

**STUDY ON INDIVIDUAL MEMBERS SHARE
CONTRIBUTION TO THEIR PRIMARY COOPERATIVES:
The case of Admas Farmers Cooperatives Union; Guraghe Zone,
SNNPR**

**A Thesis Submitted in Partial Fulfillment for the Requirement of MA
Degree in Rural Development**

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DEDICATION

This research manuscript dedicated to AFCU staff members, for my beloved friends and the year 2008 E.C.

DECLARATION

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ACRONYMS AND ABBREVIATIONS

AFCU	Admas Farmers' Cooperative Union
ATA	Agricultural Transformation Agency
CBE	Commercial Bank of Ethiopian
DBE	Development Bank of Ethiopian
FFSC	Farm Financial Standard Councils
GTP	Growth and Transformation Plan
MoA	Ministry of Agriculture
MOFED	Ministry of Finance and Economic Development
PCs	Primary cooperatives
SPCs	Seed producer cooperatives
SNNPR	Southern Nations, Nationalities and Peoples Region
VIF	Variance Inflation Factor
WTA	Willingness To Accept
WTP	Willingness To Pay

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ABSTRACT

Capitalization and building own equity for primary coops and unions to become independent and realize sustainable growth is crucial. Lack of internal capitalization is one of the key reasons why cooperatives in Ethiopia having hard times to survive, grow, compete and realize new business ambitions. There have been efforts by Admas union to establish a semi-oil refinery plant for Niger seeds. The investment need for the plant is 20 million birr. In order to get a bank loan the union need minimum of 30% own equity. Therefore, the union started issuing shares and collected around 3.5 million birr. Some farmers bought up to 20 additional shares, equaling 4000 birr, whereas others did not bought even one additional share. The raised capital is not as high as expected. On average if each cooperative member bought one share the union should have been able to collect 8.81 million Birr. This was an important point raise the question why some cooperative members contribute to their primary cooperatives by buying additional shares and why not others did and what factors affecting the contribution and demand for additional share were the objectives of this study. Three districts from highest additional shareholding index, from medium and from lowest shareholding index were selected then primary cooperative were stratified into good and poor performed based on shareholding index in each district and a total of 6 cooperatives and 190 members were included in the study. Descriptive statistics, analytical approach-Likert Scale model and Tobit model were employed to meet specific objective of this study. The result reveled that gender, model farmers, participation on cooperative training, non-farm income, total land size, access to mass-media, distance from coops, dividend payment, access to output marketing service, level of transparency and accountability and level of satisfactions on service provided by coops were a factors that affect the demand for additional share. Among these variables the results show that participation on training, access to mass-media, dividend payment, transparency and accountability as well as level of satisfactions on coops service were highly significant in influencing the contribution and demand for additional share and level of shareholding at primary coop level and in case of Admass Union. Therefore, concerned bodies should take into account these factors while promoting Admas union and primary cooperative found in Guraghe zone.

Key words: *Internal Capitalization, demand, Admas Union, cooperatives, Share, Oil refinery plant*

Chapter one

1. INTRODUCTION

1.1. Background

Agriculture is one of the pillars of the Ethiopia economy. The overall economic growth of the country is highly correlated to the success of agricultural sectors. However, this sector is poor in production and productivity to bring sustainable changes in the living standards of the community (Muthyalu, 2013). Agricultural cooperatives are an appropriate tool for higher productivity and agricultural development through, playing an important role in supply agricultural input, agricultural output marketing and through creating mechanized agricultural system which can bring sustainable changes in the livelihood throughout the country (Alema, 2008).

One of the main bottlenecks of Ethiopian agricultural cooperatives is lack of finance, which they need to modernize their practices and purchase machinery. Lending institutions to the agriculture sector was still from the state-owned Commercial Bank of Ethiopian (CBE) and Development Bank of Ethiopian (DBE), which provided 99 percent of the agriculture loan (USAID, 2010). According to Tarekegn (2012), the capitalization of agricultural cooperatives in general is weak. In the past, only a few cooperatives dare to ask credit to banks and a large part was rejected because of a lack of internal capital.

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. Members contributed to the financial strength, members supported and participated in cooperative activities. Without doubt, members played a role in the success or failure of their own cooperative. Similar to other business enterprises, cooperative enterprises require capital and other resources to enable them to operate smoothly and achieve their objectives. As a self-help organization, cooperative financial strength lies on the membership. The internal sources of capital at times are more important and inexpensive compared to other sources (Othman et al., 2010).

There are different modalities to build own equity within cooperatives. Internal capital is normally drawn from the members' contribution in shares, member account, member loan, membership fee, retained earnings and proportional capital return based on transaction level of members. It is important to identify which options can be for Ethiopian unions and cooperatives to build own equity? Members share increment naturally plays a significant part in cooperative financial stability, but it often non-structured (Steenbergen, 2014).

Due to poor capital formation of cooperatives they are not living up to their potential in Ethiopia (MoA and ATA, 2012). If agricultural cooperatives have a concert base, they have a potential impact on development and poverty reduction to sustained economic growth and making market function better-off thereby, improving the living standards of the community (DFID, 2010).

Admas Farmers' Cooperative Union (AFCU) was established May, 2003 with initial capital of 153,000 birr by 7 primary cooperatives and the numbers of farmer members were 1.7 thousand that covered 6 district of Guraghe Zone. The union was established to solve their common economic and social problems. Currently, the number of primary cooperatives increased to 117 and the numbers of farmer members increased to 46,000 of which 8.6% are female members. The union provided different services such as; supply agricultural input (chemical fertilizer, improved seed, agro-chemicals, vegetable seeds and agricultural tools), output marketing, provide warehouse service, short-term loan and transport service(AFCU, 2015)

The union has a plan to establish a semi refinery Niger seed oil business in Wolkite town on behalf of its cooperative members. The required amount of Niger seed supply for the factories is forecasted to grow from 21,900 quintal to 30,300 quintal when the mill is running at full capacity. Key product is Niger seed oil, which local consumers use for cooking and baking. Next to the consumer oil, the by-product oil cake has a sound commercial value as animal feed for cattle and chickens. The oil will be bottled, branded, packed in a carton and will be marketed to the domestic market. The by-product, oil cake will be sold locally as animal feed. The current business plan has been presented to various local banks and international investors. Though interest is there, local banks stress the importance of enhancing AFCU own equity position. The union is still attempting to issue additional shares to increase owner equity (Groeninger *et al.*, 2014).

1.2. Statement of the problems

Literature as well as cooperative experts state that lack of internal capitalization is one of the key reasons why cooperatives in Ethiopia are having hard times to survive, grow, compete and realize new business ambitions. Lack of member equity to leverage investments is a major problem for many union and primary cooperatives. In Ethiopia, the process of internal capitalization within cooperatives hardly happens. Since capitalization and building own equity is key for cooperatives and unions to become independent and realize sustainable growth. Members share capital represents the individual member's commitment to their cooperative. It promotes group cohesiveness, encourage cooperative patronage and contribute to the achievement of material and social objectives. Indirectly community and country will benefit (Pischke and Rouse, 2004).

