Determinants of Smallholder Farmers' Participation in Community-Based Onion Seed Producing and Marketing Cooperatives in Northwest Ethiopia

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Abstract

Onion seeds are mainly supplied by community based seed production and marketing cooperatives in Ethiopia. The problem of seed marketing which was faced by the onion seed producer and marketing cooperatives of Mecha district of Amhara regional state is the major reason for undertaking this study. The study analyzes the main factors for members' participation in their cooperatives. This objective serves as an indicator for the general performance of the cooperatives in running the seed business. The research used descriptive statistics and binary logistic regression model to assess members' socio-economic, demographic and institutional factors determining members' participation in cooperatives and describes seed quality status. A Semi-structured questionnaire was employed to collect primary data. A total of 120 members were randomly selected from three cooperatives in February, 2018. The study indicated that the cooperatives have been weak in making profit from the seed marketing due to their poor involvement in onion seed distribution and supply of other inputs. The findings show that there exists significant difference between active and inactive members of the cooperatives in terms of land ownership, duration of membership, information and training access, dividend obtained, satisfaction on management and communication channels used. The logistic regression result indicated that land holding, access to training for members and communication channel used were significant in determining the level of members' participation. The cooperatives should improve their scope and performance so as to enable members to engage more in production and marketing of seeds and enhance their participation.

Key words: seed producers, cooperatives, participation, onion seed, Mecha district, Ethiopia

Introduction

Agriculture is the mainstay of Ethiopian economy because it serves as a means of livelihood for more than 80 per cent of the population, is the major contributor for GDP and a source of raw materials for the industrial sector (Zewde et al., 2008). This also holds true for Amhara regional state as around 88 per

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cent of the population`s livelihood depends on agriculture which contributes 70 per cent to the regional GDP (Kerealem et al., 2009). These are some of the major reasons for the Government of Ethiopia to give a primary focus for the sector through its different economic development policies. Growth in crop production and productivity has also a huge impact to bring change in other spheres of the sector in Ethiopia. To attain this growth, the availability and timely supply of productive and quality seed is decisive among all other inputs.

The current Ethiopian seed supply system is weak in meeting the diversified seed demand of its smallholder farmers (Abebe and Ligalem, 2011). The formal seed supply system which is dominated by the public breeding and seed suppliers has its focus on a few crops like bread wheat, hybrid maize and Teff. Though the participation of the private sector has been encouraged the problem has not yet been solved. Above all the supply by this system in volume from the producing area in the country is well below 10 per cent (ATA, 2016).

Community based seed businesses are considered as a crucial means in narrowing the gap between the demand and supply scarcity of improved seed in the country. They are also a means to answer the diversified seed demand of smallholder farmers. In Ethiopian seed system, they are considered as an intermediary system between the formal and the informal system (Hamsalu et al., 2013). They are considered partly as a formal system because they can be licensed and can go through the formal process of seed supply. They can be also informal because they can produce local seed of selected crops and can declare the quality of seed produced for distribution within their locality.

The major gap that initiated this research is the poor marketing of seed produced by the primary cooperatives found in *Mecha* district. These are located in *Koga* irrigation project and are engaged in the production of onion seed (Koga irrigation project, 2017). There are three onion seed producing and marketing cooperatives; two of them have been established by Bahir Dar University, ISSD program while the third cooperative was established by the farmers themselves.

Even though the role of cooperatives has been well studied (ISDD, 2015; ATA, 2016 and Dawit et al., 2017) the intensity of participation of their members (which indicates the performance of the cooperatives) is not yet well studied in *Mecha* district. The satisfaction level of end users from the quality of seed supplied by these cooperatives in comparison with other suppliers is not analyzed. Therefore, the study contributes to fill the literature gap in identifying the determinants of farmers' participation in onion seed producing and marketing cooperatives to further understand the performance of cooperatives.

