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What Makes Collective Action to Work: Lessons from Smallholder Dairy Farmers in Kenya

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Abstract: Kenya's dairy industry is the largest and one of the most successful in Africa. Smallholder dairy farmers dominate the sector. However, the farmers predominantly practice subsistent farming and are yet to realize benefits from formal market system participation. Therefore, there is a critical need to transform the smallholder dairy to profitable enterprise through commercialisation. The primary goal of this study was to investigate what makes collection work in the dairy sector. It specifically examined the determinants of the dairy collective action choice. It also analysed the determinants of dairy collective action performance. We conducted the study in the dairy-dominated counties of Nyandarua and Nakuru in Kenya. The study used a multistage sampling technique to select a random sample of 380 dairy farmers. The study used a multistage sampling technique to select a random sample of 380 dairy farmers. The study used Propensity Score Matching (PSM) method to analyse the effect of a collective action decision by the farmers. The results revealed heterogeneity of smallholder dairy farmers groups. The results also showed that group membership led to a substantial increase in milk sales. The study concluded that collective action helped to minimize the challenges faced by smallholder dairy farmers in accessing the input and output markets.

Keywords: Smallholder Dairy, Collective Action, Propensity Score Matching model, Kenya

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1.0 INTRODUCTION

Commercial orientation should improve smallholder agriculture. Most smallholder farmers face numerous challenges that necessitate intervention to achieve commercialization. The challenges include market inaccessibility, improper smallholder coordination leading to lower prices, low volumes of output, and non-competitiveness (Poulton *et al.,* 2010; Boka & John, 2017). In addition, small farms are incapable of accessing technology, capital, and mechanisation, which are critical for commercialisation (Pingali *et al.,* 2019). Smallholder farmers' challenges of inadequate production and low investment have perpetually led to a low-level equilibrium poverty trap (Barrett et al., 2016). Theoretical analysis based on a comparative equilibrium framework indicates that low-income economies' markets suffer from institutional imperfections. Such markets experience challenges related to weak contract enforcement, high transaction costs, information imperfection, and adverse economic situations (Bardhan, 2000; Dorward *et al.,* 2005; Shirley, 2008). These institutional problems interact, compromising profitability and competitiveness for an individual approach.

Using New Institutional Economics (NIE), market actors can reduce the transaction cost and eventually eliminate the low-level equilibrium trap. This can be achieved by coordinating non-market mechanisms linked to less developed economies, because high transaction

risks and a weak institutional environment reduce investment prospects (Doh & Saka-helmhout, 2017; William & Thawatchai, 2012). As a result, solutions to the numerous problems in smallholder agriculture necessitate institutional reforms to improve service provision, market growth, and infrastructure establishment. These will assist in responding to the farmer's needs, which include market access, market information, and intelligence for commercialization. Scholars have presented collective action as a potential strategy to mitigate transaction costs and reap the benefits of large-scale production and market involvement (Fischer & Qaim, 2012; Shiferaw et al., 2008; Narrod et al., 2009).

Markelova & Mwangi (2010) studied collective action by demonstrating the understanding of platforms as a process of bringing together stakeholders on a particular issue. The platform for studying collective action performs three different but interrelated functions. They include creating a learning space for joint innovation, establishing governance functions within the chain, and reducing transaction costs. A platform can also enhance policy change or its influence on smallholder farmer groups (Vellema *et al.,* 2013). Collective action through farmer groups can increase income and economic growth (Tolno *et al.,* 2015; Tefera *et al.,* 2017). Organizations view collective action as an incentive, encouraging group members to invest resources towards achieving a shared objective and addressing common problems (Markelova & Mwangi, 2010). However, despite the benefits of collective action, it has difficulties (Bijman *et al.,* 2016; Iliopoulos *et al.,* 2016). Members' accountability through policies and rules can help to reduce these difficulties. This includes evaluating the actions of the service providers, demanding answers, and imposing sanctions or rewards on members based on their evaluations.

Collective action is the unified group behaviour toward a shared purpose or interest (Meinzen-Dick *et al.,* 2004). Group formation is the basis for the concept of social capital, which describes the relationship among the group members. Social capital therefore stimulates collective action. Social capital is the foundation on which exchanges between players in a collective activity are based. Clusters of people (or stakeholders) work together to specify problems, find and apply solutions, and evaluate the worth of a solution for a particular practice through the process (Bhandari & Yasunobu, 2009; Portes, 2009). This collective action process entails the transition from'multiple cognition' to 'collective cognition'. This implies that individuals in the group transition from being separate cognitive agents with multiple views to a collective with common attributes like values and theories. The concept also suggests that the individuals in the group can reach insights that none can reach alone. The interaction that occurs within collective action also cycles back into the communal process of learning, changing the form of social capital with time (Meinzen-dick et al., 2004; Bhandari & Yasunobu, 2009; Portes, 2009).

