

Analysis of Factors Affecting Proper Functioning of Smallholder Agricultural Cooperatives in the Limpopo Province of South Africa

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ABSTRACT The present study determined factors that affected the proper functioning of smallholder-cooperatives in the Lepelle Nkumpi municipality, Limpopo Province of South Africa. By employing discriminant analysis, data collected from 140 cooperative members from 13 different agricultural cooperative were analysed to identify factors that can be used to discriminate between functional and dysfunctional agricultural cooperatives. The results indicated that the independent variables that accounted for most the differences between functional and dysfunctional cooperatives were size of cooperative, availability of stakeholders to assist in improving the level of skill of members, satisfaction of members with assistance provided, number of females in the cooperative, number of years the cooperative had been in existence, members participation in decision making and age group. It was recommended that government should intensify efforts to improve skills of members and also provide assistance to the satisfaction of cooperative members in order to assist cooperatives to become functional.

INTRODUCTION

In recent years governments are encouraging emerging farmers to form agricultural cooperatives as a mechanism for accelerating the economic development in rural areas (Arayesh 2011). An agricultural cooperative can be defined as an independent association of farmers united voluntarily to meet their common social, cultural and economic needs and aspirations through a jointly owned and democratically controlled enterprise, organised and operated on carefully set of principles (ICA 2005). Cooperatives are self-help organized and are created to meet members' common needs. This means that cooperatives will often have social goals in the same manner as other community based civil society organizations. The building of smallholder agricultural cooperatives is a useful way to build human capacities, and favour the democratic participation of farmers (ICA 2005).

Agricultural cooperatives play important role in South Africa and translate into the improvement of living conditions of organised emerging farmers. The formation of cooperatives is voluntary, democratic and self-controlled. Cooperatives offer the institutional framework through which local communities gain control over productive activities from which they de-

rive their livelihoods. In South Africa agricultural cooperatives contribute to food production and long-term food security. Agricultural cooperatives also help in reducing the existence of rural poverty by increasing productivity and income of smallholder farmers through the formation of cooperatives, farmers are able to negotiate better prices for seeds, fertiliser, transport and storage. Cooperatives further help farmers expand market access and capture more of the value chain by getting involved in agro-processing activities (FAO 2007).

Despite the role that agricultural cooperatives play in rural areas of South Africa, their performances have been faced with a number of problems. It has been observed that some cooperatives have not been functional while others have been functional. Poulton (2005) indicated that farmers' cooperatives face substantial challenges which are exacerbated by small sizes of cooperative formed, lack of and availability of stakeholders to assist in improving membership skills, lack of satisfaction of members with assistance provided by government, more especially extension officials, and the gender composition of members in the cooperative. In addition, the number of years the cooperative has been in existence, members participation in decision making and age group have been mentioned as in-

hibiting proper functioning of cooperatives. Ortmann and King (2007) have also indicated that the functioning of agricultural cooperatives in the former homelands of South Africa are due to lack of availability of stakeholders, especially government, to assist in improving the level of skill of members. Cooperative members also complain about the quality of assistance provided by stakeholders, gender composition members in the cooperative and membership participation in decision making. A study conducted by Nugussie (2010) on agricultural cooperatives indicated that although government provides various incentives and encouragement to smallholder farming cooperatives, yet there are cooperatives that are still not functional.

FAO (2007) supported that the management of interpersonal relationships is an issue that must be addressed as it has been the cause of co-operatives becoming dysfunctional. Clashes of opinion are always present when people work collaboratively. Rutle (2008) suggested that the proper functioning agricultural cooperatives start at the local level. Poverty, social disintegration and environmental degradation are also contributory endogenous factors. Identifying the factors that contribute to the functioning or not of agricultural cooperative in rural area will help promote future viability of cooperatives. The important roles that cooperatives can play in the development of small holder agricultural sector in the country cannot be overemphasized. This research was aimed at determining factors that affect proper functioning of smallholder agricultural cooperatives using a case study of smallholder rural farmers in South Africa.