Capital formation by members within a cooperative becomes increasingly important to attract 'outsider' finance from banks and other moneylenders. Without capitalization, inside mobilization of finance of members is hard for any cooperative to become bankable and get a loan. By overlooking the capitalization of the cooperatives, many remain weak, creditworthiness stays low and investment capacity is hardly available, Admas Farmers' Cooperative Union is not exceptional. The union has the ambition to establish a semi-oil refinery plant for Niger seeds. The investment need for the oil refinery plant is 20 million birr. This finance is required to cover the procurement of the factory equipment (including packaging and filling), build the storages and factory as well as the working capital required and buying Niger seeds. However, the union has not capital for realization of this plant unless additional capital is raising (AFCU, 2015).

Various local banks and financial institution are also unable to cater for a loan for the union due to insolvency threat. In order to get a bank loan the union needs minimum of 30% own equity and therefore, the union started issuing shares in order to raise own equity. Currently the union has collected around 3.5 million birr. The raised capital is not as high as expected, still minimum of 2.5 million birr is required to acquire bank loan for building the factory. Due to an extensive awareness creation and promotions among members, some farmers bought up to 20 additional shares, equaling 4000 birr whereas others do not bought even one additional share. This raises the question why some farmers bought additional shares and why others didn't. What factors are affecting demand for additional share in primary cooperative and farmers' level in case of Admas Farmers' Cooperative Union?

1.3. Objectives of the Study

The main objective of the study is to know the real factors motivating farmers in their decision to buy or didn't buy additional share in their primary cooperatives.

The specific objectives of the study were to:

- i.** To Identify major factors that could influence farmers' demand for additional share in their cooperatives and
- ii.** To assess the level of shareholding for members of cooperatives
- iii.** To give appropriate solutions and recommendations that encourage farmers to buy more shares in and increase the investment capacity of AFCU.

1.4. Research Questions

This study attempts to address the following pertinent questions:

- 1) What were the possible factors that could make farmers willing to buy or didn't buy additional share?
- 2) Which factors play a key role in Admas Farmers' Cooperative Union to bought additional share?
- 3) What success factors and strategies the union and coops should followed to enhance own equity?

1.5. Significance of the Study.

The study was mainly concerned with assessing the contribution and demand for additional share by assessing farmer's preference, price analysis and willingness to buy additional share and identify main challenge and opportunity of AFCU for internal capitalization. The findings of this study is expected to spark valuable information to know the critical factors that affect the contribution and market demand for additional share by smallholder farmers and coops level under the current situation, It further helps them to recognize the necessity of detailed indicative direction and the root causes of unwillingness for additional share. Also the findings of this study is an input in planning and designing effective development interventions for other union, policy makers and development institutions working in the area that will complement the nation level poverty reduction initiatives.

Chapter two

2. LITERATURE REVIEW

2.1. Revolution of cooperative in Ethiopia

The people of Ethiopia have a long social history of working together to full-fill their socioeconomic needs. Many social events still takes place in rural Ethiopia through collective community efforts and these strong social bonds can be capitalized on when forming cooperatives. Agricultural cooperatives will help farmers to increase their crop yields and incomes by pooling their resources in order to support collective service provision, leading to economic empowerment(MoA and ATA, 2012).

Cooperative history in Ethiopia includes many decades of state-run enterprise, involuntary membership regulations and centralized fixed prices. The cooperative sector has changed substantially in the past decade and entered into a period of democratic governance and free market reform (Aaronson, 2012). Cooperative unions, which were initially formed in the late 1990s, serve as umbrella organizations for primary-level cooperatives. There are 160 unions and 40,000 cooperatives, out of which about 10,000 are primary-multipurpose agricultural cooperatives. These cooperatives play an important role in organizing smallholder farmers, providing inputs and output marketing services. Ethiopia Growth and Transformation Program envisions an increase in the number of cooperatives in Ethiopia to over 56,000 by 2015 (MoFED, 2010).

There are four tiers of cooperatives, namely primary cooperative, cooperative unions, cooperative federation and cooperative confederation. In Ethiopia, the apex in many regional states is the cooperative union. There are also Regional Cooperatives Federations which focus on major economic and social services that individual unions cannot effectively accomplish. At bottom level primary cooperatives help farmers to solve a collective action problem, specifically how to procure inputs most efficiently and market their outputs on more favorable terms than they could achieve by themselves. According to Ethiopians' growth and transformation plan foresees a central role for agricultural cooperatives to increase the household income of smallholder farmers and highlighted the development of cooperative as a key path way by which the agricultural sector and the economy as a whole will be developed (Bezabih, 2011).

2.2. Empirical Studies of Shareholding in Cooperatives

Othman *et al.* (2010) were conducted the study to investigate factors that influence cooperative membership and their share capital increment in Malaysian cooperatives using the binary logistic regression analysis. The result revealed that the frequency of attending cooperative annual general meeting and duration of cooperative membership are found to be positively significant with members' share increment. Among annual general meeting attendees, those that went for 1 – 3 times in the last 5 years are 1.829 times more likely to contribute to cooperative share increment as compared to those that had never attended their cooperative annual meeting.

Samson (2010) conducted studies on finance, capitalization and membership related with social and economic performance of Uruguayan cooperatives. The problems of finance and capitalization are related to difficulties of Uruguayan cooperatives to generate their own capital. This problem can be stretched out even further in case of lending; the bank requires collateral, which in Uruguay is common to be provided by the board members. Through this, board members are discouraged to engage in more dynamic business strategies. The problems of membership are related to a weak sense of belonging of members to the cooperatives which makes the cooperative functioning inefficient. It seems that there exist a gap between what the cooperatives think about the support from their members regarding finance, capitalization and membership, and what the farmers themselves experience. Based on the results of this study, it can be concluded that within Uruguayan cooperatives the problem of loyalty, may not be considered as a significant difficulty with respect to the problems of finance, capitalization and membership. However, the variables production area (ha), commodity and age were significantly affect the capitalization and membership.

Additional share are voluntarily based in which members can buy from their cooperatives. The study made by Karli *et al.* (2006) in the South Eastern Anatolian Region of Turkey analyzed farmers' decision and perceptions to be a member of agricultural cooperatives were determined using binary logit model. The model released that variables such as education, high communication, gross income, farm size, medium and high technology variables play important roles in determining the probability of entrance. Small farmers are likely expected to

join the agricultural cooperatives than the wealthier farmers are. Small farmers may wish to benefit cash at hand, input subsidies and services provided by the agricultural cooperatives.

Committee for the Promotion and Advancement of Cooperatives (COPAC) conducted research in India, Kenya and Guatemala during the 1993-1995 periods. The studies were designed to test several hypotheses on cooperative capital. Many cooperatives in developing countries have low levels of member financing. Commercial bank financing of rural cooperatives still in its infancy, the problem is that, at least in the agricultural cooperative sector, there is little tradition or desire for member financing of cooperatives' business activities. Accustomed to decades of government financial and technical support and guidance, many cooperative leaders and members are not ready to make the change. To change attitudes, these same individuals have to be shown, empirically, that member-based cooperative financing strategies are essential to survival under the new, rapidly liberalizing market conditions. Is it possible to demonstrate a positive correlation between member supports in the form of capital contributed member control and participation on the one hand, and improved cooperative business performance in the market and greater member satisfaction. If so, it would then be much easier to convince skeptics of the positive value of member-based cooperative financing schemes.

