

# EFFECTIVENESS OF THE VALUE CHAIN SYSTEM IN THE OPERATIONS OF SELECTED PRODUCER-OWNED DAIRY GROUPS IN KENYA

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## Abstract

Dairy is a major component of many rural households at least in the High and Medium Potential Lands (HMPL) in Kenya. The Kenyan dairy industry is based mostly on smallholder milk production. The history of cooperative development in Kenya is tied closely to the aims of the Government's rural development policy. Soon after Independence in 1963, Government was given wide-ranging powers in organizing farmer cooperatives to deliver the necessary services. The government's aim was to use cooperatives as a tool to facilitate commercialization of Kenya's smallholder farm sector. Currently, most of the running cooperatives are characterized by weak management capacities, inadequate capital base, and low economies of scale.

This exploratory research reveals the effectiveness of the value chain system as a planning tool, on the performance of the selected producer-owned dairy groups. The paper identifies the *value activities* within the milk value chain and the cost drivers within the chain that contribute to competitive advantage. An in-depth analysis of how the value chain strategy has been used in the selected dairy groups, the impact on their performance, challenges faced and the specific areas that supporting partners are able to focus on within the dairy value chain are discussed.

As a result of this research, a positive change in the livelihoods of the farmers was realized, as a result of **maximizing the core value activities** within the dairy chain. The core activities were the activities within the "inbound stage" of the dairy value chain and which include; Provision of farm inputs, selection of good cattle breeds, provision of animal feeds and drugs and proper milk handling practices, this means training the dairy farmers on clean milk production, at the farm level. The study established the lack of knowledge by the farmers on how to handle milk especially at the milking stage, and poor hygiene of the milk jars used during the milking process. This affected the quality of milk as a result of bacteria that contaminates the milk, causing rejects at the collection points. With such improved business services to small farmers, it was established that small farmers' transaction costs that are usually large relative to the size of their output, was greatly

reduced, resulting to improved quality of milk and efficiency of the producer-owned groups.

It was also established that in order for Michael Porter's value chain model to be effective in the **producer-owned dairy groups**, there is need to include external support activities that are outside the milk value chain. The study indicates that managers performing value-chain analysis need to take into account **newly important business drivers**. Expanding the value chain ensures that no potential strategic activity is forgotten and no opportunity for enhancing value are over-looked. The added-value chain proposes *adding an expanded set of activities* to the original value-chain concept; specifically activities that can help improve the livelihoods of the dairy farmers. The study reveals the following set of external activities that help improve the livelihoods of the farmers; Credit Facilities, provision of basic necessities like soap, sugar, bonuses/advances and school fees loans.

**Key words: Value Activities, Porter's value chain, Producer-owned dairy groups, Kenya dairy industry, Milk Value Chain**

## **INTRODUCTION**

The **value chain**, also known as **value chain analysis**, is a concept from business management that was first described and popularized by Michael Porter in his 1985 best-seller, *Competitive Advantage: Creating and Sustaining Superior Performance*.

The value chain framework quickly made its way to the forefront of management thought, as a powerful analysis tool for strategic Management. Value chain strategy has become an increasingly useful approach to gain a comprehensive view of the various inter-locking stages involved from taking a good or service from the *raw material to production* and then to the *consumer*. Value chain Model can be used to examine the various activities of the firm and how they interact in order to provide - performing these activities better or - at a lower cost than the competitors. Its ultimate a source of competitive advantage by: goal is to maximize value creation while minimizing costs. Value chain approach promotes dialogue and accountability between stakeholders as they analyze and negotiate their common interests in improving the functioning of chains and identifying those interventions likely to be most useful. It can help make chains freer and fairer and redistribute benefits to those currently disadvantaged.