Literature Review

In South Africa, agricultural cooperatives started in the 1910's and 1920's, and focused on input supplies and joint marketing of production and established processing cooperatives such as in the wine and spirits sector. Agricultural cooperatives became powerful in lobbying for agricultural sector holdings, a virtual monopoly of the sector. This situation was backed by direct financing through the Land Bank and made agricultural cooperatives capture the control of the Marketing Boards that regulated prices (Philip 2003). Since 1994, the government in South Africa has been supporting the growth of cooperatives, especially among historically disadvan-

tagged South African black farmers. A strategy to alleviate poverty and create jobs. The Cooperatives Act of 1981 was not considered a suitable vehicle for the development of cooperatives in the new economic and political era, but initiated a process of developing a new Act based on international cooperative principles (Chibanda et al. 2009).

A number of studies have examined various key factors contributing to functional and dysfunctional agricultural cooperatives in South Africa. Karami and Agahi (2010) in a study entitled "evaluating the role of creativity on success of cooperatives", indicated that the impact of competency and proficiency of the director, encouraged risk taking, innovation and accessing to information plays a role in the success of cooperatives. Flick (2009) also considers the following factors as the main challenges affecting the performance of the agricultural cooperatives: lack of motivation among the staff, top-down planning, lack of funds and delayed allocation time, lack of educational facilities in the extension centres, low-literacy among majority of members of cooperatives and lack of skilled manpower.

According to the Department of Agriculture, Forestry and Fisheries (2007), smallholder farmer cooperatives in South Africa do not have a great deal of negotiation powers because of a number of reasons which include lack of assets that are of value, their financial and infrastructural positions, and their low volumes of operations (Van der Walt 2005). Persson (2010) also indicated that the surviving cooperatives are those that have high membership numbers and functional organisational structures and leadership skills. Bernard (2013) in his study of small holder cooperatives in rural areas indicated that low levels of financial resource available to cooperatives as well as the lack of complementary goods constrain the success of cooperatives.

The empirical results of the study conducted by Banaszak (2004) using ordinal probit model of data analysis indicated that low numbers of cooperatives members, lack of leadership strength, lack of high numbers of male membership and lack of business acquaintances of members have negative effects on the success of agricultural cooperatives. Nugussie (2010) noted that the functioning of cooperatives largely depends on their values, existence of social responsibility among members and democratic

principles couples with democracy and openness norms. Nyoro and Komo (2005) on analysis of success, failure and demand factor of agricultural cooperatives in Kenya indicated that credit burden and debtors, conflicts, external forces, investment on non-income generating activities, poor or lack of communication between board members and farmers, are the main contributing factors to the dysfunctional agriculture cooperatives. Dlamini (2010) on the study of three co-operatives in Kwazulu Natal province concluded that agricultural cooperatives are challenged by complex group dynamics characterized by conflict of opinions and issues related to free-rider, horizon, and portfolio problems. Dlamini (2010) also noted that the dominant cause of the failure of cooperatives can be found in three categories of poor management, lack of organizational discipline and weakness in financial vigour. Mazibuko et al. (2008) revealed that cooperatives' success and functioning is closely linked to and dependent upon external factors which should be carefully considered in cooperative development, capacity building and policy formulation.

A study by Mazibuko et al. (2008) concluded that spanned annual general meetings or regular general members meetings; empowerment of boards; regular audits; information sharing; communication and a clearly defined role for management are factors that make cooperative to become functional. Garnevska et al. (2011) in a study of factors for successful development of farmer cooperatives found that stable legal environment; a dedicated initiator and leader; government financial and technical support; farmer understanding and participation of cooperative activities and appropriate external support from Non-Government Organisations (NGOs) were the key factors for the successful development of farmer cooperatives.

Wanyama et al. (2009) indicated that a "committed leadership and a clear vision of finding solutions to the daily problems of their members" are important factors and key importance to the success of cooperative in rural areas. Member participation is another important factor for cooperative development that the literature mentions (Flygare 2007). The success of an organisation depends on the involvement of the local population as a high degree of membership participation puts pressure on leaders and staff to properly exercise their respective roles.

Wanyama (2009) in a study of cooperative development in Africa indicated that membership participation is also a significant determinant of successful cooperatives. Didi (2004) in a research on "low communication of fishing Cooperatives on the management of coastal resource" concluded that the homogeneity of members and stability of small groups had a considerable impact on the success of cooperatives. Dlamini (2010) in his study of elements constituting an effective agricultural cooperatives indicated that most agricultural cooperatives in South Africa have not been successful due to number of constraints such as lack of entrepreneurial skills, conflict among the members, lack of financial capital and management experience.

