

9. Sale of green maize paying compared it to dry harvest?

Yes ☐ No ☐

1. How did you get involved in this business?

Introduced

By a friend ☐

Self driven ☐

Economic factors ☐

2. How would you rate involvement by public administration in C.G.M.?

STATEMENT	**S.A**	**A**	**D.A**	**S.D.**
Willing to get involved				
Negative participation				
Positively participation				
Sincere participation				

For the next question, choose one of the answers given e.g.

Strong agree (SA), Agree (A) Disagree Agree (D.A) Strong Disagree (S.D.)

12. Do you think Commercialization of Green Maize is a threat to food security in Nandi South?

Agree ☐ Strongly Agree ☐

Disagree ☐ Strongly disagree ☐

13. Do you think Commercialization of Green maize is a relief to the farmers?

Agree ☐ Strong Agree ☐

Disagree ☐ Strongly Disagree ☐

14. Banning Commercialization of Green Maize will reduce food shortage. Do you agree?

Yes ☐ No ☐

Section C:

State challenges faced by farmers in the entire farming and the government's non-involvement.

15. Do you think the government has done a lot to help the farmer?

Yes ☐ No ☐

17. Should the government get involved in controlling the business?

Yes ☐ No ☐

18. What other alternatives are available to farmers instead commercialization of green maize sales in Nandi South District?

_____

_____

_____

19. How can the alternatives be enhanced?

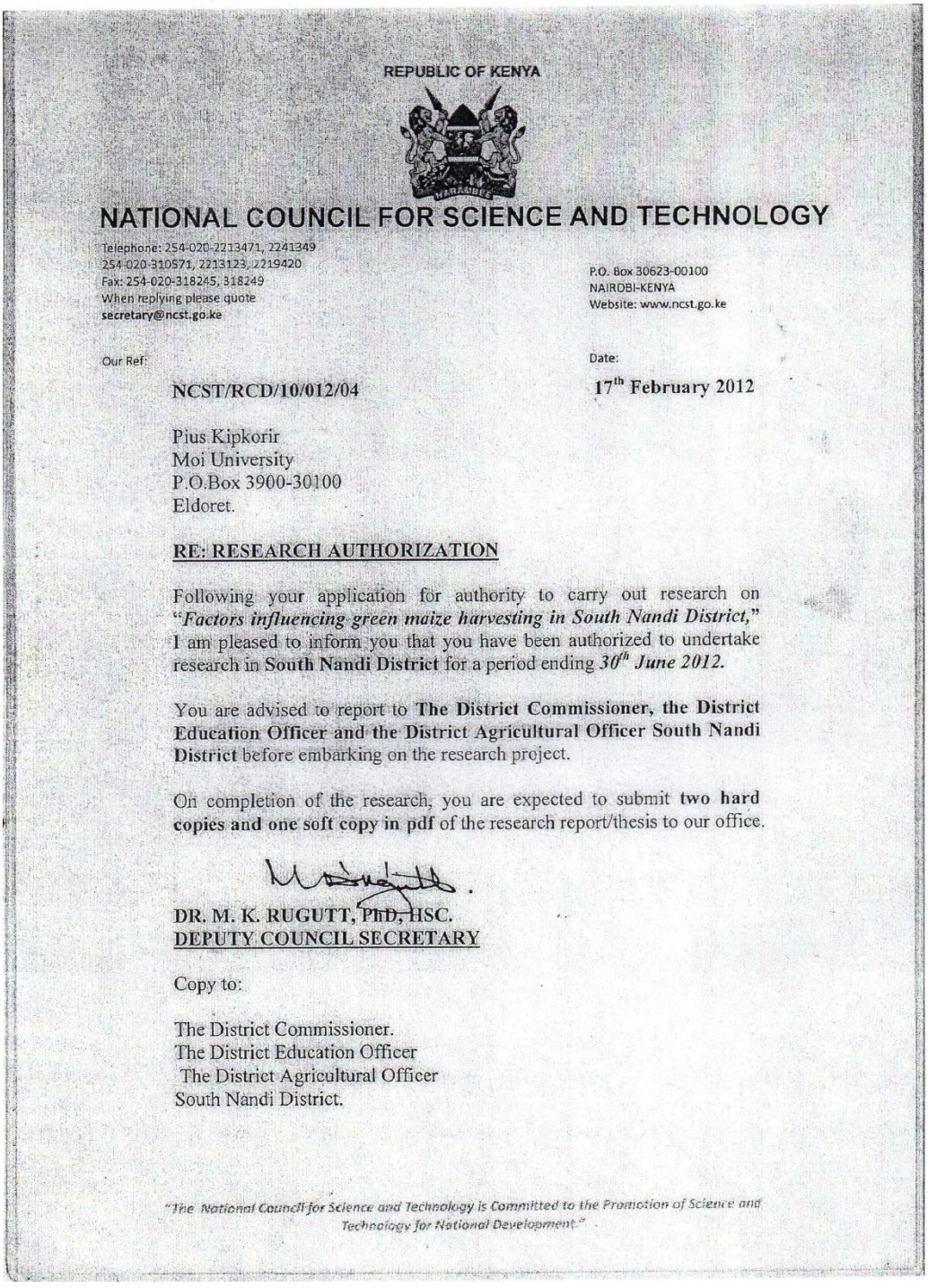
_____

_____

_____

_____

Appendix III: Research Authorization



REPUBLIC OF KENYA

NATIONAL COUNCIL FOR SCIENCE AND TECHNOLOGY

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When replying please quote
secretary@ncst.go.ke

P.O. Box 30623-00100
NAIROBI-KENYA
Website: www.ncst.go.ke

Our Ref: NCST/RCD/10/012/04

Date: 17th February 2012

Pius Kipkorir
Moi University
P.O.Box 3900-30100
Eldoret.

