Determinants of Multipurpose Cooperative Member Participation in Agricultural Output Marketing: Kersa District, Jimma Zone, Oromia Region, Ethiopia

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Abstract

This study assessed determinants of multipurpose cooperatives members' participation in agricultural output marketing at kersa district of Jimma zone, Oromia Regional State, Ethiopia. A two-stage sampling procedummre was used and 4 multipurpose cooperatives were selected to obtain a sample size of 196 cooperative members. Quantitative and Qualitative data were collected through household survey, key informant interview, focus group discussions and personal observations. Data were analyzed using descriptive statistics like mean, chi-square, standard deviation, frequency, percentage and binary logit model. The result showed that 66.36% of cooperative members were participants in agricultural output marketing where as 33.64% were non-participants. The binary logit model result showed that age, education, landholding, change in standard of living due to joining of cooperative, membership in other cooperatives other than Multipurpose Cooperatives, determined participation decision of members in agricultural output marketing positively and significantly while the other four variables determined negatively and significantly. In general, the agricultural output marketing of multipurpose cooperative members in the study area has been affected by different demographic, socio-economics and institutional factors. Therefore, the study suggested that as Woreda cooperatives promotion agency should also help these cooperatives to increase members' participation in agricultural inputs as well as outputs and create linkages with financial institutions to solve their shortage of capital.

1. INTRODUCTION

As agriculture continues to be an important sector to the Ethiopian economy, the cooperative sub-sector provides vital support services and plays a crucial role for the transformation of the agriculture (Navarra *et.al,* 2017). Agricultural cooperatives, particularly multipurpose cooperatives hold much potential to enable these economically weak farmers to increase their collective bargaining power and individual capacities of Sub Sahara African countries. Ethiopia is among the countries in this region where agriculture plays a vital role in the economy (Wanyama *et.al,* 2009).

As a result, the Ethiopian government places a very strong prominence on promoting cooperatives as one of the main organizational mechanisms to facilitate farmer access to inputs, credit, output markets and to improve coordination within the smallholder sector (Tefera *et al.,* 2016).This has led to a substantial growth in the number of cooperatives and in the total number of members over the last decade. In Ethiopia, cooperatives (unions and primary cooperatives) have grown substantially in number over the last decade. For instance, from 2008 until 2013, the number of unions grew by 44% (Royer *et al*., 2017).Linking smallholder farmers to output markets is one of the main challenges in developing countries like Ethiopia. Markets for agricultural inputs, outputs and finance, consumer goods and services are relatively 'thin' (with small volumes traded) and prone to large seasonal variability in supply and demand (Shiferaw *et al.,* 2011). Several scholars argue that the necessary action will not be achieved by market mechanisms alone, especially in rural areas with thin markets (Dorward *et al.,* 2004, Doner *et al., 2005*, Narrod *et al.,* 2009).

The complementarity of the institutional limitations calls for rigorous action to ensure that coordination problems are solved. Multipurpose cooperatives are seen as key institutional intervention in enhancing small holder farmers' access to markets, as one form of institution that fulfill exchange and co-ordination functions in an economy (Barrett, 2008, Hellin *et al.,* 2009).

Over the last decade, the literature on co-operative development in Ethiopia has grown rapidly. For instance, the International Food Policy Research Institute (IFPRI) has carried out several impacts assessment studies on co-operatives in Ethiopia. However, the factors affecting multipurpose cooperative members in agricultural output marketing, in relation to shifting government policies and changing market conditions, has not been painted. As a result of this, MPC member farmers face difficulty to participate even in local markets due to subsistence production and inability to penetrate other influencing factors in searching for markets (Deresse *et.al,* 2018). Therefore, this paper intends to examine determinants of multipurpose co-operatives member

participation in agricultural output marketing in Kersa District, Jimma Zone, Oromia region, Ethiopia.

