THE ROLE OF MILK PROCESSORS IN POVERTY REDUCTION AMONG SMALL SCALE DAIRY FARMERS: CASE STUDY OF NKCC LTD F.I.DORET SUPPLIERS

BY:

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A PROJECT PAPER SUBMITTED IN FULFILMENT OF THE REQUIREMENT OF THE DEGREE OF MASTERS OF ARTS IN SOCIOLOGY
DECLARATION

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

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DATE

DECLARATION BY SUPERVISOR

This project paper has been submitted with my approval as the University of Nairobi Supervisor.

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DATE

DEPARTMENT OF SOCIOLOGY AND SOCIAL WORK

UNIVERSITY OF NAIROBI
DEDICATION

This research project is dedicated to my loving wife Dr. Mrs. Viola Boor, who constantly encouraged, supported and prayed for me to go on even when I was at the verge of giving up. This gave me a reason to work hard and to face every challenge in my life with confidence.
All Glory and Honor be to the Almighty God, for the gift of life and all the blessings. Amen.

First, I wish to express my sincere gratitude and thank my supervisor, Prof. Mhurugu whose intellectual supervision, valuable guidance, support, critical evaluation, encouragement and patience has led to the successful completion of this project.

I also wish to acknowledge and thank a number of people who in their capacities as individuals as well as teams, directly or indirectly willingly provided valuable contribution to success of my project.

I would also like to thank many of my friends who encouraged me to complete my work but whose names have not appeared on this page, always know that your comments were appreciated, although it may not be so apparent.

Lastly, I will always be indebted to my family for their unquestionable devotion and love, which saw me through difficult times during my study.
The aim of this research study was to analyze the socio-economic role of milk processors to poverty and hunger reduction among small scale dairy farmers. Processors play a critical role in the dairy sector of value addition but mostly have been perceived to be exploiting dairy farmers but the truth is that processing increases shell life of milk and thus creates demand for more which eventually the farmer benefits.

Specific objectives of this study were to establish the extent to which milk processing had increased raw milk supply from the dairy farmers and also to examine the decision making role of dairy farmers in influencing processors to act on matters relating to farmers interests. This involved documenting the intervention measures by the dairy industry players.

This study took a multiplicity of theories to provide the basic theoretical framework for analyzing the socio-economic effects of milk processing and the dairy industry as whole. The theories included: Maslow’s hierarchy of needs, structural functional theory and the rational choice theory.

A lot of literature was reviewed on the dairy industry especially matters on milk processing. Furthermore policies and regulations of the dairy industry were reviewed. Much literature was reviewed especially touching on poverty and food security.

The researcher looked at literature from the international perspectives then narrowed down to specifically Kenyan context which cumulated the extent at which milk processing contributes to poverty reduction in Uasin Gishu.

The study employed descriptive study as research design; with the target population of 100 small scale dairy farmers and 7 dairy sector stakeholders. Data was obtained through interview guides, document analysis and questionnaires. The data was summarized into frequencies, percentages, charts and tables. The findings showed that the dairy sector supports a lot of livelihoods and there is need for combined efforts by all the concerned parties to work harmoniously in order to address poverty and hunger. Much effort should be at policies and legislation but more so is on inefficiencies at farm and processing levels.
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CHAPTER ONE: INTRODUCTION

1.1. Overview

This chapter provides the background to the study and problem statement. It also states the overall and specific objectives as well as research questions the study seeks to answer. The justifications, scope of the study are also detailed in this chapter.

1.2. Background of the study

Dairy production is a major activity in the livestock sector and an important source of livelihood for about 600,000 small-scale farmers in Kenya. Apart from milk, dairy animals also provide manure, other marketed products such as calves and cullings as well as other intangible benefits such as insurance and status symbol. In 1995, the value of dairy production was estimated at Ksh 23.1 billion equivalent to 14% of total value of agricultural production (Kodhek, 1999).

In 2000 milk production was estimated at 2.3 billion litres of which 63% was marketed, 30% was consumed at home and the rest 7% fed to calves (Republic of Kenya, 2002). The value of this production is estimated at Ksh 35.2 billion equivalent to 25% of gross agricultural output recorded in 2001.

Despite this significant contribution to the national economy and households incomes, the dairy industry is besieged by a number of technical, economic and institutional problems, which seems to have escalated in the recent past. Despite the fact that Kenya is food insecure, there is a general consensus that it can feed itself.

However, even if it has the potential to produce more than its food needs, it has implicitly adopted strategies of increasingly relying on commercial imports and food aid to the extent that it has become perpetually food import/aid dependent. Parallel to this is the observed trends of low declining levels of support to agriculture and food sector.

Throughout generations and civilizations humanity has been confronted with natural catastrophes and man-made hazards that often lead to suffering, loss of property and fatalities.
Over the years and in recent times, Kenya has been exposed to a variety of hazards such as droughts, famine, fires, floods, diseases, occupational and industrial accidents among others.

The onset of hazards is either slow or rapid. Slow onset hazards are cyclical in nature, and affect more people whereas rapid onset hazards affect fewer people, take place anytime and require quick response (Baker, W. E et al. 1983).

Food security is an important component in the society and there is need to ensure that people receive adequate food. Investments in agriculture and rural development are helping millions earn a better living, grow more nutritious food and build better futures. Agriculture is a proven pathway out of poverty with unbelievable potential for the future. Milk is an ultimate convenience food, you never have to go far to buy it, it’s very nutritious and is an important ingredient in many other foods.

1.3 Problem statement

The Government has cardinal responsibility to ensure food security to its citizens since this has a direct effect on the social and economic stability of a country. Maize is the main staple food in Kenya. Other sources of food include rice, wheat, beans, Irish and sweet potatoes and traditional foods such as sorghum, millet, cassava, arrow roots and yams. Production of these food crops have increased in the recent years. Fish and livestock production are other components of food production and together with food crops constitute food security in Kenya.

Kenya Government has over the years strove to achieve national, household and individual food security throughout the country with mixed success.

The 2007 Economic Review of Agriculture indicates that 51% of the Kenyan population lack access to adequate food. Food insecurity is closely linked to poverty which is estimated at 46% nationally. National food security does guarantee household food availability. The government continues to feed section of the population that is chronically food insecure (on average 1 million per year especially in arid and semi-arid areas). The population of cattle in Kenya is 3,355,407 exotic and 14,112,366 indigenous (2009 Census) and thus an important contributor to the national economy.
The world concern about human condition in the 21st century is voiced in the millennium declaration, which calls on government to put in place actions that will lead to noticeable improvements in the human condition by 2015. The dream of making significant differences in human well being by 2015 is given concrete expression in the millennium development goals a set of quantified and time bound targets for reducing extreme poverty and hunger by 2015.

To achieve reduction of poverty and hunger it needs combined efforts to ensure food security in the country which New KCC plays a role in contributing to the food basket in the country.

In Kenya the experience of food insecurity is common and there is need to find a solution. More emphasis has been put on grains and cereals sector hence when there is lack of it we hear of food insecurity. There is need to focus on other foods rather than grains and cereals alone. Food shortage in a population is caused by inadequate productions, post harvest wastages or by difficulties in food distribution, it may be worsened by natural climatic fluctuations and by extreme political conditions related to oppressive governments or war-fare (Graig A. Lockard 2010). The most pressing and dangerous issue that faced the people of Kenya recently is drought which was declared a national disaster by president in April 2011.

Access to food and water became very scarce, millions of livestock died, and territorial violence increased drastically as people competed for patches of fertile land. When nourishment can be found, heightened demand raises prices and makes staple goods difficult to obtain.

New Kenya Cooperative Creameries Limited plays an important role in contributing to food security in the country. The contribution is mainly on value addition which results after milk processing. By processing raw milk to various products, New KCC ensures that the products are available for a longer period and thus reducing spoilage. Milk processing is destined to provide the consumer with a wholesome nutritious and safe product. The production of quality milk and milk products begins on the farm and continues through further handling, processing and distribution. Milk processing assures the destruction of human pathogens, the maintenance of product quality without significant loss of flavor, physical and nutritive properties and the selection of organisms which may produce unsatisfactory products. Milk processing into various dairy products ensures that end users have a choice to make on the product to consume.
Processing of milk creates demand for raw milk which serves as the main raw material for milk processing industries.

Eldoret NKCC Factory receives 80% of raw milk from small scale farmers (KDB 2008).

The income from sale of milk goes a long way in improving the livelihoods of the families in that they are in a position to accomplish other monetary needs in comparison with families not involved in dairy. Milk processing therefore opens up market for raw milk and thus income of dairy farmer's increases.

Studies have been made on the importance of agriculture to our economy. Further studies and research have been done on specific agricultural enterprises that contribute directly to improvement of family’s livelihoods. Dairy production as a whole has been mentioned as one of the major contributor to poverty reduction. However milk processing in particular has not been mentioned as a factor that contributes to poverty and hunger reduction. This study seeks to find out how milk processing leads to improved livelihoods among the families supplying milk to NKCC Eldoret factory.

The purpose of this study was to find out if milk processing by New KCC Eldoret had social and economic effects to families supplying milk to NKCC Eldoret factory, and establish further whether food security increased as a result of increased incomes from milk proceeds.

1.4. Research questions

1. Which milk preservation methods do farmers use?
2. Which strategies do farmers have to ensure constant supply of raw milk for processing?
3. How does milk processing affect socio-economics of farmers?

1.5. Objectives of the study

1.5.1. Overall objective

The overall objective of the study was to assess the contribution of NKCC to poverty reduction and food security through milk processing.
1.5.2. Specific objectives

1. To establish the extent to which milk processing had increased raw milk supply from the dairy farmers.
2. To examine the decision making role of dairy farmers in influencing milk processors to act on matters relating to farmers interests.
3. To establish milk processors role in poverty reduction and food security among dairy farmers.
4. To make some recommendations to guide relevant stakeholders in addressing food security in the country through advocating for use of milk and milk products.

1.6. Justification of the study

The contribution of livestock productivity is critical. The performance of livestock sector has a strong correlation with the overall Kenyan economy and vice versa (GoK, 2006). The results from the study will provide useful information that may assist policy makers and planners of the food sector to come up with alternative policies that will guide the parties involved in their endeavor to include milk and milk products into the food basket of the country. Further the study will help policy makers to realize the importance of dairy processing in enhancing food security in the country.

1.7. Scope of the study

The study looked at NKCC Eldoret factory in Uasin Gishu County. The study focused on the livelihoods of milk suppliers to the factory. Emphasis was on raw milk supply chain and the effects of processing to the availability of raw material. By focusing on particular region in this case farmers supplying milk to Eldoret factory, the study in addition gave an insight into the wider potentiality and capability of dairy processors in other parts of the country and what was being done to promote the dairy sector.
CHAPTER TWO: LITERATURE REVIEW

2.1. Review of empirical literature

2.1.1. Food security

Food security is defined as “Access by all people at all times to enough food for an active healthy life” (Ellis, 1992). The World Food Summit in 1996 reaffirmed that food security can only exist when all people, at all times have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life. At the macro level, it implies that adequate supplies of food are available through domestic production or through imports to meet the consumption needs of all people in a country. At the micro level (household or individual), food security depends on a number of factors which are related for most part to various forms of entitlements to income and food producing assets as well as the links between domestic and external markets and the transmission effects, from the latter, on small, low income and resource poor producers and consumers. Food security is not just a supply issue but also a function of income and purchasing power and hence it’s strong relationship with poverty.

