



Impact Assessment on The Farmers Milk Marketing  
Plants: A Case of Ol'kalou Dairy Ltd.

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JULY 2007.

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Submitted in Partial Fulfillment of Requirements for the Masters  
of Science in Community Economic Development

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A handwritten signature in black ink, appearing to read "Puneetha Palakurthi", is written over a horizontal line.

## ACKNOWLEDGEMENTS

I would like to acknowledge the contributions made to the content of this project by various people and institutions. I wish to express my appreciation to my academic advisors Dr. Puneetha and Dr. Catherine of Southern New Hampshire University for their guidelines and advice that have made this study a success.

I am highly indebted to Heifer International – Kenya my employer and mostly Mr. Alex Kirui – Country Director, for allowing and providing me with full support in undertaking this MSc in ICED.

Special thanks to my fiancée Dorothy and all my family members for their moral support and prayers they offered me since the initial stages of my schooling and for the entire period of undertaking this study.

It is also a pleasure to convey my gratitude to all respondents mostly the dairy farmers of Ol'kalou.

I would like to place on record much thanks to all my fellow students at Southern New Hampshire University (Manchester, NH) USA, fellow colleagues at work and the other lecturers who have made various contributions to help me undertake this course.

As it is not possible to mention everyone, I would like to thank everybody who in one way or the other made this study to be completed successfully. May the Almighty God Bless them all.

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## SUPERVISOR CERTIFICATION

I \_\_\_\_\_ certify that I have thoroughly read this report and found it to be in acceptable form for submission.

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## DECLARATION

I declare that this is my own work and has not been submitted for similar degree in any other university.

Signature: Stephen Omondi Otieno

Date: 30th July 2007

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## **ABBREVIATIONS AND ACRONYMS**

GOK – Government of Kenya.

HPI – Heifer Project International.

KCC – Kenya Cooperative Creameries

KDB – Kenya Dairy Board.

## ABSTRACT

Generally, it is accepted that impact assessment is a critical element in further improving community development initiatives and promoting intervention. Also existing impact assessments have made an important contribution to understanding some of the complex interactions between community development interventions, livelihoods and different dimensions of poverty reduction and empowerment (Linda Myoux, 2003).

This research project on the social-economic impact of farmers' milk marketing plants in Ol'kalou Division, Nyandarua District was conducted in the month of March 2007. The main aim of the research was to determine the effectiveness of collective marketing initiatives of the farmers, in partnership with Heifer International – Kenya. The results were envisaged to enhance the collaboration of farmers and Heifer International in its bid to achieve its vision of poverty alleviation and improving nutrition.

The study was done for the purpose of examining how collective marketing through the establishment of a milk marketing plant has impacted on the smallholder dairy farmer, effect on their livelihoods and addresses the challenges that are being experienced so as to make recommendations on the way forward in replication of such projects. The study also intended to establish the employment created through direct involvement in milk production and through several support services tied to dairy production.

By using questionnaires, interviews and observation 156 respondents were contacted and the data revealed that collective marketing of milk products has greatly benefited the farmers who

now, no longer experience serious price fluctuation and inability to sell their produce. This initiative has also rejuvenated their participation in milk production to earn higher incomes to better their lives as most of the earnings from milk sales is used for daily sustenance. The buyers also appreciated such arrangement as it led to a reduction in their costs because they would find the produce ready in bulk unlike if they had to go collecting it all over the locations.

However it has been learnt that, a lot more needs to be done to create a buy in to many more farmers so that they would enjoy the economies of scale. Community mobilization in this respect is important for the success of such initiatives. Also to be included in the programs is access to credit to enable the farmers re-stocking their lost herd.

The establishment of milk marketing plants has therefore, provided the farmers opportunity to sell their milk, participate in the management of the plant and create window for sustainable rural development.

# 1. CHAPTER ONE

## 1.1 Background.

In the Agricultural sector, dairy industry is the most vibrant livestock sub-sector and it contributes up to 35% of Kenya's GDP and dairy sub-sector 15% of the percentage. About one million dairy farmers produce 80% of total milk output in Kenya, most of who derive their main source of daily cash from milk sales. Therefore with an average family size of six persons, dairy farming directly affects the livelihoods of 4.8 million people. The contribution of dairying to the sustainability of smallholder crop-dairy systems through its roles in nutrient cycling, regular cash generation ability, employment creation and provision of farm household nutrition makes it an easy choice to address rural poverty. The economic development and employment opportunities created by increased milk production, improved milk channel efficiency, and greater consumer demand for affordable dairy products are enormous.

Up to 1992 in Kenya, the milk industry was under the control of a government parastatal – Kenya Cooperative Creameries (KCC), which was handling all the milk produced by the farmers. It would procure, process, pack and market the milk products. In 1992, the dairy industry was liberalized and saw the entry of other private milk processors. In 1997, KCC collapsed due to mismanagement and fraud by the then board of directors in leadership.