Financial performance and members' participation in the agricultural input and output marketing have correlation to bought additional share. In such a way that as cooperative performers are good, members delivers appropriate services such as agricultural input (fertilizers, agro-chemical, improved seed and agricultural tools) and farmers get output marketing service that able to get premium price for their produces that ultimately motivated members to buy additional share. Research conducted by Muthyalu (2013) examined the performance of 4 multi-purpose primary cooperatives and participation of cooperative members in the agricultural input and output marketing by taking a total of 163 sample respondents. Econometric model reveled that land owned by the household, shareholding of the household, membership in other cooperatives, perception of the household on low price of fertilizer have positively and significantly influence the level of participation of the members in agricultural input and output marketing. Whereas, age, distance of the cooperative office from the household, perception of the household on the change in standard of living due to

joining a cooperative have negatively and significantly influence the level of participation of the members in agricultural input and output marketing by cooperatives.

Alema (2008), conducted his study on 10 primary agricultural multipurpose cooperatives and a total of 208 sample respondents to analyzed role of agricultural multipurpose cooperatives in Tigray Region of Ethiopia. Probit model were adopted to identify the factors influencing the participation of cooperative members in input and output marketing. The result revealed that, the cooperatives under investigation had a current ratio of less than 2.00 and financed more of their total asset with creditors' fund and also the profitability ratio were not satisfactory. The econometrics results showed that, own land, shareholding, distance from the cooperatives, output price, membership in other cooperatives and seed price were significantly and positively affected the participation of cooperative members in the agricultural input and output marketing.

Chapter three

3. RESEARCH METHODOLOGY

3.1. Description of the Study Area

Gurage is a Zone in the Ethiopian Southern Nations, Nationalities and Peoples Region (SNNPR). This zone is named for the Gurage people, whose homeland lies in this zone. Gurage is bordered on the southeast by Hadiya and Yem special district, on the west, north and east by the Oromia Regional State and on the southeast by Silte Zone. Welkite is the administrative center of the Zone.

The zone has a total area 5932km². It lies between 70.76'- 80.45'latitude and 370.46'- 380.71'longitude with an elevation ranging 1001 - 3600 meters above sea level. The zone has 13 districts with a total population is estimated about 1,343,246. The agro-ecology of the zone, out of the total land size 7% *kolla*,¹65% *woinadega*² and 28% *dega*³. The mean annual temperature of the zone ranges between 13 - 30 °c and the mean annual rain fall ranges 600 – 1600mm. According to the land utilization data of the region 298,369 hectare cultivated land, 67,678 hectare forest, bushes and shrub covered land, 70,249.31 hectare grazing land and 14,234 hectare of land is covered by others (GZFEEDB, 2011).

In Gurage Zone there are 6 different types of cooperative unions of which 2 grain marketing (multipurpose unions), 2 saving and credit coop unions, 1 irrigation user coop union and 1 seed producers coop union. These Unions comprises of 445 primary coops with members of 152,587 and 53,716,928 million birr capital.

Admas Farmers' Cooperative Union is one of the unions found in this zone which established May, 2003 with a capital of 153,000 birr by seven primary cooperatives found in 6 districts. The trend for membership of the union is increasing through time. The union engaged in supplying agricultural inputs such as fertilizer, herbicides, pesticides and selected (improved) seeds, provides output marketing, warehouse and loan service. Due to the services provided by the union, good management and profitability, attracts the attention of new cooperative to be a

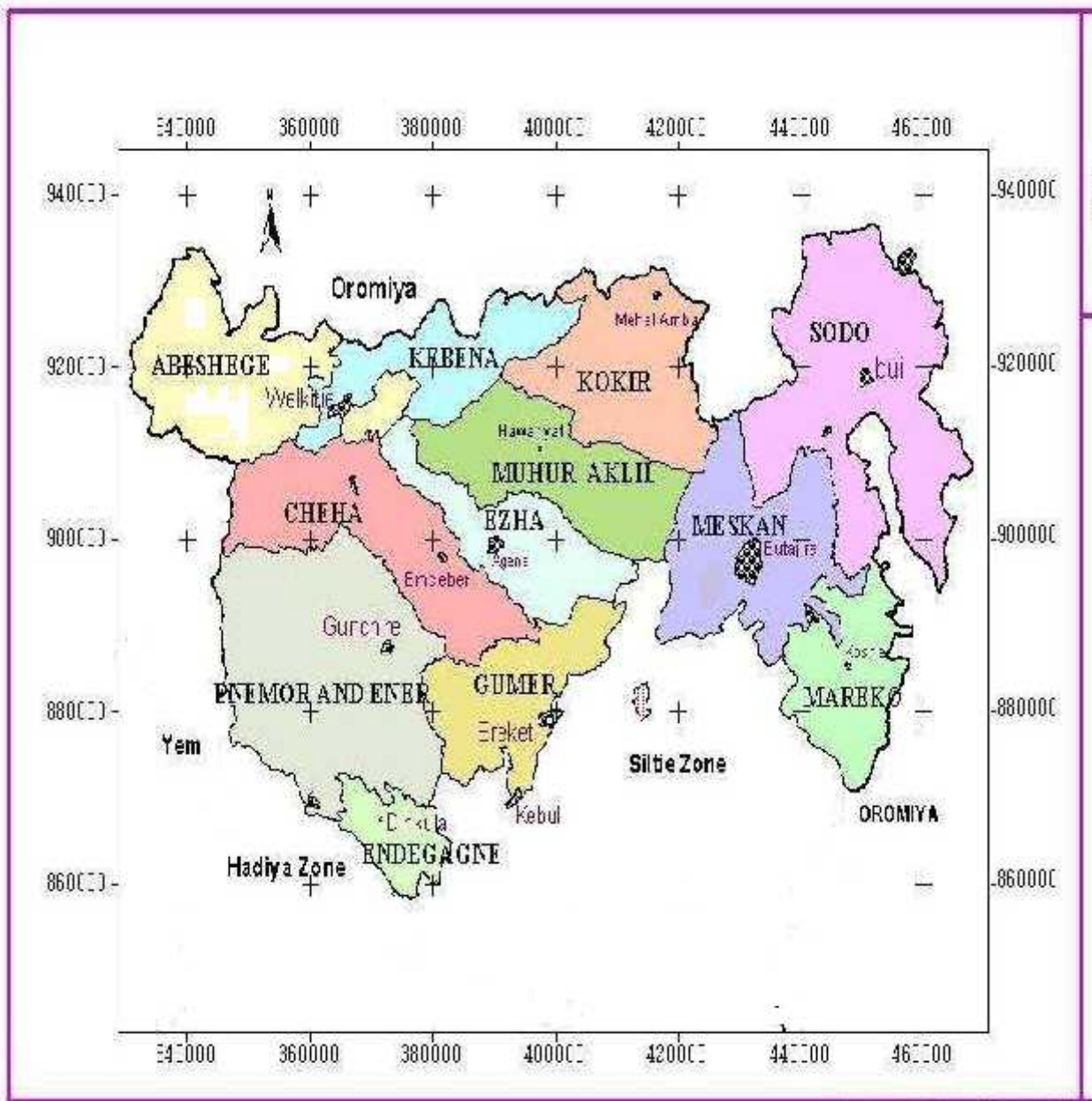
¹Tropical dry climate that can be found in areas such as the Rift Valley