A trigger typically initiates the collective action processes. This could be an external factor that is out of one's control. Collective action will mostly occur when an individual's ability to respond to challenges is inhibited, but there is also the option to take action as a group. Motivation, interconnectedness, and capacity demonstrate this (Meinzen-dick et al., 2004). Moreover, the possible merits of collective action should be evident to participants. The driver that stimulates the process could be external (e.g., government, research institutes, or NGOs) or internal (the farmer or other supply chain player). Various concepts that explain collective action are transaction cost, contract enforcement, and information imperfection.

New Institutional Economics (NIE) incorporates the concept of collective action. The NIE stands for a broader economics that explains people's choices while simultaneously allowing for factors such as norm evolution, pervasiveness of information, and people's willingness to create bonds and trust (Matthews, 2000; Nabli & Nugent, 1989). Individuals operate as an institution through collective action, which collectively affects economic growth. In turn, the growth and development of the economy act to influence change in the institutions. By influencing information asymmetry and transaction costs, groups can then enhance or limit economic growth. Institutions are principles of conduct, e.g., norms, shared values, traditions, kinships, affiliations, religions, and cultural trends, that enhance relationships between specific individuals. Collective action addresses societal problems and focusses on the environment in which groups of people with shared interests choose and act to achieve the common interest. Collective action allows for more certainty in interactions between humans, thereby shaping behaviour and consequently influencing outcomes (Runge, 1984; Nabli & Nugent, 1989; Hout & Lawler, 2014).

The goal of the NIE and, by extension, the principle of collective action is to explain institutions, their change process, and their influence on individual performance (North, 1990; Kingston & Caballero, 2009; Buendía, 2003). Farmer groups would enhance their access to production and marketing inputs, as well as efficient management, with the aim of enhancing the entrepreneurial skills of their members. Collective Action is a specific example of the role of institutional approaches to societal problems and forms the basis of this study. The mid-1990s and early 2000s have seen a lot of collective action-based research. For instance, Paxton et al. (2000) adopted the collective action approach when evaluating the success of group loan repayment in Burkina Faso. Postelnicu *et al.* (2014*)* focused on collective action as social capital for group borrowing. Shiferaw *et al.* (2008) employed the concept when evaluating the role of collective action in

addressing rural market imperfections in Kenya. Studies that concentrate on development and decision-making frequently utilize this concept. The Collective Action approach is also reliable in studying utility maximisation (Morcol, 2015; Dixit & Levin, 2017).

In this study, collective action formed the basis for analysing objective two. Collective action occurs when people combine their efforts due to constraints and make decisions to accomplish an outcome that encompasses their interests (Czech, 2016; Sandler, 2015). If the group members act in their material self-interest, there is no production of public good, and therefore everyone is worse off. Interdependence among the participants explains Collective Action problems, so that individual effort or contribution influences that of others. Collective action is dependent on the cooperation of different persons as well as the effect of externalities on group behaviour. Group characteristics and the technical, economic, and political environment determine the success of collective action (Okumu & Muchapondwa, 2017; Vorlaufer, 2012). Collective action involves making collective decisions within a group and implementing these decisions individually in independent organizations that operate based on delegated group decisions. Group institutions, including customs and conventions, induce cooperative solutions intended to overcome group challenges, thereby increasing resource efficiency (Sandler, 2010). In developing countries, the presence of a higher number of resource-poor farmers with a desire to increase their production and marketing is a justification for farmer groups within the principle of collective action.

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2.0 MATERIALS AND METHODS

This study focused on smallholder dairy farmers in Nyandarua and Nakuru counties, which share common borders with each other (Figure 1). In both counties, agriculture is the primary source of household food, raw materials for agro-based industries, and income. Nyandarua is the country's leading milk producer, while Nakuru is the country's third largest milk producer. The two counties undertake the highest concentration of dairy activities in the country, ranging from production, processing, and consumption.

