

## **Milk Market Access for Smallholders: A Case of Informal Milk Trader groups in Kenya**

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*Raw milk is highly perishable and, thus, requires rapid transportation to consumption centres or for processing into less perishable forms. Milk loses limited marketing options for small and remote dairy producers, raises transaction costs, and implies greater losses due to spoilage than for commodities such as grain. Collective action is widely recognized as a positive force for rural development in Africa. The major objectives of this study were to: (1) Identify the major determinants of traders' participation in informal milk marketing groups and assess how these groups contribute to poverty reduction, especially for the welfare of women and poor farmers, (2) Identify promising institutional arrangements that contribute to coordination of milk marketing activities and facilitate farmer participation in markets, (3) Identify the role of governments, policies and other complementary institutional arrangements for enhancing the effectiveness and viability of institutions for collective informal milk marketing. The target actors were producer groups, transporters, mobile milk traders and milk bar operators. Results showed that bicycle mobile milk trader groups are more effective in areas with low milk market access and high transaction costs than in areas with improved market infrastructure. Traders' groups increase the performance of rural markets and expand market opportunities for smallholder dairy farmers (as measured through the level of market participation, farm-gate prices and traded volumes). A major problem was that most of the traders did not have information on requirements for a licence and on the existence of business development services (BDS) and their usefulness. Therefore this study recommended mainly among others that this information be given to traders to improve on trader group formation and performance.*

*Keywords: Collective action, Milk, Market access, traders' group, Kenya*

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### **1. INTRODUCTION**

#### **BACKGROUND**

##### *Small scale producers*

There is an increasing realization and policy interest to leverage markets and rural institutions for poverty reduction and improved food security in poor regions. Whereas market reforms and liberalization policies have opened opportunities for market-led development, transforming subsistence agriculture has remained to be a major challenge. The lack of market infrastructure and institutions in rural areas means that many markets are thin and imperfect. Hence, liberalization or technology development *per se* is unlikely to bring market opportunities and income growth for the poor unless supported by proper institutional innovations that facilitate market development and address the other constraints along the value chain. High transaction costs and problems of adverse selection in marketing cause smallholder farmers in places far from marketing points to have limited or no access to markets for products, inputs and services. This calls for innovative approaches, including new policy and

institutional arrangements that create and expand market opportunities and competitiveness in changing and risky market environments.

Rural institutions are pivotal in this process as they form essential channels for accessing agricultural innovations and markets for the poor. Rural organizations can coordinate production and marketing activities, increase scale economies, and facilitate technology dissemination. This implies that under certain conditions farmers may circumvent market imperfections through institutions for collective action that help them coordinate production and marketing decisions, reduce transactions costs and enhance bargaining power.

Small-scale dairy production is an important source of cash for subsistence farmers in East-Africa. Dairy products are a traditional consumption item with strong demand, and the temperate climate in the highlands allows the cross-breeding of local cows with European dairy breeds to raise productivity. Growth in demand for milk dairy products in sub-Saharan Africa (SSA) is projected to increase over the next 20 years due to expected population and income growth. Milk production and dairy product consumption are expected to grow in the region of 3.8-4% annually between 1993 and 2020 (Delgado, 1999). Increased domestic dairy production has the potential in most parts of SSA to generate additional income and employment and thereby improve the welfare of rural populations (Delgado, 1995, 1996; Staal et al., 1997). However there are concerns that the benefits of this expected growth may bypass resource poor livestock producers unless specific policy actions are taken.

Small-scale milk producers face many hidden costs that make it difficult for them to gain access to markets and productive assets (Staal et al., 1997). Among the barriers that may be influenced by policy are transaction costs- the pecuniary and non-pecuniary costs associated with arranging and carrying out an exchange of goods or services. The relatively high marketing costs for fluid milk in Africa, the scattered nature of fluid milk markets and the risk attached to marketing of perishables in the tropics suggest that transaction costs play a central role in dairy production and marketing. Under such conditions collective action as in producer marketing cooperatives, milk traders groups etc. that effectively reduce transaction costs may enhance market participation. Hence, it is vital to know what governments can do to better support these organizations and their emergence, and determine which alternative institutions should be encouraged.

