

EMPOWERING SMALL SCALE DAIRY FARMERS THROUGH THE CO-OPERATIVES MODEL

Dia Kingu¹ and Benson O. Ndiege²

Abstract

The co-operative model is considered to be an essential means to empower small scale farmers in the process of improving food security. Despite the extensive literature, the specific question about how co-operatives facilitate the process of enabling small scale farmers including dairy farmers lack empirical evidence. This study used two dairy co-operatives, i.e., Nronga and Kalali Dairy Co-operatives which are in Hai District in Kilimanjaro, Tanzania, to learn the roles of co-operatives in eliminating market failure and reducing the costs in empowering small scale dairy farmers. The data were collected from 387 members of the two co-operatives. The quantitative data were analysed using descriptive statistics while the qualitative data were analysed using content analysis method. The results show that the co-operatives are beneficial to the small scale farmers in terms of cutting down costs and ensuring market efficiency. However, the effectiveness of co-operatives remained at risk because the concept of dairy farming and commercialized agriculture as a whole is yet to be fully sold to the smallholder farmers. Therefore, the levels of Government support and partnership with companies regarding training and other capacity-building exercises, provision of extension services and raising awareness levels in dairy farming and other best practices are required to improve understanding among farmers and improving co-operatives to ensure sustainable growth of small scale farmers.

Keywords: *Small scale dairy farmer, Co-operatives, MEMCOOP*

1.0 INTRODUCTION

The small scale dairy sector contributes significantly to poverty and malnutrition reduction, particularly in rural areas (Raphael and Urassa, 2016). The small scale dairy sector provides regular income to household by promoting (Mwakalobo and Shively, 2001). Small scale dairying is an important agricultural activity in many parts of the developing world since it is producing valuable food products that enhance household nutrition and food security (Odhiambo et al., 2004). Also, animals fulfill essential cultural and social functions as well as creating off-farm employment (Asaah et al., 2011; Anderson, 2003). However, literature argues that subsistence production characterizes small scale dairy sector. The industry is associated with poor milk equipment and cooling facilities, poor knowledge of livestock management (Ulicky et

¹ Postgraduate Student - Moshi Co-operative University, P. O. Box 474, Moshi, Tanzania. Email: dkingu@msd.go.tz

² Lecturer, Moshi Co-operative University, P. O. Box 474, Moshi, Tanzania Tel. +255 714 097 134
Email: ndiegebenson@yahoo.com

al., 2013); poor transport facilities and lack of institutional support (Sumelius *et al.*, 2013). The small scale dairy production has a less competitive advantage compared to large-scale milk processors (Machange, 2010). Moreover, there has been variability in the price of milk products because there is an imbalance between supply and demand of agricultural product (Pongpanich and Peng, 2016). These challenges of small scale dairying farming can be categorized into two categories; first is cost-oriented, where farmers fail to get required knowledge materials such as inputs, storage, and transportation. Secondly is a market failure where farmers are unable to identify or reach the markets because of poor communication.

The problem for small scale dairying in Tanzania is not so much different from that of other developing countries. In Tanzania, milk production is dominated by poor technology (Baregu, 2017; Uronu, 2015). According to Baregu (2017), there is low productivity, and still, milk is wasted and spoilt due to lack of preservation facilities and an inadequately developed infrastructure that makes it difficult to transport milk to the processing plants (Baregu, 2017). Likewise, the informal market for milk continued to dominate the market for liquid milk (Uronu, 2015). The dairy industry is dominated by small scale producers at milk production level of which more than 90% relies on traditional systems. Also, on the value additions done is by unorganized and fragmented small collectors and processors and thus prospects for growth and competitiveness are low due to higher costs of value addition along the value chain. These hinder its contribution to the development and poverty reduction in rural areas where most are small scale farmers (Uronu, 2015).

One of the recent promising efforts towards the improved performance of the dairy sector in Tanzania is the formation of dairy co-operatives. Some few small scale dairy farmers have joined into co-operative societies to develop their level of productivity and marketing of the produces (Uronu, 2015). The role of co-operatives would have been of most concern in the dairy industry in Tanzania if it had proven to have a significant positive impact since there are more than 70% of populations who are involved in small scale farming. Thus the central question is, can the dairy co-operatives helped to solve the challenges of dairy production and market in Tanzania? In this study, we examine and argue on the chance that co-operatives model has toward empowering small scale dairy farmers in Tanzania.