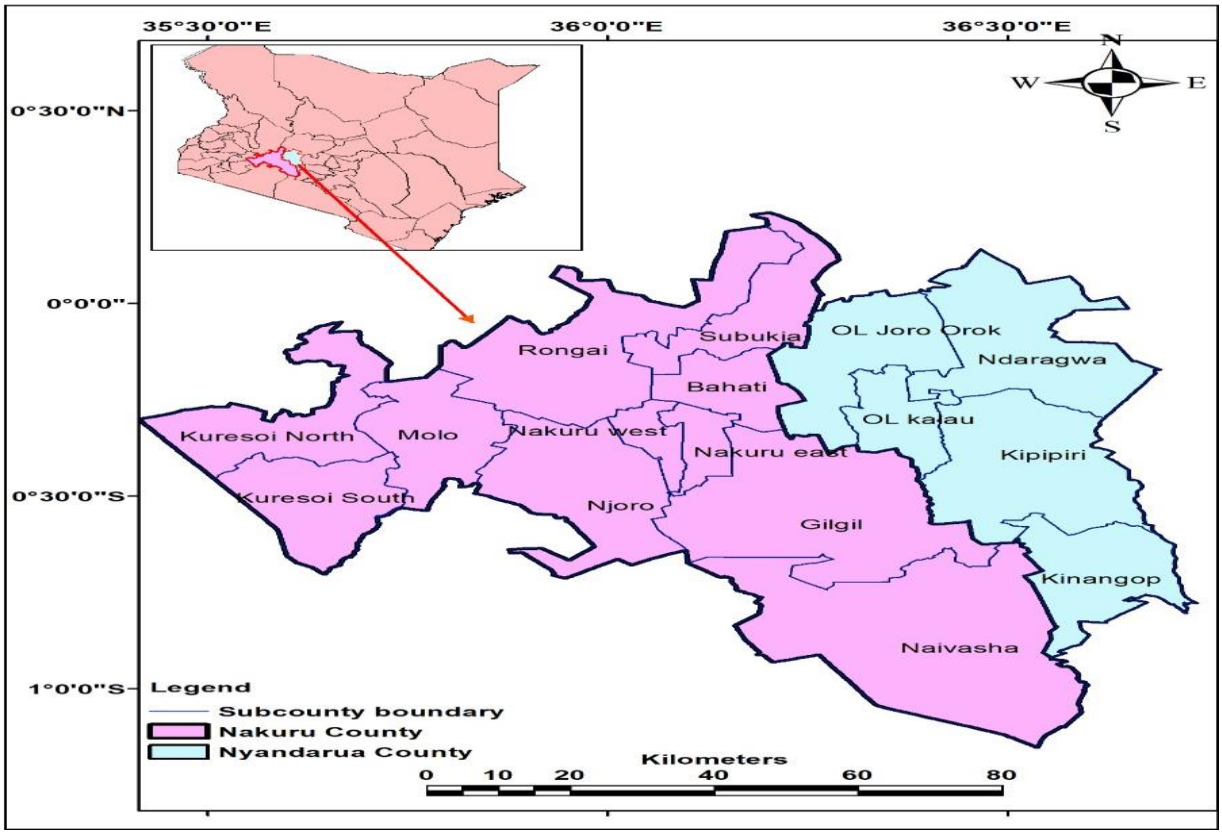

Figure 1: Map of Nakuru and Nyandaru Counties

The study used a cross-sectional survey approach and multi-stage sampling procedure to select a sample of smallholder dairy households to provide data for the study. Purposively, the study identified Nyandarua and Nakuru counties because of their large number of smallholder dairy producers. The administrative sub-ccounties of the two counties formed strata for sampling. We purposely selected three sub-counties from each county for the study, taking into account their unique characteristics such as their geographical location, milk production levels, diversity of dairy activities, and their high extent of small-scale dairy production. These were Bahati, Rongai, and Molo from Nakuru County, as well as North Kinangop, West Kinangop, and South Kinangop from Nyandarua County. Finally, using simple random sampling, the study selected 380 milk-producing households. The survey tools used to provide data for analysis were pretested structured questionnaires and focus group discussions. This study used the Propensity Score Matching (PSM) method to evaluate the average effect of farmer group membership. PSM is applicable in two cases. First, it is applicable when the non-treatment elements are similar to the treatment elements.

3.0 Results and Discussion

6.2 Smallholder Dairy Collective Action Characterisation

Table 6.1 highlights the characteristics of the groups in the study area in percentages. The study revealed an overall group membership of 66% in the study area. In Nakuru, many (82 percent) households belonged to groups, whereas in Nyandarua, 50 percent of the households belonged to groups. In the overall study area, self-help groups (SHG) were the most dominant (56.1 percent), followed by farmer-based organisations (FBO) (31.8 percent), cooperative societies (6.4 percent), and SACCOs (5.7 percent).

Table 6.1: Group Membership, Distribution, and Existence

		Nakuru	Nyandarua	Overall
Group Membership	Yes	82	50.2	66.1
	No	18	49.8	33.9
Group Distribution	SHG	57.3	54.0	56.1
	FBO	32.3	31.0	31.8
	COOP	4.3	10.0	6.4
	SACCO	6.1	5.0	5.7
Years of Group Existence	0 - 5	46.7	32.3	41.3
	6 - 10	43.6	36.4	40.9
	11 - 15	9.7	21.2	14
	16 - 20	0	8.1	3
	21 - 25	0	1.0	0.4
	Over 25	0	1.0	0.4
Group Objectives Achieved	Yes	99.4	99.0	99.2

Source: Calculations by author based on the 2017 survey data.

Results shown in Table 6.1 also revealed that the majority of groups (90.3 percent in Nakuru and 68.6 percent in Nyandarua) had existed for a period of 10 years or less. The groups achieved their primary objectives with a response rate of 99.4 percent and 99 percent of households in Nakuru and Nyandarua, respectively.

The study revealed three types of activities that the groups focused on. The activities were backward linkages, forward linkages, and hybrid linkages. Backward linkages entailed activities prior to milk production. The activities were the provision of production inputs, including dairy feed and concentrates, veterinary equipment, drugs, and services, as well as extension services such as animal husbandry. Following the production of milk, Forward Links engaged in various activities. They included activities such as processing, packaging, storage, cooling, promoting, selling, and negotiating for better market terms for dairy outputs. Hybrid linkage, on the other hand, involved one or more activities involving both the backward and forward linkages.