Materials and methods

Description of the Study Area

The study was conducted in Mecha district, one of the 13 districts of West Gojjam zone of the Amhara regional state in Ethiopia. The district is located in the Northwestern part of the country. The town of the district, *Merawi* is found at 535 km northwest of the capital, Addis Ababa and 30 km southwest of Bahir

Dar, the regional capital. The district lies between $11^0$05` to $11^0$38`N and $37^0$00`E to $37^0$23`E with an area coverage of 159,027 hectares. The altitude of the district ranges between 1800 and 2,500 m.a.s.l. This means that 80 per cent of the district lies in mid altitude area and the remaining 20 in the highland. The study area has mono-modal rainfall distribution pattern with highest rainfall from May to October. The mean annual rainfall ranges between 1000 mm to 2000 mm (Ibid). The annual temperature is 5.7^0c, 30.6^0c, 18.8^0c, which is minimum, maximum and mean score (*Mecha* district finance and economic development office, 2018).

Methods of Sampling and Data collection

Mecha district is selected because of its accessibility and high potential in onion seed production using *Koga* irrigation project. There are three farmers` onion seed producers and marketing cooperatives in three different *kebeles** of the *Koga* irrigation zone. 120 member households were selected out of the total 255 member households from the three cooperatives (Table 1). Out of the selected members, 30 of them are categorized as inactive and 90 of them are active members. Both groups constituted the sample for comparison purposes. Both primary and secondary data sources were used in the study. A household survey employing a semi-structured questionnaire was the main data collection method. Observation and field evaluation was also employed at different working sites and offices of the cooperatives.

Table 1. Sample size and Sample Frame (data from 2018 register book of cooperatives)

Cooperative	Location (Kebele)	Total member size			Sample Size		
		Male	Female	Total	Male	Female	Total
Kudmi	Kudmi	140	10	150	41	4	45
Bered Gafera	Kolela	62	1	63	44	1	45
Kedimeh Tenesa	Andinet	40	2	42	30		30
Total		**242**	**13**	**255**	**115**	**5**	**120**

Methods of data analysis

The collected qualitative and quantitative data were analyzed using both qualitative and quantitative analysis tools. Econometric model of binary logistic regression was used to analyze the determinants of members' participation in different activities of the cooperatives. "Members' participation" is the dependent variable, which is dummy i.e. either members participate actively or inactively in different activities of the cooperatives. The independent variables were both categorical and continuous. SPSS software, version 16 was used for data analysis.

*Kebele is the lowest administrative unit in Ethiopia

Specification of econometric model

To analyze the factors influencing the intensity of members' participation in the seed producer and marketing cooperatives, logistic regression has been employed as the dependent variable is dichotomous, i.e. either active member or inactive member based on the level of their participation. Following Gujarati (2004) the logit model is given as:

$P_i = f(Zi)$ (1)

$Z_i = \beta_0 + \Sigma_i^n \beta_j X_{ji} = [\log (p/1- p) = Z_i = \alpha + \beta_i X_i + \ldots \beta_i X_n]$ (2)

$$Logit(p) = Log\left(\frac{Pi}{1-Pi}\right) = \alpha + \beta 1X1 + \beta 2X2 + \beta 3X3 + \beta 4X4 + \cdots \beta iXn \quad (3)$$

Where;

Pi =1 the probability that an individual actively participates in the cooperatives (active member),

Pi = 0 if inactively participate

$\left(\frac{Pi}{1-Pi}\right)$ = is the odds ratio of the probability of participation to no-participation.

Zi = estimated variable for the i^{th} observation

f= the functional relationship between pi and zi

Xj*i* = the jth explanatory variable for the ith observation, j = 1, 2 …n,

ßj = a parameter, j = 0,1…n

j = 0, 1…, n where n is the total number of explanatory variables

Definition of variables, measurements and hypothesis

Dependent variable

The dependent variable is dichotomous, i.e. 1 if a member is actively participating and 0= if inactively participating.

Independent variables

1. Individual and Household Characteristics

Age of member farmer (AHH): Continuous: represent the age of the member farmer at the time of the interview. It is a continuous variable and expected to have significant impact on participation of farmers in their cooperative matters. Young farmers have more efficiency in gathering new ways of operation than older farmers (Getachew, 2010). But the experience that farmers had accumulated about the disadvantages and advantages of the cooperatives has more influence on participation (Ahmedine, 2008).

Sex (SEX): Dummy: which will take the value 1 if male, and 0 if the respondent is female. Even though the participation of females in seed production operation is high, their participation in different operations

and decisions of the cooperatives is not active. Females' participation in cooperatives is expected to be passive in most events of the cooperative given their roles at the household. So sex of the member farmers has an important link with the extent of participation.