A dairy co-operative is a business, which is owned and controlled by the dairy farmers who produce the milk used by the co-operative (Nembhard, 2014). The co-operative uses member-owners' milk to manufacture cheese, dairy ingredients, butter and liquid products for various markets and applications. Dairy co-operative are community-owned private enterprises that combine consumers with owners, and buyers with sellers in a democratic governance structure (Nembhard, 2014). In this regard, the Co-operatives solve the general economic problem of under or overproduction, business uncertainty, and excessive costs. According to Misra *et al.* (1993), an important attribute of efficient, viable dairy co-operatives is the organizations' ability to reduce operating and marketing costs, to provide higher prices and competent field services,

and assure a market for their milk. On the other hand, literature including Baregu (2017) doubted the role of dairy co-operatives in the society. In Tanzania, the best examples of these types of co-operatives are found in Kilimanjaro regions (e.g., Nronga and Kalali dairy co-operatives) and Tanga regions (e.g., Tanga dairy co-operative Union). The scope of this study lies on two issues which are; how co-operatives eliminate market failure through ensuring a balance between supply and demand of milk and, secondly how co-operatives are relevant in reducing the costs through economies of scale and coordination which is formed through joining.

2.0 REVIEW OF DAIRY INDUSTRIES IN TANZANIA

The dairy sector is one area that contributes significantly to the Tanzanian agricultural sector. While agricultural sector as a whole contributes 13% of the national GDP, The dairy industry in Tanzania contributes 1.14% of GDP (Nembhard, 2014). It is estimated that the country has more than 21.3 million cattle of which about 700,000 are dairy cows producing 2 billion liters of milk annually (Ijumba and Dillmann, 2011). Six dairy production systems have evolved in Tanzania over time (MoAC, 2008). These are smallholder dairy farming, integrated with perennial crops like banana and coffee, found in Kilimanjaro, Arusha and Kagera regions and the southern highlands of Tanzania. These are highly populated regions, and normally peasants own small portions of land which therefore limit the expansion of dairying. Secondly; smallholder dairy farming integrated with annual crops like maize and cereals. This system is found in the central part of Tanzania. The third system is Peri-urban dairy found in the coastal belt, mainly near Dar es Salaam, Tanga, Morogoro and other urban centers. It is practiced where many civil servants and people in business have taken up dairying as a means of generating additional income. The fourth system is specialized medium-scale dairy farms found near big urban centers such as Dar es Salaam, Tanga, Mwanza, and Mara. On these farms with 10 to 50 cows, milk production is the main economic activity. There is little crop cultivation and a limited level of mechanization. The fifth is the traditional, semi-sedentary system. This system accounts for 75% of total milk production. Though the traditional semi-sedentary system represents the biggest potential for increasing milk production in Tanzania, yet very little effort has been directed at improving milk off-take from this sub-sector' (Kurwijila and Bennet, 2011). The sector is relatively forgotten in dairy development policies, which aim at crossbred cattle dairy farming. There are few projects like the Austro Project Association - an organization that supports Maasai herders, in collecting and marketing their milk. The sixth system is Parastatal large-scale dairy farms. The government through the dairy farming company (DAFCO) operated at least seven dairy farms with a total of over 3000 dairy cattle. In spite of having the best dairy animals in the country, the performance of the DAFCO farms did not measure up to expectations due to some management problems. Milk production declined from 7.5 liters/cow per day in 1982 to 6.7 liters/cow per day in 1994 (Keregero 1988; Mtumwa and Mwashu, 1995).

In general, the low input-low output system produces the remaining 70% of the dairy sector (Uronu, 2015). Researchers established that over the last two decades total milk production has

increased at the rate of about 4% per annum mainly due to increases in cattle population rather than increases in productivity. Even in the case of the modern production system, the evidence is that productivity is low. For example, researchers show that in average milk production per day stands at a maximum of 24 liters per cow per day in Tanzania, unlike in Kenya which is 20 to 69 liters per cow per day. Moreover, of the total milk produced in Tanzania, it is estimated that only 5% reaches the formal markets and the rest reaches consumers through informal markets (Ijumba and Dillmann, 2011). This is due to the mismatch between supply and demand of milk products in the country (Baregu, 2017).

2.3 Co-operative Enterprises

The study of Tchami (2007) considered co-operatives as user-driven businesses that should contribute sustainably to the development of agricultural systems and have strengthened market access and competitive returns for farmers. In fact, co-operatives have the potentials for the creation of employment and income earning opportunities to support the immediate family as well as extended family members. Along with this assertion, research conducted by Develtere et al. (2008) revealed that socio-economic empowerment of the farming sector is a strategic mechanism for advancing the reduction of poverty and hunger as well as developing the rural economy.