² Warm and wet climatic zones with altitudes lies below 2,600m

³ Coldish, less than temperate zones with altitudes ranging between 2,600 and 3,200m

member of the union. Currently the number of primary cooperatives increased to 117, which covers 10 districts of the zone namely; Cheha, Gumer, Enemor and Ener, Eja, Geta, Abeshge, Kokir, Kebena, Endegan and Muhrina Aklil. The capital of the union extended to 14.2 million Birr and provides different services to 117 primary cooperatives and more than 46 thousand smallholders. (AFCU, 2015).

Fig, 1



Map of Gurage Zone
Source: Gurage Zone BoFED, (2011)

3.2. Admas Farmers' Cooperative Union and Internal Capitalization Modality

Admas union has a plan to establish a semi refinery Niger seed oil business in Wolkite town. The investment need for the plant is 20 million birr. In order to get a bank loan the union need minimum of 30% own equity therefore, the union invention the idea of internal capitalization to build oil refinery factory through provide training behalf of Niger seed production, oil refinery factory and impotencies of the internal capitalization for their own staff members, for 28 zonal and 30 districts politicians (3 politicians in each district), for district and kebele level cooperative experts, for 28 selected primary cooperative board members and for 348 kebele chairman in ten district of the Gurage zone in order to be bankable.

The union prepared two certificates for primary cooperatives and farmers level and issued with 5000 birr per share for primary cooperatives and 200 birr per share at individual farmers level. The zonal governance integrated the agricultural activity done in the water shade management with internal capitalization activity and followed the activity done in each district evaluate the performance of each leaders posted in those district and reported for the Admas union in weekly base. Moreover, Admas union broadcast the impotencies of internal capitalization through magazine and mass-media through Welkite FM 89.1 in Amharic language two day per week. The output of the intervention due to an extensive awareness creation, promotions, mobilization through government body more than 3.5 million birr were generated from primary cooperatives and individual members. In the district were good awareness creation and good commitment of politician, primary cooperative board members, kebele chairman existed to mobilize the internal capitalization activity many additional shares were issued. The following table indicated the amount of share issued in each district of Admas union intervention site.

Table 1: Share issued in primary cooperative and individual members level in ten districts of Gurage zone

No	District	Additional share buy by PCs in ETB	Additional share buy by individual members in ETB	Total in ETB
1	Abeshege	90,000.00	244,400.00	334,400.00
2	Cheha	155,000.00	746,800.00	901,800.00
3	Kebena	20,000.00	99,100.00	119,100.00
4	Geta	25,000.00	270,000.00	295,000.00
5	G/G/Welene	55,000.00	142,000.00	197,000.00
6	Enemor and Enre	25,000.00	261,600.00	286,600.00
7	Ezha	515,000.00	416,200.00	931,200.00
8	Muhur Aklil	50,000.00	102,000.00	152,000.00
9	Gumer	25,000.00	200,415.00	225,415.80
10	Endegagne	35,000.00	80,000.00	115,000.00
Total		995,000.00	2,562,515.80	3,557,515.80

Source: AFCU report, 2015

3.3. Sampling Procedures and Sample Size

For the purpose of demand analysis for additional share in Admas Farmers' Cooperative Union three districts namely Cheha District from highest shareholding index, Abeshge District from medium shareholding index and Qabena District from lowest shareholding index were selected purposively to ensure adequate representation of all innovation district of AFCU. To assess factors at farmers' level two-stage sampling procedure were applied. In the first stage primary cooperative were stratified into highest and lowest shareholding levels in each district based on shareholding index. Then purposively one primary cooperative was selected from each stratum for each district to ensure adequate representation and to capture broad information. In the second stage simple random sampling was employed to select the number of farmers (member of cooperatives) from each of the six primary cooperatives based on probability proportional to size of cooperative (PPS).

A simplified formula for proportions suggested by Yamane (1967) was used to determine sample size as:

$$n = \frac{N}{1 + N(e)^2} \qquad n = \frac{2,778}{1 + 2,778(0.07)^2} = 190$$

Where n is the sample size, N is the population size (primary cooperative members) and e is the level of precision where e = 1- precision and assumed as e= 7%. Totally 190 respondents would be selected randomly from six primary cooperatives based on probability proportional to size of cooperatives (Table 2).

Table 21 : Sample distribution based on probability proportional to size of cooperatives

District	Cooperatives	Performance	Population size	Sample size
Cheha	Yeweze	Poor Performer	500	34
	SisenaWeredene	Good Performer	1,132	77
Abeshge	NachaaKulit	Poor Performer	172	13
	Borer Wendemamachoch	Good Performer	154	25
Kabena	Enbelta	Poor Performer	426	29
	Zebimula	Good Performer	398	28
Total	Six primary cooperatives		2,782	190

Source: Survey result, 2016

3.4. Type and Source of Data

For this study, both primary and secondary data were collect to evaluate the contributions of farmers for their cooperatives. The Primary data were collected from selected farmers, Admas Farmers' Cooperative Union, primary coops and cooperative promotion offices, while the secondary data were collected from district and zonal level of government offices, relevant report of NGOs, university research, publications, books, journals and different websites.

3.5. Methods of Data Collections

Data collection instrument for this study were individual interview schedule, focus group discussion and key informant interview. Primary data were collected through individual interviews. In addition to the structured questionnaire focus group discussion and key informant interview were employed with district and zonal level cooperative promoters to generate qualitative and quantitative data.

The interview schedule and checklists was designed in English and then translated to local language (*Amharic*). Enumerators who have educated to minimum diploma level, better experience on primary cooperatives in the study area, who have understanding of the socio-cultural norm of the society and can speak local language were employed. However, before the actual data collection, several preparatory activities were carried out. First, enumerators had given classroom training on the objectives, content of the interview schedule and method of data collection. Second, the interview schedule was pre-tested on few respondents outside the sample to incorporate any feedback before the actual survey. The data were collected by cooperative organizer expert who have better knowledge about and experience on the data collection and supervision.

3.6. Methods of Data Analysis

3.6.1. Descriptive statistics

Descriptive statistics were used to explain the different demographic, socioeconomic and institutional characteristics of sample households. These include mean, percentage and frequency. The statistical test such as chi-square and t-test were also employed.