The history of cooperative development in Kenya is tied closely to the aims of the Government's rural development policy. Soon after Independence in 1963, Government was given wide-ranging powers in organizing farmer cooperatives to deliver the necessary services. The government's aim was to use cooperatives as a tool to facilitate commercialization of Kenya's smallholder farm sector. The current membership in the cooperative dairy sector is 100,000 dairy farmers. Most of the milk sale before liberalization and immediately after liberalization was through the KCC (Kenya Cooperative Creameries), who had a monopoly to process milk for the market. The trend however has changed with decline of KCC and influx of many small-scale processors. At

the time of liberalization in 1992, government services to large and small producers had in many cases ceased to function in practice or were very erratic. Whilst large producers may have been able to find ways around this, smallholders would have been considerably disadvantaged, through lack of individual purchasing power. Rapid growth of the informal milk trade resulted into several challenges relating to quality control and standards have emerged and need to be addressed.

Milk processing faces a number of challenges, especially, since the near collapse of the Kenya Co-operative Creameries (KCC) in the 1990s that left farmers with no outlet for much of their production. Some of the constraints within the sector include: **poor quality feed, barriers to animal health services, slow development of breeding services and poor access to credit and milk markets.** Increased milk productivity and production, coupled with exploitation of the regional markets, will spur growth in dairy production with resultant increases in income to dairy farmers.

It is expected that the interventions proposed in this new Dairy Industry Policy will rise to these challenges and opportunities to evolve a vibrant dairy industry in Kenya. The new Dairy policy reflects on the dynamism in the dairy industry and bears out *the interventions the government, together with stakeholders, will make in the entire dairy value chain.* These interventions will cover dairy research, milk production, extension, marketing of milk and milk products, milk processing, milk consumption, human resource development and training, financial services, institutional, legal and regulatory issues’.

## **CURRENT ISSUES/PROBLEMS**

Currently, most of the running cooperatives are characterized by weak management capacities, inadequate capital base, and low economies of scale. This has resulted in increased competition both in the raw material markets and the consumer markets with an emergence of milk hawkers (Informal markets). The major factors behind the dominance of informal milk markets are mainly lower price and traditional taste preferences. Available evidence indicates that formal milk markets will grow only as household incomes increase.

The government’s aim was to use cooperatives as a tool to facilitate commercialization of Kenya’s smallholder farm sector. Currently, most of the running cooperatives are characterized by weak management capacities, inadequate capital base, and low economies of scale. According to the Ministry of livestock and Fisheries, dairy farmers lose about 95 million liters of milk annually due to waste and spoilage in farms and along the market chain. ***Inadequate milk preservation facilities, instances of unpaid or overly delayed payment for farmer milk deliveries*** have been common with the resultant negative impact to milk production. This necessitates a policy shift towards prioritizing consumer requirements, exploitation of external markets and the placement of a premium on efforts to increase dairy productivity and efficiency.

The purpose of this paper is therefore to establish which core activities within the milk value chain directly affect the livelihoods of the farmers

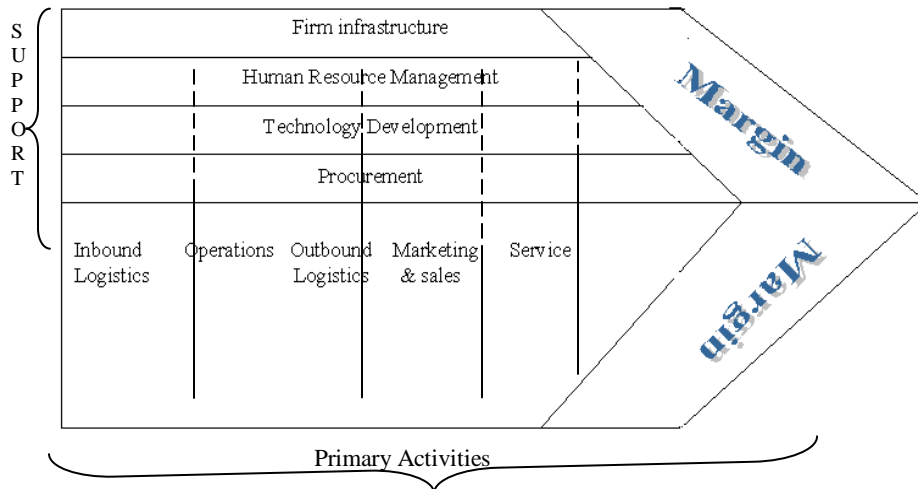
## LITERATURE REVIEW

Every firm is a collection of activities that are performed to design, produce, and market, deliver and support its product. All these activities can be represented using a value chain model. Competitive advantage is created and sustained when a *firm performs the most critical functions either* more cheaply or better than its competitor(s).

