

Effect of Social Capital on Performance of Smallholder Farmer Organizations in Western Kenya

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Abstract: Development literature has recently promoted the use of producer organizations in linking farmers to better-paying commodity markets. However, empirical studies find mixed performance of such organizations. This study examines the producer organizations' internal factors that may explain the differences in the performance of producer organizations. The study specifically analyzes the role of social capital, within a producer organization, on the performance of such organization using quantitative techniques. The level of commercialization is used as proxy of organization's performance. The study finds that social capital positively affects the performance of producer organizations. These findings imply that development strategies that target the promotion commercialization of smallholder agriculture through producer organizations should pay attention to the internal factors within such organizations.

Key words: Smallholder farmers, agricultural commercialization, social capital, performance of farmer organizations, Kenya.

1. Introduction

Commercialization of smallholder agriculture remains one of the major challenges in Africa [1]. Studies suggest that one of the major constraints to commercialization of smallholder agriculture is market access [2]. Past efforts to improve smallholder farmers' access to markets through market reforms have largely been ineffective. Consequently, many African smallholder farmers still produce largely for subsistence needs. Majority of such farmers produce small marketable surpluses and face thin markets. Such markets are characterized by low activity, low volumes and non-competitiveness [3]. The farmers face difficulties in transporting their produce to the markets often forcing them to sell at the farm gate. Lack of proper coordination among smallholder farmers limit their ability to bargain for higher prices and deny them the

chance to exploit economies of scale from bulking together their individual small volumes. Consequently, African smallholder farmers face low prices that dampen their incentives to commercialize and expand production [2]. Smallholder farmers in Africa are therefore trapped in what has been described as a low-level equilibrium poverty trap that is characterized by low production volumes, low marketable surplus and low investment [1].

The small volumes traded coupled with high seasonal variability of demand and supply, as well as low prices limit market gains for most farmers in the rural Africa. At the same time, the marketing chain tends to be long and fragmented and is usually characterized by multiple intermediaries with small transactions, repeated handling, and poorly organized marketing structures [4]. Consequently, smallholder farmers operate under high transaction costs that prevent them from taking advantage of the market opportunities [2, 4].

Recent literature has identified a number of strategies

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for overcoming the high transaction costs smallholders face and hence increasing commercialization. One such strategy is collective action in form of producer organizations. There has been aggressive promotion of producer organizations as a strategy for overcoming the high transaction costs in smallholder agriculture in Africa [2, 5, 6]. However, recent studies have found mixed evidence of the effectiveness of producer organizations in facilitating smallholder farmers' access to markets. Some studies have suggested that collective action among smallholder farmers can enable them attain economies of scale and hence improve their participation in markets [7, 8]. Other recent studies of several producer organizations, however, find mixed performance of producer organizations in improving smallholder farmers' access to markets [3, 9].

This paper presents the results of a study that aimed at understanding the factors that affect the performance of smallholder producer organizations. In particular, the study examined the role of organizations' internal factors on their level of commercialization. It combined the producer organizations' internal factors into an index of social capital. This paper therefore investigates an aspect of collective action that might be instrumental in understanding why some organizations perform well while others don't, namely, the role of social capital on performance of smallholder producer organizations.

The study focuses on groundnut marketing smallholder producer organizations in western Kenya. Western Kenya is the main groundnut growing area in Kenya. The organizations were mobilized by the International Crops Research Institute for Semi Arid Tropics (ICRISAT) between 2005 and 2007 to promote adoption of higher yielding varieties of groundnuts. Some of the organizations already existed but were engaged in the production of various crops but a few were formed by farmers themselves in response to the project. The rest of this paper is organized as follows. Section 2 outlines theoretical framework and discusses the role of social capital in performance producer organizations.

Section 3 presents the empirical methods while Section 4 presents the results. Section 5 concludes.

2. Theoretical Framework

The exchange process by buyers (traders) and sellers (farmers or farmer organizations) can best be framed in the context of the New Institutional Economics (NIE). The NIE developed as a result of the limitations of the assumptions of neoclassical economics [10]. In contrast, neoclassical economics is based on the assumption of perfect competition. It views exchange as a frictionless and costless process and it contends that where costs exist, they are passive and therefore insignificant. Neoclassical economics also assumes that institutions are exogenous or given. To the contrary, North (1993) [11] argues that the neoclassical result of efficient markets can only be obtained when it is costless to transact business or carry out exchange. He maintains that institutions matter when exchange is costly. North (1990) [12] defines institutions as a set of formal (laws, constitution, contracts, political systems, organizations and markets) and informal (norms, traditions, customs, value systems, religions and sociological trends) rules of conduct that facilitates coordination or govern relationships between individuals or groups. These institutions, together with the standard constraints of economics (capital, land, labour, technology), define the choice set and therefore determine transaction and transformation costs, and hence the profitability and feasibility of engaging in an economic activity [13].