The dairy farming was thrown in disarray. Farmers were not able to sell their milk and even what they sold they were not paid for it. A lot of milk produced was wasted as there was no market for it. The private milk processors couldn't handle all the milk farmers produced. At that time it was worthless to keep dairy cattle for milk and many were sold out. Most of these families couldn't raise enough for their basic needs and couldn't afford better health care, remained weak and unproductive hence entrapped in the web of poverty. At the very worst, many sold off their

animals to get money for their daily upkeep losing their lifetime savings and investment. Dairy farming is a precision weapon in the war against hunger and poverty and it does not only hit the target but also its root causes. The problem affecting efficiency in the dairy enterprise is lack of effective marketing systems to market surplus milk to enable the farmers earn reasonable income and create more wealth.

## 2. CHAPTER TWO.

### 2.1 Literature Review.

As part of the structural adjustment program of the 1980s and the 1990s, many sub-Saharan countries have liberalized their economies and developed poverty reduction strategies that are intended to open new market-led opportunities for economic growth.

However, market liberalization – expected to facilitate the functioning and effectiveness of markets – have had mixed results (Jayne and Jones 1997; Winter-Nelson and Temu 2002; Dorward and Kydd 2004; Fafchamps 2004). Moreover, successful implementation of structural adjustments for poverty reduction requires, among others, good infrastructure and diversified agriculture (Kydd and Dorward 2004; Dorward et al. 2004b; Dorward et al. 2005). Lack of such economic transformation after liberalization has been attributed to factors such as partial implementation of reforms and policy reversals (Jayne et al. 2002; Kherallah et al. 2000; Jayne and Jones 1997) and lack of strong institutions that support market and private sector development (World Bank 2002a and 2003). In areas with limited market infrastructure, the argument for lack of economic transformation of agriculture towards more commercialized production is strongly embedded in the lack of incentives for private sector investment and the need for proper institutions to fill the vacuum left by the withdrawal of the state.

Kenya Dairy industry is regulated through the Dairy Industry Act (Cap 336) of the laws of Kenya, enacted in 1958. Kenya Dairy Board was established in order to organize, regulate and develop efficient production, marketing, distribution and supply of dairy produce in Kenya. However, over the years, Kenya Dairy Board limited its operations to the regulation of business involved in the processing and distribution of dairy products, leaving the industry in the hands of

a parastatal and a nationwide cooperative called Kenya Cooperative Creameries (KCC) up to 1992 when the market was liberalized (Halloway, 2002).

Market liberalization was aimed at improving efficiency by facilitating more or less automatic price adjustments in response to market competition through the market forces of demand and supply. The underlying fact being that market competition should lead to stability in production and consumption and results being beneficial to society as a whole. In 1992, a policy statement was issued allowing licensing of any interested party in getting into dairy processing and marketing business provided that the business premises met the minimum hygiene standard requirements.

Nonetheless, liberalization has opened a window of opportunity for smallholder producers hitherto growing diverse products and supplying small surpluses to markets. The removal of trade barriers and increased competition has opened some flexibility for farmers to choose buyers for their products and suppliers of key inputs. But high transaction costs and problems of asymmetric information continue to bedevil smallholder farmers, especially those with poor access to markets for products, inputs and services. Lack of access to market infrastructure and geographical isolation either due to remoteness or poor roads and poor communication systems limit the development of markets. Hence, smallholder producers in these areas are poorly served by agricultural traders, making local markets thin, less competitive and prices highly dependent on seasons: falling sharply at the time of harvest and increasing gradually as local supply declines. The lack of competition among buyers, low local effective demand and covariate risks limit opportunities for farmers to bargain for better prices, which leaves them to accept low prices for their produce (de Janvry et al. 1991; Kindness and Gordon 2001).

Along the market and value chain, processors and traders are constrained by low quality products, inadequate supply and high operational costs, whereas market intermediaries in the supply chain face high assembly costs, high market risk and cash flow problems. These factors deprive farmers the underlying incentives to produce and supply quality and differentiated products with desirable market traits in addition to their inability to penetrate high value niche markets (Jones et al. 2002). This indicates that small-scale, dispersed and unorganized producers are unlikely to exploit market opportunities as they cannot attain the necessary economies of scale and lack bargaining power in negotiating prices. This reduces their ability to compete with well established large scale producers and farmers in more favored areas to harness available and emerging market opportunities (Johnson and Berdegue 2004). One viable strategy for such producers would be to evolve new collective forms of organization that would help them reduce transaction costs and benefit from better bargaining power in marketing their produce and procuring production inputs.