Value chain can be used to examine the various activities of a firm and how they interact in order to provide a source of competitive advantage by, performing these activities better or at a lower cost than the competitors. In competitive terms, value is the amount buyers are willing to pay for what a firm provides them.

Creating value for buyers that exceeds the cost of doing so is the goal of any generic strategy. *Value* instead of *cost*, must be used in analyzing competitive position''. Sustaining competitive advantage depends on understanding NOT only a firm's value chain but how the firm fits in the overall value system.

Porter categorizes the generic value-adding activities of an organization into primary and support activities. The "primary activities" include: inbound logistics, operations (production), outbound logistics, marketing and sales, and services (maintenance). The "support activities" include: administrative infrastructure management, human resource management, Research and Development, and procurement. The costs and value drivers are identified for each value activity.



Source: Michael Porter, *Competitive Advantage*, 1985

Figure 1.1: An illustration of a Business Unit Value Chain

*Porter's approach to the value chain model may be summarized as follows:*

Each primary support activity has, therefore, the opportunity to contribute to the performance of the business unit by enabling it to produce in the market and deliver products or services which meet or surpass the value expectations of buyers in comparison with those resulting from other value chains;

Value activities are therefore discrete building blocks of competitive advantage. An analysis of the value chain **rather** than value added is the appropriate way to examine competitive advantage. By using the value chain approach, a firm has the opportunity to generate superior value by having both a ***cost advantage and a differentiation advantage***. A cost advantage means understanding costs better and squeezing them out of the value-adding activities. Differentiation means focusing on those activities associated with core competencies and capabilities in order to perform them better than your competitors (Porter, 1985)

Heiko Bammann (2007): in his paper, ‘‘ *Participatory value chain analysis for improved farmer incomes, employment opportunities and food security*’’ , states that, Collaboration between government agencies, non-governmental agencies, and private agribusinesses offers the greatest potential for applying the value chain concept, ***with the aim of increasing income and employment through improved farming***. The approach can be applied to a wide range of situations and for different beneficiary groups, including youth and women's groups.

It can be used for the identification of relevant sub-sectors, commodities or groups of products and in the implementation of a rural development or food production strategy. With a view to future research priorities, public-private partnerships in research and dissemination can improve the technologies available to small-scale producers and processors, while capacity building can help farmers meet new quality and safety requirements, as well as learning how to manage cash.

Value chain programs also ***facilitate and support producer organizations***, which allow economies of scale in buying inputs and selling products. Improved business services to small farmers and processors—whose transaction costs are large relative to the size of their output— help them improve quality and efficiency, reduce costs, and expand operations. It is important that governments anticipate future vulnerabilities and build the capacities of chain participants to innovate, diversify or exit as markets change: support for value chains can increase vulnerability if incentives favor products and services susceptible to large shifts in demand and price.

## ***CONCEPTUAL FRAME WORK***

The framework was used to illustrate the contributions of both the primary and support activities in gaining competitive advantage in producer-owned groups. The study revealed that after examining all the activities within the milk chain, the dairy producer groups are able to identify the priority activities that affect the livelihoods of the farmers. The figure below provides the linkages between the study variables.