6.4 Factors Influencing Choice of Groups by Smallholder Dairy Farmers

Dairy farmers who decided to participate in farmer organisations also faced the decision on which of the group types to join. There are different reasons for choosing different types of groups to join (Adong *et al.,* 2013). The study considered the Self-Help Group (SHG) as the basis of comparisons. Table 6.8 provides the multinomial logit econometric results for the factors that

affected a smallholder dairy farmer in deciding which group to be a member of relative to SHG. The pseudo-R^2 value of 0.5828 indicated that the model explained 58.28 percent of the total variation.

Table 6.8: Group choice influencing factors: Multinomial Logit model Results

Base=Self Help Group (SHG)	**Farmer Based Organisation**		**Cooperative / SACCO**	
Variables	**Coef**	**P > |t|**	**Coef**	**P > |t|**
Frequency of achieving objectives (Frequent=1)	0.293	0.7027	0.142	0.9564
Frequency of achieving objectives (Not frequent=1)	-17.11	0.9943	-5.159	0.9986
Number of meetings in a month	0.146	0.1037	0.0226	0.9526
Group meeting frequency (Very regular=1)	-3.190	0.1317	5.383	0.9981
Group meeting frequency (Regular=1)	-2.654	0.1819	9.984	0.9965
Number of leaders in the group	0.100	0.4113	1.742*	0.0689
Gender of majority of leaders (Male=1)	-0.697	0.2176	-4.446	0.2328
Minimum education of leaders (Secondary=1)	-0.230	0.7129	5.706*	0.0754
Age consideration in leader selection (Yes=1)	-0.0685	0.9235	10.32	0.1006
Leadership period (2 years)	3.294***	0.0001	4.127	0.2324
Leadership period (3 years)	2.072**	0.0186	4.915	0.2299
Leadership period (4 years and above)	3.586**	0.0216	13.84*	0.0679
Leaders changed after term (Yes=1)	0.949	0.4860	17.99	0.9892
Leaders rewarded (Yes=1)	-0.347	0.5818	-4.982	0.1094
Popularity (Yes=1)	0.472	0.4523	2.890	0.3901
Activeness in the group (Yes=1)	1.626**	0.0267	12.45	0.4955
Age of the group	-2.389**	0.0140	0.580	0.8593
Education level (Yes=1)	1.519**	0.0255	3.347	0.2216
Economic status (Yes=1)	-1.316	0.1372	-1.905	0.4485
Trustworthiness to members (Yes=1)	1.530**	0.0347	4.665	0.1433
Ability to coordinate activities (Yes=1)	0.867*	0.0964	5.369	0.1312
Ability to initiate activities (Yes=1)	-0.574	0.2700	4.231	0.1824
Good work ethics (Yes=1)	-1.564**	0.0176	-0.318	0.8699
Tolerance to different views (Yes=1)	0.802	0.1830	-2.688	0.3925
Good communication ability (Yes=1)	-1.054*	0.0611	-4.155	0.1018
Outstanding reputation in community (Yes=1)	-1.215**	0.0450	1.538	0.5197
Recruiting of new members (Yes=1)	0.718	0.2564	8.274*	0.0556
Motivating group members (Yes=1)	1.121*	0.0565	0.732	0.7590
Attending of external meetings for members (Yes=1)	-0.508	0.3554	-4.170*	0.0912
Finding buyers for member's produce (Yes=1)	-0.774	0.1782	3.793	0.2572
Negotiating produce price (Yes=1)	2.137***	0.0008	-2.708	0.4139
Enforcing rules and regulations (Yes=1)	-1.842***	0.0024	-5.151*	0.0956
Understanding of sanctions for noncompliance (Yes=1)	1.344	0.5479	-2.633	0.2911
Understanding payment of group dues (Yes=1)	-0.453	0.5720	-3.711	0.9970
Frequency of meeting attendance (Very frequent=1)	0.876	0.8759	7.956	0.9955
Frequency of meeting attendance (Frequent=1)	-0.240	0.2634	11.91	0.4623
Penalty for exceeding absenteeism limit (Fines=1)	-2.944***	0.0011	5.656	0.3603
Penalty for exceeding absenteeism limit (Warnings=1)	-1.358*	0.0880	4.510	0.6329
Behaviour of the group (Very much=1)	0.497	0.5675	-0.201	0.9480
Behaviour of the group (Affect=1)	0.0231	0.9726	1.339	0.4364
_cons	1.738	0.6714	-78.71	0.9815
N	**255**		**255**	

Source: Calculations by author based on the 2017 survey data. ***P < 0.01, **P < 0.05, *P < 0.1

The number of leaders positively and significantly (P < 0.1) affected choice of SHG relative to cooperatives/SACCO by a factor of 1.74. In the study area, SHG had a relatively smaller number of leaders compared to cooperatives and SACCOs. Groups in the study area mostly selected their leaders through a democratic process of free and fair elections. However, age and socioeconomic status determined the chairperson's selection. The secretary position was often reserved for people with higher education. The treasurer position was often a preserve for a female member because of their perceived trustworthiness, as argued by Ochieng *et al.* (2018). To dairy farmers preferred fewer group leaders to minimise the challenges of power structures and free riding. Free riding occurs when self-interested rational individuals do not act jointly to achieve the group or shared interest, making it difficult for Collective Action initiatives to be effective. Fewer group leaders also often lead to leadership cohesion. This study differs from Tallam et al. (2016), who found that a group's ability to meet their objectives increases as leadership size increases. A study by Foys (2014) also found that groups that are relatively large are able to provide public goods.