2. METHODOLOGY

2.1 Description of the Study Area

The study was conducted in Southwestern Ethiopia, Oromia region, Kersa district of Jimma Zone. Kersa district is located 325 km southwest from Addis Ababa. The district has a total of 32 kebeles, including 30 rural and two which are part of the capital town of the district called Serbo. The total population of the Kersa district is estimated at 178,647. About 88,252 (49.4%) are males and 90,395 (50.6%) are females (Kersa District Office of Agriculture and Natural Resource, 2019). The study area is classified into two different agro ecologies: midland and highland. About 90% of the study area falls into midland while the remaining 10% is highland. The climatic condition of the area is very favorable for agricultural activities in general and for dairy production in particular. The area receives an annual rainfall of about 2000–2400 mm; the mean temperature is 13–26°C and the altitude ranges 1750–2200 m above sea level. (KARDO 2019),

Agriculture is the most crucial source of household income in the study area. The area is mostly known for its vegetation coverage, suitability for coffee, crop, livestock and bee production. Three major types of primary Cooperatives were found in the District. These are: MPCs, saving and credit cooperatives and other service cooperatives with 34,823 members in which 4,184 of them are women members. There are 30 multipurpose agricultural cooperatives in the District. The farming calendar of the districts is from June to August and like most part of the country rain fed agriculture is practiced. According to the same source, the living styles of the people in the area are characterized by mixed-farming and petty trades. The farmers' rear different livestock such as cattle, sheep, and goats basically to generate additional income to supplement the income generated from agricultural produce.

2.2 Sampling Techniques

According to Cooperative promotion office report of 2019 shows there are 30 MPCs found in the District. For this study a two-stage sampling technique was used to the study area. **First,** out of 30 Multipurpose Cooperatives in the District, four of them were selected using simple random sampling since there are equal number multipurpose cooperatives in all kebeles and they are uniformly distributed.

In the 2nd stage, 196 sample respondents of Multi-Purpose Cooperatives members were selected using systematic random sampling from a list all sampled MPC from 5111 members based on simplified formula for proportions suggested by Yamane (1967) as:

$$n = \frac{N}{1+N(e)^2} \quad \text{……………………………………………………….. (1)}$$

$$n = \frac{5111}{1+5111(0.07^2)} \quad \text{……………………………………………….. (2)}$$

$$n = 196$$

Where n is the sample size, N is the population size (Multipurpose cooperative members) and e is the level of precision where e = 1- precision and assumed as e = 7%. Totally 196 respondents would be selected randomly from four multipurpose cooperatives based on probability proportional to size of cooperatives (Table 1)

Table 1 Sampling Procedure

Name of the district	Name of MPCOs	Total member of MPCs			Sampling size		
		Male	Female	Total	M	F	Total
Kersa	T/karsu	1111	128	1239	43	5	48
Kersa	A/Sabu	1280	218	1498	48	9	57
Kersa	Siba	995	88	1083	37	7	42
Kersa	Kitimbile	1097	194	1291	41	8	49
	Total	448		5111	167	29	196

Source: KDCPA 2019

2.3 Methods of Data Collection

In order to capture relevant information both primary and secondary data were used for this study. Primary data were mainly collected from sample respondents, key informant interviews and focus group discussions. The primary data related to socioeconomic, institutional and demography of multipurpose cooperative members' participation in agricultural output marketing was collected through structured questionnaire. Secondary sources were from published and unpublished documents and reports were gathered to supplement primary data from relevant organizations. Moreover, discussions with woreda experts of the cooperatives promotion Agency offices and cooperative executive committee members were conducted.

A structured questionnaire was developed to collect the data from multipurpose cooperative members household. In addition to the questionnaire survey, four focus group discussions were held on different topics

involving 6–8 participants. Key informant interviews were also conducted at each location with kebele management units, cooperative promotion experts, Development agent and cooperative committees' member using key informant interview checklists. Appropriately, the data collected at different levels was cross checked with field observations and other data sources.

2.4 Method of Data Analysis

The data was analyzed using Statistical Package for Social Sciences (SPSS) software version 20. An independent sample t-test and Chi-square test were used to see the presence of statistically significance difference and the association between those who participate and do not in terms of the hypothesized variables. Descriptive statistical analysis was used to discuss the results of the survey using frequency, mean, standard deviation and percentages. In addition, mean comparisons of independent samples and relation of sample category with variables of interest was explored. Binary logit econometric model was employed to know the influence of demographic, socioeconomic and institutional variables of members' participation decision in multipurpose cooperative in the study area.

2.5 Model specification

The dependent variable of this study is MPC members' participation in agricultural output marketing and it is treated as a dummy variable which takes the value of one, if the multipurpose cooperative member is participant in agricultural output marketing, and zero otherwise. In this study, households who were considered as participant are those who are legally registered as members of MPCs and sell their agricultural output based on cooperative principle and their common interest. But, nonparticipants were MPC members who do not sell their agricultural output or product to their Cooperative.

