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Factors affecting members' participation in primary Dairy cooperatives in North Gondar zone of Amhara Region, Ethiopia

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Abstract
Dairy co-operatives can improve access to market information, reduce costs and price risks of marketing and can increase producers' access to technology, extension and related services and enhance bargaining power of dairy producers. The overall objective of the society is to alleviate members' milk marketing problem and increase their income generated from the milk and milk by products.. So, this paper will find out the solution for those problems. The major objective of this study is to identify factors affecting members Participation in primary cooperatives in north Gondar zone. North Gondar Administrative Zone and in the zone 8 districts and 11 primary dairy cooperatives were selected purposively and 114 sample respondents were selected by using simple random sampling methods. Both qualitative and quantitative data as well as primary and secondary data were used in the study.. The result of the study indicated that except access to transport, feed availability and proximity all discrete and continuous variables had a significant association with members' participation of the dairy cooperatives. The binary logistic regression result of members' participation also shows that from the hypothesized thirteen independent variables only six variables were found to be significantly influenced members' participation of primary dairy cooperatives. As a recommendation, the concerned bodies, members and dairy cooperatives should give emphasis on factors like transport access, number of milking cows, price of raw milk, training access, patronage dividend and access of credit to increase members' participation in GA meeting, decision making, election and economic activities of dairy cooperatives.
***Key words**: members' participation, democratic matters and Dairy Cooperative societies*

1. Introduction
Cooperatives are an autonomous association of persons united voluntarily to meet their economical, social and cultural needs and aspirations through jointly owned and democratically controlled enterprises (ICA, 1995). There are different types of cooperatives which are organized by the interest of members to provide different services for them. Among those, dairy cooperatives are the one which are primary or secondary level and they are democratic organization. The effectiveness of cooperative democracy depends on the participation of the members in the deliberation of the general body meeting and other aspects of management. Effective participation alone can ensure the vigilance, which is essential to create sense of responsibility among the board and personnel (Nakkiran, 2002
It could be argued that members securing satisfactory services from their cooperatives through effective participation in cooperative affairs on their own need a number of efforts in the years to come. For instance, the participation of members in the general assembly meeting is poor everywhere even in advanced countries the attendance and participation used to be very low (Nakkiran, 2002).
Absenteeism of members in the general body meeting may lead to the loss of democratic character that may result in dominance of the vested interest (Vera kumara, 2005). The ancillary objectives dairy cooperatives include: Availing feed at reasonable price to members, Maximizing the income obtained from the livestock sub sector by promoting milk processing industries, and Offering pasteurized and high hygienic milk and milk by products to client consumers at reasonable prices (NGZCPO, 2013).

But, there are a number of problems in the performance of dairy cooperatives to achieve the above objectives. For example, there is less members' participation in the supply of milk and democratic matters and unnecessary competition between members and primary dairy cooperatives. Besides to this, there is poor coordination between the dairy cooperatives and stakeholders are some of the missing parts in the effective operation of dairy cooperatives. Furthermore, there is no a research which is conducted in this research title (NOZCOP, 2015). So, this paper will find out the solution for those problems.

2. Materials and Methods

Description of the Study Area: - North Gondar Administrative Zone

North Gondar Administrative zone is one of the 10 administrative zones established under the Amahara National Regional State. It is far by 738 km from Addis Ababa. According to Ethiopia National Housing and Population Census (CSA, 2007), the total population of the zone was estimated to be about 2,982,285, of whom 1,571,790 are male and the rest 1,422,228 are female. Out of the total population of the zone 2,625,068 is living in the rural areas and engaged in mixed farming. In general the zone is suitable to grow variety of crops and rearing of different kinds of animals.

It has different types of primary and secondary Cooperatives which are organized and mainly engaged in agricultural output marketing, dairy product marketing, supply of agricultural input and consumer goods, saving and credit services and irrigation services for their members. It has also 11 primary dairy cooperatives with a total number of members of 531 of which 121 were female members and the rest 410 were male members in 8 districts and 1 dairy cooperatives union in Gondar town (North Gondar zone cooperative promotion office, 2014).