3.6.2. Analytical Approach - Likert Scales

Several member characteristics were measured using Likert scales tools to determine degrees of belief in specific thoughts, ideas, and/or attitudes (Rubin and Babbie 1995). A five-point Likert-type rating scale from strongly disagree to strongly agree were employed to measured degree of transparency and accountability of cooperative board and management to members. Similarly, level of members' satisfaction on cooperative service with a series of choices ranging from very dissatisfied to very-satisfied was assessed using certain questions to identify their reaction by Likert scales model.

3.6.3. Econometric model

To study the contributions of farmers to their demand for additional share and level of shareholding, Tobit model provides a good framework. This model measures not only the probability of members to bought additional share but also the level of shareholding (the numbers of additional share the members bought). This model is chosen because, it has an advantage over other models (Logistic and Probit) in that, and it reveals both the probability to buy or didn't buy additional share and level of additional shareholding in their cooperatives. Following Maddala (1992), Amemiya (1985) and Johnston and Dinardo (1997), the Tobit model can be defined as:

$$Y_i^* = X_i + u_i \quad i = 1, 2 \dots n$$

$$Y_i = Y_i^* \quad \text{if } Y_i^* > 0$$

$$= 0 \quad \text{if } Y_i^* \leq 0$$

Where: Y_i the observed dependent variable, in our case the number of additional share bought by members of cooperatives, Y_i^* the latent variable which is not observable, X_i = vector of factors affecting members' to bought additional share and level of shareholding, β is vector of unknown parameters and u_i , residuals that are independently and normally distributed with mean zero and a constant variance ². Note that the threshold value in the above model is zero. This is not a very restrictive assumption, because the threshold value can be set to zero or assumed to be any known or unknown value (Amemiya, 1985). The Tobit model shown above is also called a censored regression model because it is possible to view the problem as one where observations of Y^* at or below zero are censored (Johnston and Dinardo, 1997). The model parameters are estimated by maximizing the Tobit likelihood function of the following form (Maddala, 1997 and Amemiya, 1985).

$$L = \prod_{y_i^* > 0} \frac{1}{\sigma} f\left(\frac{Y_i - S_i X_i}{\sigma}\right) \prod_{y_i^* \leq 0} F\left(\frac{-S_i X_i}{\sigma}\right)$$

Where f and F are the density function and cumulative distribution function of Y_i^* respectively.

$\prod_{y_i^* \leq 0}$ means the product over those i for which $Y_i^* \leq 0$ and $\prod_{y_i^* > 0}$ means the product over those i for which $Y_i^* > 0$.

An econometric software known as STATA was employed to run the Tobit model. It may not be sensible to interpret the coefficients of a Tobit in the same way as one interprets coefficients in an uncensored linear model (Johnston and Dinardo, 1997). Hence, one has to compute the derivatives of the estimated Tobit model to predict the effects of changes in the exogenous variables. Johnston and Dinardo (1997), proposed the following techniques to decompose the effects of explanatory variables on demand for additional share and level of shareholding. Thus, a change in X_i (explanatory variables) has two effects. It affects the conditional mean of Y_i in the positive part of the distribution and it affects the probability that the observation would fall in that part of the distribution. Similar approach is used in this study.

1. The marginal effect of an explanatory variable on the expected value of the dependent variable is:

$$\frac{\partial E(Y_i)}{\partial X_i} = F(z) S_i$$

Where $\frac{S_i X_i}{\dagger}$ is denoted by z , following Maddala, (1997)

2. The Change in the probability of participating in cooperatives as independent variable

$$X_i \text{ changes is: } \frac{\partial F(z)}{\partial X_i} = f(z) \frac{S_i}{\dagger}$$

3. The change in intensity of participation with respect to a change in an explanatory variable among active participants is:

$$\frac{\partial E(Y_i / Y_i^* > 0)}{\partial X_i} = S_i \left[1 - Z \frac{f(z)}{F(z)} - \left(\frac{f(z)}{F(z)} \right)^2 \right]$$

Where, $F(z)$ is the cumulative normal distribution of Z , $f(z)$ is the value of the derivative of the normal curve at a given point (i.e., unit normal density), Z is the z -score for the area under normal curve, and β is a vector of Tobit maximum likelihood estimates. Before running the econometrics model, the hypothesized explanatory variables were checked for the existence of multi co linearity problems. The technique of variance inflation factor (VIF) was employed to detect the problem. According to Gujarati (2003), VIF can be defined as:

$$VIF(X_i) = \frac{1}{1 - R_i^2}$$

Where, R_i^2 is the square of multiple correlation coefficients that results when one explanatory variable (X_i) is regressed against all other explanatory variables. The larger the value of VIF the more “troublesome” or collinear the variable X is. As a rule of thumb, if the VIF of an explanatory variable exceeds 10, there is a severe multi collinearity problem which cannot be tolerable. So that, those variables would be excluded from model. However not serious multi collinearity problem were exist in case of this study and no explanatory variable excluded from the model. Qualitative data analysis includes description, explanation and interpretation of ideas, views, opinion and concepts were done to generate meaningful conclusion and recommendation.

Chapter four

4. RESULTS AND DISCUSSIONS

This chapter deals with the empirical findings and discussion of the results obtained from descriptive and econometric analysis. This study investigated why farmers' bought additional share in their cooperatives and why others refused to bought additional share and how demographic, socioeconomic and institutional factors affect demand for additional share in case of Admas Farmers' Cooperative Union. This section has three major parts; the first part presents the descriptive statistics of important variables that was related to demand for additional share. The second section discusses the result of Likert Scale Model and finally econometric results are presented.

Table 3: Comparison of poor cooperatives and well performed cooperatives

	Poor cooperatives	Well performed cooperatives
Output marketing	Didn't provide output marketing service for their members	Provide output marketing service for teff, maize, coffee and red haricot bean
Management style	Poor (lack of commitment of board members)	Good commitment of board members
Professional workers	Turnover within 3-5 months	No turnover
Type of activity	Only depend on fertilizers and seed supply	Provide diversified service like consumer goods, agro-chemical, in addition of fertilizer and seed supply
Social service	They didn't generate enough money to invest on social service	They invest 5% of net profit for social service like clean water and school up gradation.
Audit service and inspection	They were not audited in yearly basis and didn't provide any dividend for members for three consecutive years	They were audited and provide dividend based on share and participation on yearly basis
Year of establishments	New members as compared to well performed cooperatives	Founders of the union

Source: survey result, 2016

4.1. Demographic characteristics of sample households

Admas Farmers' Cooperative Union has a total member of 46,000 in ten district of Gurage Zone, out of these only 8.6% were female. The survey results show that 175 (92.11%) and 15(7.89%) of the sampled households were male-headed and female-headed, respectively. About 12 (11.01%) and 3 (3.07%) of the respondents were female headed from members who bought additional share and who didn't bought respectively. The chi-square test also revealed that a significant difference in sex of household between two groups. This indicates that if female got a chance to be members of cooperatives they would have actively participate to buy additional share from their cooperatives. Even though, female's participation in the cooperative is encouraged; female involvement was very low, in the study area. This is due to cultural practices exist in the area, in such a way that if male headed from one family become a members of cooperative the wife or the female who live under that family consider themselves as a members of coops and the rest of family members were not involving in cooperative mater by themselves. This is common phenomena in most of Ethiopia union and nearly the entire cooperative members were male headed (Table 4).