Objectives

- I. To identify factors that can be used to discriminate between functional and dysfunctional agricultural cooperatives and
- II. To make recommendations on strategies that can help policy makers to assist smallholder agriculture cooperatives to be functional.

METHODOLOGY

This study was conducted in Lepelle Nkumpi local municipality under Capricorn District in Limpopo province. Lepelle-Nkumpi municipal area is the second largest municipality within the District and is located in the southern area of Capricorn.

Questionnaires were designed to collect information that related to all objectives of the study. Simple random sampling method was used to select a sample of 140 active cooperative members from 13 agricultural cooperatives, taking into consideration, proportional representations of the cooperatives. Primary data was collected using questionnaires which were administered through face to face interviews. Secondary data was also collected using document review of journal articles, internet and books. Data collected using questionnaires were analysed with the Statistical Package for Social Sciences (SPSS Version 22.0). Discriminant analysis (DA) method was used to analyse the data. DA undertakes the same task as multiple linear regressions by predicting an outcome. DA involves the determination of a linear equation like regression that will predict which group a

case belongs to. The form of the equation or function employed can be stated as:

$$D_i = \beta_0 + \sum_{k=1}^p \beta_k X_k \quad (1)$$

$$D_i = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \dots + \beta_k X_k \quad (2)$$

Where

D_i = The i th score on the discriminant function;

β_k = Coefficients estimated;

X_k = Independent variables.

The coefficients were derived as to maximize the difference between the group means. The bigger the differences between the mean values of the independent variables related to various groups, the more was the discriminating power of that variable. Discriminant analysis simultaneously analyses all of these mean differences and determines which variables have the most discriminating powers. The main advantage of the linear discriminant function is that its measure of predictive ability is in terms of the percent of cases that are correctly classified. Therefore the discriminant analysis is an appropriate technique for use in this study to identify char-

acteristics that differentiated between two strata, functional and dysfunctional cooperatives. The proposed empirical model employed can be specified as follows:

The independent variables are described in Table 1.

RESULTS

Table 2 presents the group means, including the pooled sample means, of the variables employed on the analysis. Their significant difference levels are indicated by their P -values. The results presented in the table shows a significant difference at the 10 percent level of the training currently offered by cooperative (TCOC), significant difference at the 5 percent level of satisfaction with agricultural information obtained (SAIF) and significant difference at 1 percent level of marital status (MRT), number of

Table 1: Description of variables used in the discriminant analysis

Variable name description		$D_i = \beta_1 MRT + \beta_2 MTG + \beta_3 TCOC + \beta_4 SAT + \beta_5 NFEM + \beta_6 EXT + \beta_7 AGEP + \beta_8 SCOP + \beta_9 ASSC + \beta_{10} SASST + \beta_{11} AIP + \beta_{12} CSIZE + \beta_{13} INC + \beta_{14} YREC + \beta_{15} MPDM$	Expected sign
D	Functioning of cooperative	1= Functional; 0 = Dysfunctional	
MRT	Marital status	1=s ingle; 2=married; 3=divorced; 4=widowed	+
INC	Source of income	1= cooperative; 2=other agricultural activities; 3= pension; 4=others	+
NFEM	Female in the cooperative	Numbers	
YREC	Years in existence of the cooperative	1=less than one year; 2=between 1-5 years; 3= between 6-10 years; 4=more than 10 years	+
MTG	Frequency in meeting attendance	1= everyday; 2=weekly; 3=monthly	+
MPDM	Member participation in decision making	1= completely; 2=mostly satisfied; 3= partially satisfied; 4=mostly dissatisfied; 5=completely satisfied	-
SAT	Satisfaction of the training provided	1= yes; 0=no	+
TCOC	Training currently offered	1= leadership; 2=management; 3=technical; 4= sales; 5=computer/IT; 6=others	+
AGEP	Age group	1= under 21 year; 2=21-29 years; 3=30-39 years; 4= 40-49 years; 5=50-59 years; 6=60 years and older	+
SCOP	Stakeholder to improve the level of skill	1= AGRISETA; 2=higher education institution; 3= private training provider; 4=in house training; 5= skill development facilitator; 6=others	-
ASSC	Type of assistance offered staff	1= financial assistance; 2=study leave or time off; 3= on the job training; 4=coaching/mentoring; 5= other	-
SASST	Satisfaction with assistance provided	1= completely; 2=mostly satisfied; 3=partially satisfied; 4= mostly dissatisfied; 5=completely satisfied	-
SAIF	Satisfaction with agricultural information	1= completely; 2=mostly satisfied; 3=partially satisfied; 4= mostly dissatisfied; 5=completely satisfied	-
EXTS	Support from extension officer	1= yes; 0=no	+
CSIZE	Cooperative size	Numbers	+