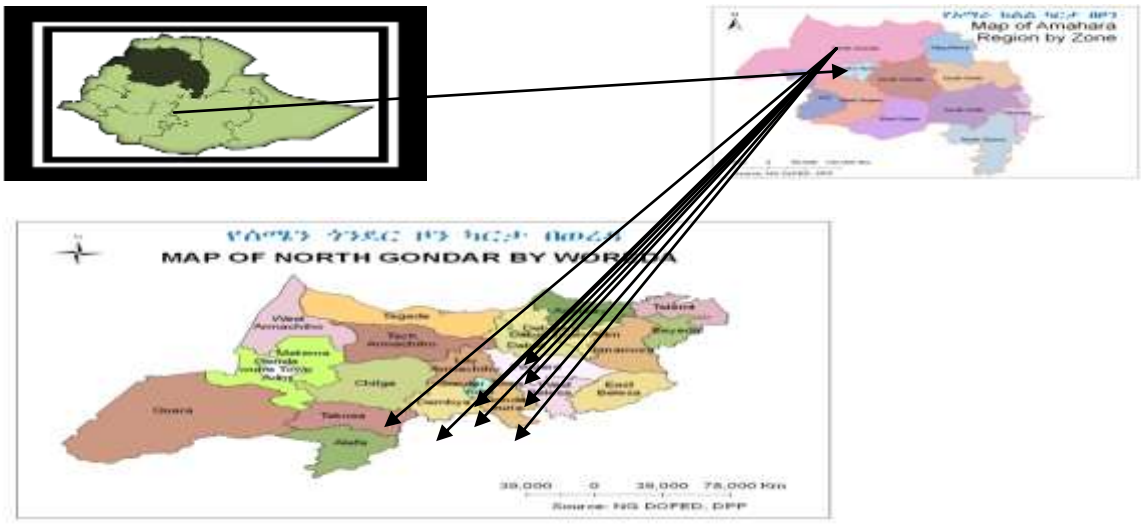

Fig. 1 Map of the study area

2.1 Research Design

The design of this study was mixed research type based on various data collection methods. With respect to the objectives and nature of the research questions of the study both qualitative and quantitative data collection methods were employed. The research was conducted in primary dairy cooperatives of north Gondar zone. The zone was selected purposively among other zone of Amhara region, The criteria for selection was, Familiarity of the researcher to the study areas, The development of Dairy coops in the zone was not as members and stakeholders expected, Poor service provision to the members and there was no research conducted specifically in the study areas and generally in the zone regarding to this title.

2.2 Population, Sampling Technique and Size

2.2.1. Sample population and frame

In North Gondar zone, there are 11 primary dairy cooperatives in 8 Districts. The total number of members of those dairy cooperatives was 531 of which 410 were male and 121 were female and all are selected as Sample population and frame of the study (Table 1).

2.2.2 Sampling Technique and Size

As mentioned above, there were 531 general assembly members taken from 11 primary dairy cooperatives in the zone. So, from these numbers, 114 (21.49%) members were taken as sample respondents for the study

by following the listing of the members and by using simple random sampling technique by considering their proportionality to the number of the members (population proportionate sampling technique).

Table 1: Sample size of each woreda

No	Name of coops	Woreda w/c it is found	Number of members			Selected Sample respondents		
			male	female	total	male	female	total
1	Abebech Seraqo	Chilga	41	5	46	8	2	10
2	Alemgenet	L/Armachiho	55	5	60	10	3	13
3	Mariseg	L/Armachiho	31	7	38	6	2	8
4	Tadila-Dibabo	Gondar Town	43	4	47	8	2	10
5	Arebaba	r Town	37	10	47	8	2	10
6	Meseret	Gondar Zuria	16	11	27	4	2	6
7	Enesera-Behibret	Wogera	31	7	38	6	2	8
8	Edeget-Behibret	Denbia	36	6	42	7	2	9
9	Felege-hiwot	Dabat	37	2	39	6	2	8
10	Andinet	Dabat	46	61	107	18	5	23
11	Debark	Debark	37	3	40	7	2	9
	Total		410	121	531	88	26	114

Source: North Gondar Zone and Gondar Town coop promotion Office (2015)

2.3 Data Collection Instrument and Procedure

2.3.1 Data Types, Sources and collecting Methods

Both qualitative and quantitative data was used in the study and data was collected from both primary and secondary sources. Primary data was collected from focus group discussion, key informants interview and responses obtained from sample respondents. Hence, members, management committees, control committees, employees of primary dairy cooperatives, cooperative officials at district and zonal levels were the sources of primary data.