#### *Transaction costs, collective action and milk-market participation.*

Transaction costs are the embodiment barriers to market participation by resource-poor small-holders. They include the costs of searching for the partner with whom to exchange, screening potential trading partners to ascertain their trustworthiness, bargaining with potential trading partners (and officials) to reach an agreement to see that its conditions are fulfilled, and enforcing the exchange agreement (Holloway et al , 2000). The nature of milk and its derivatives in part explain the high transaction costs associated with exchanges of fluid milk. Raw milk is highly perishable and, thus, requires rapid transportation to consumption centers or for processing into less perishable forms. Further, bulking of milk from multiple suppliers increases the potential level of losses due to spoiling. These losses limit marketing options for small and remote dairy producers, raise transaction costs, and imply greater losses due to spoilage than for commodities such as grain. Collective action is widely recognized as a positive force for rural development in Africa. Groups enable individuals to empower themselves and to increase benefits from market transactions. Getting together with others also can allow individuals to better cope with risks,

particularly when neither the private sector nor the government provides any “safety nets” or insurance against risk (Place *et al.*, 2002).

A common form of collective action to address access problems of this type is a participatory, farmer-led cooperative that handles input purchasing and distribution and output marketing, usually after some form of bulking or processing. They are helpful in overcoming access barriers to assets, information, services and indeed, the markets within which small-holders wish to sell high-value items. However, producer cooperatives in Africa have had a generally unhappy history, because of difficulties in holding management accountable to members, leading to inappropriate political activities or financial irregularities in management (de Jary *et al.*, 1993; Akwabi-Ameyaw, 1997), and also due to over-ambitious investment beyond management’s capability in terms of scale and enterprises. Considering their vital function in transforming agriculture and integrating rural economies, there has however been an appalling lack of knowledge on market institutions, best practices, protocols and innovative approaches in the post-liberalization era to facilitate access to markets and other essential services for the poor

One exception of the cooperative model of collective marketing of products by many traders with little value added is when a small group of firms works together to meet a regular demand of a specific client (Johnson *et al.*; 2002). This is observed among small groups of mobile milk traders for who work together to meet the regular demand of milk in a specific market. They tend to pay for and are paid for the milk they trade individually but they operate under one umbrella, the group, and are governed by some norms and rule. Some go as a group to buy the milk and sell it to a specific market. This allows them to share information, encourage one another in the business, build trust with the producers, reduce the transaction costs of monitoring, and can easily be reached by the regulators. They sometimes share contracts with sellers and buyers when there is more demand or supply. They also teach those new to the business how to manage it. Producers build trust with them such that one trader can not default payment of a farmer’s milk or cheat on them e.g. claiming that the milk got spoiled or never sold it. This is because the traders do the business together and monitor each other.

### *Informal milk marketing*

The collapse of KCC in 1997 resulted with serious milk marketing problems and a sudden influx of informal milk traders. Studies conducted by the Small Holder Dairy Project (SDP) in the mid to late nineties showed that the informal milk market accounted for over 70% of the milk marketed. This was a clear indication that the government could no longer ignore these actors. It therefore became necessary for the government to review the dairy act in order to accommodate the informal milk traders who according to the act were illegal.

In the informal milk marketing, small scale (mobile) milk traders are the majority and this is because it is very easy to enter and exit. One trader said: “you can just wake up in the morning with no money in your pocket and start the business; all you need is a plastic container!” This is because milk collected from the farmers is paid for in the evening. This has made the trade a favourite for school leavers and others who have no capital. It also causes the traders to play hide and seek with regulatory bodies for sometime before they accumulate enough savings to pay for the licences. Most traders started off with very small quantities of milk, even as little as five litres, which was transported by public means, on foot or by bicycle. The quantity is increased gradually as the business grows and some are handling up to 200 litres. Quite a

number of the traders have gradually moved from using public means or bicycle to using hired transport and then to buying their own vehicles and to setting up their own milk bars.