The NIE therefore acknowledges the important role of institutions in economic exchange and relaxes some of the assumptions of neo-classical economics such as the assumption of perfect information, zero transaction costs and complete rationality. In the context of NIE, producers adopt strategies such as collective action to overcome the constraints of costly exchange and hence maximize profits. The constraints to frictionless exchange arise from several of exchange conditioning factors that have come to be known as transaction costs.

These are costs associated with exchange process and include search and screening costs, negotiation costs, monitoring costs and maladjustment costs [5, 14, 15].

2.1 Social Capital and the Performance of Rural Producer Organizations

Overcoming the problem of high transaction costs requires that smallholder producers rely on external rather than internal economies of scale through collective action [16]. Hollaway et al. [17] suggests participatory, farmer-led producer organizations that handle output marketing, usually after some form of bulking to address the problem of market access. Rural producer organizations are the various forms of organizations that perform production and marketing for members [18].

Rural producer organizations enable farmers to have improved access to market for their products at a fairer price [17]. They help members by aggregating the volume of produce over the number of producers, finding a trader interested in buying, negotiating the price and quality specifications, assembling the product for the delivery date and quantity agreed, collecting payment, paying farmers and retaining a small margin for the organization to cover its operating expenses. The way rural producer organizations perform their useful role is centered on three mechanisms: the sharing of information among members, the reduction of opportunistic behavior, and the facilitation of collective decision-making [19, 20].

Various studies highlight the importance of collective action in improving the welfare of rural small-scale producers [21-24]. Hellin et al. [24] and Darr [22] suggest that collective action facilitates easier access to commodity markets, technical skills and market information. Rural producer organizations can facilitate low cost access to information, thereby stimulating technology adoption, commercialization and even contract compliance [25, 26]. Such organizations are also important in managing market access, input supply, savings and credit, and informal insurance [27]. In addition, rural producer

organizations lower the transaction costs of marketing produce by eliminating some of the intermediaries hence enabling farmers to capture the economies of scale of marketing their produce jointly.

Fafchamps [28] argues that, by sharing information on bad players in a decentralized manner, rural producer organizations help the members to lower screening costs. Sharing information also reduces the cost of searching for market information. In both cases, transaction costs of initiating exchange are reduced. Cooperation amongst farmers in negotiating prices with traders has two benefits. It reduces the negotiation costs and increases their bargaining power, empowering them to have greater control over the setting of prices and also reduces the time and the cost of marketing. Such producer organizations lower the costs of monitoring the terms of exchange [5, 8]. Therefore, rural producer organizations can have an impact on poverty through increasing rural household incomes some of which can then be invested in agriculture thus spurring commercialization [21].

The success of a rural producer organizations and the inherent collective action in reducing transaction costs depends, among other things, on social capital (i.e. the level of cooperation or networking between its members). Serageldin and Grootaert [29] argue that the capacity to fulfill the producer organizations' interests depends on the social structures internal to the organization, structures that organize the formulation and enforcement of rules, making and implementation of collective decisions and actions. These internal structures constitute social capital. Social capital can thus be viewed as an input into a household's production. We hypothesize that the observed differences in the performance of producer organizations can be explained by the differences in the organizations' level of social capital.

3. Empirical Methods

3.1 Data and Sampling

Both primary and secondary data are used in this study. Primary data was collected through personal

interviews at both household and producer organization levels using pre-tested questionnaires. The producer organization level questionnaire was administered to producer organization leaders, while personal individual interviews were conducted at household level.

The survey was carried out in 2007 in three districts of Kenya, i.e. Siaya, Teso and Homa bay. The data was collected from 225 members of 45 rural producer organizations. The three districts were purposively selected from among all the districts in which the International Crop Research Institute for the Semi Arid Tropics had facilitated formation of rural producer organizations. The districts were selected to cover the major agroclimatic zones in the project area. In each district, three divisions were purposively selected based on groundnut production potential and agroclimatic conditions. In each division, a list of all the rural producer organizations with more than 10 members was drawn and five organizations randomly sampled from the list to give a total of 45 organizations. A complete list of all members of each sampled organization was obtained from the organizations' leaders and five members randomly selected from the list giving rise to 225 farmers.