The leadership period had an impact on the choice of SHG relative to FBO. Leadership period of 2 years significantly (P < 0.01) affected the choice of SHG by a factor of 3.29, whereas 3 and 4 years of leadership period significantly (p. < 0.05) affected the choice of SHG by a factor of 2.07 and 3.59, respectively. In addition, for a leadership period of 4 years and above, smallholder farmers significantly (P < 0.1) preferred SHG to cooperative by a factor of 13.8. The results indicated that smallholder dairy farmers preferred groups where the leaders served for fewer years. Members cited that leadership was better if held in rotation such that everyone had a chance of leading the group at any capacity and hence the sense of belonging and ownership. Most groups emphasized the importance of a group constitution that outlines leaders' selection processes. However, because there were few or no member expressions of interest, re-election of leaders for additional terms was feasible. This was because leadership was mostly voluntary and could be extremely involving.

The group's activity significantly and positively (P < 0.05) affected the choice of SHG to FBO by a factor of 1.6. The findings showed that smallholder farmers in dairy production preferred SHG because of the group's activeness and multipurpose nature. The level of benefits and incentives enjoyed by members and the leadership's guidance determined the activeness of a group. SHGs had members from different socioeconomic backgrounds with varying intentions. Production, marketing, and socioeconomic dilemmas differ from farmer to farmer, presenting complexities that the group could solve. In farmer groups, the principal-agent problem is when individual group members intend that the group do something for them. They anticipate assistance with either the backward linkage, the forward linkage, or other non-agricultural socioeconomic challenges. Members therefore needed some guarantee from their groups to achieve their objectives. On the other hand, the farmer groups also expect their members to effectively carry out their group roles, which include providing high-quality and quantity of outputs, attending and contributing to meetings, and financing the group when necessary.

The age of the group was found to negatively and significantly (P < 0.05) affect the preference of SHG to FBO by a factor of 2.4. The findings indicated that, considering the group's age, farmers preferred FBO because they have been in existence for long compared to SHG. As a result, they saw FBO as a brand that smallholder dairy farmers could trust. Ochieng *et al.* (2018) observed that group age had an effect on smallholder marketing. Older farmer groups tend to be more successful than younger ones because they are better at mobilizing resources and more likely to manage developing market prospects. Older groups also tend to have established adequate market linkages from recurrent transactions and operational group activities. However, studies by Sonam & Martwanna (2012) and Tallam et al. (2016) found that the age of a group does not affect their ability to achieve objectives. Performances of the older and younger groups are not statistically different. Younger groups benefit from high member commitment and effective group structures. On the other hand, older groups may consist of members who are not committed or have poor organizational frameworks, thereby hindering the achievement of objectives.

The leaders' education level significantly (P < 0.05) and positively affected SHG preference over FBO group choice by a factor of 1.5. Effective farmer group activities and management for progressive production and marketing relied heavily on quality group governance. A well-educated leadership team would excel in management and skill acquisition through training programs. However, members with potential for leadership who were educated preferred other formal engagements over group leadership (Ochieng et al., 2018). The group members received the majority of their training from their leaders. A leader's literacy could enhance their ability to acquire most of the skills during trainings and then disseminate them to the members. Smallholder groups were much more concerned with their leaders' skills, motives, and commitments to the group than the processes of leadership. Trust to conduct collective actions coupled with reliable knowledge sharing by the member groups explains this observation (Townsend *et al.,* 2016; McDonald & Warburton, 2003).

Trustworthiness of leaders positively and significantly (P < 0.05) affects choice of SHG relative to FBO with a factor of 1.53. In the study area, smallholder dairy farmers expressed significant concerns about the code

and conduct of the group leaders, particularly in relation to corruption. Anti-corruption collective action, particularly in the face of bribe demands, depends on the participation of the group leadership. Storey (2016) contended that a group leader's preference to be corrupt is exogenous when carried out in a systemic corruption environment because of the predominant complex power structures. Rothstein (2011) and Radin (2018) argued that trying to handle corruption issues in such environments by applying the typical principal-agent paradigm would be ineffective if an individual's desires are not determined endogenously. According to Frank & Buckley (2012), the achievement of an efficient and functional group necessitates that members take ownership and leadership to be trustworthy.