About 78 (41.05%) of the members were illiterate while the remaining 112 (58.95%) had different levels of education, which ranges from the ability to read and write to diploma holding. Out of these, nearly 66.85 percent were bought additional share whereas, only 32.15 percent didn't bought additional shares in their coops. The average level of education of sample household was 3.66 grades with standard deviation of 4.18 grades. Both the chi-square and t-test revealed that non-significant mean difference in educational status and educational level of household between members who bought additional share and who didn't bought. From total sample survey majority of them 183 (96.32%) were married, 5 (2.63%) were single whereas, divorced and widowed account about only 1 percent of the total sample respondent. The chi-square test showed that non-significant difference between two groups. The mean age of the sample households' was 48.74 years old with standard deviation of 12.42 years old. The minimum and maximum ages were found to be 23 and 90 years old respectively. The independent sample t-test result shows that non-significant difference in age of sampled households between two groups (Table 4).

The average family size for members who bought additional share and who didn't bought were 7.16 and 6.60 persons per home with standard deviation of 2.34 and 2.31 persons respectively. The average economically active family members (15-64 years) were about 4.78 persons per home for members who bought additional share and 4.20 for who didn't bought. This implied that each economically active person supports about 4.78 and 4.20 economically inactive persons in their family respectively. The independent sample t-test was showed that non-significance difference in dependency ratio as well as family size between two groups.

Table 42 : Mean comparison test of demographic characteristics by shareholding status

	buy share		Did not buy additional share		Total		2
	No	Percent	No	Percent	No	Percent	
Sex							
Male	97	88.99	78	96.30	175	92.11	
Female	12	11.01	3	3.07	15	7.89	23.71***
Marital Status							
Married	109	100	74	91.36	183	96.32	
Single	0		5	6.17	5	2.63	
Divorced	0		1	1.23	1	0.53	
Widowed	0		1	1.23	1	0.53	0.021
Literacy							
Literate	76	69.72	36	44.44	112	58.95	
Illiterate	33	30.28	45	55.56	78	41.05	0.413
	Mean	SD	Mean	SD	Mean	SD	t-value
Educational level	4.33	4.15	2.74	4.07	3.66	4.18	2.54
Age of HH head	48.77	12.41	48.70	12.53	48.74	12.42	-0.04
Family size with	7.16	2.34	6.60	2.31	6.92	2.34	-1.61
-Age less than 15	2.28	1.67	1.93	1.59	4.53	0.15	-1.49
-Age of 15-64	4.78	2.05	4.20	2.12	3.50	1.29	1.91
-Age greater than 64	0.50	1.37	0.51	1.37	2.45	1.36	0.01
Dependency ratio	0.89	0.79	0.76	0.88	0.83	0.84	1.07

Source: Survey result, 2016

4.2. Socioeconomic characteristics of sample households

Tropical Livestock Holding: The dominant domestic animals reared in the study area include poultry, cattle, sheep, goat, donkey, etc. The farmer's rear animals for various purposes, including milk, meat, draft power, source of income and transportation. The average livestock holding for the sample households as a whole in TLU was 4.92. The average TLU for members who bought additional share was relatively higher (5.54) than members who didn't bought (4.10). The t- test revealed that there was significant difference in TLU owned between

two groups at 1% probability level (Table 5). This implies that as farmers have more TLU they have a capacity to bought more additional share than counterpart who have less TLU. The possible explanation was that farmers compare and contrast the constant value of one share (200 Birr) with the value of poultry they have. The price of one hen/cock on average was 95 Birr, during the holly day the price raised up to 200 Birr. These created the possibility to change one hen/cock with one share during holy day season. In addition small ruminants like goat and sheep were also served as a source of income during shortage of cash.

Land: Land plays a central role in producing crops and raring livestock. The livelihood of the study population is almost entirely based on land and memberships to coops were also based on the availability of land. The survey results revealed that the average size of land holdings was 2.52 hectare with standard deviation of 2.16 hectare. The minimum and maximum land holding was 0.125 and 9.5 hectare respectively. The independent sample t- test showed that there was a significant difference between members who bought additional share and who didn't bought in terms of their land holdings at 5% significance level (Table 3)... This implies that the farmers who had large farm size were bought more additional share from their coops. The plausible reason was that the large size of land requires more agricultural input such as fertilizers, improved seed, agro-chemicals etc and determines the amount of produce per annum and output marketing of cooperative members which created more attachments between coops and members. Thereby, members' participation to bought additional share from their cooperatives was increased.

Farm Income: Subsistence type of agricultural practices is a common practice and there was no as such specialization in production in the study area. The mean farm income of household in the sample was 20, 266.70 Birr with standard deviation of 32,293.13 Birr per annual. The minimum and maximum total incomes were found to be 1000 Birr and 326,200 Birr per annual respectively. Significant mean difference in total income of household was observed between members who bought additional share and who didn't bought, which were evaluated using independent sample t-test at 5% significance level (Table 3).. This indicated that as farm income of households increase the purchasing power for additional share were also increased. The plausible reason was that farm income was expected to increase by production enhancement activities by better application of agricultural input (like fertilizers, improved

seeds, agro-chemical, agronomic practices etc.) and by loss prevention activities (better, storage, transport and output-marketing; and by value-adding). These activities was a joint activity of Agricultural and Cooperative Promotion office that ultimately convinced members to bought additional share due to improvement of their farm income.

Non-farm income: In the study area, about 31.06% of sample households were support their life with non-farm income beside of farm income such as, petty trading and renting part of piece of land, shopping, casual work, handicraft, sale of local drink and food item to secure additional sources of income. On average non-farm income for members who bought additional share and who didn't bought were 2,265.743 Birr and 1,775.1481 Birr per annual respectively. The independent sample t-test revealed that the mean comparison between two groups with regard to non-farm income was statistically significant at 10% probability level (Table 3). This showed that as non-farm income increased the members did not bought additional share from their cooperatives. The plausible reason was that as non-farm income growth and the relation between members and cooperatives were became minimum and minimum that ultimately even fires them from cooperative membership when non-farm income will be greater by fold than farm income.