3.2 Measurement of Variables

The explanatory variables considered in modeling the effect of social capital on rural producer organizations included social capital indicators, the mean level of education for the members of the organization, age of the organization's leader, gender of the leader, size of the organization, age of the organization, distance to the nearest motorable road in kilometers, a set of district dummies (Teso, Homabay and Siaya, with Homabay as the base district), presence of by-laws and mean land operated by members in hectares. Education was measured as the total number of years of formal education for each member and averaged across the number of group members. Age of the leader of the organization and age of the organization was measured in years, while presence or

otherwise of group by-laws is represented by a binary variable. Land operated by the organization's members was measured in hectares and averaged across the number of members.

3.2.1 Measuring Social Capital

Social capital is most frequently defined in terms of the groups, networks, norms, and trust that people have for productive purposes. Hence the survey tool used in this study was designed to capture this multi-dimensionality of social capital. Six indicators of social capital were used to construct indices of social capital. Following Grootaert [30], we measured both structural and cognitive social capital. The structural social capital indicators we used in this study included density of membership to local associations, diversity of members in the rural producer organizations, frequency of attendance to rural producer organization's meeting and level of democracy in decision making. On the other hand, the indicators of cognitive social capital included trust and solidarity among members in the rural producer organizations. We assumed that networks built through social interactions have measurable benefits to the participating individuals and lead directly or indirectly to a higher level of well being.

Density of membership was measured by the number of local associations each household belonged to while internal diversity of the organization was measured using seven criteria: diversity in neighborhood, family/ kinship group, age, denomination, income group, gender and tribe. Frequency of attending group meetings was measured using a 3-scale criterion i.e. "never", "sometimes" and "always". The level of democratic decision-making in the organizations was measured by asking organization's members to state how decisions were made in their respective groups while trust was measured using indicators of generalized and specialized trust. Decision-making in a group was categorized as "decisions made by management only", "decisions made by management in consultation with members" and "decisions made by members consensus". The

generalized trust was estimated by asking the question “can most people be trusted?” and responses recorded as a binary variable. Specialized trust was estimated by asking the respondents to rank three types of people they trusted most against a seven-point criterion that included family, fellow farmers, church leaders, rural producer organizations’ members, political leaders, traders and friends. Level of solidarity in the rural producer organization was captured by questions regarding what the household would receive or give out in times of famine. Five items that the household would help other needy households with or receive during drought or famine are seed, grain, other food items (including cooked food), clothes and cash.

3.3 Estimation Procedure and Model

An ordinary least squares regression model was used to test the effect of social capital on the performance of rural producer organizations. Since produce marketing was the primary activity in such organizations, the mean level of commercialization of the organizations’ membership was used as proxy for the performance of those organizations. The organization’s mean level of commercialization is calculated as the mean value of produce sold in Kenya Shillings (Kshs) by the sampled organization’s members, divided by the mean value, in Kshs, of crops produced by the organization’s members in 2006, hence it is reported as an index. The dependent variable is therefore an index of the mean level of commercialization of individual producer organizations. The estimated regression model is thus specified as:

$$\text{commindex_mean} = f(\text{numgrp_mean}, \text{Indivindex_mean}, \text{Indecindex_mean}, \text{Insolidindex_mean}, \text{Inmeetingatt_mean}, \text{Intrustindex2_mean}, \text{educate_mean}, \text{age}, \text{sex}, \text{Ingrousize}, \text{Inagegroup}, \text{Indistroad}, \text{teso}, \text{siaya}, \text{grpbylaw}, \text{Inhectares_mean}) + \mu \quad (1)$$

Where *commindex_mean* is the index of mean level of commercialization of individual producer organization’s members; *numgrp_mean* is the mean density of associations for organization’s members; *Indivindex_*

mean is the organization’s diversity index; *Indecindex_mean* is the organization’s decision making index; *Insolidindex_mean* is the organization’s solidarity index; *Inmeetingatt_mean* is the organization’s meeting attendance index; *Intrustindex2_mean* is the organization’s trust index; *educate_mean* is the mean years of formal education for farmer organization’s members; *age* is age of farmer organization’s leader in years; *sex* is gender of farmer organization’s leader; *Ingrousize* is the size of the farmer organization; *Inagegroup* is the age of the farmer organization; *Indistroad* is distance to the road in kilometers; *teso* is a dummy equal to 1 if the district is Teso and 0 otherwise; *siaya* is a dummy equal to 1 if the district is Siaya and 0 otherwise; *grpbylaw* is a dummy equal to 1 if the organization has by-laws and 0 otherwise; *Inhectares_mean* is the mean size of land operated by farmer organization’s members in hectares and the variable μ is the stochastic term.