RE: RESEARCH AUTHORIZATION

Following your application for authority to carry out research on "***Factors influencing green maize harvesting in South Nandi District,***" I am pleased to inform you that you have been authorized to undertake research in **South Nandi District** for a period ending ***30th June 2012.***

You are advised to report to **The District Commissioner, the District Education Officer and the District Agricultural Officer South Nandi District** before embarking on the research project.

On completion of the research, you are expected to submit **two hard copies and one soft copy in pdf** of the research report/thesis to our office.

DR. M. K. RUGUTT, PhD, HSC.
DEPUTY COUNCIL SECRETARY

Copy to:

The District Commissioner.
The District Education Officer
The District Agricultural Officer
South Nandi District.

"The National Council for Science and Technology is Committed to the Promotion of Science and Technology for National Development."

OFFICE OF THE PRESIDENT
PROVINCIAL ADMINISTRATION & INTERNAL SECURITY

Telegrams "**DISTRICTER**: Nandi Sout
Telephone
Email: denandisouth@yahoo.com
When replying please quote

Ref No: NSD/ED/10/9/VOL I/67

DISTRICT COMMISSIONER
NANDI SOUTH DISTRICT
P. O BOX 6 -30305
KOBUJOI

17Th February, 2012

TO WHOM IT MAY CONCERN

RE: RESEARCH AUTHORIZATION
PIUS KIPKORIR

This is to inform you that the above referred person is a lecturer at Moi University and has been authorized to carry out research on **"Factors influencing green maize harvesting in South Nandi District."**

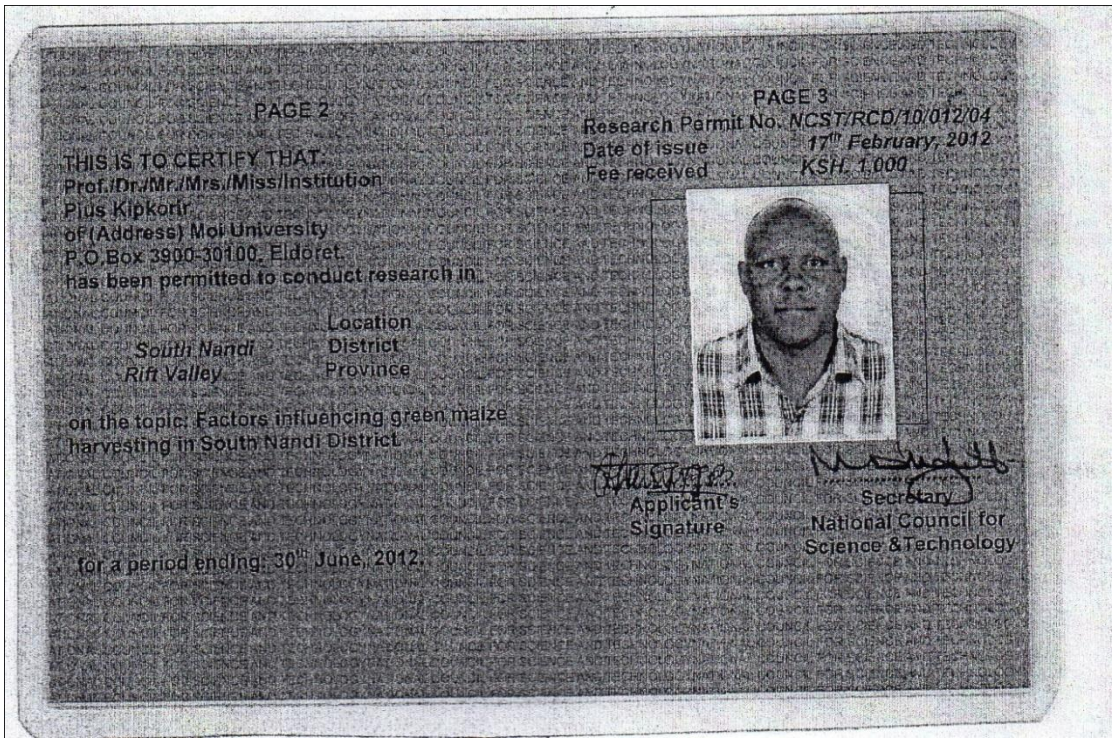
The research is scheduled to take place from the date of this letter up to 31st August 2012.

Kindly accord him any necessary assistance.

J. N. MBUGUA
FOR: DISTRICT COMMISSIONER
NANDI SOUTH

Cc District Officers
Aldai Division
Kaptumo Division

Appendix IV: Research Permit



PAGE 2

THIS IS TO CERTIFY THAT:
Prof./Dr./Mr./Mrs./Miss/Institution
Pius Kipkorir
of (Address) Moi University
P.O.Box 3900-30100, Eldoret.
has been permitted to conduct research in

South Nandi — Location
Rift Valley — District / Province

on the topic: Factors influencing green maize harvesting in South Nandi District.

for a period ending: 30th June, 2012.

PAGE 3

Research Permit No. NCST/RCD/10/012/04
Date of issue 17th February, 2012
Fee received KSH. 1,000

Applicant's Signature

Secretary
National Council for Science &Technology