The rural development report by IFAD (2011) revealed that co-operatives, specifically agricultural, are important producers and suppliers of services such as market access and contracts to producers and agri-businesses that may be excluded from private markets and businesses due to scale and quality considerations. The report further pointed out that, co-operatives not only provide the farmers with access to extension and inputs such as fertilizer, seed, dairy equipment, etc. but also contribute to improving the quality and quantity of the produce. For example, agricultural co-operatives offer an efficient way of delivering agricultural services to small scale producers that help escalation of production and diversification into more profitable produce and as such market access is fundamental.

Use of the co-operative model is important when farm holdings are small, with farmers lacking in resources to earn sufficient income from their economic endeavors (Hadrach and Johnson, 2015). Cooperation, therefore, would enhance rural smallholder farmers to pooling their resources to purchase farm inputs with the intention of improving productivity as well as to enhance marketing access of their agricultural products (Maghimbi, 2010). Through pooling their resources together, they take advantage of incentives inherent in economies of scale which co-operative enterprises present to their members. This would increase their competitive advantages and bargaining power in the market. Also co-operative trained their members on the best ways to get higher yields. Many previous studies have shown the positive effect of co-operative membership on small farmers' performances. Ma and Abdulai (2016) revealed that co-operative membership exerts a positive impact on apple yields, farm net returns and household income in a study done in China. Verhofstadt and Maertens (2014a) found that co-operative

membership in general increases income and reduces poverty and that these effects are largest in more remote areas.

However, these advantages should not be taken for granted. Studies by Magigi (2013), Gabagambi (2013), Ukpere (2010) and Chambo (2009) evidenced that the co-operatives have been facing various challenges. According to (Magigi, 2013), the challenges include, but not limited to, bribery, policy, and legal setting as well as institutional structure and systems in place, among others necessitate many developing countries to have co-operative reform programme to redress the situation, Tanzania inclusive, in urban and rural development agenda. Over the last two decades, co-operative societies in East Africa have been performing disapprovingly, particularly in Kenya, Uganda, and Tanzania. Eventually, the poor performance of co-operative societies has a negative implication for its members, including inadequate services provision, policy contradictions, fragile structure and existence of weak co-operative leadership and management. The performance and effectiveness of co-operatives to serve their members depend on governance practices (Chambo, 2009).

The study by Gabagambi (2013) on the review and analysis of agricultural related market policies in Tanzania revealed that co-operatives often tend to emulate other business, but through pursuing a social reason, they bring out the traits, which make them different. In this case, educating, training and retraining of members in general and officers, in particular, are always a challenge to co-operatives, especially in developing countries. Other assertions from the author revealed that a co-operative without an active constituent of education is at risk of losing its essential nature, that is, the human and personal characteristics which distinguish it as a co-operative. Ukpere (2010) indicated that a great challenge facing the sector is the adaptation. He pointed out that all business in a national economic system operates in conditions of dependence and interdependence. Both capitalist firms and co-operatives depend to some degree on the State and services provided by the State. Similarly, the public enterprise depends greatly on private business, or on co-operatives. Sometimes private-profit business depends on co-operatives. In this case, it can be imagined that the reverse, co-operatives depending on private business in some way or other, is quite common.

Moreover, Verhofstadt and Maertens (2014b) indicated that while co-operative membership has a positive impact on farm performance, specific types of co-operatives determine the effects. Also Pongpanich and Peng (2016) indicated that most co-operatives tend to be inefficient which might mean they need to be understood for continuous improvement. Chagwiza (2016) showed that co-operatives are strong in facilitating technological transformations and commercialization but weak in offering better prices. The argument here is that co-operatives are not useful at all times and all conditions. Moreover, literature is silent on how co-operatives cause positive results; they are also not widely discussed, and that is the focus of the paper. Hence studying on how co-operatives work for smallholder farmers is important in adding knowledge.