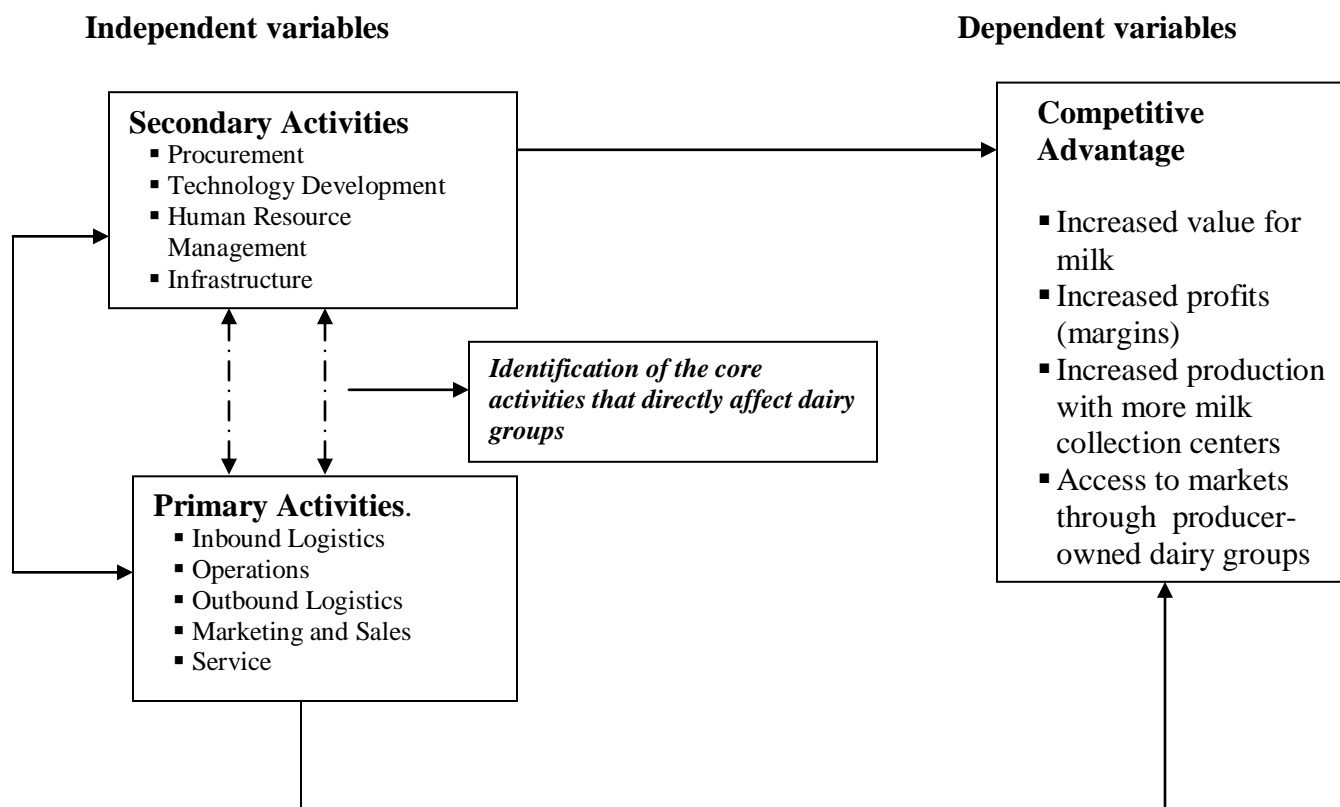


Figure 1.2: Conceptual Framework

### OPERATIONALIZATION OF THE VARIABLES

The variables of the study were operationalized for ease of interpretation as shown in the table below. In this case both primary and support activities were in line with the study objectives.

Table 1.1: Value Chain Activities in the Dairy Industry.

ACTIVITIES	MEASUREMENT
<b>Primary Activities</b>	
Inbound logistics (Activities at the farm level)	Support for training of farmers - Provision of farm inputs - Selection of cattle breeds - Provision of cattle drugs - Support for feeding programmes
Operational activities	--Milk cooling plants, processing of other milk products
Out bound activities	--Support for market development - How the milk is delivered to the collection centers, and how it is stored before sold to milk processors
Sales and marketing activities	-- How the milk sold (For example; through informal traders and milk processors

	--Consumer information
Service activities	- Maintenance and repair of any tools used in production
<b>Support Activities:</b>	
Firm infrastructure	Management support and training to the farmers
Human Resource Management	Training of staff and management of the dairy group
Technology	Equipment financing
Procurement	Procurement of farm machinery