Producer or farmer organizations refer to the various forms of organizations that perform diverse functions such as analysis, advocacy, economic (production and marketing) and local development (Stockbridge et al. 2003). They are founded on the principle of collective action among potential beneficiaries. Collective action occurs when individuals voluntarily cooperate as a group and coordinate their behavior in solving a common problem. In broad terms, collective action may be defined as action taken by a group (either directly or on its behalf through an organization) in pursuit of members' perceived shared interest (Marshall 1998), which fits well in the traditional African setting. In the absence of well functioning markets, African farmers have traditionally relied on kinship and other forms of reciprocal relationships in production, marketing and other social activities (Fafchamps and Minten 1999; Gabre-Madhin 2001). There

is a potential that such informal institutions and relationships can form the basis for enhancing market access and entrepreneurial skills through collective action. Collective marketing plays a major role in farming throughout the world. In most countries farmers have found that they can increase their income and efficiency by joining with other farmers to market their goods, purchase their inputs and co-ordinate their farming techniques. In Bolivia 60% of chickens are marketed co-operatively. 87% of pyrethrum grown in Kenya is sold in this way and 40% of the cotton produced in Brazil is sold by farmers' associations. No fewer than 8 of the 10 largest Canadian firms are co-operatives. (Place, 2002).

However, collective action in marketing requires closer coordination of production and postharvest activities to ensure delivery of high quality and homogeneous products. Moreover, new forms of organization among small and spatially dispersed producers involve transaction costs and require good leadership and development of new skills in business and agro-enterprise development. In the 1990's performance of many cooperatives declined considerably due to political wrangles, management problems and stakeholder conflicts. The negative experiences of cooperatives in the past attest to the importance of these factors in farmer organization, management and resilience (Lele 1981). It is with that observation that Heifer International - Kenya has formed Private companies with the farmers to move away from the skepticism that has gripped the revival of the cooperative movement.

If new forms of organization and market institutions are going to help reduce transaction costs and enhance market opportunities for the poor, there is a need to understand how such collective action evolves and how it is sustained; the determinants of farmer participation; alternative forms of organization that may enhance performance and effectiveness; and the complementary institutions and the policy support needed for the effectiveness of collective marketing groups.

With hindsight, farmer organizations tend to succeed only when: farmers can manage them autonomously with minimal government interference; farmers participate actively in decision-making at every stage of the process; and their cooperative activities are profitable (World Bank 2003). A strong justification for farmer organizations is their potential to play a critical role in both the delivery and coordination of services to smallholder producers (Dorward et al. 2004b). They can facilitate collective marketing of agricultural outputs that will help reduce transaction costs related to the marketing of agricultural inputs and small marketable surplus emanating from a large number of widely dispersed small producers. Collective marketing allows small-scale farmers to spread the costs of marketing, enhance their ability to negotiate for better prices, and improve their market power. Furthermore, climatic variability in semiarid areas increases the variability of supply and prices because effective demand is limited, and small-scale farmers are often unable to sell to consumers outside of their local markets. Through coordination of marketing activities, farmer organizations could facilitate access to better markets, reduce marketing costs, and synchronize buying and selling practices to seasonal price conditions. Farmer organizations can shorten the marketing chains by linking producers more directly to the upper end of the marketing chain.

### **3. CHAPTER THREE**

#### **3.1 RESEARCH DESIGN**

##### **3.1.1. Objectives of the Research study**

The current study is undertaken with the following objectives: -

- a) To evaluate the socio-economic impact of milk marketing establishments on smallholder dairy farmers.
- b) To find out the extent of employment created through several support services related to dairy farming and milk marketing.
- c) To ascertain the changes in milk production around Ol'kalou division.
- d) To identify existing gaps in dairy farming and marketing and recommend the way forward.

##### **3.1.2. Study area.**

Ol'kalou Dairy Ltd is one of the 5 (Five) Milk marketing plants established as a joint effort by Heifer International Kenya and the farmers in the need to address their milk marketing constraints. The milk plant is located in Ol'kalou Division of Nyandarua District at the foot of Aberdare ranges in Central Province. The dairy plant was established to serve 13 locations; 12 within Ol'kalou division and 1 from nearby Gilgil division. It was incorporated as a target location due to its close proximity to the plant site and accessibility.

The division has a population of 96,795 persons and 9,237 farmers who carry on farm enterprises on prime land of 77,809 acres. The economy of the division is mainly dependent on agriculture and livestock keeping.

### 3.1.3. Research Design

The research study used cross-sectional design and longitudinal questions by asking the participants questions on before and after the establishment of the milk plant. The sample size selected is 200 people representing 12.5% of the number of farmers registered and selling their milk through the dairy plant. They were randomly selected. Data was obtained from 156 people i.e. 78% of the selected sample. This study was conducted in the areas that have highest number of farmers registered in the dairy plant (Table 3.1) and being the high catchment areas too. In the selected locations the researcher worked with farmers and opinion leaders representing both the sexes different sexes and opinion leaders.