Table 2: Group means of variables employed in the analysis

Variables	Cooperatives		All	P-value
	Functional	Dysfunctional		
MRT	1.76 (0.576)	2.04 (0.680)	1.87 (0.633)	0.011
INC	1.96 (1.142)	2.32 (1.003)	2.11 (1.097)	0.062
NFEM	6.61 (2.589)	7.89 (4.083)	7.14 (3.327)	0.025
YREC	2.48 (0.755)	2.82 (0.889)	2.62 (0.826)	0.015
MTG	2.81 (0.397)	2.60 (0.495)	2.72 (0.450)	0.006
MPDM	0.46 (0.501)	0.30 (0.462)	0.39 (0.490)	0.058
SAT	3.01 (1.375)	2.44 (0.982)	2.78 (1.258)	0.008
TCOC	3.43 (1.647)	2.88 (1.477)	3.21 (1.598)	0.042
AGE	4.49 (1.173)	5.04 (1.068)	4.71 (1.159)	0.006
SCOP	3.02 (1.963)	2.09 (1.539)	2.64 (1.855)	0.003
ASSC	3.67 (0.885)	3.21 (0.526)	3.49 (0.791)	0.001
SASST	3.28 (1.400)	2.35 (0.935)	2.90 (1.310)	0.000
EXT	0.92 (0.280)	0.81 (0.398)	0.87 (0.336)	0.060
SAIF	2.71 (1.339)	2.18 (0.685)	2.49 (1.147)	0.006
CSIZE	10.05 (4.708)	11.93 (5.577)	10.81 (5.145)	0.033
Number of cases (n)	83	57	140	

Standard deviations in brackets ()

female (NFEM), frequency in attending meetings (MTG), satisfaction of the training received (SAT), age group (AGEP), source of income (INC), years in existence of the cooperative (YREC), members participation in decision making (MPDM), support from extension officers (EXT), stakeholder to improve the level of skill of staff (SCOP) type of assistance offered staff (ASSC), how satisfied have members been with such assistance (SASST) and cooperative size (CSIZE).

Table 3 presents the results of discriminant scores. The *eigen* value is one of the statistics used to evaluate the magnitude of the discriminant analysis model. The results presented in Table 3 indicated that *eigen* value was low (1.033). This implies that between the groups differences were much lower than the within groups differences.

Wilks' lambda, indicates of the accuracy of the discriminant model used and also a measure of the importance of the variables. A low value of Wilks' Lambda (0.492) is an indication of a high percentage of explained variance of dependent variable, in this case functional and dysfunctional agricultural cooperative. The percent of explained variable is calculated as $[-(\text{Wilks' lambda}) \times 100]$. In this study, Wilks' Lambda in the case where all the functions are in the analysis was estimated as 0.492, and indicates the differences between two groups of cooperatives account for 85.7 percent of variance in the predicting variables.

Table 3: Standardized canonical discriminant function coefficients

Independent variable	Coefficient	Wilks' Lambda
MRT	-0.122	0.954
INC	-0.100	0.975
NFEM	0.455	0.964
YREC	-0.452	0.958
MTG	0.248	0.947
MPDM	0.407	0.974
SAT	0.092	0.950
TCOC	0.076	0.971
AGE	-0.446	0.947
SCOP	0.579	0.938
ASSC	0.302	0.916
SASST	0.516	0.878
EXT	0.327	0.975
SAIF	0.259	0.947
CSIZE	-0.852	0.967
<i>Statistics:</i>		
Eigen value	1.033	
Canonical correlation	0.713	
Wilks' Lambda	0.492	
Chi-square	92.582	
df	15	
P-value	0.000	
% grouped cases correctly classified	85.7%	

The Chi-square statistics was used to test the null hypothesis that the discriminant function had no discriminating ability. The null hypothesis was rejected since the Chi-square (92.582) with degrees of freedom, $df = 15$, was significant at the 1 percent level of significance ($P < 0.000$). An indication that the discriminant function was appropriate for the analysis.