Secondary data was collected from monthly, quarterly and annual report, minutes, audit reports of the cooperative societies. Moreover, it was collected from Woreda cooperative promotion office and zonal cooperative promotion office. In addition other reliable sources such as published and unpublished documents were used as a secondary source of data.

Qualitative data: For the sake of triangulation on data collected from member respondents, 3 Focus Group Discussion were conducted among different committees of the societies through interview guide check list. Moreover key informant interviews (KIs) were employed with 3 Woredas cooperative promoters, 3 zonal cooperative promoters and 4 employees of the societies through interview guide check list. The researcher used the likert scale for collecting the qualitative data.

Quantitative data: The primary quantitative data was collected from the respondents using a pre- tested, semi-structured interview schedule. This interview schedule for primary data included open-ended and closed-ended questions. Secondary quantitative data was collected through reviewing documents, such as, reports and documents of the societies, Woreda and zonal cooperative offices.

Pre- testing of structured interview schedule was done with 10 non-sample respondents for 2 days before formal data collection, to check its clarity and freeness of ambiguity. To make the communication easier during collection of data from the respondent member, semi-structured interview schedule was translated into local language of the respondents called Amharic.

Six enumerators who can speak the local language were recruited and trained about the data collection techniques for 2 days. They practiced how data will be collected from respondents along with pre-testing of semi-structured interview schedule. Continuous supervision was conducted by the researchers to reduce errors during data collection, to correct possible errors right on the spot and for the sake of maintaining the validity and reliability of the data.

2.4 Data Analysis

Following the completion of the data collection, the data was coded and entered in to Statistical Package for Social Science (SPSS version 20) computer program for analysis.

2.4.1 Qualitative data analysis

Qualitative data was analyzed using different qualitative statistical procedures and methods. Descriptive tools was supplemented by qualitative analytical methods (mainly for those data acquired through the participatory/ qualitative methods) like interpretation and explanation of various opinions, views and concepts; and summarizing, categorizing, and presentation of these in convenient forms.

2.4.2 Quantitative data analysis

2.4.2.1 Descriptive statistical tools

The Descriptive statistical tools were used to analyze the quantitative data. The important statistical measures that were used to summarize and categorize the data are means, percentages, frequencies, standard deviations, chi-square and T-test.

2.4.2.2 Econometric model

With regard to inferential analysis, Binary logit model was also another statistical technique used to analyze the influence among variables (*i.e.* single dependent variable and several independent variables) with the object of using the independent variables whose values are known to predict the single dependent value (Hair *et al*, 1998).

3. Result and Discussion

In this chapter, the results of focused group discussion, key informant interview and survey were presented and discussed hereunder.

3.1 Demographic characteristics of members' respondents

3.1.1 Distribution of the respondents by age group

It is the number of completed years of the respondents from the time of birth till the time of the survey conducted. The average age of the respondents was 46.07 years with a standard deviation of 8.385. The minimum and maximum age of them was 27 and 66 respectively. The T-value of the age of the respondents was 5.519 which is significant at 5% probability level and has association with the dependent variable.

3.1.2 Distribution of the respondents by sex and marital status

It was found that from the total respondents about 82.45% were males and the rest 17.54% were female. This implies the majority of the respondents were male and the involvement of females was very less. As far as their marital status is concerned, the respondents were categorized as single, married, divorced, and widowed. So, the result shows that from the total respondents 85.10% were married, 5.26% were not married, 3.5% were divorced and the rest 6.14% were widowed. This implies that the vast majority of respondents were married.

3.1.3 Distribution of respondents by Religion:

With regarding to Religion, 97.36% of the respondents were follower of Orthodox while 0.87% of them were followers of Muslim and the rest of the respondents' was follower of Catholic. The result shows, the vast majority of the respondents were followers of Orthodox.