The thrust of this study was to examine the overall effect of both secondary and primary activities in gaining competitive advantage. The findings of this study revealed the core activities within the milk chain that affect the performance of the dairy groups and external activities that affect the livelihoods of the dairy farmers in the selected producer-owned dairy groups

### *EMPIRICAL EVIDENCE*

The agro-processing sector in general is one of the potential sectors that were identified through the economic baseline study conducted by GTZ-RED project in Indonesia. Dairy milk production in the District of Boyolali , – one of the districts in the program area of GTZ-RED – is one of the largest dairy milk clusters in Indonesia, as well as one of the largest employers in the locality.

The livelihood of the rural poor also depends much on the dairy milk production. Aiming at developing the economic potential of the milk cluster and poverty alleviation of the rural population, the sub-sector of dairy milk has been selected for economic promotion using the Value Chain Approach (VCA). The objective of VC promotion in this sub-sector is to increase the competitiveness of SME/dairy farmers in terms of milk quality and productivity.

It was apparent that higher milk prices can only be obtained if the basic prerequisites are fulfilled, namely improved milk quality and a functioning quality/price mechanism. Therefore, all interventions should aim at reaching these two prerequisites.

It became apparent that the cooperatives play a significant role as the main actor in driving changes on the farmer level. In particular, the cooperatives are those possessing the ability to conduct continuous capacity building for dairy farmers through their permanent training and monitoring functions.

It is also evident that support from the dairy industry is very influential for the improvement of the milk cluster's performance in terms of giving technical and financial assistance, monitoring activities amongst others. Thus, an active participation of the dairy industry in the endeavor is highly desirable not only for the milk cluster, but also the industry itself, since this will ensure the continuous supply of high quality raw materials.

Such a strategy involved some clear interventions, including: Regular meeting for coordination and communication of the Milk cluster forum, training good farming process in 6 sub-districts of Boyolali, benchmarking in East Java and West Java, study tour in Vocational education center for Agriculture ( VEDCA, Cianjur). The emphasis was on individual activities involving capacity building for the dairy farmers.

The cornerstone of the whole approach is to focus on the critical constraints and opportunities that hold back the growth of sub sector and design interventions that would benefit all actors in the chain (not only farmers' organisations) and have a potential to become viable solutions to be offered by the local service providers.

In general, the value chain approach has been used as a participatory approach, which has resulted in upgrading of products and processes in order to increase the value of a product. The empirical evidence above suggests that using VCA as a participatory assessment process can be beneficial especially to the agricultural sector.

In order to achieve a combined effect of all the activities within the value chain strategy, the connecting theme is the intermediation between farmers, input suppliers, traders, companies and rural banks. Promoting associations will continue being a key issue to connecting small farmers with dynamic markets.

## **METHODOLOGY**

The research methodology was a survey of the selected producer-owned dairy groups. The two dairy groups supported by TechnoServe Inc., are –Wakulima Company and Nyala dairy group, located in Nyeri and Nyahururu districts, Kenya. The selected sampling technique was **Non probability Sampling**. The method of sampling was Purposive **sampling**, where by the selected dairy farmers conformed to a criteria that assessed their performance as a result of using the Value chain strategy. This judgment sampling was appropriate in determining the effectiveness of the value chain as a strategy and also addressed the research questions in this study.

Wakulima Company, which has to date 5,300 small-scale farmer members and Nyala Dairy has 3,700 smallholder farmers. A total population of, 9,000 farmers. The total respondents were 91 farmers including; 53 farmers from Wakulima Company, and 38 farmers from Nyala Dairy.

The researcher used **Questionnaires and Interviews** as the methods of data collection. Both questionnaires had likert scales that included performance indicators before and after TSN support. The questionnaire for the dairy farmers was open-ended and unstructured. To test the dependent variable, the questionnaire for farmers required unstructured questions to allow freedom for farmers to respond in their own words and have a greater depth of response. The selected questions from the questionnaires were used as the guide to interview the sampled dairy farmers and the senior management. Data was analyzed using Qualitative techniques. Results obtained from the data collected were coded using the SPSS Text Editor Qualitative Research Software. The data has been tabulated with ratings in figures and percentages for overall performance and also for each activity within the dairy chain. Some descriptive statistics, frequencies, charts were also generated for both dairy groups.