Given the importance of collective action in informal milk marketing, the major objective of this study was to determine what influences traders' participation in collective action, the impact of collective action on market participation by milk traders and identify the role of governments, policies and other complementary institutional arrangements for enhancing the effectiveness and viability of institutions for collective informal milk marketing.

## 2. METHODOLOGY

### THE STUDY AREA

The sample used in this study was drawn from nine towns of Kenya to represent the western and central milk marketing chains. Some of the towns were cities. Nyeri, Kiambu, Nairobi, Thika, Nyandarua, Nakuru represented the central milk marketing chain while Eldoret, Kisumu, and Kericho represented the western milk marketing chains.

All the towns have vibrant small-scale milk markets that sprung up soon after the liberalization of the dairy sector in 1992 and the subsequent collapse of KCC. Nakuru provides a unique opportunity to investigate issues faced by mobile bicycle traders who travel long distances to collect milk from rural areas, which is then sold in urban Nakuru. These traders have faced official harassment and have experimented successfully with cooperation (as a way to tackle harassment and competition). The traders who collect their milk in the evening at around 6.00pm and then preserve it in a cold-water bath overnight; the milk is then transported on bicycle to Nakuru for sale by 5:00 am the following day start their journey at 3:00am. In a strategy to deal with the risk of harassment from public officials, 26 of some 200 mobile milk traders that sell 60 – 80 liters each per day in Nakuru have formed an association called the Gatemano self-help group. One of the main activities of the group has been to rent premises at Ksh 1000 per month and establish a milk bar in Nakuru urban area. A 24-year –old female employee is hired to retail the milk sold at the milk bar. This is in response to the requirements of the Kenya Dairy Board (KDB) that every retailer must have fixed premises before qualifying to receive a license (*Omoro et al 2004*).