The weights of the standardized canonical discriminant coefficients of the independent variables as presented in Table 3 showed that the variables that maximise the separation of the two groups of cooperatives were: cooperative size (-0.852), stakeholder to improve the level of skill of staff (0.579), satisfaction with assistance provided (0.516), number of females in cooperative (-0.455), years in the existence of cooperative (0.452), members participation in decision making (0.407) and age group (0.446) in order of magnitude.

DISCUSSION

The essence of cooperatives performance is their strong membership commitment and support. Cooperative success not only relied on the strength and efficiency of board of governance and management but more importantly on membership size. The results of the study showed that agricultural cooperatives membership size determines whether they are functional or dysfunctional. This result is in line with researchers who believe that the size of cooperatives can be used to determine their functionalities and success (Amini and Safari 2002). This finding is also consistent with findings of the studies conducted by Bruynis (2001) who indicated that high performance of cooperatives are determined by their high membership numbers or sizes. The results presented in Table 3 indicated that the levels of skills of members were significant in the separation of cooperatives. Nompozo (2000) has noted that for good performance of cooperatives, a reasonable amount of skills to analyse information are necessary to back up agricultural productivity. The study found out that those cooperatives that are functional had satisfaction with the assistance provided by stakeholders. Azadi et al. (2010) also indicted that low level of satisfaction among the members may demotivate them in collective actions and thus causes cooperatives to become dysfunctional.

The study found out that the years of existence of cooperatives can be used to group cooperatives into functional and dysfunctional categories. This finding is supported by the study of Ortman and King (2006) who indicated that for the proper functioning of cooperatives, their existence should have been long enough to receive assistance from stakeholders and

show adequate membership performance. This study found out that cooperatives can be grouped as functional or dysfunctional by their gender compositions. The study also showed that agricultural cooperatives that are dysfunctional have high number of female than those that are functional. This may be attributed to the fact that cooperatives encourage the participation of females who are generally excluded from more rewarding agricultural opportunities because of lack of resources (FAO 2007). The presence of more females possess threats and negatively affect the proper functioning of agricultural cooperatives because women are risk averse in their aspects of transformation regarding new technologies and are not strong because agricultural labour requires physically strong individuals. The results of the study indicated that age appeared to be one of the variables that can be used to separate the two groups of cooperatives. Dlova (2004) indicated that age is one major factors that affects the probability of a farmer being functional in agricultural cooperatives, because younger farmers are more ready to adopt modern technology and may be more adaptive and more willing than older people to try new methods.

The study found out that membership participation in decision making can be used to separate functional and dysfunctional cooperatives. As indicated by Prakash (2003), some of the problems faced by agricultural cooperatives have been, among others, poor membership participation in decision making. This finding is also consistent with findings of the studies conducted by Amini and Ramezani (2006) who indicated that poor membership participation in decision making can be detrimental in the proper functioning of cooperatives.

CONCLUSION

This study determined factors that affect proper functioning of smallholder agricultural cooperatives in Lepelle Nkumpi municipality, Limpopo Province, South Africa. The results of the study showed that most of smallholder agricultural cooperatives were functional than those that are dysfunctional. Functional smallholder cooperatives were characterized by high level in offering training to their members; interact with other stakeholders to improve level of skill, satisfied with the training and assistance received.

Dysfunctional smallholder cooperative were characterized by high age group, low level of meeting attendance, large cooperative size, unsatisfied of the assistance and training received and high number of females. In general the results of the study showed that the variable that accounted for most of the differences in the average score profiles of the two groups of agricultural cooperatives were: cooperative size, satisfaction of training received, number of females in cooperative, years in the existence of cooperative, members participation in decision making and age group.

RECOMMENDATIONS

Based on the findings, the following recommendations are important to provide the solution to factors affecting proper functioning of agricultural cooperatives: Government should continue to support agricultural cooperatives through extension officials who can disseminate information on cooperative size, type of training that can be received for members to become satisfied, the number of females that can be accepted in cooperative for them to become functional, and advise on members participation in decision making.

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