Table 53: Mean comparison test of socioeconomic characteristics by share holding status

Variable	buy additional share		Did not buy additional share		t-value
	Mean	Std. Error	Mean	Std. Error	
Livestock holding	5.54	.34307	4.1031	0.34	2.91***
Land holding	2.84	.20598	2.1986	0.18	-2.27**
Farm income	25,140.6	3,637.3	13707.96	2333.50	2.44**
Non-farm income	2265.743	586.49135	1775.15	455.26	-1.96*

Source: Survey result, 2016

4.3. Institutional Factors

Access to credit service: is an important institutional service to finance poor cooperative members for input purchase, to adopt and use agricultural technologies. About 188 (98.9%) of respondent had access to credit from different financial sources. However, only 117 (61.58%) of the respondent were took loan. The loan size varied in accordance with the type of financial institution. On average sample households were borrowed 1,555 Birr, 3410 Birr and 2887 Birr from cooperatives, micro-finance and local money lenders respectively. With regard to the sources of credit, 24 (20.51%), 70 (59.83%) and 23 (19.66%) took loan from cooperatives, micro-finance and local money lenders respectively. Members repaid their credit with highest interest rate when borrowed from local money lenders as compared to primary cooperatives and micro-finance institution. The chi-square test revealed that non-significant mean difference was observed between two groups in terms of access to credits service (Table 4).

Participation on coops training: Among a number of coops characteristics provision of education, training and information are one of the most important principle. Cooperative is member based organizations that owned by members and manage by board of directors elected from members. Out of sample households 73 (38.42%) members have exposure to different cooperative training whereas, majority of members about 117 (61.58%) haven't exposure for different training provided by cooperative promotion office, union, primary cooperatives, Government and NGO. The chi-square test revealed that there was significance difference in accessing training between members who bought additional share and who didn't bought at 1% probability level (Table 4). This implies that, training smoothes the information flow, both internal and external for optimal relation between the cooperative management and its members which fertile the trust between coops and members that improve the interconnections among members themselves thereby, members motivating to bought additional shares.

Access to mass-media: Admas Union informing farmers in order to bought additional share to establish oil-refinery factory in Welkite town through radio and magazines two times per week for consecutive nine months in Amharic language. From total respondent 154 (81.05%) have access for mass media through radio and mobile phone regarding of share issued to build oil-refinery factory. Out of these 101(92.61%) were from members who bought additional share

and 53(65.40%) were from members who didn't bought. The chi-square test result revealed that there was statistical significant difference at 1% probability level between two groups on access to mass media (Table 4). This implies that as farmers got information from original source they were motivated to bought additional shares from their cooperatives. The plausible reason was that promotion through radio, television; magazines and newspaper have positive influences on changing the awareness and attitudes of members.

Output marketing services: Cooperatives are basically meant to safeguard their members from middlemen exploitation through lower price for their produced, improve their market access and enhance farmers' negotiation power by purchasing their produce at competitive prices. Out of the total respondent 149 (78.42%) were sold their produce directly to consumers, retailers and whole sellers in local market. Output marketing benefit members and cooperatives even though, most of members did not sold their produce to cooperatives due to many reason. About 34 (22.82%) of the respondents were suggested that their coops did not provide output marketing service, 49 (32.88 %) of the respondents pointed out cooperatives did not pay competitive price for their produce as compared to other marketing agent, 37 (24.83%) of the respondent suggested that the cooperative did not purchase at the time when they want to sold and did not purchase regularly even at the time of harvest. Whereas, 9(6.04%) due to far from coops, 15 (10.07%) due to lack of trust on coops marketing department and 5 (3.36%) due to unknown reason. Only 41 (21.58%) of the respondent sold their produced to cooperatives out of these 38 (34.80%) were from members who bought additional share whereas 3 (3.72%) were from members who didn't bought. The chi-square test result revealed that there was significant difference in percentage between two groups on accessing output market services at 1% probability level (Table 4). This shows that the farmers who sold their produce to coops were bought more shares as compared to those who sold their produce to local market (consumers, retailers and whole sellers'). The plausible reason is that as farmers sold their produce to coops got dividend distribution based on participation on output marketing and strengthens the linkage between members and coops which enhance the willingness to bought additional share from their coops.

Dividend distribution: Most of cooperatives in the study area did not pay dividend to their members. On average members got dividend 102.85 Birr per year. Out of these about 13 (16.46%) of members claimed that, the amount they actually received was very low; about 49 (62.02%) suggested that the main benefits to become a members of coops was not primarily for dividend but to solve their common problem and 17 (21.52) members could not complain about dividend distributions. Coops can only pay dividends to members after a certified auditor has declared that the group made a net surplus, yet fewer than 33.33% of coops were audited each year. The majority of the members (58.42%) were not got dividend. Out of members who took dividend payment 66 (60.50%) and 13 (16.46%) where from members who bought additional share and who didn't bought respectively. The chi-square test revealed that there was significant difference in percentage of dividend receivers between two groups at 1% probability level (Table 4). In contrary the t-test result revealed that non-significant difference in amount of dividend paid between two groups was observed. This indicated that members strictly needed the dividend payment not considered the amount of payment. These would be the good opportunity for General Assembly to optimized internal capital through maximizing their reserve fund more than 30 percent. This can be also supported by Ethiopia cooperative proclamation article 33 of No. 2/2004, the article suggested that the distribution of net profit shall be determined by the General Assembly. The plausible reason was that farmers believed that "something was better than nothing". Even if the coops were not earned profit, audit report should be disclosed for members to strengthen the relationship between members, board and management of coops to build transparency. Ultimately the trust, commitments and confidence on their coops were developed. Thereby members were actively participated to buy many additional shares.

Distance from coops: The distance of the cooperative office from the farmers' house in kilometers that the members travelled to get cooperatives for accessing different services. In line with this, the average distance traveled by the respondents to the cooperatives was about 2.73 kilometers with standard deviation of 2.59 Km. On average, members who bought additional share traveled about 2.17 kilometers while who didn't bought traveled on average about 3.47 kilometers to reach the cooperatives. The t-test revealed that the mean comparison between two groups with regard to distance of the cooperative office from members' house was statistically significant at 1% probability level (Table 4). This implies that members'

nearby to cooperatives were bought more additional share as compared to their counterparts reside far from the cooperatives. The plausible reason was that as farmers locate far from cooperatives they have limited access to different service and information about their cooperatives.

Duration of membership in cooperatives: The survey result shows that, the minimum and maximum duration of membership in cooperative were 2 to 36 years respectively. On average duration of membership in their cooperative was 11 years ago. Duration of membership in cooperatives for members who bought additional share was 11.77 years whereas, for members who didn't buy were 9.98 years. The t-test result revealed that duration of membership in cooperatives between two groups was found to be significant at 10% probability level (Table 4). This implies that as years of membership increased the motivation to bought additional share would be decreased. The plausible reason was that the members who have long years of membership have black scars on cooperative that was exist in the past regime and consider it will be happen in the future due to the fact that cooperatives are not still free from government intervention. Thus, they regret to buy additional share to progress their cooperatives.