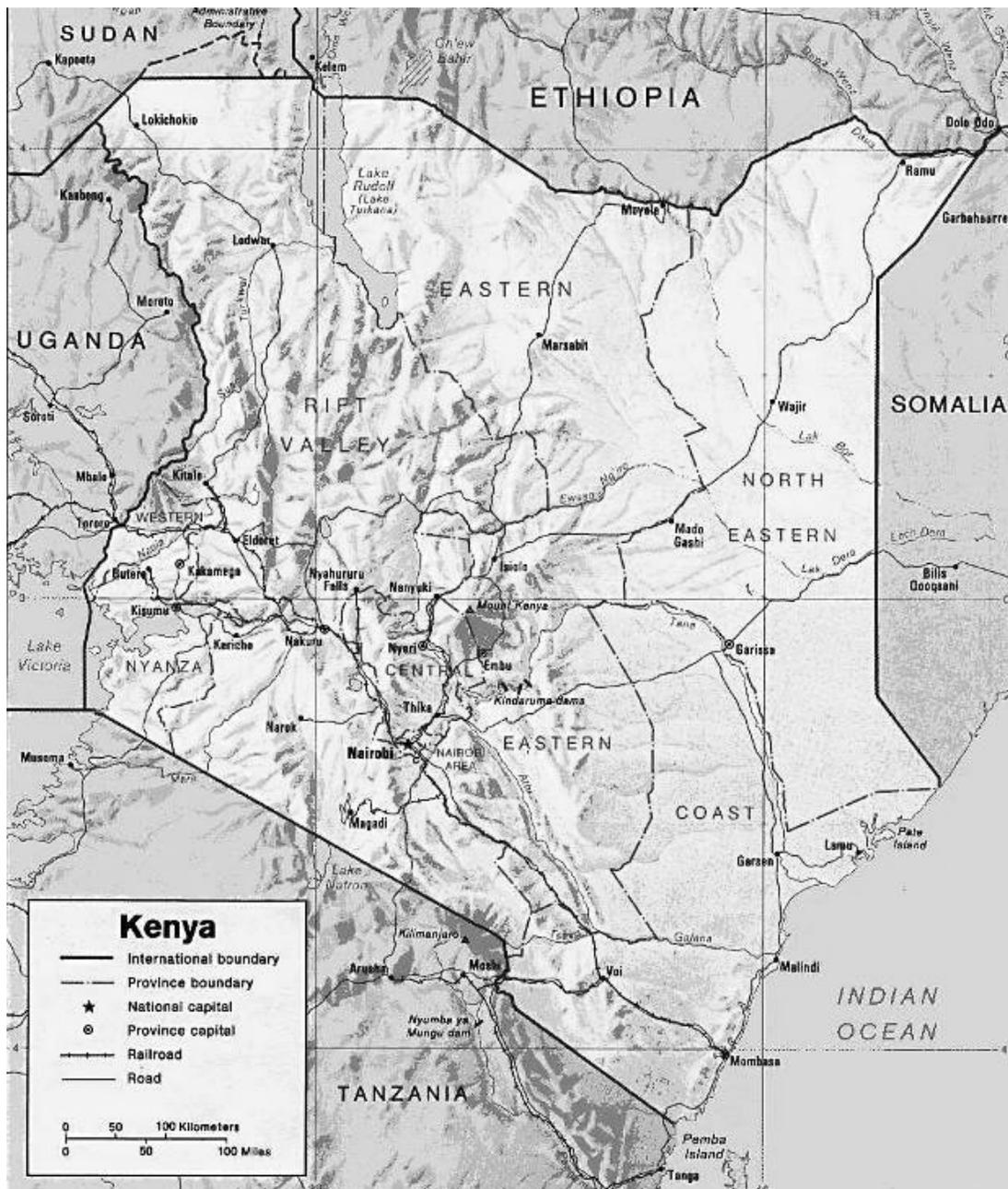
Murang'a, on the other hand is a more rural setting. Here traders use public transport vehicles (*Matatu*) and rarely face harassment. This is attributable to the long distances to the nearest regulatory offices. The milk is collected in the morning (usually at 6.00am) and then transported to the market by *Matatu* for sale between 7:00 am. - 9:00 am. However, little has been done in terms of training or formal development to assist these traders most of whom are women.

Thika, which supplies parts of Nairobi, faces serious problems with regard to spoilage and there are complaints of adulteration by unscrupulous farmers in the area. These traders supply a competitive, urban and highly sophisticated market. The milk is collected in the morning 6.00 am and then transported by *Matatu* for sale to the market by 7:00 am. - 9:00 am.

In the study area, the informal milk market chain is such that actors greatly interact with each other. Milk traders in the study site compose of bicycle milk bars, mobile milk traders, matatu mobile milk traders,

transporters, self-help groups, producer groups, producers and processors. Farmers and/or producer groups are the primary source of milk to all traders. Some of the farmers are also traders and they take their milk, buy more from others and sell mostly to milk bars or consumers such as hotels and schools. Traders prefer to buy milk directly from the farmers in order to maximize the profit margin. Transporters and mobile milk traders supply milk to milk bars and are not allowed to sell to individual consumers except hotels, schools and institutions. In some areas where they have long-term contracts, they are allowed to sell to individual households. Milk bars are the main source of milk to consumer households. There are some cases where mobile traders sell their milk to a processor.

Figure 1 – Map showing towns in Kenya from which the sample studied was drawn.



*Sampling techniques*

- 9 towns where informal milk traders are prevalent were purposively selected as sites for the study in the central and the western milk marketing chain.
- Random sample of unlicensed and licensed traders was selected on the site (mobile milk traders). Some of these traders belonged to groups while others did not.
- A random sample was taken from a list of other traders (milk bars, producers and producer groups)?