Kenya for a long period pursued the goal of attaining self-sufficiency in key food commodities that included maize, wheat, rice, milk and meat. Self-sufficiency in maize was achieved in very few years during the 1970’s when production was high to the extent that some was exported. Unfortunately, attainment of self-sufficiency did not automatically imply that household food security was achieved. Evidence shows that solving the food security issue from the production (supply side) point of view, which overlooks the demand side, does not solve the food security problem particularly the access of vulnerable groups to enough food.

In 1986, Kenya shifted from a food self-sufficiency goal to an outward strategy by identifying seven commodities that form the core of its current food and agricultural policy: maize, wheat, meat, milk and horticultural crops for both home consumption and for export markets and coffee and tea for raising farm income and earning foreign exchange. The strategy was aimed at achieving multiple objectives, including family and national food security, foreign exchange, government revenue, employment, regional balance and generating new incomes streams for the
rural people. [GoK 1986, Fischer] This strategy continues to be valid. It can thus be concluded that self-sufficiency and expansions of exports are the main objectives of the government in agricultural sector.

On the average 30% of the food consumed by rural households is purchased while 70% is derived from own farm production. On the other hand, 98% of the food consumed in urban areas is purchased while about 2% is own production. The main sources of farm incomes are the crops and livestock products that are sold by households. About 50 percent of the rural farming households are involved in off-farm income generating activities and about 36 percent have at least one salary earner living away from the farm (GoK. 2002). Furthermore, a third of the households receive remittances. Most rural people depend on non-farm activities for a significant portion of their incomes. On the average 30% of the rural incomes for households are derived from farm incomes while 70% is derived from off-farm incomes, which includes remittances. However, these ratios vary from region to region with farm incomes forming a low proportion (18%) in Eastern Province and a high proportion 60% for Rift Valley Province.

2.1.2 Food Insecurity

Food insecurity in Kenya occurs both in urban and rural areas and in both high potential and the Arid and Semi Arid Lands (ASAL) areas. About 51% and 38% of the rural and urban populations respectively are food insecure. The insecurity has been attributed to many factors including: decline in agricultural productivity; inefficient food distribution system; population growth; unemployment; access to income and high incidence of HIV/AIDS among others. Food insecurity in Kenya has been classified as either chronic or transitory. Chronic food security results from a continuous inadequate access to food and is caused by the chronic inability of households to either produce or purchase sufficient food, whereas transitory food insecurity is the inadequate access to food due to instability in food production, food supplies and income. Food problem in Kenya is mainly of transitory nature. This has been exemplified by: periodic droughts over the years, institutional failure and poor policies which cause food crop and livestock production to decline forcing the country to import substantial food stuffs. While food crisis in the ASAL has always been attributed to climatic and environmental conditions other equally important factors have been documented. These include limited alternative sources of
income, exploitative cereal marketing channels, unavailability of drought and disease resistant crop varieties, low limited crop diversification, poor storage methods, lack of credit services, inaccessibility to agricultural services, illiteracy and poverty. [Mayanga et al. 2003].

Food insecurity has also been viewed as a question of entitlements where, not all can have a fair share of the food available or produced. Sen argues that some people are deprived of food due to a breakdown in the ‘means’ of accessing food. As evident in Kenya, food insecurity has occurred without any decline in the general supply of food. In other words, food production per person can increase and yet more people still go hungry. This is basically due to the other intervening variables like food distribution patterns as well as national policies and subsidies. Furthermore, food shortages are not experienced uniformly even in the same food deficit zone, [Sen A. 1981].

Recurrent food shortages especially before grain marketing was liberalized in Kenya have been blamed on the abandonment of indigenous drought resistant crops and soil conservation methods. However, initiatives being made to assist rural communities to revert to these practices are beset with obvious inherent contradictions. Apart from changes in feeding habits and tastes over time, the market has not been overly receptive to these changes particularly with regard to indigenous crop varieties like millet, cassava, sorghum and cowpeas. It has also become increasingly difficult to convince consumers that their traditional crops and vegetables are not only well suited to the local climatic conditions but they are also nutritious. As a result, there is dire need for a concerted and a participatory effort aimed at sustainable co-existence between ‘new’ technologies in agriculture and the traditional farming practices.

Food insecurity has also been caused by land fragmentation, as most of the original large-scale farms have been sub divided beyond economically sustainable production capacity. As a result of the fragmentations, some 89 percent of the households in Kenya are living in less than 3 ha while more striking is that 47 percent live on farms of less than 0.6 ha (1.5 acres) therefore the country is predominantly made of small farms: 10 percent of the holdings or 575,000 households are above 3 ha (7.5 acres). One third of these are in the large farm areas of the Rift Valley Province and another one third in the marginal areas of Eastern Province (Kitui and Machakos) and Nyanza province (Homabay and Migori). The balance is small pockets of large farms in all areas of the country.
Despite the rental market, Kenya is faced with landlessness when large chunks of idle land owned by the state or individuals still exist. There is a need to revise the existing land laws, land tenure system and land distribution so that land that is idle can be put into productive use. Other bottlenecks to food security include farmers’ inability to access food crop research findings, demotivated extension workers, tribal clashes and displacement, illiteracy and rudimentary farming methods.

2.1.3 Economics of milk processing

The economics of manufacturing of different dairy products, viz. ghee, full-cream milk, standardized milk, toned milk, double-toned milk, skimmed milk and ice-cream (processing only) have been reported.

Milk production is increasing at the rate of one per cent per annum in the world, while in India, it is increasing at the rate of more than 4.5 percent. This increase in milk production and low-cost advantage has attracted the multinationals and other private entrepreneurs to establish milk plants in India. The number of milk plants in the cooperative and private sectors registered under Milk and Milk Product Order (MMPO) has increased from 509 in 1996 to 628 in 2002. Consequently, the total milk-handling capacity has increased from 55,909 thousand litres per day (LPD) to 72,979 thousand LPD during this period. India represents one of the largest and fastest growing World markets for milk and milk products due to the rising disposal income of 250 million middle class families. The demand for milk and milk products is income elastic as it is estimated that 10 per cent of the Indians with highest per capita income consume 30 per cent of the total milk production in India and 30 per cent of the lowest income people consume only 10 percent of the total milk produced in India (Ganguli, 1995).

India has attained the highest milk production status (84.5 million tonnes in 2001-2002: Agricultural Statistics at a Glance, 2002) in the world. To maintain this level and further increase milk production, expansion in the milk marketing structure is needed through a balanced development of the dairy industry. The price and quality of milk and milk products play an important role in increasing their demand. The consumer-producer equilibrium can be restored if plants operate at the minimum cost of processing. The study by Raju (1980) had shown that the...
The dairy industry had hardly attracted 7 per cent of the milk production in the country and the installed capacity of the plants remains unutilized even during the flush seasons by 32 to 35 percent.

The huge fixed investment made in the installation of dairy plants is shared by the small volume of milk, resulting in high cost of its processing. Due to the high cost of processing, the benefits to both the producer and the consumer are reduced. Cost-efficient production of milk in some countries and the protection mechanisms of many developed countries, combined with future developments in the global trade are likely to influence strongly the future shape of international dairying market (Creamer et al., 2002). Against this background, there is a need of regular cost estimates for milk and milk products processing and their break-even level of production.

Despite the need, there have been very few studies (Venkatakrishna, 1975; Singh, 1979; Hedrik and Chandan, 1980; Raju, 1980) on this aspect; on the other hand, the technology has undergone a lot of changes during the past one decade. The recent study by Namaware (2001) was on the cost of manufacturing milk products on an experimental plant. In this direction, the present investigation has reported the component-wise cost, process-wise cost and break-even level of milk and milk products in an ISO-9002 dairy plant.

2.1.4 Opportunities and challenges for value addition

Concerns over quality and safety continue to affect food markets in the world over. Whereas industrialized countries mitigate the negative effects of food safety by regulating production and handling along the market chain, and by providing appropriate information to consumers who are often willing to pay for safety, the situation in developing countries is different. The extent to which governments in developing countries can effectively design and apply appropriate regulations on food safety that also protect the welfare of their predominantly low-income populations is uncertain, given the apparently low demand for product differentiation with respect to safety and quality.
Markets for livestock products such as milk and meat are rapidly changing in eastern Africa with supermarkets and other new niche markets increasingly playing an important role. The emerging markets demand higher quality products currently mainly supplied by large scale farmers, processors and through imports. Off-farm small and medium scale enterprises and smallholder producers often find it difficult to penetrate these niche markets because of failure to meet product safety and quality attributes that the consumers demand. Exploiting these opportunities through value addition and improved marketing of high quality livestock products could provide an important pathway out of poverty for poor producers and small-scale actors in the value chain.

This requires identification of the opportunities and adoption of the right practices, together with an enabling policy and institutional environment that recognizes the co-existence of both formal and informal (or traditional) food supply systems, divergent views of various stakeholders on food safety objectives in the face of this co-existence, and low willingness to pay among consumers for improved food safety and quality. Often, these environments are characterized by limited or no food safety and quality regulation; where such regulations exist, the enforcement capacity is low.

Increasing population, urbanization and incomes in developing countries have led to projections that demand for livestock products will continue to outstrip supply (Delgado et al., 1999). Quality and safety will be important factors. Currently, there are limited value-added products produced in the region due to lack of innovative product development and diversification to meet various needs. Intra-COMESA (Common Market for Eastern and Southern Africa) value of trade in dairy products only amounted to about 5% of total production over the previous years (COMESA/EAC, 2004). This gap is currently filled through imports into the region. There is limited empirical literature on how the dominantly informal market actors can innovatively respond to better exploit consumer demand for higher meat and milk quality and safety in the region (Karugia, 1997).

Currently, the milk and meat sectors in the region are dominated by many scattered smallholder producers who sell raw products directly to consumers or through small scale intermediaries. Industrially processed food produced under formal regulation account for a small percentage of
the market share. In industrialized countries, the responsibility for food safety and effective quality management often rests with regulators and everyone engaged in the often long and anonymous market chains from production to distribution (Jongen and Meulenberg, 2005). In developing countries, where both formal and informal (or traditional) food supply systems co-exist, an optimal mix of both official and self-regulatory approaches is crucial to effective quality assurance.

The world over, indications are that quality care and sound supply chain management are rapidly becoming key features for market access and competitiveness (Reardon et al., 2003). But factors determining trends in local demand and preferences across various market segments (supermarkets, hotels, high and low income) have rarely been documented. One recent rare report on the subject from Kenya indicates that supermarkets are growing rapidly at 18% per year and reached 20% of urban food retail by 2003 (Neven and Reardon, 2004). This trend is likely to continue with increasing urbanization. It is in these new markets that local products need to make inroads to capture higher returns. To achieve that, small-scale market actors must adopt organizational forms that better exploit economies of scale among themselves and along the value chain.