Leaders' ability to coordinate group activities significantly and positively ($P < 0.1$) influences the choice of SHG preference over FBO by a factor of 0.86. The results indicated that group members considered coordination as an important element for group success. Today's leaders expect competence and the ability to handle both known and unknown risks adequately (Faulkner, 2019). The leaders therefore need genuine intentions towards groups and network goals. They need to ensure regular meetings to update group members on relevant emerging issues and decide on the plan of action. The results confirm that organisations face diversified activities and challenges that call for coordination (Mpandeli & Maponya, 2014; Pujara, 2016). Organisational operating environments are dynamic and evolve, hence the need for strategic planning and coordination (Rodríguez, 2007; Adeola, 2016). Effective coordination calls for explicit definition of roles and accountabilities. Coordination provides timely advice for organizational improvements. Generally, attaining collective good requires group agreement and coordination. As a result, coordination tries to answer the questions of why, how, when, and who in an organization. Coordination has links to trust and performance, facilitating performance realization through networking (Radin, 2000).

The good work ethics and reputation of the leaders in the community negatively and significantly ($P < 0.05$) affected the choice of the SHG preference to FBO by a factor of 1.6 and 1.2, respectively. The results indicated that smallholder farmers in the dairy sector preferred FBO because the leaders tend to have better ethics and reputation in the community compared to SHG leaders. Inappropriate group management practices and ethics by the group leaders would result in disregard for accountability, transparency, mismanagement of authority, and group resources. This results in mistrust and incompetence in groups (Kutsyuruba & Walker, 2016; Albu & Flyverbom, 2019; Sanyal & Hisam, 2018). Ethics results from ownership by members, organised separation of work, accountability in records, sound marketing strategies, and quality achievements championed by organised leadership. Successful groups effectively implement their activities. The group would adhere to the developed procedures and motivation systems, focusing on pricing, payments, quantity, and quality requirements that are appropriate for members and value chain collaborations (Ruengdet & Wongsurawat, 2010).

Communication ability was found to negatively and significantly ($P < 0.1$) affect SHG preference to FBO by a factor of 1.05. Smallholder dairy farmers in the study area believed that communication was important for group activities' success. The power of communication determines the relationship between groups, which are social entities comprising individuals with norms and behaviors (Mohanty & Mohanty, 2018; Hargie, 2016; Kauffeld & Lehmann-Willenbrock, 2012). Communication is possible to define the suggested group norms, goals, and feelings that define the group are possible through communication. Group effectiveness requires internal and external communication, conflict resolution, decision-making, and leadership. The group process has four stages. The first stage is the *group processes Stage,* which involves the internal performance of group activities. This stage is achieved through communication, where group members obtain the group behavior rules and all potential solutions. The second stage is conflict, which controls individual and group activities and results in group improvement. Third is the decision-*making stage*, which defines the precise and effective group decision-making process. The fourth stage is called the *leadership stage. Leaders represent the group, protect the group's interests, and provide the group's cohesion by directing the individuals and their activities, thereby keeping them together (Saim, 2015).*

Motivating group members positively and significantly ($P < 0.05$) affected the preference of SHG to FBO by a factor of 1.12. Motivating group members is critical to achieving group success. Motivation requires constant nurturing and collaboration to sustain high performance throughout (Faulkner, 2019). In the study area, the majority of the farmers preferred the SHG because they were accessible to emergencies and small loans from their monthly group savings. This was very useful for urgent cash requirements for their farming and non-farming needs. The benefits and motivations gained through membership determine members' involvement in group activities (Sonam & Martwanna, 2012). Most groups acknowledged that their leaders dedicated themselves to assisting them in accomplishing group goals. This assistance came in the form of group members' training on what they learned during the seminars. Group leaders also ensured that members implemented the lessons they had learned. It was therefore imperative for the groups to emphasise fulfilling the members' needs and expectations. Similarly, the ability to offer economic benefits to members is essential to sustaining any farmer group (Juliana, 2015; Tolno *et al.,* 2015). One of the main reasons farmers join associations is the hope of benefits. Ultimately, the key

motivation of any organisation is to provide collective goods to their members.

Negotiating produce prices by the group significantly ($P < 0.01$) and positively affected the preference of SHG to FBO by a factor of 2.137. Knowing the market price minimizes the uncertainties associated with it (De Toni et al., 2017; Ito et al., 2013). The number of market linkages for a single product is likely to improve market participation and sales value. Smallholder dairy farmers could flourish in the global economy by improving their culture of entrepreneurship (Devi & Ramachandran, 2014; Prasetyo, 2019). The key is to shift production interventions to focus on commercialization. This has sparked a renewed interest in collective action institutions, such as farmer groups, as an effective pathway for improving marketing. The success of a farmer organization depends largely on its ability to integrate into the wider economy and effectively participate in the appropriate market chain. According to Proctor & Vorley (2008), market inclusion is not only about market access but also requires stronger linkages between consumers, producers, and other players along the market chain. Production should also be responsive to the market's needs and potential. For FOs to achieve their market and economic goals, they must anchor their good business rationale on commercially viable activities and strong associations with the private sector.