Educational level (EDUL): Categorical: level of literacy the respondent farmers have at the time of interview. It is a categorical variable which could be categorized according to the level of education of the respondents. For illiterate, read and write, elementary school, and high school educational level of participants, the categories are 0, 1, 2, and 3, respectively. Education is a crucial factor for skill development; hence education has been shown to be positively correlated with members` intensity of participation in cooperatives (Kirub, 2008). Illiterate members may not read reports and hence are passive participants (Habtamu, 2014). Hence level of education has a significant and positive influence on the level of members` participation.

Family size (FS): Continuous: It is assumed that farmers with high family size have good participation in cooperative matters due to the available labor force that could handle their farming activity. The family size should also go with the proportions of working age against dependents.

Marital status (MS): Categorical: It is categorized as married, divorced, unmarried and widowed from 1 to 4 categories, respectively. Since households with married status have good chance of discussion on the economic importance of the cooperatives, marital status could have an impact on the extent of participation of farmers in their seed cooperatives.

2. Socio-Economic variables

Farm size (TLAND): Continuous: this is the size of cultivated land (in ha.) owned by the respondent household. It is expected to have a positive relation with the participation of the farmers in their seed cooperatives. Farmers with large land size actively participate in seed multiplication operation and thus the expected participation on the decision at planning and implementation is high.

Number of oxen owned (NOXE): Continuous: this represents the number of farm oxen the respondent owns at the time of interview. It is expected to positively affect farmers` participation in cooperative participation. Farmers use oxen as the main traction material and their number indicates the economic status of the farmers. The more oxen they own the more would be their participation in seed multiplication and other decision matters. The points which should go with this are the total livestock holdings which indicate the wealth status that could influence participation positively. It is measured in tropical livestock unit (TLU).

Gross income level of farmers (GINC): Continuous: it is the total income level of the interviewed farmers. Members in cooperatives are the owners and their ownership can be explained by the amount of investment in the form of shares they bought. Farmers with better income are likely to purchase more

shares, hence their participation in election, decision making of cooperatives is expected to be active (Kirub, 2008)

3. Services obtained from the Cooperatives

The different services offered by the cooperatives to their members have great influence on their level of participation. There are many services provided by cooperatives for their members such as access to information, trainings, patronage share obtained, input access like basic seed which are the major ones. The services or benefits obtained are the major reasons for farmers` participation in cooperatives. If no benefits exist, there are no cooperatives (Minilek et al, 2012).

Access to information (IA): Dummy: cooperatives act as a source of information for different technologies and agricultural activities. Access to new information could be taken as dummy variable. That is 1 if a member has better access to information because of being a member of a cooperative and 0, otherwise. Access to information has a positive influence on members' participation in cooperatives.

Training access (TRACC): Dummy: access to seed production and marketing training is a dummy variable in this study, which could be represented by 1 if the respondent has got different training opportunities in relation to seed and cooperatives, and 0 otherwise. Training is a continuous process of capacity building which enables the households to increase their knowledge and skill on seed production and marketing. Hence the training they obtained from professionals on importance of cooperatives, seed production and marketing is expected to influence their participation positively.

Dividend Obtained (DVO): Continuous: it is the probability the members receive the share of profits from the cooperatives. 1 if the respondent gets the patronage at least once every year, and 0 otherwise.

The level of satisfaction on price determined by cooperatives (SATPR): Categorical: this represents the level of satisfaction the members feel about the total amount of prices determined per kilogram for his/her seed after selling to the cooperative. It is used to compare the differences in benefits with respect to grain markets, and the price obtained by working with other formal seed suppliers as being contract growers. The satisfaction level could be represented from very dissatisfied to very satisfied, with 0 to 3 categories, respectively. The higher price offered is expected to influence member farmers to have active participation in their seed production cooperatives.

4. Organizational environment of the cooperatives

Under this section the main organizational conditions which have influence on members` participation will be explained. From review of different literature it is possible to take the duration since membership, members' satisfaction with the cooperative management and communication channel of Board of Directors as major explanatory variables (Ahmedine, 2008, Kirub, 2008 and Getachew, 2010).

Duration since membership (DURMEM): Continuous: refers to the number of years that a farmer is a cooperative member. The more the number of years the farmers was a member of the cooperative the more the experience and knowledge they gained about benefits of the cooperatives. Longer duration since membership is thus expected to positively influence extent of participation in cooperatives.