2.1.5 Kenya's dairy sector

With more than two thirds of the dairy cattle in eastern and southern Africa found in Kenya, and per capita production levels double those found anywhere else on the African continent, Kenyan milk consumption is amongst the highest in the world. On average, each Kenyan drinks four times the average (25kg/yr) for sub-Saharan Africa. And, despite strong marketing within the formal sector, informal milk sales account for more than three-quarters of the milk market: buying raw milk, direct from farmers or local hawkers, is convenient even for wealthier households, and the high butterfat content is particularly valued for its taste and nutritional value. But with increasing pressure for regulation of the informal sector, can Kenya lead the way in reforming its dairy policies whilst maintaining the growth in smallholder production?
More than 600,000 smallholders, with between one and three cows, currently produce 80 per cent of Kenya's milk. Most dairy consumption is as liquid milk, and the preference for raw milk is high even in urban areas; the exception is Nairobi, where consumers drink more pasteurized milk. But, although milk consumption increases with income, latest research by the DFID-funded Smallholder Dairy Project shows that an increase in raw milk prices is unlikely to dissuade poor people from buying raw milk or to reduce their consumption. However, a price increase in pasteurized milk would result in lower-income groups buying less milk and could seriously affect levels of household malnutrition, particularly amongst children, if the alternative raw milk market were not available. Consumer demand for raw milk therefore plays a significant part in the continuation of the informal sector and it is unlikely that, in the immediate future, consumption levels of raw milk will decline even as incomes increase.

2.1.6 Outdated policies and regulations

The growth in Kenya's dairy sector has been heralded as a great success story, and yet further gains in dairy production and marketing are constrained by a wide range of problems. These include poor quality feed, barriers to animal health services, slow development of breeding services and poor access to credit and milk markets. Many existing dairy policies pre-date independence and tend to be discriminative, with standards biased towards the formal sector. However, due to a lack of capacity and resources, implementation of legislation and regulations is generally poor. For instance, a recent survey has found that very little difference exists in milk quality (based on coliform counts) between licensed and unlicensed traders, which rather invalidate current official unwillingness to license small traders with no fixed premises. Road infrastructure also remains poor, and it is estimated that for every kilometer of poor feeder road farm-gate milk prices are reduced by three per cent. Yet, none of the cess levied on milk is currently used to improve roads.

Despite current constraints, the smallholder dairy sector in Kenya remains competitive, providing good returns. Smallholders have long characterized the Kenyan dairy industry and it is essential that the smallholder sector continues to be incorporated into economic recovery plans for Kenya. "Large commercial dairy farmers need to develop an out grower mentality," stated
professor Anyang Nyongo, the Minister for Planning and National Development at the Dairy Policy Forum held in Nairobi in May 2004. "It has happened in the flower, sugar and vegetable oil industries in Kenya and it should be able to happen in the dairy sector." It is estimated that 12 per cent (365,000 jobs) of the national agricultural workforce is employed for on-farm dairy activities and, given the rapid growth of the sector; it is believed that investment in dairying would create more employment than in most other agricultural sectors.

2.1.7 Causes of poverty

Poverty is an exceptionally complicated social phenomenon, and trying to discover its causes is equally complicated. The stereotypic (and simplistic) explanation persists that the poor cause their own poverty based on the notion that anything is possible. In America some theorists have accused the poor of having little concern for the future and preferring to "live for the moment"; others have accused them of engaging in self-defeating behavior. Still other theorists have characterized the poor as fatalists, resigning themselves to a culture of poverty in which nothing can be done to change their economic outcomes. In this culture of poverty which passes from generation to generation the poor feel negative, inferior, passive, hopeless, and powerless.

The "blame the poor" perspective is stereotypic and not applicable to all of the underclass. Not only are most poor people able and willing to work hard, they do so when given the chance. The real trouble has to do with such problems as minimum wages and lack of access to the education necessary for obtaining a better-paying job.

More recently, sociologists have focused on other theories of poverty. One theory of poverty has to do with the flight of the middle class, including employers, from the cities and into the suburbs. This has limited the opportunities for the inner-city poor to find adequate jobs. According to another theory, the poor would rather receive welfare payments than work in demeaning positions as maids or in fast-food restaurants. As a result of this view, the welfare system has come under increasing attack in recent years.

Again, no simple explanations for or solutions to the problem of poverty exist. Although varying theories abound, sociologists will continue to pay attention to this issue in the years to come.
The effects of poverty are serious. Children who grow up in poverty suffer more persistent, frequent, and severe health problems than do children who grow up under better financial circumstances.

- Many infants born into poverty have a low birth weight, which is associated with many preventable mental and physical disabilities. Not only are these poor infants more likely to be irritable or sickly, they are also more likely to die before their first birthday.

- Children raised in poverty tend to miss school more often because of illness. These children also have a much higher rate of accidents than do other children, and they are twice as likely to have impaired vision and hearing, iron deficiency anemia, and higher than normal levels of lead in the blood, which can impair brain function.

Levels of stress in the family have also been shown to correlate with economic circumstances. Studies during economic recessions indicate that job loss and subsequent poverty are associated with violence in families, including child and elder abuse. Poor families experience much more stress than middle-class families. Besides financial uncertainty, these families are more likely to be exposed to series of negative events and “bad luck,” including illness, depression, eviction, job loss, criminal victimization, and family death. Parents who experience hard economic times may become excessively punitive and erratic, issuing demands backed by insults, threats, and corporal punishment.

Homelessness, or extreme poverty, carries with it a particularly strong set of risks for families, especially children. Compared to children living in poverty but having homes, homeless children are less likely to receive proper nutrition and immunization. Hence, they experience more health problems. Homeless women experience higher rates of low-birth-weight babies, miscarriages, and infant mortality, probably due to not having access to adequate prenatal care for their babies. Homeless families experience even greater life stress than other families, including increased disruption in work, school, family relationships, and friendships.
Sociologists have been particularly concerned about the effects of poverty on the “black underclass,” the increasing numbers of jobless, welfare-dependent African Americans trapped in inner-city ghettos. Many of the industries (textiles, auto, and steel) that previously offered employment to the black working class have shut down, while newer industries have relocated to the suburbs. Because most urban jobs either require advanced education or pay minimum wage, unemployment rates for inner-city blacks are high.

Even though Hispanic Americans are almost as likely as African Americans to live in poverty, fewer inner-city Hispanic neighborhoods have undergone the same massive changes as many black neighborhoods have. Middle and working class Hispanic families have not left their barrio, or urban Spanish-speaking neighborhood, in large numbers, so most Hispanic cultural and social institutions there remain intact. In addition, local Hispanic-owned businesses and low-skill industries support the barrio with wage-based, not welfare-based, businesses.

Climbing out of poverty is difficult for anyone, perhaps because, at its worst, poverty can become a self-perpetuating cycle. Children of poverty are at an extreme disadvantage in the job market; in turn, the lack of good jobs ensures continued poverty. The cycle ends up repeating itself until the pattern is somehow broken.

2.1.9 Feminist perspective on poverty

Finally, recent decades have witnessed the feminization of poverty, or the significant increase in the numbers of single women in poverty alone, primarily as single mothers. In the last three decades the proportion of poor families headed by women has grown to more than 50 percent. This feminization of poverty has affected African-American women more than any other group.

This feminization of poverty may be related to numerous changes in contemporary America. Increases in unwanted births, separations, and divorces have forced growing numbers of women to head poor households. Meanwhile, increases in divorced fathers avoiding child support coupled with reductions in welfare support have forced many of these women-headed households to join the ranks of the underclass. Further, because wives generally live longer than their husbands, growing numbers of elderly women must live in poverty.
Feminists also attribute the feminization of poverty to women's vulnerability brought about by the patriarchal, sexist, and gender-biased nature of Western society, which does not value protecting women's rights and wealth.

2.1.10 Poverty and hunger

We often hear about people's desire to solve world hunger, or to be able to feed the world and help alleviate the suffering associated with it.

However, meaningful long-term alleviation to hunger is rooted in the alleviation of poverty, as poverty leads to hunger. World hunger is a terrible symptom of world poverty. If efforts are only directed at providing food, or improving food production or distribution, then the structural root causes that create hunger, poverty and dependency would still remain. And so while continuous effort, resources and energies are deployed to relieve hunger through these technical measures, the political causes require political solutions as well.

There are many inter-related issues causing hunger, which are related to economics and other factors that cause poverty. They include land rights and ownership, diversion of land use to non-productive use, increasing emphasis on export-oriented agriculture, inefficient agricultural practices, war, famine, drought, over-fishing, poor crop yields, etc. Solving world hunger in the conventional sense of providing/growing more food etc) will not tackle poverty that leads to hunger in the first place. Further, there is a risk of continuing the poverty and dependency without realizing it, because the act of attempting to provide more food etc can appear so altruistic in motive. To solve world hunger in the long run, poverty alleviation is required.

The food scarcity part of the argument in the population debate is an interesting one, people are hungry not because the population is growing so fast that food is becoming scarce, but because people cannot afford it. Food may be scarce, but it is international trade, economic policies and the control of land that have lead to immense poverty and hunger and therefore less access to food, not food scarcity due to over population.
Food aid, when not for emergency relief, can actually be very destructive on the economy of the recipient nation and contribute to more hunger and poverty in the long term. Free, subsidized, or cheap food, below market prices, undercuts local farmers, who cannot compete and are driven out of jobs and into poverty, further slanting the market share of the larger producers such as those from the US and Europe. Many poor nations are dependent on farming, and so such food aid amounts to food dumping. In the past few decades, more powerful nations have used this as a foreign policy tool for dominance rather than for real aid.

Third World countries are often described as developing while the First World, industrialized nations are often developed. A lack of material wealth does not necessarily mean that one is deprived. A strong economy in a developed nation doesn’t mean much when a significant percentage even a majority of the population is struggling to survive.

Successful development can imply many things, such as though not limited to:

- An improvement in living standards and access to all basic needs such that a person has enough food, water, shelter, clothing, health, education, etc;
- A stable political, social and economic environment, with associated political, social and economic freedoms, such as though not limited to equitable ownership of land and property
- The ability to make free and informed choices that are not coerced
- Be able to participate in a democratic environment with the ability to have a say in one’s own future
- To have the full potential for what the United Nations calls Human Development:

Human development is about much more than the rise or fall of national incomes. It is about creating an environment in which people can develop their full potential and lead productive, creative lives in accord with their needs and interests. People are the real wealth of nations. Development is thus about expanding the choices people have to lead lives that they value. And it is thus about much more than economic growth, which is only a means if a very important one of enlarging people’s choices.
At household, community, societal, national and international levels, various aspects of the above need to be provided, as well as commitment to various democratic institutions that do not become corrupted by special interests and agendas.

Yet, for a variety of reasons, these full rights are not available in many segments of various societies from the richest to the poorest.