3.0 METHODOLOGY

The study was cross-sectional design in which two dairy co-operative, i.e. Nronga and Kalali dairy co-operatives, located in Hai district in Kilimanjaro region were involved in this study. Both co-operatives are women based. In Hai, District efforts are being made to establish dairy co-operatives, and until 2015 there were seven dairy primary co-operative societies and 13 groups which had not acquired the co-operative registration status (Uronu, 2015). Nronga and Kalali dairy co-operative societies have 32 and 18 staff respectively. These societies process dairy milk for value addition and sell milk and dairy products (yogurt, cheese, and butter) to the final consumer in Kilimanjaro region. The choice of the two co-operatives is based on the fact that they are the main suppliers of dairy products in Moshi town. Nronga and Kalali Dairy co-operatives were formed under the Member Empowerment Co-operative Program (MEMCOOP). MEMCOOP was a programme that was modeled by the Moshi University College of Co-operative and Business Studies, now, the Moshi Co-operative University and was focused on increasing awareness of members of co-operatives on their role and potential in their co-operatives. It has shown success in increasing awareness of the members of primary agricultural as well as in dairy co-operatives in the country.

The targeted respondents were members of the two co-operatives. The target population for this study was 820 members. Kalali co-operative has a membership of 360 while Nronga has 460 members, together totaling 820 members (Kalali and Nronga annual report, 2015). A sample of 387 respondents was obtained by using the formula provided by Saunders et al. (2007). The sample from each society was arrived at by the proportion of members of the society to the total of 820 members in the selected category. Thus, the figure for each society was as follows: Nronga: $460/820 \times 387 = 217$ (56%) and Kalali: $360/820 \times 387 = 170$ (44%).

A simple random sampling technique was used by picking respondents using the list of the members provided by the leaders of the two dairy co-operatives. Thus, primary data were mainly used in this study. Data collected were on the perception of members of the co-operatives, using questionnaires. The questionnaires were in a 5-level Likert scale form. The first question was about the motives for joining a SACCOS. The second question was about the role played by co-operatives in rectifying market failure, and the last question was about the role of co-operatives in reducing average costs to an individual farmer. Also, the researchers interviewed the management of both co-operatives where the main issue was about the prospects and challenges in their respective organizations. The quantitative data were analysed using descriptive statistics, and qualitative data were analysed using context analysis.

4.0 RESULTS AND DISCUSSION

4.1 Motives to Join Co-operative Societies by Small Scale Dairy Farmers

The results in Table 1 indicate that there are different motives for community members to join co-operatives. The statements focus on three relevance issues of co-operatives. Firstly is information, communication, and learning; secondly understanding a co-operative as a hierarchy

which allocates productive resources efficiently, and thirdly, is bargaining power among members. For instance, the mean value of 4 showed that better market information is their priority. It indicates that information asymmetry is one of the bigger problems and it contributes significantly to market failure for the individual small scale dairy farmers. Also, the mean value of 3.4 shows that many individual small scale farmers are uninformed about where to find a consumer that can give a better price, thus a co-operative seems to be a good idea. Also, they are unable to reach the market which normally in towns due to communication difficulty and distance.

Table 1: Motives to join co-operatives

Category Incentives to join co-operatives		Mean	Std. Deviation
Bargaining power among the members	Need to have collective decision making and sharing experience	3.557	1.10939
	Increased bargaining power	3.3725	1.29964
Co-operative as a hierarchy which allocates productive resources efficiently	Need to access the government support and subsidies	3.4362	1.34751
	Access to donor support	3.6208	1.09813
	Desire for higher profits	3.7987	1.21705
	Access to agricultural machines and specific farming experience	3.5872	1.00207
	Need more beneficial prices	3.4027	1.2682
	Easier marketing of dairy produces	3.3289	1.17461
	Reduced marketing costs	3.1644	1.24037
	Need to secure agricultural inputs	3.151	1.14915
	Better market information	4.0134	1.04115
Information, communication	Need to have clear contract with the buyers and suppliers of inputs	2.9631	1.17579

The study findings indicate that the individual member need is to maximize profit in the business. The maximum profit will be acquired through securing agricultural inputs at a minimum cost of production but higher prices of milk. Also, it has been shown in Table 1 that farmers need to get network to expand their activities. The network through both government and external is important for funding, training, and marketing of the products. Moreover, members need to have a bargaining power in the market. Farmers reiterated that strong relationship between farmers and co-operatives has led to the improvement of the volume of the milk produced. Such improvement may be useful to the livelihood of Hai District population takes into account the fact that the livelihood of most households is anchored in the production of milk. However, the information from the dairy co-operatives' management show the entire value chains for milk into the market is inefficient though prospects for profitability exist if the co-operatives can make improvements in the collection system and processing units. Under the current production systems and cost structures at the co-operative society level, the most important actors in the chain are milk producers who are earning a small income from the

business. The findings show that, low productivity is the result of lack of market-oriented milk production system and lack of efficient market-oriented co-operative. Perhaps the low level of development of the milk supply chain has combined to make volumes handled to be relatively small to the extent that the profit gained by farmers is low.