*Data collection*

- Cross sectional survey using a formal questionnaire administered to individual mobile milk traders (Group members and non-members).
- Focus group discussions ( with trader groups selected)
- Key informant discussions (with regulators and others)

*Data analysis*

Logit model was used to asses factors determining trader participation in milk trader groups. Statistical tests and simple statistics were used to asses the impact of being in a group on milk market access variables.

*Market access variables measured:*

- Milk left over and spoilage
- Possession of licenses
- Seeking BDS services
- Trying some of the practices that they have learnt
- Sales per day (Volume)
- Using quality control measures
- Value addition to milk

A probit model was estimated to assess the probability of being in a milk traders’ group. The model is generally represented below:

$$y_i = \delta' \mathbf{X}_j + e_j, \quad (j= 1, \dots, N) \quad \text{Equation (1)}$$

Where:

- $y_i$  is the probability of being in a milk trader group
- $\mathbf{X}_j$  is a vector of trader characteristics and other characteristics
- $\delta$  is a coefficient vector
- $e_j$  is a random disturbance term

*Variables used in the probit model*

- Age of the leader

- Education level of leader
- Region where the group is found
- Gender of trader
- Type of business
- Contact with regulatory authority

### 3. RESULTS AND DISCUSSIONS

#### DESCRIPTION OF TRADERS IN GROUPS

Results in table 1 show the characteristics of traders in the sample that was studied. Average age of traders in the sample is of a young age. This may be because the business is the easiest to start. Young people who do not have much capital to start other kinds of business find this business the easiest to start. Most of the traders claimed that to start the business, you simply wake up one morning and all you need is a plastic container to carry the milk. One can get the milk from farmers on credit which you pay in the evening after you have sold the milk in the evening.

Traders with secondary and primary school level of education dominate the business. This is because these two levels of education are where most students drop out of from education. They then start looking for employment which is hard to find in Kenya. The easiest alternative is to self employ themselves by starting milk marketing business.

Table 1-Description of traders in the sample.

Variable	Mean
Mean number of years of age of traders	35
% traders that are male	75
<i>Level of education traders</i>	
% with primary education	38.2
% with secondary education	41.8
% with post-secondary education	18.2
% traders in groups	35
Mean number of males at start of group	20(11.9)
Mean number of females in groups at start of group	4(4.7)
Mean number of males in groups now	24(12.6)
Mean number of females in group now	5(7.8)
% groups licensed	72.2
%Groups initiated by self	62.1
% groups initiated by Kenya dairy board and others	37.9

Source: Authors' Survey 2006

Fewer traders operate in groups than those operating individually. Traders gave various reasons why they have not joined groups which are shown in table 3. There are more males in the groups than females. This may be because the type of business operated by females do not motivate them to form groups. These are mostly milk bars. Most traders in groups are those operating as mobile milk trader's e.g on bicycles, on foot or by public transport means. Most women are not involved in this type of business.

Most of the groups were self initiated by the members but a good proportion of them were also initiated by KDB and other. Traders are encouraged to form groups before they are issued to operate the business by Kenya dairy board.

#### IMPACT OF MILK MARKETING GROUPS ON MARKET ACCESS VARIABLES.

Table 2 shows differences in performance of traders in groups and those not in groups in the market. Results show that traders in groups have low milk wastage through spoilage, left over and spillage. This may be because traders in groups may have gone through training in milk handling and hygiene since they can be accessed by trainers.

Volume of milk sold per trader in groups is higher than volumes sold by those that are not in groups. This is likely because traders in groups are trusted by individual milk producers and always have milk available for them every day. It may be also that they have long term contracts with producers to provide them with milk unlike traders who operate individually. Because of the traders operating as a group they may be able to access more market for their milk for the same reason of having a long term contract with consumers. This also emanates from the trust that builds between them because of working in a group.

Purchase price of traders operating in groups is lower than that of traders that are not in groups. This may be because of the some of the costs the group incurs that are transferred to the producers. Milk may still be sold to traders in groups because of the guaranteed purchase of the milk from the suppliers. Prices from traders who operate individually may be high but the uptake of milk from the suppliers is not guaranteed.