Enforcing rules and regulations by the leaders had a significant ($P < 0.1$) negative effect on the preference of SHG to FBO by a factor of 1.8. The results indicate that smallholder dairy farmers preferred FBO because of its rules and regulation enforcement. Groups are social networks that act as self-governing systems during member interaction. Groups tend to be more stable and efficient due to social capital in the form of effective working rules. The groups' social systems tend to develop and preserve the networks created and norms adopted by members. Agreement on a preliminary set of rules is insufficient. Determining the practical meaning of the rules, however, takes time. Learning through experience is what occurs when things go wrong (Creelman *et al.,* 2016). Similarly, penalties for absenteeism at group meetings affected group membership. Fines and warnings negatively and significantly ($P < 0.01$ and $P < 0.1$, respectively) reduced the preference of SHG to FBO by the smallholder dairy farmers by a factor of 2.9 and 1.3, respectively. According to Gavrilets & Richerson (2017), any group that punishes free riders but emphasizes less on group objectives achieves strong norm adoption with concurrent increments in production and punishment. Increasing the size of the group has a strong negative effect on norm development, implementation, and penalty. Encouraging both the development and punishment of free riders generally increases the costs of penalties and ultimately the output. Smaller groups typically have a higher standard of punishment and production effort than larger groups. Bigger groups can perform better if they retreat to fewer members, resulting in less or no punishment and development efforts.

6.5 Factors Affecting Smallholder Dairy Group Performance

Aiming at members' desires and prospects would encourage smallholder dairy farmers. Groups that are economically beneficial to members would, therefore, inspire participation in collective action. However, there is little evidence proving an optimal type of farmer organization that is efficient in solving member needs (Michalek, Ciaian, & Pokrivcak, 2018). The Ordinary Least Squares (OLS) model was used to analyze the group dynamic factors that affect milk sales for the group members, and the results are presented in Table 6.9. The model's R2 value was 0.3107, indicating that it explained 31.07 percent of the total variation

Table 6.9: Group Dynamic Effects on Members Dairy Sales: OLS Results

Variable	Coef	P > |t|
Cooperatives and SACCO	4.892*	0.0680
Number of group meetings in a month	-0.356	0.1610
Number of group leaders	0.248	0.4900
Gender of group leaders (male=1)	3.181*	0.0890
Minimum education of group leaders (Secondary=1)	-0.697	06850
Period of service for leaders (2 years)	-1.876	0.3890
Leaders rewarded (Yes=1)	3.053*	0.0840
Age of the group leaders	-0.721	0.7350
Finding buyers for members' produce (Yes=1)	-0.587	0.6810
Enforcing rules and regulations of the group (Yes=1)	0.616	0.6780
Frequency of attending meetings (Very frequent=1)	2.152	0.6040
Penalty for exceeding meeting absenteeism (Warning=1)	-3.853*	0.0770
Years of group existence (6 – 10)	-4.055**	0.0190
Years of group existence (16 – 20)	-8.216*	0.0630
Size of the group	-0.765	0.4340
Number of groups by a member	-0.700	0.4850
Gender of majority of members (Female=1)	-0.108	0.9530
Reason for financial borrowing (Improve production)	5.107**	0.0160
Reason for financial borrowing (Value addition)	8.687**	0.0130
Reason for financial borrowing (Personal development)	3.839*	0.0670
_cons	*7.991*	*(9.987)*
N	*236*	

Source: Calculations by author based on the 2017 survey data. *** P < 0.01, ** P < 0.05, * P < 0.1

The results showed that the type of farmer group affects group performance. Cooperative/SACCO membership significantly (P < 0.1) and positively affected the group performance by a factor of 4.89. This implies that households in cooperatives sold more milk compared to those in other group types. Members perceived cooperatives as their establishments to respond to negative market conditions, which were common to them. Members shared a common desire to market their dairy produce at higher farm-gate prices, ensure the supply of high-quality and reasonably priced dairy inputs, and provide sufficient and affordable credit. In addition to being formed to meet the specific objectives of their members, cooperatives also adapt to the changing needs of their members. In the study area, cooperatives are establishments formed and controlled by the members for producing, value-adding, or selling dairy produce, whereby the smallholder dairy members share the risks and profits. This study finding is in agreement with Alho (2015), who found out that farmer groups differed in types and benefits to members.

The gender of group leadership significantly (P < 0.1) and positively affected group performance by a factor of 3.2. This indicates that groups with a majority of male leaders performed better relatively to groups with a majority of female leaders. Men and women farmers participate in collective action at varied levels. Even though more women join farmer groups as members compared to men, their proportion in group leadership is low (Quisumbing *et al.,* 2014). Females in the study area exhibited limited capacity, especially in leadership, due to low self-confidence in the presence of men. Multiple barriers also hindered the possibility for group involvement by women and hence leadership. FAO (2011) notes that women's participation in producer organisations faces more constraints compared to men. This is because of the limitations of time and mobility posed to them by cultural norms and domestic and reproductive household responsibilities limit their time and mobility. The barriers include socio-cultural norms, gender perception, group structure, and governance. They are therefore not able to influence the decisions of the group. Information regarding the role and failure of women's participation in leadership within groups remains limited (Nakazi et al., 2017). While farmer groups continue to play a crucial role in the smallholder dairy subsector, the composition and leadership of women in socioeconomic groups reveal a bias towards men (Gipson et al., 2017; Torre et al., 2019; Dhatt et al., 2017). Farmer groups could be ignorant about gender equity objectives and laws, or they may lack the strategies and willingness to apply them.