4.2 The Role of Co-operatives in Strengthening the Market

The findings from the survey questionnaire in Table 2 shows that most of the respondents agreed that the co-operatives provide linkage to the market with a mean score of 4.047, which imply that almost all respondents have the same perceptions in this construct. The construct which had lowest average score was the issue of collective bargaining power where the mean was 3.2136. However, it is above the cut-off point for five Likert scale items and can be regarded as satisfactory. The results show that the two co-operatives facilitate efficient market outlets of the dairy products from their members. Having more outlets is directly interpreted as increasing access to the milk products.

Table 2: Co-operatives and market failure elimination

Roles in eliminating market failure	Mean	Std. Deviation
Co-operatives provide linkages with the market as a spokes organ for the farmers	4.047	1.02057
The co-operative reduces the burden of the middlemen and farmers enjoy fair price for their products	3.8389	1.21199
The co-operative facilitates efficient market outlets for the dairy products	3.6376	1.06182
Trading through co-operatives leads to reduced market risks		
The co-operative strives to create a more competitive dairy business environment	3.3993	1.03064
Co-operative provides access to reliable markets of our products	3.3658	1.29117
Trading through co-operative enhances collective bargaining power	3.2136	1.21994

4.3 The Role of Co-operatives in Reducing Dairy Farmers Costs

In qualitative responses, the respondents showed that cost per head is low for the members. Currently, the co-operatives buy the milk at the price of TZS 700/= per litre of which 40/= is paid to the co-operative to cover the operational cost. In this case, the final payment to the farmer is TZS 660/= which is collected at the co-operative at the end of each month. Through the partnership, the farmers get the benefit of access to farm inputs, including the medicines and improved animal feed. Also, findings show that the co-operatives facilitate access to credit which indicates that co-operative facilitates increase farmers’ efficiency and productivity. However, whether the co-operatives increase sales volume had a low mean score which indicates that the

members did not agree with this statement (Table 3). This raises doubt on the level of technology acquired by the farmers in milk value chain; the farmers in co-operatives take the milk to their co-operative collection centre where there are cooling, storage, and processing facilities.

Table 3: Role of Co-operatives in Reducing Costs through economies of scale and coordination

Co-operatives and cost reduction	Mean	Std. Deviation
The co-operative facilitates access to new technology	3.5772	1.23191
Trading through co-operative reduces the operation cost	3.4094	1.02174
Trading through co-operative increases sales volume of the products	2.9094	1.13493

Traditionally, farmers organized themselves to collect and bulk milk from the households to the co-operative collection center. The activity of collection and bulking is done on a daily basis, and all members are obliged to participate and ensure that quality is maintained. In the process of milk collection and bulking, milk quality testing is considered one of the most important activities to meet the quality demand of the industry. Milk transportation to the market is the responsibility of the co-operative. Therefore it is evident that co-operatives have not strengthened technology on production, rather they focus on facilities for collection, storage, and transportations.

5.0 CONCLUSION

Empowering Small Scale Dairy Farmers is vital in a developing economy such as Tanzania's. According to the Sustainable Development Goals (SDGs), enabling small scale farmers is required in promoting sustainable agriculture (Goal Number 2) and, in the process of eradicating poverty (Goal Number 1). This study presents the relevance of the co-operative model in ensuring high prospect and sustainable development of small scale farmers in Tanzania. The findings of the study revealed that members of organizations admit that co-operatives have played a significant role in enhancing access to the market (reaching market), increasing information and getting a better price. Co-operatives have also helped in reducing the costs of milk production per farmer through economies of scale and coordination.

Moreover, the management admits the market is inefficient although prospects for profitability exist. The production is small, and the market is not reliable. The concept of dairy farming and commercialized agriculture as a whole is yet to be fully sold to the smallholder farmers in Hai district and perhaps in most of the country. This indicates that the dairy farming sector is yet to realize significant impact on farmers. Thus, the levels of Government support and partnership with companies regarding training and other capacity-building exercises, provision of extension services and raising awareness levels and adapting other best practices in dairy farming are deemed necessary. The study, therefore, recommends that small scale dairy farmers should be supported to form co-operatives which will be a platform to train them, increase their bargaining power and their capacity to access market.

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