*Table 3.1: Sample selected for the study*

Location/Group	Number Male Respondents	Number of Female Respondents	Total
Rurii	44	6	50
Tumaini	47	3	50
Kaimbaga	46	4	49
Management and Board	6	1	7
Total	143	14	156

Source: Field Data, 2007

*Table 3.2: Registered farmers and quantity delivered per location – 2006.*

Location	No. of Farmers		Qty Delivered - Kgs
	Men	Women	Jan - Dec 2006
Rurii	331	35	433129.2
Tumaini	296	28	354378.4
Kaimbaga	183	38	295315.4
Olkalou	180	14	255940.0
Wanjohi	164	19	236252.3
Ndemi	152	26	216564.6
Karunga	115	17	177189.2
Total	1421	177	1968769.0

Source: Olkalou Dairy Ltd, 2006

### **3.1.4. Research Approach and Strategy**

During the research, both the qualitative and quantitative methods of data collection were used to obtain primary data from the farmers, staff and management of the dairy plant. Since most of the farmers speak Kikuyu language, 5 (Five) local high school graduates were hired as data collection personnel. Before actual data collection, questionnaires were pilot tested among 10 farmers who deliver milk directly at the plant. This was to facilitate proper understanding of the research questions by the data collection personnel and the correct interpretation in Kikuyu for those farmers who would not understand English.

### **3.1.5. Sampling Techniques**

Random sampling for farmers in general was applied in the location, with the five data collection personnel distributed in different parts in the location. Instructions to them were to skip 2 homes after every interview. Manager, a staff member and 4 Board members were selected for the interview. They answered the questionnaires by themselves.

### **3.1.6. Data Collection Techniques**

The study employed several tools for data collection, namely questionnaire, interview, informal discussions, observation and secondary data.

#### ***3.1.6. a. Questionnaire***

The questionnaires were distributed to 5 members of staff due to their full time commitment so that they would fill it in at their own time. The questionnaires contained information about their interaction and support to the farmers.

### ***3.1.6. b. Interviews***

A set of prepared key questions was used to guide the discussion between the data collectors and respondents. The interviews were conducted on the farmer's farms in the form of question and answer sessions. All questions were open ended and closed. The atmosphere was conducive for the respondents to express themselves freely.

### ***3.1.6. c. Informal discussions***

Informal discussion with the farmers was encouraged. This took place after completing the interview the objective being, to supplement the collected information using other research instruments. It also enabled gaining a broader view from the farmers concerning the milk marketing plant.

### ***3.1.6. d. Observation***

This direct observation was very useful for crosschecking information given in the interviews and questionnaires.

### ***3.1.6. e. Secondary Data***

A number of documents were consulted both at Heifer international Kenya head office and Ol'kalou dairy plant office. These documents included business plans, progress reports strategic plan, farmer's files and relevant documents about the milk plant.

### **3.1.7. Data Analysis**

Using themes and categories emanating from my data and questions, the outputs were summarized in tables and charts; and they are discussed in chapter 4 of the report. Secondary data were analyzed by presented my findings in descriptive analysis.

## 4. CHAPTER FOUR

### 4.1. RESULTS AND DISCUSSION

#### 4.1.1. Farm sizes

*Table 4.1: Average farm acreage*

Acreage	Number of Respondents	%age Summary
0 - 5	98	65
6 - 10	22	14
11 - 15	10	7
16 - 20	6	5
20 >	14	9

Source: Field Data, 2007

*Table 4.2: Average farm acreage used to raise cattle*

Acreage	Number of Respondents	%age Summary
< 5	122	80
6 - 10	18	12
11 - 15	10	8
20 >	-	-

Source: Field Data, 2007

From the tables above, it is evident that, 65% of the farmers own small pieces of land and a further 80% even use less of it in cattle rearing. Population growth has led to sub-division of land into small units for each member of the family. Even smaller is the portion over which is used to keep cattle. With the collapse of the government parastatal which was the main milk buyer, most farmers have since then turned to other agricultural activities because animal rearing is labour intensive and costly in comparison to the returns. This can well explain the less consideration of land allocation to cattle rearing as a source of livelihoods to the farmers.

#### 4.1.2. Milk Production.

*Table 4.3: Cattle type reared by farmers.*

Type	Number of Respondents	%age summary
Pure breed	35	23
Cross breed	111	74
Local breed	4	3

Source: Field Data, 2007.

*Table 4.4: Average milk quantity sold per day*

Quantity (Kgs)	No. of respondents	%age summary
1 - 10	62	41
11 - 20	14	9
21 - 30	56	38
31 - 50	9	6
50 >	9	6

Source: Field Data, 2007.

Milk production generally is still very low. This can be seen from the above tables 62% are selling only up to 10Kgs per day. It can be attributed to the inferior breeds kept by the farmers. 74% keep the crossbreeds. This is a mix of local and hybrid types and their performance depends on the generation level. From third generation onwards better yields can be experienced but only if they are bred with semen from pure breeds. Pure breeds are expensive and costly to maintain unlike the crossbreeds which are preferred for they are cheap and resistant to many conditions hence their preference even though they do not produce as much. Crossbreeds are cheap to acquire, climate tolerant and disease resistant. Out of the low milk production the farmers are not able to make enough money for their upkeep from the trade. Relatively few farmers keep the pure breeds 23% and their quantity for sale per day is higher.

#### 4.1.3. Farmer Membership

**Table 4.5: Plant Membership in sample population.**

Choice	Number of respondents	%age summary
Yes Member	102	68
Not Member	48	32
Total	150	100

Source: Field Data, 2007.