Members` satisfaction with the cooperative management (MEMSAT): Categorical: Members' participation is directly related to their satisfaction on how the cooperative is running (Kirub, 2008). When members are dissatisfied on cooperative organization and management, they may react by non-participation. The attitude of members towards their organization management body's competitiveness and trustworthiness are important factors that influence their level of participation. The variable takes the values from 0 to 3 for the levels of 'very dissatisfied', 'dissatisfied', 'satisfied' and very satisfied, respectively.

Communication channels of the Board of Directors (COMCH): Dummy: this is the information communication system that the Board of Directors use. It indicates how the managing teams of the cooperatives openly communicated the performance and decisions of cooperative members. Channels of information communication have got high impact on members` participation. It is a dummy variable which takes 1 for open communication and 0 other wise.

Distance to cooperative service center (DISCOP): Continuous: As the farmers are nearer to the cooperative service center, they have the opportunity to get more information. So distance to the service center has an inverse relationship with members' participation. It can be measured in the minutes it takes in walking for the farmers to reach the center.

Results and Discussion

Results of Descriptive Statistics: Comparisons between active and inactive participants.

Age and total family size

As can be observed from Table 2, the mean age of active member group is 41.21 and that of inactive member participants is 40.54 years. So their mean difference is small indicating that the majority of the cooperative members are found in the active working age. The variation in average total family size between the active and inactive members in participation is also very low. The contribution of age and family size in bringing a difference in the level of participation is found to be insignificant.

Table 2. Summary of result of mean comparison between active and inactive members

Level of participation						
Active			**Non- active**		**sig**	**t-value**
Variables	**Mean**	**St.Dev.**	**Mean**	**St.Dev.**		
Age	41.21	9.481	40.53	10.947	0.745	-.326
Family size	5.88	2.11	5.35	2.157	0.256	-1.141
Land holding	0.88	0.477	0.71	0.49	0.097*	-1.672
Oxen ownership	1.93	0.65	1.93	0.74	1.000	0.000
Gross income level	47,096	16,334	43,352.4	21,313	0.37	-1.004
Duration since membership	4.82	2.075	3.07	2.625	0.002***	-1.756
Distance from home to the cooperative	14.36	12.33	16.77	17.246	0.406	2.411

***, **,* Significant at 1%, 5%, and 10%, respectively

Land holding, Oxen ownership and Gross annual income

The average land holding of active members is 0.88 hectares, where as it is 0.71 hectares for the inactive ones. Land ownership is found to bring significant difference in the level of participation of farmers. The other two continuous socio-economic variables, viz., oxen holding per household and gross income level have also brought no statistically significant variation on participation.

Duration since membership and distance from the Cooperative Office

About 58 per cent of the members have more than five years of membership and 26.7 per cent have scored only one year since they joined the cooperatives. The maximum was in Kudmi cooperative which is seven years and the minimum at Kedimeh Tenesa cooperative, which is one year.

The active members have mean of 4.8 years stay in the cooperatives, but the inactive members have the mean membership of only 3 years. Therefore, members with more years of membership are active members. This indicates that the longer the period a member stays in the cooperatives, the better the level of understanding about the objectives and mission of cooperatives. They have more experience of the gains and losses of working as cooperatives than new members. The t- test result also indicates that the number of years of membership has a significant contribution in members' participation.

The distance of the cooperative office from the members dwelling has an impact on extent of participation which can be tied with the poor information communication of the cooperatives. Due to limited market volume, the cooperatives have members participating only from irrigation blocks which are found in their vicinity. The actively participating members have taken on an average 14.36 minutes of walk, whereas the inactive ones have taken 16.77 minutes' walk from their home to the cooperatives` office. Therefore,

distance from cooperatives office to home is one of the important factors for farmers to participate in cooperatives. However, the contribution of the variable to participation was found to be insignificant on participation from the test result.

For categorical variables, Pearson chi-square test for independence is used to assess their mean difference on participation. This test is used to explore the relationship between two categorical variables (Pallant, 2005). Taking into account the data collected, some categories of responses given under the variables are minimized into two categories. These are marital status -married and unmarried. Similarly, educational status is categorized as literate and illiterate. The other variables which measure satisfaction level from very satisfied to very unsatisfied are re-grouped to satisfied and dissatisfied. These relate to satisfaction on total price obtained and satisfaction levels on cooperatives management bodies.