3.4 Socio-economic Profile of Farmer Organizations

Table 1 presents the socioeconomic characteristics of the groups interviewed in this study. The average distance to the nearest village market and nearest main market was 1.4 km and 3.6 km respectively. Distances to the nearest village market and nearest main market were however highest in Homabay district indicating that farmers in the district incurred higher transaction costs in marketing their produce.

Table 1 also indicates that the mean age of the producer organizations was seven years while the average size was 45 members. However, farmer organizations in Homabay were larger. The mean age of the leader of the organization was 48 years with Siaya district have the highest mean age. All the producer organizations had by-laws that governed how they conducted business and the conduct of members.

Among the social capital indicators, density of memberships to local producer organizations was lowest in Homabay district. The results show that most of the farmers belonged to just one organization,

Table 1 Socioeconomic characteristics of the farmer organizations by district, 2006.

Variable	Homabay	Siaya	Teso	Total	SE
Market access variables					
To the main road	3.20	2.10	1.80	2.40	0.45
To village market	1.60	1.10	1.40	1.40	0.08
To main market	4.60	3.80	2.50	3.60	0.19
Group characteristics					
Age of group	6.00	7.00	7.00	6.00	0.06
Size of the group	79.00	36.00	20.00	45.00	8.19
Mean members education	7.00	7.00	9.00	8.00	0.28
Age of leader	47.00	55.00	43.00	8.00	2.01
Social capital indicators (%)					
Density of membership	1.00	2.00	2.00	2.00	0.06
Group diversity index	70.00	63.00	82.00	72.00	1.43
Decision-making index	57.00	65.00	66.00	63.00	1.61
Solidarity index	56.00	36.00	44.00	45.00	1.60
Meeting attendance	67.00	82.00	74.00	74.00	1.87
Trust index	73.00	63.00	62.00	66.00	1.50

Source: Author's survey.

perhaps because attending meetings in these organizations take time away from other household activities. In terms of heterogeneity, farmer organizations in Teso were more heterogeneous compared to those in Siaya and Homabay. The results also suggest that solidarity within the farmer organizations was lowest in Siaya, though the members in the farmer organizations in Siaya were more diligent in attending their group's meetings. The level of trust among the members of a farmer organization was highest in Homabay district.

4. Results and Discussion

Table 2 presents the OLS estimates of the effect of social capital on the performance of rural producer organizations.

As hypothesized, the results show that the various dimensions of social capital affect the performance of rural producer organizations although the direction of effect differs. A unit increase in the index of diversity of producer organizations increases the organization's level of commercialization by 0.36. The findings therefore suggest that producer organizations that are more heterogeneous perform better than homogenous ones

Table 2 Effect of social capital on the performance of rural producer organizations, 2008, OLS regression.

Dependent variable: Index of mean level of commercialization for rural producer organizations' members		
Variable	Coefficient	P-value
Constant	-2.427	0.020
Mean density of membership to groups	0.01	0.913
Log of mean diversity index	0.36	0.015
Log of mean decision making index	0.24	0.060
Log of mean solidarity index	0.30	0.002
Log of mean meeting attendance index	0.12	0.014
Log of mean trust index	-0.19	0.096
Age of organization's leader	-0.00	0.086
Gender of organization's leader	0.01	0.825
Log of organization's size	0.05	0.100
Age of the organization's	0.002	0.562
Log of distance to the road	0.02	0.027
District dummy 1=Teso, 0= otherwise	-0.11	0.286
District dummy 1= Siaya, 0= otherwise	0.11	0.317
Group has by-laws 1=Yes, 0=No	0.16	0.098
Log of mean land operated by members	0.20	0.010
Mean education of group members	-0.01	0.637

N = 45, F (16, 28) = 10.24, Prob>F = 0.000, Adj R-squared = 0.61.

probably because the former benefit from diverse and complementary ideas and skills embodied in the membership.

The finding that the heterogeneity of an organization enhances its performance corroborates those of Grootaert [30] who found that heterogeneity of a group has a positive impact on household welfare. It however contradicts those of Nagarajan et al. [31] who suggested that homogenous groups performed better. They argued that membership homogeneity reduced information problems and ensured that members had common interest. All the rural producer organizations interviewed in the study received same production and marketing information from the project field staff. Therefore, major information problems were not expected contrary to the situation studied by Nagarajan et al. [31].

The results also show that organizations that follow a democratic (i.e., consensus) method of decision-making perform better. A unit increase in the index of democracy in decision-making increase the organization's level of commercialization by 0.24, *ceteris paribus*. This finding suggests that seeking members' consensus in decision-making allows members to make decisions that suit them best thus making their organization perform better.

The degree of solidarity among the members of a producer organization also affects its performance.