Selling price of traders in groups is higher than that of individual traders. This might be because traders in groups are able to access better market for their milk than traders in outside groups. Because of being in groups they are able to bargain for higher prices.

Business development service has been received by a higher percentage of traders in groups than individual groups. This is because traders in groups can easily be accessed by trainers. They are also more informed of where to get the services from since they share information in the group and encourage each other to seek for the information.

Table2- Effect of being in a marketing group on market access variables

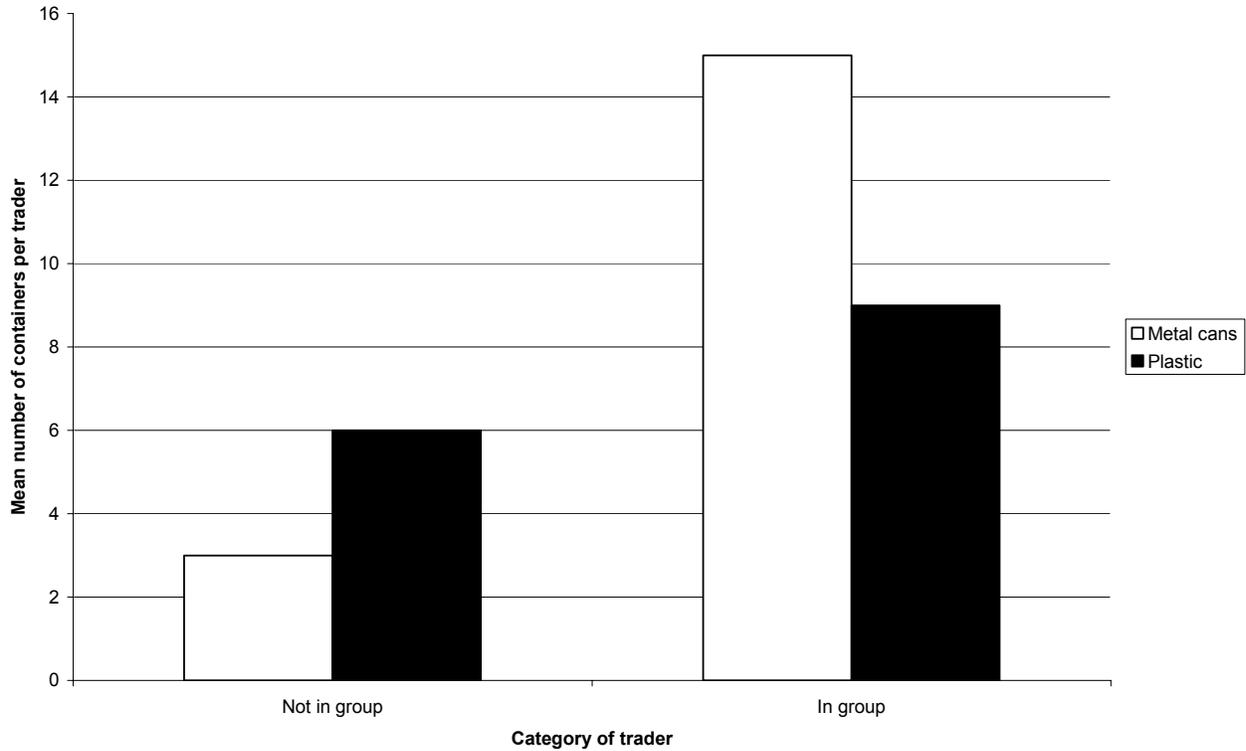
Variable	In group	Not in group
Spoilt amount yesterday (litres)	9.8 (18.1)	35.4(65.1)
Leftover amount yesterday (litres)	14.1(27.9)	18.3(33.7)
Spoilt amount yesterday(litres)	7.2(10.4)	13.1(28.7)
Spoilage times per week (litres)	2.9(3.4)	2.8(3.1)
Mean amount sold (litres)	379.3(352.7)	145.6(285.2)
Mean purchase price (Ksh)	17.3 (2.7)	18.2(3.5)
Mean sale price (Ksh)	24.9(16.3)	24.4(7.4)
% Received BDS service	56.4	40.3

Source: Authors' Survey 2006

*Milk handling and hygiene*

Figure 2 show that traders in groups have a higher mean number of the required metal cans than those not in groups. This means that they are meeting the requirements by the regulators. This will lead to their establishment than those not in groups.