Reward for group leadership was significant (P < 0.1) and positively affected group performance by a factor of 3.1. The groups that rewarded the leadership experienced an increase in members' milk sales. A

group's leadership reward is critical for any sustained group success. In the study area, 58% of the leaders do not have any jobs. Only 29% of the groups rewarded their leaders, with money being the main form of reward (61%). The capacity of the farmer group leaders to be efficient in managing the group requires absolute personal commitment as well as competence. There is usually a trade-off among the leaders between their personal priorities and those of the group. The tradeoff (perceived or real) is dependent on motivation to the leaders, which varies from group to group and hence the variations on group success.

The penalty for absentees had an impact on group performance. Results indicated that issuance of warnings as a penalty for exceeding absenteeism limits had a negative and significant ($P < 0.1$) effect on the group performance by a factor of 3.9. This implies that even though strict rules on absenteeism are well intended, their enforcement demotivates members and impacts their output sales. Empirical evidence suggests that the farmer organisation structure and governance affect member performance and may lead to inequalities in both organisation and public resource allocation (Alho, 2015; Francesconi & Wouterse, 2015; Falkowski & Ciaian, 2016). In this study, the penalty for absenteeism was a form of punishment to influence group members behavior. The penalty aimed to instill cultural norms and values in individuals, promoting the group's overall well-being by curbing instances of free riding. Group members are to act according to a certain norm in order to achieve the group objective or avoid social sanctions (Gavrilets & Richerson, 2017). Culture and social factors influence norm internalization and may change throughout an individual's life (McDonald & Crandall, 2015; Wach, 2015; Gavrilets & Richerson, 2017).

For groups aged 6 to 10, years of group existence had a negative and significant ($P < 0.05$) effect by a factor of 4.1 for groups with ages between 6 and 10 years. Groups with ages between 16 and 20 years also exhibited a negative and significant ($P < 0.1$) effect on group performance by a factor of 8.2. The results indicated that the performance of groups declined with the age of the group. Younger groups were still enthusiastic to achieve their objectives. They dedicated their resources and were more cohesive in their operations relative to the older groups. This study finding contradicts those of Nakazi *et al.* (2017) and Barham & Chitemi (2009), who found that older groups had better management practices and were able to mobilise resources, hence performing better than younger groups.

The reason for member borrowing impacted the group's performance. Financial borrowing by groups had a positive and significant ($P < 0.05$) effect on improving production by a factor of 5.1; value addition was significant ($P < 0.05$) by a factor of 8.7; and personnel development was significant ($P < 0.1$) by a factor of 3.8. Smallholder dairy farmers in the study area were mostly limited in resources. Institutional, investment, and technical resources constrain their dairy operations. Economic benefits, mainly income, are the key motivator for farmers to join farmer groups (Tolno *et al.,* 2015). Therefore, smallholder dairy farmers pursue approaches to subsistence and seek wealth through formal or informal means. As a result, smallholder dairy farmers have turned to various alternatives to improve dairy production and marketing-related activities, thereby improving their well-being. One of these alternatives is to join a group in order to pool resources and work together as members where they can acquire assets. Such resources would enhance dairy production, value addition, and personal development. These findings agree with those of Petcho *et al.* (2019); Adekunle (2018); and Ma & Abdulai (2017), who concluded that membership in organisations increases production, yields economic benefit, and promotes the welfare of farmers.

CONCLUSION AND RECOMMENDATION

This study revealed the level and heterogeneity of smallholder dairy farmer groups. Farmers have to make decisions on the type of group(s) to join. Group leadership, education of leaders, leadership period, the age of the group, members behaviour, communication by the leaders, motivation of the group members, negotiation of the prices, enforcement of rules and regulations, and penalty for absenteeism affected the decision by individuals to join a specific type of group. The study also revealed that various factors influence group performance, such as the type of group, the gender of the leaders, the rewards given to them, the group's approach to absenteeism, the duration of the group's existence, and the motivation behind lending to the group members.

The success of collective action necessitates institutional arrangements that include locally adapted simple rules as well as effective monitoring and sanction systems. Collective action also needs social capital (trust, mutuality, and other collective relations), human capital (knowledge resources), and political capital to be effective. These conclusions led to several recommendations. It is important to emphasize the quality of leadership in farmer groups. Group leadership remains to be at the heart of successful collective impact initiatives. Deliberate efforts should be in place on how to choose the right individuals to compose the leadership of smallholder groups. There is also a need to consider an elaborate public-private partnership to further develop collective action. This involves bringing together all the stakeholders in the dairy subsector to form a cross-sector program. This would help smallholder dairy farmer communities to build strong Collective Action partnerships that can work collaboratively toward smallholder dairy farmer goals.

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Ethics Statement

The concerned county authorities also granted permission to carry out the survey. For the purpose of participating in this study, the participants gave their written informed permission.

Conflict of Interest

The author certifies that he has no affiliations with or involvement in any organisation or entity with any financial interest or non-financial interest in the subject matter or materials discussed in this manuscript.

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