## OVERALL FINDINGS FROM THE SELECTED PRODUCER DAIRY GROUPS

The study revealed that 80.4% of all respondents indicated that the ‘inbound logistics’ which is the first stage of the primary activities in a value chain is very critical to the performance of dairy groups. Provision of farm inputs, selection of cattle breeds, provision of animal feeds and drugs, within the milk value chain are considered activities that have a more positive impact on the performance of dairy farmers. See figure below;

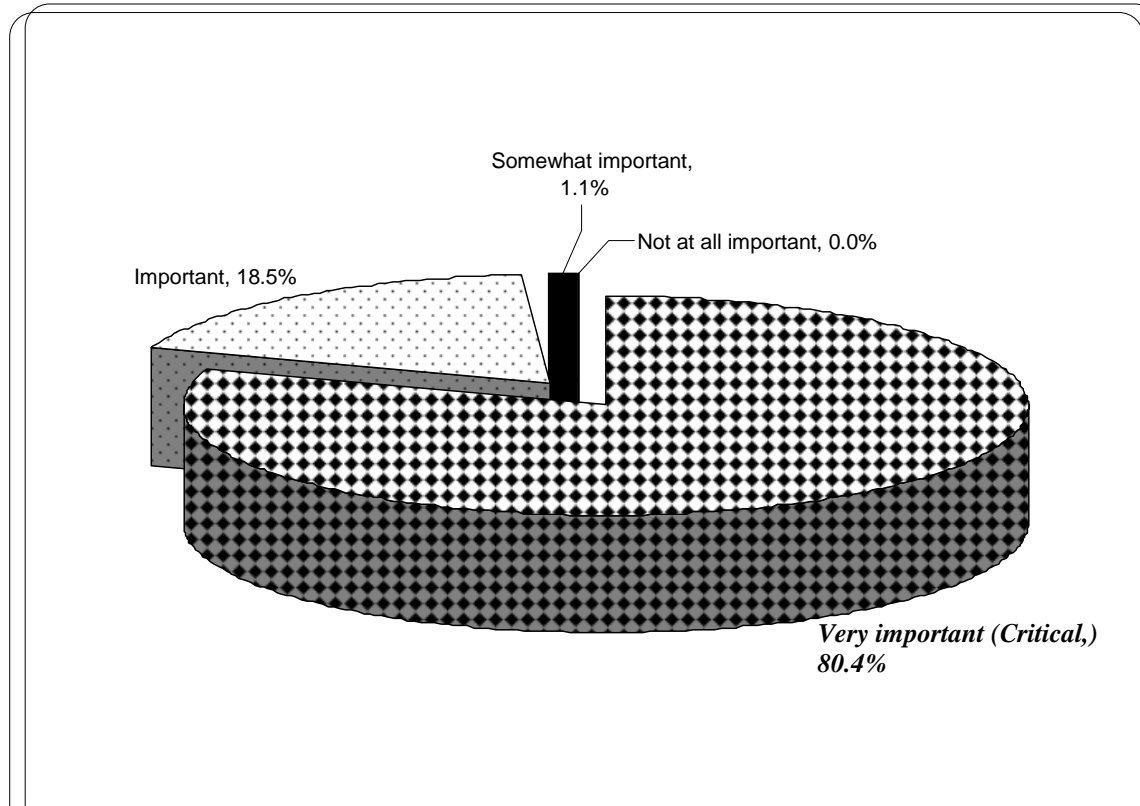


Figure 1.3: Inbound logistics - farm inputs, selection of cattle breed

The most important activity that needs intervention is the *inbound logistics*. This includes; **provision of farm inputs, selection of cattle breeds, provision of animal feeds and drugs**. Secondly, *by training the dairy farmers on, clean milk production*, at the farm level, the study shows lack of knowledge by the farmers on how to handle milk, especially at the milking stage, and poor hygiene of the milk jars used during the milking process. This has affected the quality of milk due to the bacteria that contaminate the milk, causes rejects at the collection point. Nyala group in particular have faced a high number of milk rejects from farmers, this has been attributed to the poor tools used in production (in this case the milk jars) which are easily contaminated with bacteria.