From the table, greater proportions of respondents 68% are members of the dairy and also sell their milk through the milk plant. 32% are not members and do not sell their milk through the plant. Further, the 68% represent those who have been members of the plant for less than three years. Most of them joined in after the milk plant started operations and was seen to be doing well.

#### 4.1.4. Selling of milk to other dairies

**Table 4.6: Farmers selling all milk to Plant**

	Number of respondents	%age summary
Yes	53	35
No	97	65
Total	150	100

Source: Field Data, 2007

**Table 4.7: Farmers willing to join membership.**

	Number of respondents	%age summary
Yes	46	88
No	6	12
Total	52	100

Source: Field Data, 2007

Most of the farmers sell all their milk quantity to the milk marketing plant 65%. This is due to the confidence gained by the farmers in the milk plant for prompt payment of milk dues and most of them being members too. 35% still sell to other channels. Mostly, these are farmers who

sell small quantities 5kgs and below, and are used to cash on collection of their milk hence cannot wait for monthly payments as the milk plant does. In certain instances, the milk plant does not offer means of transport to collect milk from these farmers.

Further, those who sell through other milk marketing channels are still willing to supply through the milk plant 88% if the milk plant provides among other things means of transport, better prices and if the dairy does not engage in giving milk quotas in times of surplus production. This normally takes place during the rainy season. However, a few others 12% aren't willing at all to sell their milk to the milk plant for reason that the milk plant offers low prices.

#### 4.1.5. Did you increase or decrease your cattle after establishment of milk marketing plant?

*Table 4.8: Change in cattle herd.*

	Number of respondents	%age summary
Increase	117	78
Decrease	33	22
Total	150	100

Source: Field Data, 2007

The data indicates that, a greater proportion of the farmers 78% have had their herd numbers go down. This is mostly because of poor animal health care resulting into demise of the cattle. Again due to the demand to meet certain needs and with the low prices and low incomes the cattle are often sold to raise money to meet their demands. However, 22% did increase their herd numbers.

#### 4.1.6. Ability to sell all milk before establishment of milk plant

*Table 4.9: Number of Farmers able to sell all milk.*

	Number of respondents	%age summary
Yes	86	57
No	64	43
Total	150	100

Source: Field Data, 2007

Only 57% of the population was able to sell all they produced. It is due to the fact that after the collapse of the government parastatal, the other milk buyers have no capacity to handle all the milk produced and pay for it as well. Upon the establishment of the milk marketing plant, a lot more of the 43% who did not sell all their milk, have had access to milk selling channels as the plant is able to buy from them and sell in bulk to the milk processors.

#### 4.1.7. Participation in other income generating activities.

*Table 4.10: Farmers participation in other income generating activities.*

	Number of respondents	%age summary
Crop farming	110	73
Small trading	8	5
Employed	20	14
None	12	8
Total	150	100

Source: Field Data, 2007

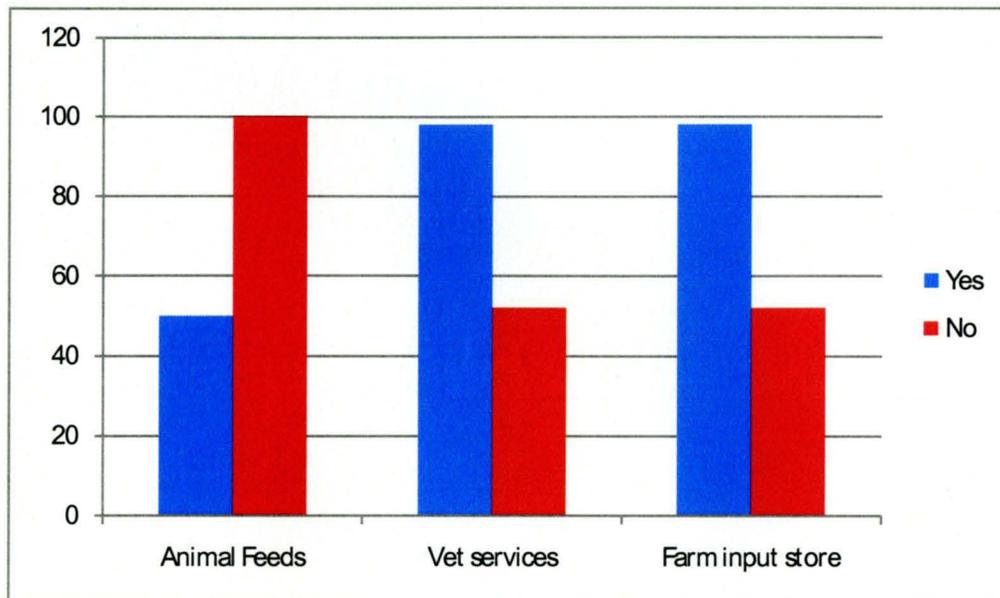
Most of the farmers do a range of agricultural activities on the farms and what brings good returns will be given more priority. As indicated earlier, they devote small part of their land to cattle rearing. Majority of the farmers 73% depend more on crop farming, 14% are employed and only 8% concentrate fully on dairy production. A few more 5% do trading for their livelihoods.