The dependent variable: The dependent variable in this study is participation of multipurpose cooperative members in the agricultural output marketing. Participation is standard to measure the decision of member participation in agricultural output marketing. Moreover, index of participation of members in cooperative was a complementary dependent variable, which is useful to identify determining factors that affect member participation decision

Table-2: Summary of hypothesized variables.

Variables	Definitions	Type of Variables	Expected sign
AGEHH	Age of HH members'	Continuous	+/-
EDUCTN	Education level of HH	Continuous	-
FAMSIZE	Family size of HH	Continuous	+
LANDHOLD	Land owned by HH	Continuous	+
TLSH	Total livestock hold	Continuous	+
SHAREHOLD	Share holding	Continuous	+
NONFARMI	Non-farm income of HH	Continuous	-
EXPHHM	Expenditure of HH members	Continuous	-
DISTANCE	Distance of HH from MPC office	Continuous	+
OUTPUTP	Perception on output price	Dummy	+
CHSTDUCO	Perception on change in standard of living due to joining MPC	Dummy	+
MOTHRCOOP	Membership in other MPC	Dummy	+
FERPRICE	Fertilizer price	Continuous	+/-
SEEDPRICE	Seed price	Continuous	+/-

3   RESULTS AND DISCUSSIONS

This chapter presents the findings of the study. Tables, percentages, graphs and charts were used to present the volume and value of agricultural inputs and outputs marketed by multipurpose cooperatives in District. The descriptive analysis made use of tools such as mean, standard deviation and percentage. T-test and χ2- test were also employed. Moreover, to test the multicollinearity and degree of association between the continuous and discrete variables, variance inflation factor and contingency coefficient was also calculated. Econometric analysis was employed to identify the most important factors that influence the participation of member in the agricultural output marketing activity made by the primary cooperative societies.

3.1 Demographic Characteristics of the Sampled Respondents

The total sample household members were 196 out of these sample households' distribution by sex constitutes 85.2% males headed and the rest (14.8%) respondents are female headed. Out of the total interviewed sampled respondents' majorities (95.96%) of them were married, the rest less than one percent respondents were single.

Table 3: Marital status and sex composition of the sample respondent

Marital Status	Frequency	Percent	Sex	Frequency	Percent
Single	8	0.041	Male	167	85.20
Married	188	95.96	Female	29	14.80
Total	196	100		196	100

Source: Survey result 2019

3.2 Factors affecting the Participation of MPCs members in agricultural output marketing
3.2.1 Results of Econometric Model

The agricultural output marketing of multipurpose cooperative was determined by various, demographic, socioeconomic and institutional factors. In this section, selected explanatory variables were used to estimate the binary logistic regression model to analyze the factors affecting of MPC member participation decision in agricultural output marketing of multipurpose cooperatives to estimate the effects of the hypothesized explanatory variables on the probabilities of being participant or not participant in multipurpose cooperatives. It is convenient to look into the problem of multicollinearity finding among the continuous variables and verify the degree of association among the hypothesized qualitative explanatory variables. It is relatively essential to ignore the variable with the VIF value exceeds 10 (this will happen if R_i^2 exceeds 0.90 i.e. highly correlated) of the continuous variables. The values of contingency ranges between 0 and 0.75 with zero indicating no association between the variables and values close to 1 indicating high degree of association contingency coefficient computed for dummy variables.

These variables were selected on the basis of theoretical explanations, personal observations, association among the explanatory variables and the results of the survey studies, the 14 potential explanatory variables were entered into Logit analysis to determine the best subset of explanatory variables that are good predictors of the dependent variable. Estimates of the parameters of the variables expected to determine the participation decision are displayed on the Table 8 and 9.

Table 4- Sign of explanatory variables used in binary Logit method

Explanatory Variables	B	S.E.	Wald	Sig.	Exp(B)
AGE	.110	.046	5.703	.017**	1.116
EDULM	.705	.207	11.564	.001***	2.025
FAMSIZE	.299	.226	1.751	.186	1.348
LANDHOLD	1.844	1.024	3.243	.072*	6.323
TLSH	-.880	.274	10.304	.001***	.415
SHAREHOLD	-.181	.423	.184	.668	.834
NONFARMI	.000	.000	.376	.540	1.000
EXPHHM	.000	.000	1.012	.314	1.000
DISTANCE	-.892	.368	5.871	.015**	.410
OUTPUTP	1.077	.974	1.223	.269	2.935
CHSTDUCO	3.711	1.096	11.466	.001***	40.887
MOTHRCOP	2.199	1.144	3.697	.055*	9.015
FERPRICE	-4.903	2.343	4.377	.036**	.007
SEEDPRIC	-2.571	1.171	4.822	.028**	.076
Constant	-.168	3.002	.003	.955	.846