Sex, Marital status and Educational attainment

From Table 3, it is possible to see that out of the 5 females included in the random sample three of them (60%) were actively participating in their cooperatives. This implies that if chances are given to females, their participation could be high. However, statistically sex difference is not significant in influencing participation between active and inactive members. The remaining two personal characteristics variables, viz., marital status and educational attainment were also found to have insignificant contribution for difference in participation in the area.

Services obtained and organizational environment of the cooperatives

Out of the six categorical variables under the different services obtained from the cooperatives and the organizational environments, five of them are found to be statistically significant to influence members' participation on their cooperatives governance issues. These are access to agricultural information, training access, attainment of dividend share annually, their satisfaction level on the management of the cooperatives and the communication channels used by the cooperatives management. The results imply that the services the members obtained from the cooperatives and their attitude towards the managers of their cooperatives are found to be more significant than other personal and socio-economic factors in determining their level of participation.

Farmers usually use their cooperatives as a source of information for their different agricultural operations. From the result of the analysis, it is possible to see that farmers who got access to information have participated better. Out of the total respondents 78 per cent of them have agreed they got better information for their work. Out of these farmers, 85 per cent of them have actively participated in the cooperatives. Hence, access to agricultural information is positively and significantly connected with participation.

Training access on seed production, marketing and cooperative issues can contribute to the better understanding of seed business and also the importance of working together. Out of the 120 members 61.7 per cent of them have attended these trainings and hence their participation in the cooperative is active. Farmers who lack this training access are found to be poor in participation. Out of farmers without access to training, only

38 per cent are found to be active in participation. Farmers who got more dividends annually, which is attained from their higher shareholding, were found to be higher in their level of participation. However, the satisfaction level from the price set from sale of onion seed was found to be not statistically significant for participation. Out of the 120 respondents, 71 of them confirmed that the price obtained from onion seed is better than other crop sales of the area. However, 49 participants showed their dissatisfaction, which is connected with the current marketing problems on onion seed in the area.

The satisfaction level of the respondents on their management is also found good in the study area. About 91 of the respondents are satisfied with their managers out of which 74 of them showed active participation in their cooperatives. Besides the communication channel used by the cooperatives managers is found to be accessible to the majority of the respondents. Of 120 respondents, 97 respondents have confirmed the accessibility of the channels. This is in connection with their vicinity to the cooperative office and the means of communication which is accessible to the majority of the members. They use churches, letters and personal communications.

Table 3. Chi square test result for services obtained from the cooperatives, organizational Environments and personal characteristics

		Level of participation				
Variables	**Categories**	**N**	**Active**	**Not active**	**Sig.**	**Chi- sq.**
Information access	Better access	94(78.3%)	80(85%)	14(15%)	0.000	21.211***
	No access	26(21.7%)	10(38%)	16(61.5%)		
Training access	Got training	74(61.7%)	66(73.3%)	8(26.7%)	0.000	18.801***
	No training	46(38.3%)	22(47.6)	24(52.2%)		
Dividend obtained	Got dividend	73(60.8%)	64(87.7%)	9(12.3%)	0.000	14.282***
	No dividend	47(39.2%)	21(44.7%)	26(55.3)		
Satisfaction on seed price	Satisfied	71(59.2%)	55(77.5%)	16(22.5%)	0.592	0.287
	Dissatisfied	49(40.8%)	35(71.4%)	14(28.6%)		
Satisfaction on management	Satisfied	91(75.8%)	74(81.3%)	17(18.7%)	0.01	6.684**
	Dissatisfied	29(24.2%)	16(55.2%)	13(44.4%)		
Communication channel used	Accessible	97(80.8%)	79(81.4%)	18(18.6%)	0.002	9.485***
	Not accessible	23(19.2%)	11(47.8%)	12(52.2%)		
Sex	Female	5 (4.2%)	3(60%)	2(40%)	0.792	0.070
	Male	115(98.5%)	87(75.7%)	28(24.3%)		
Educational level	illiterate	90(75)	68(75.6%)	22(24.4%)	1.000	0.000
	literate	30 (25%)	22(73.3%)	8 (26.7%)		
		Level of participation				
Variables	**Categories**	**N**	**Active**	**Not active**	**Sig.**	**Chi- sq.**
Marital status	Married	111(92.5)	85(76.6%)	26(23.4%)	0.317	1.000
	Unmarried	9 (7.5)	5(55.5%)	4(44.4%)		