#### 4.1.8. Access to farm inputs (Animal feeds, Drugs and Vet services)

*Table 4.11: Farmer's access to farm inputs.*

	Yes	No
Animal Feeds	50	100
Vet services	98	52
Farm input store	98	52

Source: Field Data, 2007



**Figure 1: Access to Vet services and Farm inputs - Source: Field Data, 2007**

From the above tables, most of the farmers 67% do not have access to animal feeds. This is because they don't have sufficient money to purchase the feeds and in addition do not interest to spend much money on the feeds while their milk produce will fetch them less. Only 33% of the farmers supplement animal feeding with manufactured feeds.

There are many animal health workers who are within the community making it easy for the farmers to get their cattle attended to within the community. Most of the farmers 65% are able to

get vet services within their community. Some of the farmers having attended to many cases are most often consulted by the other farmers on some of the conditions seen in the cattle making it possible to solve some of the conditions locally.

Stores that stock animal drugs, feeds, crop seeds are found within the farmers reach as 65% of the farmers said they are able to access the farm inputs from the stores. The milk plant also offers the farmers that supply it with milk their on farm requirements.

#### 4.1.9. Availability of system to ensure milk quality.

*Table 4.12: Farmer's system to ensure milk quality.*

	Number of respondents	%age summary
Yes	98	65
No	52	35
Total	150	100

Source: Field Data, 2007

Most of the farmers 65% have acquired skills on farm, to ensure milk quality is maintained. This helps the farmers get maximum benefits from their produce because they are able to sell most or all of what they produce. The farmers use the basic hygiene knowledge to keep the milk in good quality. Some of the most applied methods include; proper washing and drying of milk handling equipment, washing of hands before milking, storing of milk in a cool place, washing of cow udder with warm water before milking and filtering of milk after milking.

#### 4.1.10. Training on Dairy Production

**Table 4.13: Farmers with training on dairy production.**

	Number of respondents	%age summary
Yes	50	33
No	100	67
Total	150	100

Source: Field Data, 2007

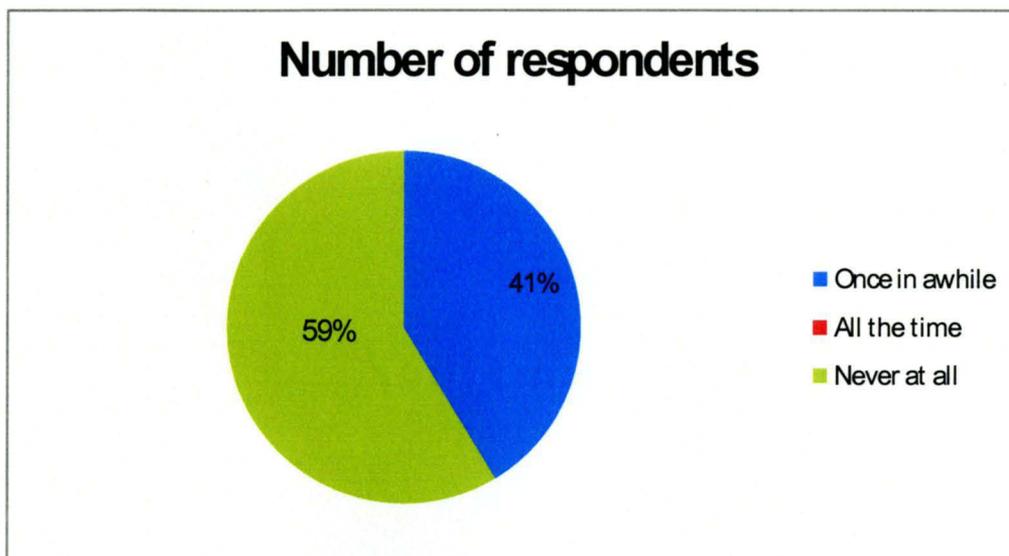
Few of the farmers 33% who practice milk production have attended training on their dependable source of livelihood. Most of the farmers practice the trade as a result of acquiring the knowledge from their parents of neighbours. It is common to have cattle for milking in almost of the households. This has contributed to low quantity of production because the farmers do not seek new knowledge within the dairy industry. Most of the acquired knowledge has been through attendance of farmers training days that are occasionally organized by the drug companies and other stakeholders.

The training has enabled the farmers to acquire the basic knowledge that enables them handle milk and maintain its quality before collection by the milk plant.

#### 4.1.11. Incidences of milk rejection at the plant

*Table 4.14: Farmers experiencing milk rejection.*

	Number of respondents
Once in awhile	62
All the time	0
Never at all	88



**Figure 2: Farmers experiencing milk rejection – Source Field Data, 2007**

The basic hygienic knowledge has been very important to the farmers. This knowledge has also been able to be passed on to the next generations hence few farmers 41% have experienced milk rejection but this is attributed to quota's during the rainy season, low fat content due to feeding in the same period and lateness at collection point. In cases where the farmers have good transport system, and maintenance of proper hygiene, they have not experienced their milk being rejected.