Thirdly, *milk processing* is an area that also needs intervention. The study reveals that farmers expressed a need to own their own processing plants so that they can produce a variety of milk products like yogurt and butter, in order to gain competitive advantage.

Fourthly, *delivery of milk* from the farmers to the collection centers has affected the milk value chain. The study shows that both dairy groups incur high operational costs as a result of hiring private transporters to collect milk from the farmers. This affects the buying

price of milk from the farmers. Other transporters have also affected the quality of milk brought at the collection center. Some transporters have diluted the milk in order to increase the capacity and fetch more money. Therefore delivery of milk to the centre is an important primary activity within the chain, which can affect overall performance of the producer-owned dairy groups.

Finally, *Promotion of producer-owned dairy groups' activities* helps to attract more farmers to participate in activities that can help improve on their performance. This is part of the sales and marketing within a milk value chain. Nyala group noted that *creating awareness* of the support activities that a producer-owned group has to offer is very useful in improving the dairy businesses. The group suggested an idea of initiating forums or organize village events where people can be gathered for a social function for example, sponsoring athletics, such forums will create opportunities for dairy groups to market their activities.

## **CHALLENGES FACED BY THE SELECTED PRODUCER DAIRY GROUPS**

### ***Nyala Dairy:***

The study identified some challenges, which affect both the members and management of the group.

The group faces high number of milk rejects at the collection point. This is due to the poor milk testing services at the collection center. Farmers lack knowledge on how to milk the cows in a more hygienic manner which can help prevent bacteria contaminating the milk and affecting the quality of milk

The milk collection center needs to increase the capacity of coolers in order to accommodate the excess capacity. Currently they have one cooler that takes only 16,000 ltrs of milk per day, but usually the milk collected from the farmers exceeds the cooling capacity to almost 34,000 ltrs. Secondly, the milk jars used by the farmers has contributed to the poor quality of milk as a result accumulated bacteria inside the covers of the milk jars. The management of the group had to introduce Aluminum jars which have been more expensive but helps to reduce on the milk rejects at the center.

High milk transportation costs. Commission charged by the outsourced transporters is high; therefore the farmer is left to enjoy little profit. This has affected the buying price of milk offered to the members. Transport has also been a problem especially during the rainy season, transport to the farms is difficult, and causes a delay in delivering the milk at the cooling centre resulting to milk rejects. Some farmers still prefer to sell their milk to the brokers and this affects the quality of milk that is brought to the center, since its often diluted with water to increase the capacity

### ***Wakulima Group***

The cost of production is high. Currently, the farmers practice zero grazing and this sometimes is affected by the climate, the land owned by each of the farmers is limited around 2-3 hectares. This is coupled with the low milk buying price which is between Kshs 17-18. Despite the increase, the farmers still believe that the milk can be bought at a better price. Farmers lack knowledge on how to look after bulls when cows are lactating. The animal husbandry and dairy farming techniques received from the group only concentrate on the dairy cows.

Farmers are faced with lack of market for their excess milk. The dairy group only collects milk twice a day, so farmers who are able to milk their cows at a later time have no where to sell their milk, which later gets spoilt.

Farmers also face high costs of animal feeds have resulted to high costs of production. Quality of animal feeds supplied by the suppliers is poor which has affected the quality of milk.

High operation costs at the cooling centre are high. For example they have to chill the milk so as to prolong the milk life. With chilled milk they can fetch high price for their milk from the processors. Farmers also need training on plant farming for specific plants for cow food (fodder), to increase the yield. The fodder acts as a substitute for the animal feeds

## CONCLUSION

The study showed that the core activities within the milk value chain that directly affect the livelihoods of the farmers, are mainly the **primary activities at the ‘inbound logistics stage’** of the milk value chain. The primary activities are considered to have a more positive impact on the performance of dairy farmers. The initial primary activities within the milk value chain include; provision of **farm inputs, selection of cattle breeds, provision of animal feeds and drugs**. Improved business services to small farmers will greatly reduce their transaction costs that are usually large relative to the size of their output. This in turn creates competitive advantage through improved quality of milk and efficiency of the producer-owned groups.