χ^2 (Chi-square) value	197.950
-2 Log likelihood	52.477
Correctly predicted over all sample %	95.9
Correctly predicted participant %	96.2
Correctly predicted non-participant %	95.5

* Significant at less than 10% level of significance
** Significant at less than 5% level of significance
*** Significant at less than 1% level of significance

The logit model results used to study factors influencing the MPC member participation in agricultural output marketing are shown in table 10. The various goodness of fit measures state that the model fits that data well. The maximum likelihood estimates of the logistic regression models are significant at less than 1% probability of participation. The models percent correctly predicted 95.9, correctly predicted participant 96.2 and correctly predicted non-participant 95.5. This indicates the existences of useful information in the estimated models. Another measure of goodness of fit is based on a method that classifies the predicted value of the dependent variable, participation of MPC members in agricultural output marketing, as 1 if participant and 0

otherwise. This classification is the result of cross-classifying the outcome variable, y, with a dichotomous variable whose values are derived from the estimated logistic probabilities.

In this approach, estimated probabilities are used to predict group membership. They say that, if the model predicts group membership accurately according to some criteria, then this is thought to provide evidence that the model fits. The model explained about 95.9% of the total variation in the sample for participation of agricultural output marketing. Correctly predicted figures for participants were about 96.2%; while correctly predicted sample size for non-participants were 95.5%. Among the 14 variables used in the model, 9 variables were significant with respect to participation of agricultural output marketing. The effect of the significant explanatory variables on participation in study area is discussed below:

Age of HH head: Keeping other variables constant, age was positively and significantly influencing the probability of MPC members' participation in agricultural output marketing at 5 Percent. This implies that as the age of MPC members' increases by one year the probability of their participation in agricultural output marketing increases and this is possible because as cooperative member gets more and more experience in their agricultural output marketing, business skill, accumulate wealth and use better planning than the younger ones, the behavior farmers averting risk increases with increasing in age and experiences of the household head. Hence, they may prefer to participate in the agricultural output marketing. This finding was in line with (Jamal, 2008) while in contrast with finding, (Alema, 2008 and Muthyalu, 2013).

Educational level of members (EDULM): As hypothesized, education level was positively and significantly associated with participation in input and output marketing at less than 1% probability level. The education level of members is significant at 1% (p= 0.001) level. This implies as the years of formal education cooperative members attended increases, it influences their participations in agricultural output marketing positively. Educated cooperative member can have more access, knowhow and understand the benefits of making transactions with the cooperatives. The odds ratio for the variable implies that other variables constant increase in education level of MPCs member by a year leads to increase the probability of agricultural output marketing MPC member participation by a factor of 2.025. This implies more educated farmers were tending to participate more as result of awareness they have in making transaction with cooperatives. The result is inconformity with (Astewel, 2010 and Addisu, 2011)

Land Hold of HH: It was found that land hold had positively and significantly influenced the probability of participation of agricultural output marketing at less than 10% significant level. This result implies that farmers with large handhold are more likely to participate in agricultural output marketing than those farmer members who have small land size. The odds ratio of 6.323 for land hold indicates that, other things being constant, the odds ratio in favor of participation in agricultural output marketing increases by a factor of 6.323 as the land hold increases by one hectare. This result shows that households with larger land size produce more and likely participate in agricultural output marketing. This finding agrees with findings of (Daniel, 2006).

Livestock holding: The total livestock holding of MPC members was negatively significant at less than 1 percent level of significance. This shows that, as household livestock increases by one TLU, the probability of participating in agricultural output marketing decreases by a factor of -0.88.