3.2 Factors affecting members' participation in dairy cooperatives

Table 2: Summary of results of continuous explanatory variables

	Variables name/description	Mean value	T- value	Significance level
1	Age of respondent (AGE)		5.519**	0.021
2	Proximity (DISMTC)		1.433	0.235
3	Extension contact (EXC)		3.357*	0.071
4	Milking cow (MKS)		5.682**	0.020

Source: own survey, (2015)

***, ** and * represent level of significant at 1%, 5% and 10% respectively.

Table 3: Summary of results of discrete explanatory variables

No.	Variables name/description		Chi-square value	P-value
1	Educational level (EDULEV)		43.902***	0.000
2	Transparency (TRANSPA)		39.902***	0.000
3	Promoter support (PROMOSUP)		15.805***	0.000
4	Transport Facility (TRANSPOR)		0.195	0.659
5	Access training (TRAINING)		3.951**	0.047
6	Feed availability (FA)		2.390	0.122

7	Raw milk price (RMP)		15.805***	0.000
8	Credit access (CRACC)		4.878**	0.027
9	Patronage dividend (PATRONG)		12.488***	0.000

Source: own survey, (2015)

***, ** and * represent level of significant at 1%, 5% and 10% respectively.

3.3 Binary logistic analysis for factors affecting Members Participation

3.3.1 Multicolliniarity diagnosis

To study factors affecting members' participation in their cooperative society, data gathered from 114 sampled cooperative members were subjected to logistic regression analysis. The statistical software used for analyzing the data was SPSS version 20 for windows. Prior to running the logistic regression model, both the continuous and discrete explanatory variables were checked for the existence of multi-collinearity problem. The problem arises when at least one of the independent variables is a linear combination of the others. The existence of multi-collinearity might cause the estimated regression coefficients to have the wrong signs and smaller t-ratios that might lead to wrong conclusions.

There are two measures that are often suggested to test the presence of multi-collinearity. These are: Variance Inflation Factor (VIF) for association among the continuous explanatory variables and contingency coefficients for dummy variables Gujarati (2003).

The technique of Variance Inflation Factor (VIF) was employed to detect the problem of multi-collinearity among the continuous variables. According to Gujarati (2003), VIF can be defined as:

$$\text{VIF}(X_j) = \frac{1}{1 - R_j^2}$$

Where, Ri^2 is the square of multiple correlation coefficients that results when one explanatory variable (Xi) is regressed against all other explanatory variables. The larger the value of VIF (Xi) the more "troublesome" or collinear the variable Xi is. As a rule of thumb, if the VIF of a variable exceeds 10, there is a multi-collinearity problem. The VIF values displayed below Table 33 indicates that the four continuous explanatory variables have no serious multi-collinearity problem in primary dairy cooperatives.

Table 4: VIF for continuous explanatory variables of primary dairy cooperatives

No	Variables	Adjusted Ri^2	VIF
1	Age of respondent	0.017	1.0003
2	Proximity	0.059	1.0035
3	Milking cow	0.038	1.0014
4	Extension contact	0.064	1.0041

Source: Computed from the field survey data, 2015

Similarly, contingency coefficients were computed to check the existence of multi-collinearity problem among the discrete explanatory variables. The contingency coefficient is computed as:

$$C = \sqrt{\frac{x^2}{n + x^2}}$$

Where, C= Coefficient of contingency,

χ^2 = Chi-square random variable and

N = total sample size.

The decision rule for contingency coefficients states that when its value > 0.75, there is a problem of association between the discrete variables i.e. the value of contingency coefficients ranges between 0 and 1, with 0 indicating no association between the variables and the value > 0.75 or close to 1, indicating a high degree of association. The contingency coefficients value displayed below Table 34 indicates that the nine discrete explanatory variables have no serious multi-collinearity problem in primary dairy cooperatives.