However, the study revealed that examining the full spectrum of value adding activities, assists managers to develop and communicate new activities that will allow dairy groups to gain competitive advantage. The value chain strategy used by the selected producer-owned dairy groups has also incorporated external activities, which is very effective in improving the livelihoods of farmers. It thus *strengthens Porter’s value chain* by incorporating external support activities that are *important business drivers* that directly affect the livelihoods of the farmers. This may include; **provision of basic necessities, credit facilities and school fees loans**. These “business drivers” support the farmers in the producer groups who are able to deliver milk as they wait for their milk income from the milk processors. Payment processes made by the dairy group to the farmers, is usually determined by the amount collected at the milk collection centers and the demand from the milk processors. Farmers are attracted and willing to join dairy producer groups that have a milk value chain that is managed efficiently and the farmers’ needs (external activities outside the milk chain) are addressed. This clearly shows the ineffectiveness of Porter’s value chain as a strategy that can be used in Producer-owned dairy groups

## RECOMMENDATIONS FROM THE STUDY:

In order for Michael Porter’s value chain model, to be effective in the producer-owned dairy groups, there is need to include external support activities that are outside the milk value chain. The study indicates that managers performing value-chain analysis need to take into account newly important business drivers. Expanding the value chain ensures that no potential strategic activity is forgotten and no opportunity for enhancing value are overlooked. The added-value chain proposes *adding an expanded set of activities* to the original

value-chain concept; specifically activities that can help improve the livelihoods of the farmers. The study reveals the following set of external activities that help improve the livelihoods of the farmers; Credit Facilities, provision of basic necessities like soap, sugar, bonuses/advances and school fees loans.

After critical analysis of the milk value chain, the researcher observed the need to maximize the operations of the chain in order to gain competitive advantage. There was a high demand by farmers from both groups *to add value* to their milk. The groups need to maximize their operations by having their own processing plants where they can develop new products like yogurt, maziwa mala, and butter. This would greatly improve on the value of the products, and the group would have a differential advantage, which would give the farmers a competitive edge in the market.

It was evident through this research that producer-owned dairy groups, need to manage their own transportation as part of the support activities within the milk chain. However, it was noted that outsourced transporters have also affected the quality of milk brought at the collection center. Some transporters have diluted the milk in order to increase the capacity and fetch more money. The dairy group translates the high costs incurred by paying private transporters to increased operational costs. This eventually affects the buying price offered to the farmers. With own transportation, management is able to collect the farmers' milk at the collection points more frequently and with reduced costs. Therefore reduced costs in milk delivery to collection centers, is an intervention area that supporting partners could focus on. Dairy producer groups could also ensure that agreements are made on procedures for paying external transporters and ensuring that the quality of the bulk milk is not jeopardized by consignments that have deteriorated or have been adulterated.

The study also revealed the need for producer-owned dairy groups to improve on the delivery of veterinary services offered to the farmer. These services should be easily accessible by the farmer, in a sense that the dairy groups should have enough man power/clinical officers who are able to reach the farmers located far from the center.

In conclusion, the researcher highly recommends for supporting partners to maximize the primary core activities at the farm level. By improving business services to small farmers, their transaction costs that are usually large relative to the size of their output, is greatly reduced, resulting to improved quality of milk and efficiency of the producer-owned groups. Finally, in order to achieve effectiveness of the value chain strategy to improve the performance of dairy groups, it was established that the entire milk value chain has to be assessed and **incorporate external activities** which directly improve on the livelihoods of the dairy farmers. This creates *the added-value chain* which is *more effective* and may assist strategists and managers to develop and communicate new activities that will allow producer-owned dairy firms to be efficient.

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