Politics have led to dire conditions in many poorer nations. In many cases, international political interests have led to a diversion of available resources from domestic needs to western markets. This has resulted in a lack of basic access to food, water, health, education and other important social services. This is a major obstacle to equitable development.

2.1.1 Poverty in Kenya today

The poor constitute slightly more than half the population of Kenya. Women constitute the majority of the poor and also the absolute majority of Kenyans. Three-quarters of the poor live in rural areas. The bulk of them are located within the highly populated belt stretching South to South-East from Lake Victoria to the Coast which straddles the rail and road corridors. (IPRSP 2000)

Preliminary results of the 1997 Welfare Monitoring Survey (WMS) show that the incidence of rural food poverty was 51%, while overall poverty reached 53% of the rural population. In urban areas, food poverty afflicted 38% and overall poverty 49% of the population. The overall national incidence of poverty stood at 52%. According to available estimates, over the past 25 years food poverty has increased more than absolute poverty. The number of poor increased from 3.7 million in 1972-3 to 11.5 million in 1994. Thereafter, numbers increased to 12.5 million in 1997 and is now estimated to have reached some 15 million.

According to the WMS 1994 and the Participatory Poverty Assessment (PPA) 1996, the prevalence of overall poverty in 1994 was highest in North Eastern Province (58% of population), Eastern (57%), and Coast (55%) while the lowest were Nyanza (42%) and Central (32%). However, by 1997 indications are that not only had poverty increased rapidly but that its
distribution had changed with Nyanza (63%) recording the highest level followed by Coast (62%) although Central still recorded the lowest incidence (31%).

Major characteristics of the poor include landlessness and lack of education. The poor are clustered in certain socio-economic categories that include small farmers, pastoralists in ASAL areas, agricultural labourers, casual labourers, unskilled and semi-skilled workers, female-headed households, the physically handicapped, HIV/AIDS orphans and street children. The poor have larger families (6.4 members compared to 4.6 for non-poor) while in general rural households are larger than urban. Geographically, North Eastern and Coast Provinces have the largest poor households. Nationally, poor women have a higher total fertility rate (rural 7.0 and urban 4.8) than non-poor women (rural 6.7 and urban 4.1). According to evidence on health status, the prevalence and incidence of sickness are similar for both the poor and non-poor. However, the response to sickness is markedly different. An overwhelming majority of the poor cannot afford private health care (76% rural and 81% urban) and rely on public health facilities. However, 20% of the urban poor and 8% rural poor found even public health charges unaffordable. Furthermore, 58% urban and 56% rural poor reported that they do not seek public health care because of the unavailability of drugs. A further indicator of disparity is that only 37% of poor mothers gave birth in hospital compared to 58% of the non-poor mothers.

Empirical evidence shows that 13% of the urban poor have never attended school at all while the comparative rural figure is 29%. Of the poor, only 12% of those in rural areas have reached secondary education while for the urban poor the figure rises to 28%. Dropout rates have risen, as have disparities in access, due to geographic location, gender and income. The main reason for not attending school is the high cost of education. Children are also required to help at home, while for girls socio-cultural factors and early marriage are significant factors.

Regardless of poverty, over 50% of Kenya's households do not have access to safe drinking water, although the proportion is higher for the poor. In urban areas, large populations living in informal settlements within the towns and cities have no access to safe water. In rural areas there are large disparities between geographic areas where in North Eastern and Eastern Provinces less than 30% of the poor have access to safe water compared to some 60% in Western Province.
Certain occupations, such as subsistence farming (46% poor) and pastoralism (60% poor), have a higher than average incidence of poverty. Subsistence farmers account for over 50% of the total poor in Kenya. While the poor cultivate, on average, more land and have more livestock than the non-poor, the non-poor earn more than two and one half times the income from cash crops and more than one and one half times the income from livestock sales. This pattern can partly be attributed by differences in the fertility of land and the affordability of inputs to improve productivity. For livestock, cultural factors and the lack of high-grade stock and poor access to markets could account for low sales among the poor.

Studies in Kenya indicate that women are more vulnerable to poverty than men. For instance, 69% of the active female population work as subsistence farmers compared to 43% of men. (WMS 1994) Given that subsistence farmers are among the very poor, this relative dependence of women upon subsistence farming explains the extreme vulnerability of women. These problems are most severe in arid and semi-arid areas where women spend a great portion of their time searching for water and fuel. The release of women's productive potential is pivotal to breaking the cycle of poverty so that they can share fully in the benefits of development and in the products of their own labour. In the urban areas, the proportion of poor female-headed households was higher than male-headed households in 1997. Both rural and urban women in 1997 were severely affected by poverty. This means that women are affected more by development process and the area of residence plays a major role in poverty status of women. However, poverty is still pre-dominant in the rural areas for both men and women, meaning targeting needs to be intensified in the rural areas.

Inequitable access to the means of production (land and capital), the distribution of wealth, reduced access to economic goods and services and remunerative employment are all causes of poverty. Poverty adversely affects participation in social and political processes and denies life choices while the poor are particularly vulnerable to natural disasters. In terms of income distribution, Kenya ranks highly as inequitable. Estimates indicate that a high proportion of wealth is concentrated in a very small proportion of the total population. This income concentration is the highest amongst the 22 poorest countries and is exceeded only by Guatemala (per capita income US$1340), South Africa (US$3,160) and Brazil (US$3,640).
The indicators demonstrate the depth and breadth of poverty in Kenya today and the magnitude of the challenge. The fight against poverty, ignorance and disease has been a major goal of Government since independence. However, it is evident that efforts to-date has been inadequate and the growth of poverty has not been reversed. In response, Government is mounting a new effort which will incorporate wider consultation and broader participation of various stakeholders. This is designed as an ongoing long term poverty strategy for policy and programme development. (IPRSP 2003)

2.1.12 Raising income opportunities of the poor

The goal to raise GDP growth to 5% per annum and thereafter to a sustained level of 6-7% per annum will result in significant increases in national wealth. However, national growth will not necessarily be spread evenly across all sectors of the economy and between all members of society. Historically, the service sector has grown at much higher rates than either manufacturing or agriculture while rural agricultural smallholders have, in general, not benefited to the extent of those employed in urban enterprises. The poor in all circumstances will be ill-placed to take advantage of economic growth unless deliberate interventions are put in place to increase their opportunities and access to the resources, skills and services required for them to rise out of the poverty trap. (IPRSP 2003)

With 80% of the population and the majority of the poor living in rural areas and reliant upon small-holder agriculture and livestock production, often at subsistence levels, it is evident that poverty reduction calls for higher agricultural growth rates. But with increasing population pressure on the land, it is equally important to expand non-farm employment in the rural areas. For the poor in urban centers, increased access to employment and self-employment in both the formal and informal sectors will be vital. As female-headed households constitute a significant proportion of the poor, any intervention must be gender-sensitive. All these will require very substantial improvements in infrastructure services and a conducive legal and regulatory environment.

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Agriculture is the lifeline of 80% of Kenya's poor who live in rural areas, including farmers, workers and unemployed. 70% of Kenya's employment is in agriculture, consequently creating jobs and increasing income in that sector is vitally important and, if achieved, will have an important direct effect on poverty. Furthermore, agricultural growth can catalyse growth in other sectors, with an estimated growth multiplier of 1.64, compared to 1.23 in non agriculture; it is likely to have a strong indirect effect. Restoring high and sustainable agricultural growth is therefore critical for alleviating poverty. (1PRSP 2003)

Agricultural growth has been well below potential in recent years due to a number of constraints. Those which result partly from an accumulation of poor past policies and which will take time to remedy include; (i) non availability of quality seeds and inappropriate production technologies especially for small holder farming, (ii) lack of access to credit, by the majority of small holder farmers, particularly women, (iii) high cost of farm inputs, (iv) poor and inadequate rural infrastructure, especially feeder roads, power supply and market facilities. Other constraints, which Government intends to make relatively rapid efforts to ameliorate include (v) inconsistencies in policy/poor institutional and legal framework, (vi) inadequate research, inefficient extension delivery systems as well as inadequate extension services and support, (vii) poor sequencing of the liberalisation process, (viii) lack of effective co-ordination of investment activities among the key stakeholders in agriculture. Lastly, there are constraints which are almost entirely exogenous, including (ix) insecurity in high potential areas and cattle rustling in some ASAL areas, (x) unfavourable weather conditions and high dependence on rain fed production and (xi) population pressure on the natural resource base. As a result, many indicators of rural livelihood have been worsening, indicating an increase in rural poverty.

The Agriculture sub-sector needs to grow at about 4-6% per annum if it is to contribute to national growth and increasing rural wealth. For this to happen in a way that effectively supports poverty reduction over most of the sector, a number of important elements need to be in place and actions to facilitate them need to be taken. These include: (i) building an effective and efficient participatory extension and technology delivery service; (ii) undertaking affirmative action in agriculture by facilitating participation of women; (iii) establishing efficient rural
finance and credit supply system for smallholders and rural primary agro processors; (iv) ensuring policies, institutional and legal frameworks are investor friendly; (v) implementing sound land use, water and environmental policies; (vi) facilitating long term investments in farm improvement; (vii) protecting water catchments areas by developing forest plantations; and (viii) improving the governance of the co-operative sector by empowering farmers. To address specific problems of ASAL areas livestock marketing needs to be improved and small scale irrigation investments undertaken in poverty stricken areas.

The role of Government in encouraging growth in the rural sector would be redirected towards fulfilling those functions which are truly public goods. In particular it would strive to provide better research/extension linkages and which are seen as the main way of supporting effective increases of smallholder maize and traditional crop production which is undertaken mainly by the rural poor. It would also set policies to create an enabling environment which encourages investment and trade, thereby leading to job creation, which would also be of direct benefit to the poor.

2.1.14 Kenya's poverty reduction strategy

The primary development goal for Kenya is to achieve a broad-based, sustainable improvement in the standards of welfare of all Kenyans. This will require a concerted effort to tackle the intolerably high incidence of poverty that now afflicts about half our population. While Government has a particular responsibility for spearheading action and creating a positive framework, the private sector, non-governmental and community based organizations all have a vital role to play in meeting the challenge of poverty reduction. Kenya must mobilize all available resources and use them efficiently and effectively in the fight against poverty. (IPRSP 2003)

Our most precious resource is the people and their potential to work for the collective betterment of our nation. Poverty wastes this resource and its potential. Poverty has numerous manifestations including low and unreliable income, poor health, low levels of education and literacy, insecurity and uncertain access to justice, disempowerment, and isolation from the mainstream of socio-economic development. It is, therefore, necessary to devise multi-
dimensional policies and interventions that will provide a permanent solution. The poor must be provided with the means to help themselves through income earning opportunities, ready access to means of production, the provision of affordable, basic services and the protection of the law.

This will not be achieved through temporary relief programmes but only through a deliberate and long term policy to increase equity of opportunity and to ensure that all members of our society can participate fully in the socio-economic development of Kenya.