Table 5: Contingency coefficients for discrete explanatory variables of primary dairy cooperative societies

	1	2	3	4	5	6	7	8	9
1	1	.121	.086	.160	.125	.041	.007	.012	.027
2		1	.121	.086	.160	.125	.041	.007	.012
3			1	.105	.001	.246*	.148	.207	.235*

4				1	.389**	.140	.329**	.214	.472**
5					1	.139	.614**	.356**	.204
6						1	.191	.212	.088
7							1	.409**	.237*
8								1	.030
9									1

Source: Computed from the field survey data, 2015

ESCRIPTION: 1. Educational level
2. Transparency
3. Promoter support
4. Transport Facility
5. Access training
6. Feed availability
7. Raw milk price
8. Credit access
9. Patronage dividend

Based on the VIF and contingency coefficient results, the data were found to have no serious problem of multi-collinearity in this case and therefore the continuous and discrete explanatory variables were retained in the model.

3.3.2 Model results

In the preceding section, variables characterizing members' participation were identified. However, in the logit model analysis, we emphasize on considering the combined effect of variables on members participation of dairy cooperative societies. Therefore, the emphasis is on analyzing the variables together, not one at a time. By considering the variables simultaneously, we are able to incorporate important information about their relationship.

Table 20: Maximum likelihood estimates of the binary logit model

No	Explanatory variables	B	S.E.	Wald	df	Sig.	Exp(B)
1	AGE	-.032	.036	.797	1	.372	.968
2	DISMTC	.013	.039	.112	1	.737	1.013
3	EDULEV	-.216	.923	.055	1	.815	.806
4	TRANSPA	-1.016	.753	1.817	1	.178	.362
5	PROMOSUP	1.433	.959	2.233	1	.135	4.192
6	EXC	-.057	.772	.005	1	.941	.944
7	TRANSPOR	-2.298	.980	5.496	1	.019**	.100
8	TRAINING	-1.607	.905	3.151	1	.076*	.201
9	FA	-.409	.904	.205	1	.651	.664
10	RMP	-2.308	.968	5.685	1	.017**	.099
11	MKS	11.747	5.197	5.109	1	.024**	1.264
12	CRACC	-2.936	1.247	5.540	1	.019**	.053
13	PATRONG	-2.992	1.228	5.933	1	.015**	.050
	Constant	8.796	3.245	7.346	1	.007	6.606E3

Source: Computed from the field survey data, 2015

2 Log Likelihood 74.970
Model chi-square 43.237***
Percentage of correct prediction 75.6 %

***, ** and * represent level of significant at 1%, 5% and 10% respectively.

As indicated in table 35, the binary logistic regression output showed that out of thirteen independent variables of primary dairy cooperatives, six variables were found to be significantly influencing the members' participation at 5% and 10% levels of significance. The rest seven explanatory variables were found no significant influence on dependent variable in the study area.

3.3.3 Explanations on significant explanatory variables

3.3.3.1 Explanations on significant explanatory variables of primary dairy cooperatives

The maximum likelihood estimates of the logistic regression model show that access of transport, access of training, raw milk price, milking cows, access of Credit and Patronage dividend were important factors

influencing members participation in their democratic matters and business matters with significance of 5% and 10% probability level.

Transport access (TRANSPOR): - The access of transport of the respondents was positively and significantly associated with members' participation of dairy cooperative societies at 5% probability level. Similarly, the output of logistic regression proves that as the access of transport of the members' increases by one unit, the members' participation of the society also increase by 0.1 units. The result indicates that as the access of transport of the members' increases, members participation in their society will also increases. So, it was positively relate to members participation of the society and the result is in agreement with prior expectation.

Access of training (TRAINING): It is operationally defined as the training given to members of general assembly, management committees and employees about the importance of members' participation in democratic matters and related activities. It is assumed that committees, members and employees who have attained training will have a better knowledge and awareness about the importance of members participation in democratic matter and related activities of the society. Access to training to the respondents was positively and significantly associated with the members' participation of the society at 10% probability level. Similarly, the output of logistic regression proves that being other things constant, as the access to transport increases by one unit, the democratic management practices of cooperatives also increase by 0.201 units. The result indicates, as access to training increases, the members will participate in democratic management and business activities. So, it was positively relate to members participation of the society and support the prior assumption.