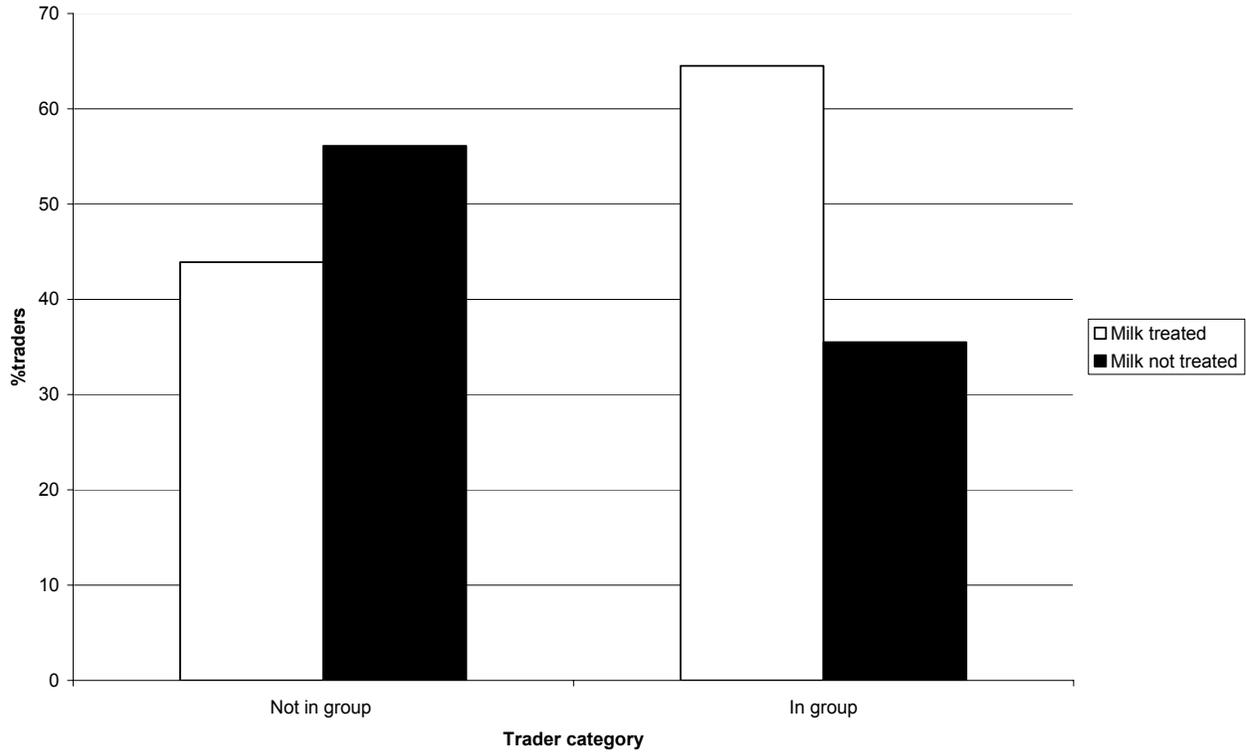
**Figure 2- Mean number of containers used by type**



Source: Authors' Survey 2006

Figure 3 shows that more traders in groups practice milk preservation methods than traders that are not in groups. This must be as a result of the being trained on milk handling and hygiene.