A fundamental prerequisite for poverty reduction is economic growth that considerably outpaces population growth. Over the past few years Kenya's economy has declined in per capita terms. As a result, the standard of living for the vast majority of the population has suffered and the level of poverty has risen alarmingly. Therefore, the Government's immediate priority is to restore and sustain rapid economic growth in order to generate the wealth and economic expansion necessary to reduce the incidence of poverty. (IPRSP 2000)

2.2 Theoretical framework

2.2.1 Introduction

One of the key factors that led to the emergence of sociology was research into poverty. In both Britain and France the rise of sociology was accompanied by poverty studies. Yet from 1940s Sociologists moved away from poverty studies. One path of exit was a change of terminology in which the poor was increasingly replaced by the lower class and from the problems of the poor to the fertile terrain of deviance and crime. Another was a shift of the sociological interest away from the lower to the middle class an area where research funds were abundant and which was more suitable for survey research that was fast becoming the preferred method in sociology (Roach and Roach 1972). The sociological interest in poverty rekindled during the 1960s when poverty was rediscovered in USA. But after the failure of anti-poverty agenda of 1960s in USA and fall of the modernization paradigm, sociologists gradually retreated from poverty studies as well as from development studies. The field was largely taken over by economists (Jordan, 1996).
Most of the sociologists engaged in poverty studies mainly focused on policy research. Poverty studies have definitely been animated by larger and nobler visions like one provided by Sen. In spite of such efforts, it is apparent that in the absence of a strong tradition of interdisciplinary research the field has remained fragmented. Poverty studies have largely been confined to the rites of headcount, if not headhunting. There does not seem to be an adequate theory of poverty.

2.2.2 Maslow’s hierarchy of needs

The best known need theory is hierarchy of needs which was developed by psychologist Abraham Maslow. Maslow’s theory has been widely used as a foundation of quality of life. According to this theory members of a society must use a variety of factors to motivate behaviour since individuals will be at different levels of the need hierarchy (Stredwick, 2000). Maslow organized human needs into a hierarchy based on five need categories.

These needs categories are in ascending order as follows: physiological needs (basic needs), security needs, social needs (Belonging needs), esteem needs and self actualization needs. Physiological needs were the most basic needs in Maslow’s hierarchy and included needs that must be satisfied for the person to survive including food, water, oxygen, sleep and sensory satisfaction.

Most dairy farmers in Uasin Gishu district make sure that their physiological needs are first met before they sell their milk. Milk is consumed directly at farm level and in other instances sold in order to be able to buy other types of food that is not available at certain homes. Safety and security needs will emerge if physiological needs are relatively satisfied. These needs include desire for security stability, dependency, protection, freedom from fear and anxiety and need for structure, order and law. The issue of safety and security is paramount and it gives one peace of mind. Dairy farmers by virtue that they own animals that give them a sense of material security. In society, ownership of animals is considered a security as it is an indicator of wealth. Material wealth gives an individual sense of security as material things gives ones certain status in the community.
Social needs were originally referred by Maslow as need for belongingness and love. It includes need for emotional love, friendship, affectionate relationship with people in general but especially a spouse, children and friends. In Uasin Gishu dairy farmers have close association with their family members and more often than not affection usually leads to being given dairy animals. Love leading to marriage is usually finalized by payment of dowry which is mainly in form of cattle. The most fascinating thing is that nowadays animals for use for dowry are bought from the market other than getting from own homestead. This has been aggravated by the value of dairy industry which has made the cost of dairy cows to be very high and thus families are hesitant to pay dowry using their own dairy stock.

Esteem needs occur after satisfaction of social needs and ones feel the need to be distinguished and recognized. The need for esteem includes the desire for self respect, self esteem and for esteem of others. In Uasin Gishu, dairy farmers with lots of dairy cows command a lot of respect from fellow members of society. Dairy industry since long ago supported many households’ livelihoods and thus valued by society.

Self actualization is the highest need in Maslow’s hierarchy and it refers to needs for self realization, continuous self development and the process of becoming all that a person is capable of becoming the best one. In Uasin Gishu dairy farming if done well is considered the best enterprise to engage in as it gives returns on daily basis so long as the animal is lactating. Most farmers are very proud of the dairy industry and brag of the title Lord which in Kenya the only farmers referred so were dairy farmers for example Lord Delamere, Lord Egerton just but to mention a few.

2.2.3 Structural functional theory

Structural theories of poverty hold that poverty is caused by the structure of the larger socioeconomic order. It is the macro structure of society that produces inequality and consequently poverty. The structure of global capitalism, for example, gives rise to inequality and large-scale poverty all over the world.
Marxism of different varieties has remained a major theoretical perspective for understanding poverty. Dependency theory, which emerged in Latin America, has been particularly concerned with third world poverty. Theory of marginalization again of Latin American vintage has a rich tradition of exploring the fate of human deprivation and marginality. Another key phrase that has become immensely popular in recent years is social exclusion (Friedman, 1996).

The term social exclusion was coined in France by Rene Lenoir in 1974 (Gore, 1995; Silver, 1995; Haun, 1998). In Renoir’s view exclusion referred to people who were excluded from employment-based social security system. It became a popular term in France in 1980s to express new forms of poverty associated with technological change and economic restructuring. Unemployment, ghettoisation, disruptions of family.

Everything in society has purpose and a function. Poverty and inequality serve a specific function in society. Inequality is a graded ladder of people at different income levels. Poverty motivates people to climb the ladder. Poverty ensures that all jobs (functions) in society will be filled.

Structural functionalism theory is very much applicable in the dairy industry and more so in this research. Dairy farmers play their role of producing milk which is the raw material for processors. The processors on their part utilize the raw milk by converting to processed products which are eventually taken up by consumers. Milk production involves many players, the government and development partners through extension agents assist farmers to adapt better ways of animal husbandry in order to enhance higher production of milk. Banking institutions on their part give financial assistance to the farmers in form of loans. Processors as much as they are in business they help in converting raw material to finished product which lasts for long and thus reducing storage losses that could have been incurred by the farmers. There are also transporters along the value chain who transport raw milk from the farmers to the processors and those that transport finished products from the factories to the market. There are also various suppliers of different products and services within the dairy industry. We have suppliers whose target is the dairy farmer and a case in point is those that supply dairy equipment e.g. aluminum cans. Processors also have their suppliers e.g. those supplying packaging material, chemicals and
factory equipment. Each player in the dairy industry is interdependent and contributes to the dairy industry functioning as a whole.

Emile Durkheim suggested that society is held together by social consensus or cohesion in which members of society agree upon and work together to achieve what is best for society as a whole.

2.2.4 Rational choice theory

Most sociological rational-choice theories assume that actors act rationally in a broad sense, and focus on the aggregate outcomes that individual actors in interaction with one another are likely to bring about. A vast body of social research reveals that people often act impulsively, emotionally, or merely by force of habit.

Rational-choice sociology is the branch of sociology which is most thoroughly influenced by economic theory. Yet it is not simply an application of economic theory to the explanation of social phenomena. Rational-choice sociology consists of a diverse set of theories only some of which can be said to have been imported from economics. The common denominator of rational-choice sociologists is that they use explanatory models in which actors are assumed to act rationally, in a wide sense of that term. Unlike in many other sociological theories, actors are not assumed to be governed by causal factors operating behind their backs, but are seen as conscious decision makers whose actions are significantly influenced by the costs and benefits of different action alternatives.

Most rational-choice sociologists do not seek to explain the actions of single individuals. The focus instead is on explaining macro-level or aggregate outcomes such as the emergence of norms, segregation patterns, or various forms of collective action. To make sense of outcomes like these, however, rational-choice sociologists focus on the actions and interactions that brought them about.

Farmers have choices to make on the kind of enterprise to engage in. Dairy farmers in particular make their choices depending on various factors such as cost involved, sustainability, and reliability among other benefits. Some of the choices made by the farmers to engage in dairy are
driven by economic benefits whereas others are influenced by sociological conditions such as social class and status.

By the time one decides to settle on a particular farming activity he/she needs to consider factors such as land size, cost of investment involved among others. Dairy farming can be done in a small piece of land in comparison with crop enterprises which require large parcels of land. By practicing zero grazing mode of dairy system one is able to rear more animals per given parcel of land in comparison with other dairy systems.

As much as dairy farmers make the choice to engage in dairy, they are also required to make a choice of dairy system to practice in their farms. There are many dairy systems in place such as Zero grazing, semi-zero grazing and pure grazing in extensive set up. Each of the grazing system is determined by certain factors hence farmers make appropriate choices on the kind of system to practice. Type of breeds is also another major contributor to the dairy industry hence farmers have to make rational choice on the type of breeds to keep in their farms. Marketing of milk is also important and thus farmers make own choices on how and to who to sell their milk. There are many milk processors in the country, hence depending on different factors the farmers have to make choices on who to sell their milk. There are other types of informal market available in different areas within Uasin Gishu and it contributes to choices farmers make when it comes to marketing of milk. In some instances of marketing, farmers sometimes have little choices to make other than concede to the forces in place. A classical point is during milk glut when there is plenty of milk and processors handling and processing capacity is overwhelmed.

2.3.0 Conceptual framework of the study

The figure below shows the relationship between the independent variables and dependent variable. From the figure the independent variable include raw milk prices, volume of processed milk, prices of processed products and milk production cost. The dependent variable is consumer purchase and income from milk proceeds.
The amount of processed milk and products purchased drives the need for raw milk and thus the farmer benefits more when more milk and milk products are absorbed in the market.
3.0 Introduction

This chapter presents a detailed description of the procedures followed in conducting the study. It describes the site of study, the target population, sampling, data collection method, data collection tools and techniques of data processing & analysis.

3.1 Site of study

The study was carried out in Uasin Gishu County. Uasin Gishu County lies in the mid west of the Rift Valley and borders six counties namely Elgeyo Marakwet County to the East, Trans Nzoia to the North, Kericho to the South, Baringo to the South East, Nandi to the South West and Bungoma to the West. The study dealt with raw milk suppliers to New KCC Eldoret factory. New KCC is the largest and the oldest milk processor in Kenya and therefore was the most appropriate in achieving the objectives of the study.

3.2 Unit of analysis and unit of observation

The unit of analysis was the role of milk processors in poverty reduction among dairy farmers in Uasin Gishu County. The unit of observation was the dairy farmers from whom information was obtained through structured interviews. It also included key informants such as representatives of farmer dairy groups, officials from Kenya dairy board, government agents, banks, NGOs and NKCC who provided insights on milk production, processing, marketing and challenges that are experienced by dairy farmers.

3.3 Sampling

3.3.1 Selection of sample area

The sample area was selected on the basis of habitation of dairy farmers who supply milk to New KCC Eldoret. An initial exploratory survey was carried out to help in identifying the area.
3.3.2 Sample and sampling procedure

NKCC Eldoret factory was purposively selected because it was easily accessible to the researcher and provided the research with the required information because of the different settlement and dairy farming systems in place.

3.3.3 Respondents Selection

Farmers supplying milk to NKCC Eldoret factory are 18,000 some of whom they supply directly to the factory whereas others supply to milk collection points serving the factory.