Majority of the farmers are not happy with the milk production despite it being a source of income due to their small farm acreage of, inadequate pastures, high costs associated with the

dairy farming in comparison to the earnings, poor roads making it not possible to bring the milk to the market.

#### 4.1.12. Services and benefits offered by the milk plant.

##### 4.1.12. a. Prompt payment

*Table 4.15: Response to payment mode.*

	Number of respondents	%age summary
Yes	90	60
No	60	40
Total	150	100

Source: Field Data, 2007

Over the years, after the collapse of the only government owned milk processor, the farmers have not been able to get their milk dues in time and this contributed to most of the farmers shifting away from dairy production. In this period, there sprung up many middlemen who duped the farmers of their money. Most of the farmers resorted to selling on cash terms. A slight majority 60% of the farmers, agree, that the milk plant has been able to process their proceeds in time. The other 40% constitute majorly the farmers who used to sell for cash, still aren't comfortable with the monthly payments and would still prefer being paid in cash and either weekly or after fortnight. In most cases, the proceeds from milk is used in for subsistence in the households thus the demand for cash payment or regular short time payment. The money also helps in payment of the children's school fees and for animal maintenance.

#### 4.1.12. b. Loan services

**Table 4.16: Access to credit services.**

	Number of respondents	%age summary
Yes	17	11
No	133	89
Total	150	100

Source: Field Data, 2007

In order to boost their production, there is need for the farmers to access more capital to invest. This has been made possible by the plant making arrangements with a local bank to provide the plants members with loans ranging from Ksh 1,000 – Ksh 500,000. 11% of the population has been able to use this service to boost their production. They have so far been able to keep up with repayment on the loaned amounts because of the prompt payments by the plant despite the prices of milk fluctuating.

The plant has also been able to provide transportation services for the farmers. This is because, the farmer as an individual is not able to transport his/her own produce several miles but those who live along the agreed route use the same means of transport thereby reducing their transportation cost and increasing on their incomes. This also enables them to sell on a daily basis as the onus of providing transport lies with the plant.

#### 4.1.13. Milk Plants Management.

The entire milk marketing management and staff were in agreement that, the plant had lived to achieve the objectives behind its formation. At the time of registration, the plant had 50 members and the number had gone up to 1200 registered members and an additional 500 members who were selling milk to the plant but not registered members. Though, the number of members is still going up with more farmers adopting the collective marketing idea. There is a non

refundable Kshs 500 (USD 7.5) for registration and Kshs 100 (USD 1.8) per share for a maximum of 60 shares. Out of the 1200 members, there are 1084 men and 116 women.

The plant has entered into contractual arrangements with the milk buyers. This helps to stabilize the prices and guarantee the farmers some bare minimum even in times of milk glut when prices fall so low. The plant is also guaranteed of market for the milk from the farmers. The plant also strives to ensure the contracted amounts are maintained and will offer good prices to the farmers so that they don't migrate to other buyers.

The plant also foresees expansion in the future and increasing its capacity to handle more milk as produced by the farmers. At the start of its operations in March 2005, the plant was handling 100Kgs representing 0.77% capacity and at end of 2006, it was handling 12000Kgs per day representing 92% capacity.

The plant has strength in its record since inception to have paid all the milk dues regularly and this has attracted many more farmers to join in the collective marketing arrangement. This has resulted into the increased milk handling capacity. The plant has also been able to set up a farm input store to supply its farmers with animal feeds and drugs on a check off system. Farmers have also been able to receive their payments through the local bank – Equity Bank and access credits from the bank, on the strength of their dues that get paid through the bank.

Ol'kalou Dairy Plant Ltd has also created employment to significant number of people both through the staffing at the plant, to the farmers who get income directly from their production

and some milk collection agents and transporters. Indirectly the plant also creates employment support of other numerous services e.g. Auditing, Farm input and Vet service providers, repair and maintenance of the plant machinery. The plant has 13 full time staff 10 of them being men and 3 women.

Major weakness of the plant is its inability to expand its capacity in response to the overwhelming response from the farmers. The opportunities that they can exploit include expanding their catchment area for so many farmers want to come on board but their challenge remains coordinating means of transport of which if availed they are willing to pay for.

Competition remains to be the plants main threat as many other agents who used to exploit farmers are now seeking ways to regain their market share. Other milk processors also buy directly from the farmers and seek milk from the plant too. Weather is also another threat and there is little that can be done in this respect. Most of the milk is received during the rainy season and it is hoped that a serious drought won't be experienced for that would affect the plants operations.