***,**,* Significant at 1%, 5%, and 10%, respectively

Determinant Factors Influencing the Extent of Participation

Out of sixteen explanatory variables considered in the binary logistic model, three of the variables were found to have significant influence on participation of members in their cooperatives (Table 4). These variables are total land holding of the respondent member farmers (TLAND), the communication channels used by the cooperatives managing bodies (COMCH) and access of members to different trainings (TRACC).

Table 4. Parameter estimates for binary logistic regression

Variables	B	S.E.	Wald	p-value	Exp(B)
SEX	.281	1.764	.025	.874	1.324
AHH	-.059	.039	2.338	.126	.942
MS	2.294	1.421	2.604	.107	9.911
FS	.095	.171	.313	.576	1.100
DURMEM	.084	.187	.201	.654	1.088
EDU	.368	.726	.257	.612	1.445
NOXE	-.260	.499	.271	.603	.771
GINC	.000	.000	.859	.354	1.000
IA	-.633	.770	.676	.411	.531
TRACC	-1.191	.711	2.803	.094*	.304
DVO	-1.402	1.001	1.963	.161	.246
SATPR	.164	.668	.060	.806	1.178
MEMSAT	-.606	.686	.781	.377	.545
COMCH	1.538	.755	4.156	.041**	4.657
DISCOP	.027	.023	1.297	.255	1.027
TLAND	2.203	.926	5.664	.017**	9.055
Constant	.085	2.000	.002	.966	1.089

Model fit summary

Cox and Snell R2 0.320, Nagelkerke R2 0.474: -2 log likely hood 38.687
Pearson chi square 7.325, and P-value 0.502
Correctly predicted R2 value indicated from the analysis is 83%
***, **, * Significant at 1%, 5%, and 10%, respectively

Total land holding of the members (TLAND)

The findings show that the odds of participation increase by a factor of 9.055 for every additional unit of land members own, keeping the other factors constant. It is possible to see that the land holding has a positive association with the level of participation. The larger the size of land, the more capability the farmers would have to produce seed and purchase more inputs such as improved seed that could enhance their participation.

Communication channel used by the cooperative (COMCH)

For every information members receive from their cooperatives, their participation would increase by a factor of 4.657, depicting a positive association between the accessible communication channel and level of participation. The finding has approved the importance of communicating the activities of the cooperatives to the members through accessible means of communication channels. This could keep them up-to-date in every activity of the cooperatives, which in turn brings positive impact for their chance of participation.

Access to training for the members (TRACC)

Although access to training on seed production technology was expected to positively influence members to participate more in the governance of their cooperatives, the result of the analysis indicated that there is negative association between access to training and participation. In addition, the odds ratio indicated that there is a decrease in participation by a factor of 0.304 for every access of training on seed technology keeping other factors constant. This might be because the farmers were inclined more to economic participation and reduce governing their cooperative after seed technology training. The finding is in line with (Kirub, 2008) who concluded that access to training by cooperative members is statistically insignificant. However, Getachew (2010) found a significant difference between farmers to participate in cooperatives with respect to their access to seed related training.

Concluding Remarks

Community based seed production and marketing is one of the major ways used to tackle seed supply scarcity in the country. Among the crops, vegetable seed particularly seed of onion and potato is mainly supplied by this system. The research tried to assesses the factors affecting the extent of participation of members in their cooperatives, which is one of the major indicators for the performance of the cooperatives in serving the community. Making profit for the cooperatives is also very important, which enables the members to get more return on their share. This is one of the factors which enable the members to actively participate in their cooperatives. The overall findings also depict that there exists significant association between active and inactive members of the cooperatives in terms of land ownership, duration of membership, information and training access, dividend obtained, satisfaction on management and communication channels used. Land holding, access to training for members and communication channel used were also found significant in determining the level of members' participation. The overall findings imply that seed producers and marketing cooperatives should improve their scope and performance to enable them engage more in production and marketing of seeds and thereby enhance the participation of members. On top of these, the seed producing and marketing cooperatives should be managed by efficient managers for success in the business of seed production and marketing.

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