Individual milk suppliers were interviewed as they have crucial information pertaining to the dairy industry. These individual suppliers were in two forms i.e. small scale dairy farmers supplying milk directly to Eldoret factory and those supplying through their organized groups. Furthermore raw milk transporters were considered as key informants as they played a crucial role of ensuring milk reached to the processor and in many instances been bestowed a lot of responsibilities by the dairy farmers.

Officials of organized dairy groups are expected to know well about their membership livelihoods and be in a position to give views that represent those of the majority. They were therefore the key informants on matters touching on farmers operating their business as an organized entity.

New KCC management were of importance in giving the researcher vital information on milk processing as well as dynamics of the industry. Kenya Dairy Board is the regulator of dairy industry in Kenya hence the research gained a lot from their contribution especially on the overall dairy sector in the country.

Financial institutions also play a crucial role in the dairy sector hence banks gave information on the socio economic activities that drive the economy in the area.

Development partners especially Non Governmental Organizations targeting dairy industry are mainly working in the high potential areas of Uasin Gishu and therefore their role in the dairy industry could not be underestimated. Government organs and specifically ministry of Livestock
veterinary and livestock production department have a mandate to promote dairy in the country hence their views were of importance to the research. Ministry of agriculture also plays a role in ensuring availability of dairy feeds thus the researcher gained a lot from their contribution to the dairy industry.

3.3.4 Procedure for respondents selection

Two categories of respondents took part in this study: i.e. raw milk suppliers and key informants which in this case were raw milk transporters, banking institutions, development partners and government organs/institutions.

a) Selection of raw milk suppliers

From the 18,000 farmers, 100 farmers were randomly selected as stated below.

Uasin Gishu is divided into five administrative divisions namely: Ainakhoi, Kesses, Turbo, Kapsaret and Soy. Each division had four milk collection points which makes a total of twenty collection points in the whole of Uasin Gishu.

Of the twenty collection points, five collection points were randomly selected for the research and this catered for real representation of the entire county. From each of the five randomly selected collection points, twenty farmers supplying milk to that point were randomly selected and interviewed. The selection of farmers was randomly started and the process of selecting one respondent at an interval of every 5th farmer was continued until all the required sample size was obtained. From each collection point, equal number of respondents were interviewed and therefore from the randomly selected five collection points twenty farmers from each point and thus making a total of one hundred farmers.
Selection of key informants

Organized dairy groups delivered milk in bulk and therefore a representation of many farmers in the area. One representative from the groups was purposively selected.

Raw milk transporters to Eldoret NKCC factory were 15 and one was purposively selected to participate in the research.

NKCC Eldoret management staffs are 6 and one was purposively selected to participate in the research. From the government agents one was purposively selected to participate in the research. There were 50 banks and microfinance in Eldoret town that serve the Uasin Gishu County. For purposes of this research the bank which most farmers operate an account with, participated in the study and in this case the bank was Family bank. Only one bank official was purposively selected. The dairy industry in Kenya is of interest to many development partners and in Uasin Gishu County there were five International Non Governmental Organizations working to promote dairy sector. Of the five INGOs one was purposively selected and one senior manager was purposively selected for the research.

Table 1: A listing of key informants that were to be interviewed

<table>
<thead>
<tr>
<th>Target Respondents</th>
<th>Number interviewed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Raw milk transporters</td>
<td>1</td>
</tr>
<tr>
<td>Dairy Groups representatives</td>
<td>1</td>
</tr>
<tr>
<td>Banks Management</td>
<td>1</td>
</tr>
<tr>
<td>Non Governmental Organization</td>
<td>1</td>
</tr>
<tr>
<td>Government agents</td>
<td>1</td>
</tr>
<tr>
<td>Kenya Dairy Board</td>
<td>1</td>
</tr>
<tr>
<td>New KCC Ltd</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7</strong></td>
</tr>
</tbody>
</table>
The study used two main methods of data collection i.e. examination of secondary data and interviews. Data collected from KDB, development partners and stakeholders in the dairy sector gave information relevant to research questions and objectives. Among other documents examined were the trends of milk deliveries to new KCC limited.

### 3.4.1 Key informants interviews

Raw milk transporters have vital information concerning the dairy industry and thus were key informants in the study. Group representatives also have reasons and justifications on why they came together hence were also considered as key informants in the study. New KCC management were also the key informants in the study as they possessed valuable supplier/farmer information and more specifically on quantity of milk supplied and amount paid.

Bank management were also key informants as they are the ones that gave an insight of the cash flow associated with the dairy sector in Uasin Gishu. Ministry officials and KDB were also key informants in the study as they gave the dynamics of dairy industry in totality. Non Governmental organizations were of importance as they gave both local and global perspective of dairy industry.

### 3.4.2 Interview of raw milk suppliers/farmers

Raw milk suppliers/farmers were interviewed on the basis of their milk supply by use of questionnaires which mainly captured the socio-economic impacts of milk processing which addressed the study objectives and research questions.

### 3.4.3 Data collection tools

The data collection tools that was used in this study was interview schedule and in person surveys.
3.4.4 Interview schedule

A structured questionnaire was administered to the raw milk suppliers which determined their views on the socio-economic impacts of milk processing to poverty and hunger reduction.

3.4.5 In person surveys

Face to face conversations were held with management of NKCC, ministry of agriculture and livestock officials, KDB officers, banks management and NGOs officials who gave their view on socio-economics of dairy industry in Kenya and more so specifically in Uasin Gishu county. Structured key informant guide was used in this case.

3.5 Techniques of data processing and analysis

3.5.1 Data processing procedures

Data and information obtained from interviews and examination of secondary data was organized and grouped into appropriate categories and themes such as socio-economics of dairy and such other categories that emerged from the data.

Data processing involved both manual tabulation as well as computer processing. Tabulation was not only the main component of data processing but the tables produced most visible outcome of the whole analysis and the most used output. Data collected from the key informants concerning milk production by dairy farmers and how they benefited through sale of milk was manually tabulated. Data collected from the suppliers/dairy farmers by use of structured questionnaires was processed by use of computer. The computer processing involved: data editing, data entry, sorting data, coding data, summarizing data, and converting data into more usable information.

3.6 Problems encountered in the field

In the recent past there have been many research conducted by NGOs in the area targeting dairy farmers and whose findings have been fruitful and thus their expectations were similarly high as I did the academic research and had to take a lot of time to convince them not to expect too much this time round.
CHAPTER FOUR: DATA PRESENTATION ANALYSIS AND PRESENTATION

4.0 Introduction
This chapter presents the research findings of the study on the role of milk processors in poverty reduction a case of Eldoret factory NKCC raw milk supplier's. Data was collected using questionnaires, interview guides and the responses were statistically analyzed and the results are presented in this chapter in form of frequencies distribution tables and percentage chart. This chapter is organized thematically in sections and subsections corresponding to research questions and objectives as follows; demographic information of the respondents and their responses to the information required to address the stated study objectives.

4.1 Data presentation

Socio-demographic and economic characteristics of the sampled small scale dairy farmers in Uasin Gishu

4.1.1 Gender
This study noted the gender of the participants. 35 percent women and men 65 percent took part in the study as illustrated in figure 2 below. Gender was important in this study since it was necessary to get the views of all as poverty affects both genders

Figure 2: Gender of the participants
4.1.2 Age distribution

Participants in this study were also asked their ages. They gave their ages in a range of between 21 and 70 years of age. Table 2 below shows the trend of ages of the respondents.

Table 2: Age group of the respondents

<table>
<thead>
<tr>
<th>Age group</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>21 - 25</td>
<td>10</td>
<td>10.0</td>
</tr>
<tr>
<td>26 - 30</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>31 - 35</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>36 - 40</td>
<td>25</td>
<td>25.0</td>
</tr>
<tr>
<td>41 - 45</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>46 - 50</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>51 - 55</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>56 - 60</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>61 - 65</td>
<td>0</td>
<td>0.0</td>
</tr>
<tr>
<td>66 - 70</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

Table 2 above indicates that majority of the small scale farmers interviewed lie in the age cohort between 36 - 40 years. Table 2 also indicates that the number of persons supplying milk to NKCC reduces when they reach 50 years and above. This reduction is as a result of the effects of collapse of the old KCC whereby at that period most farmers lost their milk dues. Age was important in this study considering the fact when KCC collapsed many farmers lost confidence with processors and thus was crucial to evaluate the most affected age bracket.

4.1.3 Highest level of education completed

Participants were asked their highest level of education. Responses were as follows, incomplete primary school 20 percent, primary school completed 15 percent, incomplete secondary school 5
percent. O level completed 40 percent and university degree obtained 20 percent. Table 3 below, provides the cumulative frequency of the highest levels of education of the responses

Table 3: Highest level of education

<table>
<thead>
<tr>
<th>Highest level of education</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incomplete primary school</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td>Primary school completed</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>Incomplete secondary school</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>Completed secondary school</td>
<td>40</td>
<td>40.0</td>
</tr>
<tr>
<td>University degree obtained</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

Most of the interviewed farmers had completed secondary education and this indicates that gone are the days whereby farming activities and in particular dairy production was considered a side job for educated people. Indeed 60 percent of the farmers had completed secondary education and above.

4.1.4 Area of residence

Participants were also asked the area they reside and all the responses were that all the interviewed small scale farmers resided in Uasin Gishu County. This question was important to the study in that it came out clearly that NKCC Eldoret factory was established within the proper catchments area for raw milk.

4.1.5 Family size

Participants were also asked their family size. The responses have been provided in table 4 below. This question was important in this study as it would help in determining the number of families that benefit from milk processing.
The study established that 65 percent respondents had a family size of between 3 and 8 people. Thus the question is, if there was no milk processor where will all these families be selling their milk and will they get a better sustainable deal?

4.2 Data analysis and interpretation

The study sought to find out the effects of processing and how it influences raw milk supply.

4.2.1. Milk processing and supply

a) Raw milk supply to NKCC

Participants were asked if they are suppliers to NKCC factory and it was noted that all the respondents (farmers) in this study were supplying milk to NKCC. This question was important because this study aimed at assessing the impact of milk processing to the socio-economic lives of the small scale milk suppliers to Eldoret NKCC factory.

b) Duration of milk supply

The respondents were also asked to indicate the number of years they had supplied milk to NKCC. This question was important in this study because this study aimed at determining how farmers respond to existence of processors knowing well that KCC collapsed and farmers lost their milk dues and therefore was crucial to gauge their confidence to processors.
The responses have been provided in table 5 below.

**Table 5: Number of years been supplying milk to NKCC**

<table>
<thead>
<tr>
<th>Duration (Years)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Less than 1</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>1-3</td>
<td>45</td>
<td>45.0</td>
</tr>
<tr>
<td>4-6</td>
<td>15</td>
<td>15.0</td>
</tr>
<tr>
<td>Over 7</td>
<td>35</td>
<td>35.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

From the analysis above farmers supplying milk for the duration of 1-3 years had the highest frequency and this is because farmer’s confidence has increased after the revival of the company in the year 2003.