Other things equal, a unit increase in the organization's solidarity index increases its performance by 0.30. This finding suggests that greater solidarity within an organization leads to cooperation among members resulting in higher level of commercialization. The results further indicate that frequency of attendance of meetings by members positively affects the performance of a producer organization. Holding other variables constant, a unit increase in the index of attendance of the organizations' meeting increases its performance by 0.12. These results indicate that organizations whose members are more diligent in attending meetings perform better. This is probably because farmers who regularly attend their organizations' meetings acquire better crop production skills and marketing strategies

leading to higher productivity and hence crop sales.

The results however indicate that higher level of trust in rural producer organizations reduces the mean level of commercialization in it. A unit increase in the organization's level of trust reduces the level of commercialization by 0.19. Although most forms of economic exchange require trust, our results suggest that trust-based transactions lower the performance of rural producer organizations. Why might this be so? Evidence suggests that there appears to be a weak and/or insufficient legal protection in trust-based transactions [4, 32]. In deed, Knack [32] argues that the type of trust that is unambiguously beneficial to economic performance is that between strangers. In societies where strangers can trust each other to act in the collective interest, people can contract with a wide range of parties without extended written agreements. However, in the current study, trust was mainly reported for family members and Church leaders, i.e. people who have interacted repeatedly. Consequently, this type of trust had a significant negative influence on the performance of the rural producer organizations suggesting that it limits the number of actors the smallholder farmers can comfortably transact with without fear of being cheated.

As the above results indicate, the various dimensions we used to assess the effect of social capital on the performance of producer organizations have opposing effects. In order to determine the direction of the overall effect of social capital on the performance rural producer organizations, we performed a multiple restriction exclusion test involving all the social capital variables. We specifically tested the null hypothesis that all the social capital variables do not affect the level of organizations' commercialization. The alternative hypothesis was that at least one of the social capital variables affects the level of commercialization of a producer organization. The result of this Wald test yielded an F statistic of 3.34 and a p-value of 0.017 indicating that social capital has an overall positive and significant effect on the performance of producer

organizations. It therefore supports our hypothesis that internal and external factors within a producer organization (measured as social capital) affect how well a producer organization performs.

A number of conditioning variables included in the analysis namely age of the organization's chair, possession of by-laws, and organization's size also affect the performance of producer organizations. Other things equal, an increase in the age of the producer organization's chair by one year reduces the performance of the organization by 0.002 suggesting that older leaders were less likely to effectively manage a producer organization as they would be less productive. However, the effect was negligible, though statistically significant.

Results also show that producer organizations that have by-laws perform better than those that do not. By-laws provide guidelines regarding what members can or cannot do. Indeed, some of the organizations had a by-law that required members to sell all their produce through them. Possession of a by-law increases the performance of the rural producer organizations by 0.16, *ceteris paribus*. Results further show that the size of a producer organization affects its performance. All other things equal, increasing the size of a producer organization by one member raises the level of commercialization by 0.05.

The other control variables that affect the performance of producer organizations are the distance between the organization and the main road and land ownership. All else equal, an increase in the distance to the road by one kilometer increases the organization's level of commercialization by 0.02. Since distance to main road often captures the level of transaction costs, the results suggest that smallholder farmers were more likely to sell their produce through the organization as transaction costs of reaching alternative markets increased. As expected, this study finds that land ownership increases the level of commercialization of the farmer group. A unit increase in the amount of land operated increased the performance of the rural

producer organizations by 0.20, *ceteris paribus*. Larger size of land would most likely lead to an increase in production, hence an increase in the amount of produce sold in the market.

5. Conclusions

Development literature currently promotes producer organizations as one of the major strategies for achieving commercialization of smallholder agriculture. However, some recent empirical studies of such producer organizations find mixed performance. In this study, we use quantitative methods to test the hypothesis that social capital might explain why there has been mixed performance of such organizations. As hypothesized, the study finds that social capital indeed affects the level of commercialization of a producer organization hence how it performs.

Based on the results of this study, we conclude that social capital affects the performance of rural producer organizations. It especially increases the level of commercialization for smallholder farmers. The results suggest that mixed performance of rural producer organizations can be explained by the differences in the level of internal factors (such as diversity in membership, democracy in decision making, frequency of attendance to meetings, density of membership to other groups, trust and solidarity) within each organization. These findings imply that even though producer organizations may be accorded the same services, internal factors within the producer organizations will influence the way these organizations perform their roles. Attention should therefore be given to these internal factors when designing development strategies that target the commercialization of smallholder agriculture through producer organizations.

More broadly, another major policy implication of these findings is that rural producer organizations can reduce rural poverty by enhancing increased commercialization of the smallholders' production.

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