Distance of the cooperative office from the HH house: It is the distance from multipurpose cooperatives to the member household residence that has influence on the probability of participation of farmer members in the agricultural output marketing. The logit model estimates indicated that this variable is negatively and significantly related to member participation in input and output marketing at less than 5 % probability level. This result may be due to the fact that members, who live relatively nearer to MPCs office, have more chance to participate in marketing. This could be due to the fact that it is more convenient to extension services and cooperative promoters in giving training and support than distant households. Furthermore, the cooperative promoting agents focus in helping in creation of awareness may be concentrated on the nearest members to extensions office because currently one cooperative promoter has responsibility of three villages. The odds ratio revealed that as distance increases by a Km, member participation in agricultural output marketing decreases by 0.410 and this study result coincides with the finding of (Muthyalu, 2013, Jemal,2008)

Change on standard of living due to joining to cooperative (CHSTDUCO): This is a dummy explanatory variable coded as 1 if the standard of living due to joining a cooperative (became a cooperative membership) of MPCs member has changed or otherwise 0. Change on standard of living due to joining MPCs is Positive and significant at less than one percent participation level. The odds ratio reveals that change in the standard of living of MPC member increases the probability of agricultural output marketing by 40.887. This study finding was similar to the findings of (Alema, 2008).

Membership in other cooperatives (MOTHCOP): Membership in other cooperatives i.e. other than the multipurpose cooperatives has positive and significance influence at less than 10 % the probability of participation in the agricultural output marketing by MPC members. The odds ratio of 9.015 for Membership in other cooperatives indicates that, other things being constant, the odds ratio in favor of participation in agricultural output marketing increases by a factor of 9.015 as the membership of farmer members in other

cooperative become increases by one cooperative. This This implies that cooperative members who have a membership in other cooperatives before has better understanding in participating in the cooperative affairs including in patronizing the cooperative business such as in agricultural output marketing business and this result was in line with findings of (Muthyalu ,2013 and Alema,2008).

Perception of the HH on fertilizer price (FERPRICE): The fertilizer (DAP and UREA) which is supplied by the MPCs to its farmer members. Low price of agricultural fertilizer might be perceived to have positive influence in the level of participation of the members in agricultural output marketing by cooperatives and vice versa. Fertilizer price perception influenced the participation of MPC members in the agricultural output marketing negatively and significantly at 5 percent probability level. This implies as the price of fertilizer increases, the participation of the household head in purchasing fertilizer from the cooperative decreases by 49.03 probability level (Muthyalu, 2013).

Perception of the HH on improved seeds price (SEEDPRIC): The price of improved seed has influenced the dependent variable participation of cooperative members in the input and output marketing by cooperatives negatively and significantly at 1 percent probability. This implies farmer members participate more actively in the purchase of improved seeds as compared to other types of inputs regardless the price or as the price of improved seed increases the probability of MPC member farmer participation decreases by. 25.71 Percent.

In general, the participation of multipurpose cooperatives in the agricultural output marketing by their members was significantly influenced by age, education, land hold, Total livestock hold, distance of the cooperative office from the household house, change in standard of living due to joining cooperative, membership in other cooperatives, price of inorganic fertilizer and price of improved seed. However, out of the 9 significant explanatory variables two of them (land hold and Membership in other cooperative than MPC) were influenced the participation of cooperative members in the agricultural output marketing by cooperatives significantly at 10%, four of them at 5% ,3 of them at 1% probability level respectively.

4   CONCLUSION AND RECOMMENDATION

This study analyzed determinants of MPCs members' participation in agricultural output marketing. The descriptive statistics and econometric model were also used for analyzing the data. T-test was used to compare the mean values of the continuous explanatory variables and examine the existence of statistically significant differences between participants and non-participants of MPCs members in agricultural output marketing. The T-test showed significant difference in the age, educational level of members, total live stocks hold, land hold and distance of HH members from MPCs office. Discrete variables were also compared using Chi-square test to see if there is statistically significant difference between the two groups. The Chi-square test also revealed that the discrete variables: Change in standard of living due to joining cooperative, membership in other cooperative Other than MPCs, fertilizer price and seed price are found to influence farmer members decision in agricultural output marketing activity at the different levels of significance. The result of binary Model shows that age, educational level of members, total livestock hold, distance, change in standard of living due to joining cooperative, membership in other cooperative than MPCs, fertilizer price and seed price perception are found to influence MPCs members' decision in inputand output marketing activity at the different levels of significance. However, family size, share hold, on-farm income, expenditure in inputs, and output price perception were not affecting their participation.

Generally, it can be concluded that MPCs in the study area are not playing significant role in marketing farmers output protecting farmers from low price payment, in providing multifaceted service, in enhancing the farmer's negotiation power, while playing significant role in availing farm inputs at the right time, saving the effort and time incurred to reach the district market and in acting as alternative, market outlet in the input marketing.

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