Farmers that have supplied milk for over 7 years had a relationship with the advancement in age in that all were over 51 years of age. This is also associated with the attachment the farmers had with KCC and thus understand the value of formal milk marketing.

c) **Quantity of milk delivered for processing**

The respondents were also asked the amount of milk they deliver for processing per day. This question was important because if processors were not in place to do value addition what volume of raw milk will go to waste per day and what sociological effects would it have to the community and country at large.

Table 6 below shows the percentage of litres of milk delivered daily for processing to NKCC Eldoret factory. Thus if the factory was to close down what will happen to the dairy industry?

From the table 60 percent of the farmers deliver between 6-15 litres per day which in real sense is a lot of milk just for daily consumption at farm levels hence the importance of processors.
Table 6: Litres of milk delivered daily for processing and percentage

<table>
<thead>
<tr>
<th>Quantity delivered daily (Litres)</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>1-5</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>6-10</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td>11-15</td>
<td>40</td>
<td>40.0</td>
</tr>
<tr>
<td>16-20</td>
<td>10</td>
<td>10.0</td>
</tr>
<tr>
<td>21-25</td>
<td>5</td>
<td>5.0</td>
</tr>
<tr>
<td>Over 26</td>
<td>20</td>
<td>20.0</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>100</strong></td>
<td><strong>100.0</strong></td>
</tr>
</tbody>
</table>

d) Milk preservation method

Milk quality starts at farm level and therefore it was important to know how the small scale farmers preserve their milk before delivering to processors. It is well noting that milk should be chilled within the first two hours of milking to 6 degrees and below in order to arrest microbial growth.

Table 7 below indicates the milk preservation methods used by farmers. 50 percent of farmers do not preserve milk in anyway and this is because of close proximity of milk coolers and also because they lack facilities to do so.
Table 7: Milk Preservation method and percent distribution

<table>
<thead>
<tr>
<th>Preservation method</th>
<th>Frequency</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooling</td>
<td>40</td>
<td>40.0</td>
</tr>
<tr>
<td>Boiling</td>
<td>10</td>
<td>10.0</td>
</tr>
<tr>
<td>None</td>
<td>50</td>
<td>50.0</td>
</tr>
<tr>
<td>Total</td>
<td>100</td>
<td>100.0</td>
</tr>
</tbody>
</table>

It is evident from the table that there is need to improve on milk preservation in order to reduce milk spoilages.

4.2.2 Consideration of farmers interests by processors

Causes of low milk supply for processing

The respondents were asked to mention and rate the causes of low milk supply for processing on a scale of 1 to 5, where 1 meant least cause and 5 meant most serious cause. The causes discussed and rated have been summarized in table 8 below. The study established that the most serious cause of low milk supply for processing included; processors low price 85 percent and delayed payments 85 percent. The study also established that high standards of milk grading 75 percent and processors limited handling capacity 75 percent were mentioned and ranked as the least causes of low milk supply for processing.

These percentages are based on responses from individual causes, for example 100 respondents were asked to rate processors low price as cause of low milk supply for processing and the responses show that while only 15 percent rated this to be a moderate cause, 85 percent rated it to be one of the most serious causes.
<table>
<thead>
<tr>
<th>Causes of low milk supply for processing</th>
<th>Rating (Percent distribution)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Least cause</td>
</tr>
<tr>
<td>Processors low prices</td>
<td>0</td>
</tr>
<tr>
<td>Unpredictable processors price</td>
<td>5</td>
</tr>
<tr>
<td>High standards of grading</td>
<td>75</td>
</tr>
<tr>
<td>Delayed payments</td>
<td>0</td>
</tr>
<tr>
<td>Proximity to processors</td>
<td>5</td>
</tr>
<tr>
<td>Processors limited handling capacity</td>
<td>75</td>
</tr>
</tbody>
</table>

a) Processors low price
This factor was rated as a most serious cause of low milk supply for processing 85 percent. The respondents claimed that the informal market offers better price than the formal market processors price. The only concern is how sustainable and dependable is the informal market? As much as the informal market offers better price than the processors what volume of milk are they able to handle?

b) Delayed payments
This factor was ranked as a most serious cause of low milk supply for processing 85 percent. The issue of delayed payments was causing a lot of anxiety to suppliers because of the previous historical happenings of the collapsed KCC. When the old processor collapsed many raw milk suppliers lost their milk dues and thus so sensitive to matters touching on milk payments.
c) High standards of grading

The findings from the study show that high standards of grading is the least cause of low milk supply for processing 75 percent. Quality parameters are paramount in the dairy industry and in order to penetrate international market there is need of high standards of dairy products.

d) Processors limited handling capacity

This factor was also rated as the least cause of low milk for processing 75 percent. This attribute is evident by handling capacity of NKCC Eldoret factory which is: storage capacity 500,000 litres and processing capacity 120,000 litres of milk per day. The NKCC Eldoret factory is actually underutilized as the volume of raw milk received daily is low.

4.2.3 Processors role in poverty reduction and food security

Enterprise of choice

The participants were asked to mention the most profitable enterprise of choice and all of them said it was dairy farming. This question was important in that Uasin Gishu county is climatically high potential area for many agricultural activities and therefore wanted to know if farmers were engaging in dairy production after considering all the opportunities that exist in the region.

Ways of ensuring constant supply of raw milk for processing.

Table 9 below was constructed based on the ways of ensuring constant supply of raw milk for processing. Respondents were asked to rate ways of ensuring there is availability of raw milk for processing on a scale of 1 to 5, where 1 meant least appropriate way and 5 meant most appropriate way. The responses have been provided in percentage. From Table 9 below, the most appropriate way of ensuring there is milk for processing include proper animal nutrition 85 percent, constant price throughout the year 65 percent, giving incentives to suppliers 60 percent and controlled calving 40 percent are the moderately appropriate way.
Table 9: Ways of ensuring constant supply of raw milk for processing

<table>
<thead>
<tr>
<th>Ways of ensuring constant supply of raw milk for processing.</th>
<th>Rating percentage</th>
<th>Total percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Least appropriate way</td>
<td>Appropriate way</td>
</tr>
<tr>
<td>Proper animal nutrition</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>Controlled calving</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>Constant price throughout the year</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Giving incentives to suppliers</td>
<td>5</td>
<td>5</td>
</tr>
</tbody>
</table>

a) Proper animal nutrition

This factor was rated as the most appropriate way of ensuring constant supply of milk for processing 85 percent. The main interest of processors is to get constant supply of the raw material in order to for operations to run smoothly. Issues of proper feeding of animals is sometimes challenging especially in times of drought and therefore human beings struggle to get their own food and not for livestock and thus forgetting that from the same livestock they can get their food. It is evident that during drought periods the first to suffer arc the animals then human beings. Most relief activities target humans leaving the animals to die.
b) Constant price throughout the year

This factor was rated as a most appropriate way of ensuring constant supply of milk for processing 65 percent. Giving farmers constant price throughout the year will make them plan properly because they will be sure of the price. Many farmers have had difficulties in repaying loans that they acquired because of milk price fluctuations.

c) Giving incentives to suppliers

This factor was ranked as a more appropriate way of ensuring constant supply of milk for processing 60 percent. By giving incentives to supplier's processors will ensure there is loyalty and thus avoids the risk of mass movement by suppliers to informal market especially during times of drought and milk scarcity.

d) Controlled calving

This factor was ranked as a moderately appropriate way of ensuring constant supply of milk for processing 40 percent. A number of dairy farmers in Uasin Gishu still practice extensive free range system of dairy farming and thus not able to consider controlled calving as a way of ensuring there is milk at certain periods of the year.

4.2.4 Enhancing the dairy industry

Challenges to raw milk suppliers

The respondents were asked to mention and rate the challenges they face as raw milk suppliers on a scale of 1 to 5, where 1 meant least challenge and 5 meant most serious challenge. The challenges discussed and rated have been summarized in table 10 below. The study established that the most serious challenge to raw milk suppliers included; poor pricing 80 percent, road network 70 percent, lack of animal feeds 65 percent and climate change 60 percent. The study also established that milk preservation method 30 percent and changing land use 30 percent were rated as the least challenge to raw milk suppliers.
### Table 10: Rating of challenges faced by farmers as milk suppliers

<table>
<thead>
<tr>
<th>Challenges to raw milk suppliers</th>
<th>Rating (Percent distribution)</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Least challenge</td>
<td>Appropriate challenge</td>
</tr>
<tr>
<td>Poor pricing</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Road network</td>
<td>10</td>
<td>0</td>
</tr>
<tr>
<td>Climate change</td>
<td>0</td>
<td>15</td>
</tr>
<tr>
<td>Changing land use practices</td>
<td>30</td>
<td>25</td>
</tr>
<tr>
<td>Milk preservation methods</td>
<td>30</td>
<td>5</td>
</tr>
<tr>
<td>Lack of animal feeds</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Lack of dairy breeds</td>
<td>15</td>
<td>5</td>
</tr>
</tbody>
</table>

**a) Poor pricing**

This factor was rated as a most serious challenge to raw milk suppliers 80 percent. The respondents registered their concerns basis on the price of processed milk. They claimed the price difference of raw milk and processed milk is so huge and thus processors exploit them.

**b) Road network**

This factor was also rated as the most serious challenge to raw milk suppliers 70 percent. During the rainy suppliers are faced with difficulties in transporting their milk to designated collection areas as vehicles get stuck in mud. The duration one takes to reach the factory also increases and eventually milk spoilages increases significantly.

**c) Lack of animal feeds**

Challenge of feed availability was also rated as a most serious 65 percent. There is plenty of livestock feeds in Uasin Gishu but the limiting factor is conservation and preservation (GoK 2010).
d) Climate change

This factor was also rated as the most serious challenge to raw milk suppliers 60 percent. There is nothing much that can be done by dairy farmers to address the challenge of climate other than changing production system and conserving animal feeds.

e) Changing land use practices

The findings from the study show that changing land use practices is the least challenge to raw milk suppliers 30 percent. As much as there is much pressure on land and upcoming of more land use enterprises the respondents in the study were comfortable with all the happenings concerning various farming enterprises.

d) Milk preservation methods

This factor was also rated as the least challenge to raw milk suppliers 30 percent. The distribution of NKCC satellite coolers and chilling plants have significantly contributed to reduction in milk spoilages in the rural areas (KDB 2011). Milk preservation was not seen as a challenge because the farmers are yet to embrace issues of quality which is mainly a challenge experienced by processors when it comes to marketing of processed products.
CHAPTER FIVE: SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

This chapter presents a summary of the findings, conclusions and recommendations of the study whose aim was to assess the contribution of NKCC to poverty reduction and food security through milk processing. The summary of the findings, conclusions and recommendations are organized around the study objectives.