## 5. CHAPTER FIVE

### 5.1. SUMMARY AND CONCLUSION

In the foregoing data, majority of the farmers are living in small parcels of land 65% (Table 4.1) and these have been further subdivided to accommodate the increasing number of family members. Land is an important resource and will be shared by the living members of the family. With the subdivision it therefore becomes less and less productive because there are many activities all undertaken on the same piece and in small bits which are not economically sustaining. Dairy farming requires relatively large tracks of land in order to realize good returns. It is therefore important to have the local farmers trained on other forms of effective dairy production e.g. zero grazing that will maximize the available land. In their small parcels of land, Dairy production was given less priority and allocated less than 5 acres by over 80% (Table 4.2) of farmers. Only a paltry 8% considered dairy farming to be their main source of livelihood (Table 4.10). This can be attributed to the serious price fluctuation that has left the farmers with poor returns hence pulling out of dairy production and concentrating in other means to get more rewarding incomes. This proves that a lot more farmers do not put as much effort on the dairy farming. Alternatively, these farmers could be using their incomes from dairy farming to better other activities on farm e.g. crop farming that most of them also engage in.

Milk production has increased tremendously and this can be attributed to the confidence that the farmers have in the revival efforts of the industry. With the formation of the farmers marketing plant, the farmers have had another outlet for their produce. This has helped them get an opportunity to sell more milk that would have gone to waste especially in the glut season. At the time of inception the milk plant was operating with a between 70% - 90% idle capacity which

has been reversed by the growing number of farmers who sell their milk at the plant. The plant has been able to win the confidence of the farmers by making monthly payments and advance payment based on the quantities delivered, on a demand basis.

The plant has also created employment opportunity directly and indirectly to a large group of people. Farmers who directly earn from their milk dues and some of the farmers have also employed on farm workers who help in managing the cattle, milking and even taking the milk to the plant. The plant has also created opportunity to transporters and other milk agents who buy and sell to the plant or merely transport to the plant and get paid depending on the quantities that they deliver. The plant has also employed 13 full time staff, 10 men and 3 women. Other service providers; input suppliers, auditors, repair and maintenance technicians all have had the opportunity upon the establishment of the plant.

Despite the increase in milk production, most of the farmers still lack training on dairy production. A big number of farmers have never attended any training on dairy production. They depend on the knowledge acquired on the farm practices. This however, is not sufficient in line with the current changes on efficiency on farm production. Better animal care could be provided by the farmers who have received some training on basic animal health. This would boost animal care and guarantee good produce.

The management of the plant has been able to display good practices to win farmers confidence. They have been able to respond appropriately to the farmers' queries and meet their interest hence growth in the number of farmer's membership. At the start of the project there were 700

and has grown to 1500 by the end of 2006. This includes making payments monthly and in time, making available farm inputs on credit, collecting farmer's milk on time and daily, effective marketing their presence. With the rapid increase in membership, the plants management need to encourage the other farmers not selling to them and those selling and not members to join in membership as this will help them improve their capital base and boost their milk intake too. There is also a need to expand existing capacity with the increase of membership.

Collective marketing has also brought community cohesion as they are proud of their milk marketing plant. The farmers community is now able to work together to chat the way forward for their plant as well as other issues that affect them in their locality. Through their company they have been able to attract funding from other government wings e.g. Constituency Development Fund with which they were able to sink a borehole for use at the plant. Funds from this source were also used to fence around the plant's compound. This has boosted the farmer's identity within their locality.

## 5.2 RECOMMENDATION

In order to better the performance of the milk marketing plant and the plight of the smallholder dairy farmers, the following need to be undertaken: -

### a) Training of Farmers.

Farmers need to be trained on dairy production so as to bolster the knowledge they have gained by working on the farms. This will enable them to perform better and provide good care to the cattle. In line with the training, farmers need to be made aware and encouraged to use Artificial Insemination as a way through which they can improve genetics of their breeds and increase their output.

Farmers should also be made aware of feed conservation techniques. This will help them provide for sufficient food for their cattle in times of drought and maximize their earning during this period as the prices tend to be high due to low supply.

### b) Popularization and recruitment

The milk plant should embark on a campaign to popularize itself and encourage more farmers to join in its membership. This will enable it to raise more capital for expansion and increase its catchment base to that it can be able to attract more farmers to sell milk through it and enjoy the economies of scale. The plant serves both members and non members equally and there should be ways to encourage the non members to become members as a way to ensure sustainability of the plant as the farmers get encouraged to own the project.

c) Provision of other services

The plant needs to find ways to respond to their clients concerns which include: -

- Provide wide access to the farm inputs and Artificial Insemination services on credit so that they are able to improve on their production.
- Link the farmers with other micro-credit firms which will offer better credit terms with less stringent requirements like the main stream banks. This would boost the farmer's ability to invest into the better breed of cattle and improve their production.
- Source for adequate milk markets to absorb all the milk produced during the rainy season. Most of the times, a lot of the milk has been wasted for lack of markets to absorb the surplus during rainy season. This would involve signing contracts with milk buyers to guarantee their milk market.
- Leverage and cushion the farmers from significant low prices that eventually discourage them from undertaking milk production. This can be done by enforcing price stability in their contracts with milk buyers hence giving a similar guarantee to the farmers.
- The dairy should have elaborate milk collection plans so that the farmers do not get worried about their milk reaching the plant.
- Regularly organize farmer trainings and field days to equip the farmers with more modern techniques in dairy production and how to keep proper hygiene on the farms to ensure good milk quality.

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