**Figure 3- Milk preservation**



Source: Authors' Survey 2006

### REASONS FOR TRADERS NOT JOINING GROUPS.

Results in table 3 show the reasons that traders gave for not joining groups. The biggest percentage of traders claimed that they were not aware that there were groups or they said they said others were not willing to form a group. These may be in areas where groups are not very popular or in places where there is little work being done by Kenya dairy board.

Table 3- Reasons for traders not joining groups.

Reason for not joining group	%
Not aware of any group to join	27.42
Yet to give it a thought	12.9
Planning to join	11.29
Hard to operate as a group	9.68
Just started	9.68
Not necessary	9.68
Type of business	9.68
Others	6.67
Total	100

Source: Authors' Survey 2006

#### *Determinants of participation in milk marketing groups*

Table 4 shows results of a probit regression to show factors that determine participation in milk marketing groups. Results show that most of the variables used in the regression do not significantly determine participation in a milk marketing group. This means that joining a group does not depend on the region of the milk marketing chain. This may be because there are just as many milk marketing groups in central milk marketing chain as there are in western. The difference may just be the type of groups. Where in central region is dominated with farmers' and producer groups while western is dominated with middlemen groups. Whether from central or western region, the probability of joining a group is the same. The same case is applicable to the gender of the milk trader, their education level and age. Regardless of their status in these respects, they have an equal probability of joining a group. The results for gender may be because there were few females in the sample hence they could not make a significant difference. Age did not have a significant influence may be because most of the traders in the business are of the same age which is between 31 years to 40 years.

Type of business the trader operated significantly influenced their probability of joining a group. Traders with milk bars were significantly less likely to join a group than those with other type of business. This may be because traders with milk bars are able to access the market as individual milk bars without using group. This is because their clients will always find them in their location. Therefore they find joining a group does not add value to their business. Traders who were mobile milk traders were not significantly different in their probability to join a group from traders who are milk producers or milk transporters.

Table 4 - Probit model results on factors affecting joining of a group

Variable	Coefficient	Std. Err.	P
Region	-0.10	0.50	0.84
Respondent age	-0.11	0.28	0.70
Respondent education	0.11	0.33	0.75
Respondent gender	0.04	0.65	0.96
Contact with authority	0.36	0.48	0.46
Milk bar	-1.79	0.63	0.01
Mobile milk trader	-0.16	0.56	0.77
cons	-0.18	1.50	0.90

Source: Authors' Survey 2006

#### 4. CONCLUSIONS AND RECOMMENDATION

Belonging to a group increases the probability of a trader being established in informal milk marketing since he/she incurs fewer milk loses in the business, is able to handle bigger volumes of milk and fetch higher prices for the milk and meets requirements by the regulatory institutions. This will more likely lead to an increase in the incomes of such type of traders than for those not in groups. Hence operation as groups in milk marketing is beneficial to producers, middle men and consumers who get quality milk at reasonable prices and their formation should be encouraged.

Traders should be assisted to form groups. This is because those who have been operating individually find it difficult to join a group because of the requirements set by the group members. It would be easier for the trader who has been operating individually to join a group if for example he/she was given a loan to do so and pay back slowly. Traders handling very little amounts of milk which make it not viable to join a group could be given a loan to increase his/her capacity.

There should be equal emphasis on group formation in both regions, regardless of the gender, age and education of trader since the probability of traders joining groups is equal for all traders in these respects.

Stakeholders in milk marketing should invest more in training traders on the benefits of groups and give information on the existing groups to encourage them to join especially those operating milk bars. This is because they seem not informed about the benefits of being in a group since most of them shied away from joining one claiming that it was either not necessary or some were just sluggish to make the decision to join. Some were not aware that they can operate as a group.

Cess payment when a trader is in a group should be according to what he/she sold in the month and not generalized. This is because traders were finding it expensive to operate as a group given that they may be handling less amounts of milk per month than the equivalent of the cess they are required to pay regardless of the amounts.

There should be more research on formation and performance of milk trader groups. This will enable stake holders in milk marketing to be able to replicate successful groups. This study was limited in this capacity because the number traders for each group was less than could allow for this analysis.

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