5.2 Summary and conclusions

The study established that milk processing is a way of value addition and it creates demand for the raw material and thus increasing returns to raw milk suppliers. The more the milk is processed into various products, the more the requirement for the raw milk. It was also established that dairy farming is male dominated in the area and thus needs more involvement of women in order to increase production. In the study 60 percent of the respondents deliver between 6-15 litres of milk per day for processing. It also emerged that milk availed for processing is more than what is consumed at family level though families with more members deliver slightly less milk for processing as compared to families with few members but with same number of dairy cows. From the analysis of the various factors it emerged that milk processing is key in determining raw milk supply. The more we have processed milk and milk products the more the demand for the raw milk. Sociologically people involved in income generating activities contribute immensely to the economy of the country and thus should be supported fully to attain their goals.

The study further established that pricing was a major factor in the dairy sector and anything concerning milk payments was very sensitive to the farmers. The respondents rated processors low price (85 percent) as a factor that contributed to low volume of milk supply for processing. It was noted that any delay in payments had a direct effect on volume of milk deliveries. The issue of delayed payments also was rated highly as a cause of low milk supply for processing (85 percent). This was associated with the collapse of the only milk processor in the late nineties and thus farmers were not ready to lose again their milk dues. Milk processing is mainly a value addition exercise in order to prolong shelf life as well as to have variety of products from one raw
material in order to completely utilize the available raw material. For the dairy sector to nourish the interests of farmers should be prioritized because they are the suppliers of the raw material. Farmers have formed dairy groups that champion their demands and make them speak in one voice. Now there is a body that champions farmers concerns which is referred to as Kenya Dairy Farmers Federation (KDFF) with membership from all organized dairy groups in Kenya. Socially people tend to reason in commonality when faced with similar challenges and thus the dairy farmers came together to form a body to fight for their interests due to the experienced historical injustices.

The study found out that there is relationship between poverty and food insecurity. The poor are more food insecure and this was illustrated by the amounts of milk delivered for processing by individual households. Large families were the ones delivering the lowest volume and this was as a result of domestic consumption and thus low income from milk proceeds to support other financial obligations. The issue of informal markets was very much affecting milk deliveries to processors because of the mode of payment by traders in the informal sector which was mainly cash on the spot. This indicates the social-economic status of dairy farmers was very low and thus requires instant cash in order to meet other financial obligations. From the study it was also noted that feed availability for livestock was a major problem experienced in the area and it led to scarcity of milk during the dry spell and this affected processors operation costs. Animal nutrition was rated as the most appropriate way of ensuring there is constant supply of milk for processing (85 percent). Poverty and food security are hardly inseparable and by addressing poverty you eliminate food insecurity. The study revealed that farmers selling their milk to processors have better livelihood than those not selling milk. The issue of poverty is reduced because NKCC other than price they offer for milk deliveries they also guarantee bank loans to their suppliers. Milk in itself is also sources of cheap protein thus dairy farmers are better placed in accessing the protein source and thus more food secure. The dairy sub sector has potential to improve the livelihoods of the majority smallholder family farmers and pastoral communities and transformation from subsistence farming to competitive, commercial and sustainable dairy industry for economic growth and wealth creation. It should be recognized and appreciated that Kenya has one of the most developed dairy sub-sectors in Sub-Saharan and the single largest contributor to agricultural GDP of Kenya. Dairying is a life line for the majority smallholder family farmers and entire
pastoral communities of Kenya (3 million households) as sources of: food, employment, cash income, manure to support crop production, and financing cash needs for social status. The dairy sub sector is important in attaining the development goal of vision 2030. It is dominated by smallholders who produce over 80 percent of the domestic milk and sale raw milk directly to consumers. Socially a country that is faced by poverty and food insecurity has a lot of work to do because it means they are still struggling to get basic needs. S

The study revealed that the mandate of dealing with milk processing has been left to the processors alone without support from other sectors like the government. Only KDB does the regulation of the industry which is more legislative. Therefore the advocacy for use of processed milk and milk products is done by the same processors. The only advocacy support is from medical fraternity when advising for nutrition which mostly supports use of pasteurized milk. As a show of advocacy for use of processed dairy and dairy products recently all the major milk processors in Kenya came up with Kenya shillings fifty million campaigns dubbed stay young do milk, in order to advocate for use of processed milk and products. The challenges faced by milk suppliers need intervention at policy level as some of the challenges mentioned need legal framework in order to address. Milk marketing system is characterized by low compliance with safety and quality standards diffuse market structure consisting of many small-scale market agents, low value products limited in diversity and weak participation of producers in policy formulation. Dairy sub sector supports a large population of rural poor households. Combined efforts by dairy stakeholders are needed in order for the government to reverse the poverty, hunger and unemployment problems through transformation and revitalization of the dairy sub sector. There is huge potential of economic value of the dairy sub sector that can be tapped to drive development goals through transformation into a globally competitive dairy value chain that will provide high quality life and wealth creation. There is need for strategies which will make the enterprise to increase, market orientation, value addition, use modern farming technologies and creating synergies at all levels. Finally there is need to institute policy, legal and regulatory framework for effective revitalization of the dairy sector. With revitalization of the sector and sustainability then dairying will be a major socio and economic activity in Kenya, thereby improving the livelihood of the poor resource based communities and enhancing Kenyan leadership position in dairy industrialization in the region. Socially as from the structural
functional theory every party in the dairy sector is important as each party has certain specific contribution to the sector.

5.3 Recommendations

Based on the findings of the study, it is recommended that there is need for review of dairy policies since the existing ones are not comprehensive and outdated. There is need for a strategic milk reserve operated by an independent entity like the Kenya Dairy Board so that it handles excess milk in the country. As it is now, processors struggle very much when there is excess milk in the country and this leads to deliberate price drops for milk and this punishes farmers who have played their role of production. The way the government supports the maize sector by having strategic grain reserve the same support should be extended to the dairy sector.

The dairy revenue (cess) collected by KDB needs to be utilized in developing roads in the rural areas where milk is gotten from. Majority of the roads in dairy areas are in deplorable state and this calls for establishment of milk roads. The study also recommended that milk quality based payment be established in addition to the existing quantity based payment in order to access international markets which will eventually give more returns to the farmers.

In addition, processors and raw milk suppliers need to work on their inefficiencies so as to reduce processing and production costs. Further a formula should be developed whereby there is a correlation in prices of the processed products and the raw milk.

Finally the study recommended that there is need for massive campaign to promote consumption of processed milk and milk products so as to ensure food safety.

5.4 Areas for Further Study

Based on the findings over the course of this study the following research needs have been identified:

- The extent to which milk processors acquire raw milk from the farmers is market driven.
- Capacity building of dairy farmers to ensure milk quality standards are high.
- Dairy farmers are vulnerable to fluctuating and unpredictable raw milk prices.
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http://www.smallholderdairy.org
APPENDIX I

Interview Schedule for the Raw Milk Suppliers/Farmers

Dear Respondent,

This questionnaire is designed to assess the role of milk processors in poverty reduction among small scale dairy farmers supplying milk to NKCC Eldoret factory. It is meant to assist in collecting relevant data concerning the research. You are kindly requested to participate in this study by answering this questionnaire. The responses provided are for the purposes of this study and not for any other purpose. All your responses will therefore be treated with highest confidentiality.

1. Gender
   a) Female
   b) Male

2. How old are you?

3. What is your highest level of education?
   a) Nursery school
   b) Never completed primary school
   c) Primary school
   d) Never completed secondary school
   e) O level
   f) A level
   g) University degree
   h) Masters degree

4. Are you a raw milk supplier to NKCC Eldoret factory?
   a) Yes
   b) No
   c) I don’t know
5. From which Division do you reside? (tick only one)
   a) Soy
   b) Kapsaret
   c) Turbo
   d) Ainabkoi
   e) Kesses
   f) None of the above (state the area where you reside)

6. How long have you supplied raw milk to NKCC? (tick only one)
   a) Less than 1 year
   b) 1 to 3 years
   c) 4 to 6 years
   d) 7 or more years

7. What is the size of your family?
   a) 1 person
   b) 2 people
   c) 3 to 8 people
   d) 9 to 14 people
   e) 15 to 20 people
   f) More than 20 people

8. How many litres of milk do you deliver to NKCC per day?
   a) 1 to 5
   b) 6 to 10
   c) 11 to 15
   d) 16 to 20
   e) 21 to 25
   f) 26 and above
9. Which farming enterprise do you find more profitable to engage in? Please tick one

a) Maize farming

b) Wheat farming

c) Dairy farming

d) Horticulture

e) Other (Specify) ________________


a) Boiling

b) Cooling

c) None

d) Other (Specify) ________________
11. How can constant supply of raw milk for processing be ensured? (Tick all that apply) Rate in scale of 1 to 5 by ticking the appropriate box. Rating 1 means least appropriate way while 5 means most appropriate.

<table>
<thead>
<tr>
<th>Ways of ensuring constant supply of raw milk for processing</th>
<th>Ranking (Tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Proper animal nutrition</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>b) Controlled calving</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>c) Constant price throughout</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>d) Giving incentives to suppliers</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>e) Other (specify)</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
12. What are the causes of low milk supply for processing? (Tick all that apply) Rate the causes in a scale of 1 to 5 (by ticking the appropriate box). Rating 1 means least cause while 5 means most serious cause.

<table>
<thead>
<tr>
<th>Causes of low milk supply for processing</th>
<th>Ranking (Tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>f) Processors low prices</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>g) Unpredictable processors price</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>h) High standards of milk grading</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>i) Delayed payments</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>j) Proximity to processors</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>k) Processors Limited handling capacity</td>
<td>1 2 3 4 5</td>
</tr>
<tr>
<td>l) Other (specify)</td>
<td>1 2 3 4 5</td>
</tr>
</tbody>
</table>
13. What are the challenges of raw milk suppliers? Rate the following issues on a scale of 1 to 5 (by ticking the appropriate box). Rating 1 means least cause while 5 means most serious cause.

<table>
<thead>
<tr>
<th>Challenges of raw milk suppliers</th>
<th>Ranking (Tick as appropriate)</th>
</tr>
</thead>
<tbody>
<tr>
<td>a) Poor pricing</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>b) Road network</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>c) Climate change</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>d) Changing land use practices</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>e) Milk preservation methods</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>f) Lack of animal feeds</td>
<td>1  2  3  4  5</td>
</tr>
<tr>
<td>g) Lack of dairy breeds</td>
<td>1  2  3  4  5</td>
</tr>
</tbody>
</table>
Dear Respondent,

My name is Edward Boor. I am a student at the University of Nairobi pursuing a Master of Arts degree in Sociology. I am carrying out a research on the role of milk processors in poverty reduction among small scale dairy farmers supplying milk to NKCC Eldoret factory. All information provided will be treated with confidentiality and will not be used for any other purposes.

Please answer the following questions concerning milk production by dairy farmers and how they benefit through sale of milk

1. Do farmer groups and cooperatives help in strengthening bargaining position of farmers?

2. Does milk processing contribute to poverty and hunger reduction? (mention exhaustively)

3. How does dairy farming contribute to the livelihoods of the farmers?

4. How can the dairy industry be improved in Kenya?

5. Is milk value addition by processors contributing to increase of raw milk?


7. Is consumption of unprocessed milk affecting availability of raw milk?

8. Do milk processors offer incentives to farmers in order to increase raw milk supply?

THANK YOU