Raw milk price (RMP): It is operationally defined as the fairness of the price of the raw milk which the members sell to their cooperative society. It is assumed that the fair price of the raw milk will increase the delivering of volume of milk by the members. Raw milk price was positively and significantly associated with the members' participation of the society at 1% probability level. Similarly, the output of logistic regression proves that being other things constant, as the fair price of the raw milk increases by one unit, members participation of the cooperative society also increase by .099 units. The result indicates, if there is a fair price of raw milk in the society, the members will participate in democratic management and business activities. So, it was positively relate to members participation of the society and support the prior assumption.

Number of milking cows (MKS): It is operationally defined as the number of milking caws which the members have. It is assumed that if the number of milking caws increase, the volume of the milk will increase and they will deliver much amount of milk to their cooperative society. The output of logistic regression proves that being other things constant, as the fair price of the raw milk increases by one unit, members participation of the cooperative society also increase by 1.264 units. The result indicates, if there is a fair price of raw milk in the society, the members will participate in democratic management and business activities. So, it was positively relate to members participation of the society and support the prior assumption.

Access of Credit (CRACC): It is operationally defined as the credit which the members will get from different financial sources. It is assumed that the member who has an access to credit will buy milking caws, forage and other milking materials. This variable is assumed the positive influence on the cooperative improvement. The output of logistic regression proves that being other things constant, as the access of credit increases by one unit, members participation of the cooperative society also increase by 0.053 units. The result indicates, if there is an access of credit for members of the society, members l participation will increase in democratic management and business activities of their society. So, it was positively relate to members participation of the society and support the prior assumption.

Patronage dividend (PATRONG):- Refers to the accessibility of cooperative member to profit dividend based on the contribution in their cooperative. The payment of patronage dividends to members is a major factor in influencing the loyalty and willingness of members to participate. It has a positive influence on dependent variable. Because, dividend is appreciated by the members and it encourage them to improve their involvement. The output of logistic regression proves that being other things constant, if patronage dividend is increases by one unit, members' participation of the cooperative society also increase by .050 units. The result indicates, if there is a patronage dividend for members of the society, members

participation will increase in different matters of their society. So, it was positively relate to members participation of the society and support the prior assumption.

4. Conclusion and Recommendations

4.1 Conclusion

Active participation is expected from all members of dairy cooperatives in their democratic rights and business activities. As we see the study, Members' factors such as age and educational level have an association with members' participation of dairy cooperative societies. All institutional factors such as access to transport and feed availability have no significant influence on members' participation of the societies. With regard to technical factors such as transparency, extension service and promoters' support, they have a significant influence on members' participation in democratic right practices and business activities of the societies

When we come to economic factors, there were raw milk price, number of milking cows, credit access and patronage dividend. All of the economic factors have a significant influence on members' participation in democratic right practices and business activities of dairy cooperative societies. The binary logistic regression result also shows that from the hypothesized thirteen independent variables only six significantly influenced the members' participation. The influence of independent variables on the dependent variable from strong to weak was milking cows, training access, transport access, raw milk price, credit access, and patronage dividend respectively.

4.2 Recommendations

There should be active participation of members in their democratic rights and business activities.

- There should be access of transport to come and bring the raw milk to the cooperative. Because the cooperatives office distance is one factor for the member cooperatives to bring the raw milk to the dairy cooperatives on time. So the responsible body must think over it.
- Training is also the main instrument for cooperatives to enlighten members about the benefits of members' participation in democratic matters and business activities of cooperatives and every concerned body must think over it.
- There was a member who didn't have milking cow in dairy cooperatives. If anyone who has no milking cow/s he/she couldn't be a membership of that dairy cooperative. So, the cooperatives and responsible bodies should revise and correct it because it is one criterion for membership.
- There was no fair price for their raw milk that forced them to sell for others who have better price.
- Besides to this, there was no credit access in different institutions to buy milking cows and milking equipments and even though there was a profit dividend in dairy cooperative societies, that much not satisfied and initiated the members as expected. So the concerned bodies including cooperative societies must consider about number of milking cows, credit access and patronage dividend for members to increase their participation in their cooperative societies.

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