Table 64: Mean comparison test of institutional factors by shareholding status

Variable (Dummy)	Members who buy additional share (109)		Members who didn't buy additional share (81)		Total		2
	No	%	No	%	No	%	
	Access to credit	107	56.32	81	42.63	188	
Participate on training	49	44.95	24	29.63	73	38.42	16.16***
Access to mass-media	101	53.16	53	27.89	154	81.05	22.43***
Marketing through PCs	38	20	3	1.58	41	21.58	26.66***
Got Dividend	66	34.74	13	6.84	79	41.58	37.88***
Variable (Continuous)	Mean	SD	Mean	SD	Mean	SD	t-value
Dividend	167.62	251.56	164.15	245.23	166.8	209.3	1.37
Distance from coops	2.17	1.83	3.47	3.23	2.73	2.59	3.518***
Duration of membership	11.77	10.84	9.98	8.12	11.01	11.23	1.98*

*** represents at 1% significance level

Source: Survey result, 2016

4.4. Regression and Likert Scale Analyses

4.4.1. Perception of members on role of cooperative in service provision

The satisfaction of members on agricultural input and consumer goods and service provision by cooperative were assessed using certain questions to identify their reaction by Likert scales model. Most of agricultural input such as fertilizers (DAP and UREA), improved seed, agro-chemical and consumable goods and service are delivered to households through their primary cooperative. Under this section evaluating the satisfaction of members on the role of cooperative in service provision, are discussed as follows:

Supply of fertilizers: Respondents were presented their satisfaction levels with a series of choices ranging from very dissatisfied to very-satisfied on supply of fertilizers. The Likert scale analyses revealed that, the percentage of satisfactory (very satisfied to satisfy) members on supply of fertilizers were 175 (92.11%). The respondent suggested that adequate and timely availability of fertilizers and micro-finance grant short-term credit for purchase of fertilizer made them satisfactory. Whereas, only 4 (2.11%) members were unsatisfactory and complained that fertilizers were too expensive. The remaining 11 (5.79%) were unsure about their satisfaction level on supply of fertilizers. The chi-square test revealed that non-significance difference between members who bought additional share and who didn't bought was observed on satisfactions level in fertilizer supply by their cooperatives.

Supply of improved seed: From the total respondent 82 (43.16%) were unsatisfactory in supply of improved seed due to many reason. Farmers claimed that they did not get improved seed at appropriate time, at required amount; the quality, seed varieties and adaptability to the environment as well as the productivity were not as expected. About 71(37.37%) were satisfactory in supply of improved seed from their cooperatives whereas, the 37 (19.47%) members were unsure about their opinion. Majority of the respondent were at low level of satisfactions in access to improved seed. Members who bought additional share were more unsatisfactory than members who didn't bought by about 4.21%. The chi-square test also revealed that there was a significance difference at 1% probability level between two groups in terms of supply of improved seed from their coops (Table 6).

Although somewhat unexpected, is justifiable given, farmers exchange improved and local seed informally at local market thereby; indirectly fulfill a portion of their demand for seed. If cooperatives would supply basic seed for one year they have a trend to save seed and exchange at local market up to five years thereby, for the next years, even if cooperatives would not supply to the members they fulfilled their demand at local market, due to this reason they did not regret to buy additional shares from their coops even if improved seed supply were unsatisfactory.

Supply of agro-chemicals: The survey result shows that 137 (72.11%) were perceived that the supply of agro-chemicals by coops was unsatisfactory, out of this 71(65.13%) were members who bought additional share and 66 (81.48%) were from members who didn't buy share. This indicates that majority of members who didn't bought additional share were not satisfied on supply of agro-chemical. The chi-square test also revealed that the satisfaction level between two groups was significantly different at 5% probability level (Table 5). This implies that as farmer's satisfaction level progress in supply of agro-chemical input at the right time, at the right place and at reasonable price when they require they are more motivated to bought additional share. The plausible reason was that the alternative traders who supply agro-chemical supply outdated and poor quality to members as compared to cooperatives that, ultimately members have trust towards coops services rather than traders.

Supply of consumer goods: Cooperatives supply consumer goods like oil, sugar, soap, etc to their members in the study area. Accordingly 72(37.89%) were unsatisfied by service due to many reason such as; the farmers claimed that the price was not much difference from traders, the quantity supplied was too few specially cooking oil and sugars, unfair distribution some portion of these consumers good given for traders etc. About 39 (20.52%) were satisfied and suggested that cooperatives sufficiently and effectively supplying consumer goods to their members. About 45 (41.28%) and 17 (20.98%) were satisfied from members who bought additional share and who didn't bought respectively. The chi-square test revealed that there was a significance difference at 1% probability level between two groups (Table 5). This implies that as members' satisfaction level on consumers' good and service increased the willingness to bought additional share were also increased. The plausible reason was that consumer goods specially cooking oil and sugar were highly demanded for daily consumption

by farmers. Thus members expected to get these service from their coops unless, being a member of cooperatives to them are nothing.

Table 75: Degree of members' satisfaction in Cooperative service

Level of Satisfaction	Members who buy additional share (109)		Members who didn't buy additional share (81)		Total		2
	No	%	No	%	No	%	
	Supply of Fertilizers						
Strongly dissatisfied	1	0.92	2	2.47	3	1.58	
Dissatisfied	1	0.92	0	0	1	0.53	
Neutral	8	7.34	3	3.70	11	5.79	
Satisfied	24	22.02	28	34.56	52	27.37	
Strongly Satisfied	75	68.80	48	59.26	123	64.74	1.68
Supply of Improved Seed							
Strongly dissatisfied	28	25.69	32	39.52	60	31.58	
Dissatisfied	21	19.27	1	1.23	22	11.58	
Neutral	14	12.84	23	28.39	37	19.47	
Satisfied	10	9.17	9	11.11	19	10	
Strongly Satisfied	36	33.03	16	19.75	52	27.37	24.79***
Supply of Agro-chemicals							
Strongly dissatisfied	41	37.61	40	49.38	81	42.63	
Dissatisfied	30	27.52	26	32.10	56	29.47	
Neutral	15	13.76	12	14.81	27	14.21	
Satisfied	4	3.67	0	0	4	2.11	
Strongly Satisfied	19	17.44	3	3.71	22	11.58	12.41**
Supply of Consumer goods							
Strongly dissatisfied	14	14.68	36	44.44	50	26.32	
Dissatisfied	19	17.43	3	3.70	22	11.58	
Neutral	29	26.60	26	32.10	55	28.94	
Satisfied	41	37.61	15	17.28	56	29.47	
Strongly Satisfied	4	3.67	2	2.48	6	3.18	16.19***

** , *** represents at 5% and 1% significance level respectively

Source: Survey result, 2016

4.4.2. Members' perception on transparency and accountability

Important points used to indicate the existence of transparency and accountability inside the cooperatives: willingness and ability of the board to conduct annual general meeting, evaluating and executing cooperative activity, approving audit report and electing board were among some.

Annual meeting: cooperatives need to disclose their members on a specific time and date in year to hold an annual General meeting. The management committee/board is elected by the annual general meeting. About 106(55.79%) of the respondents were aware the existence of regular annual meeting and capable to attend with board/management of cooperatives. Out of these 72(66.05%) of them were from members who bought additional shares and 34(41.97%) were from members who didn't bought additional share. Moreover, 44(23.16%) of the respondent could not participate and disagreed the existence of regular annual meeting, of which 19(17.43%) and 25(30.86%) were from members who bought additional share and who didn't bought respectively. The remaining 40(21.05%) had no ideas on annual meeting. The chi-square test also revealed that there was significant difference in the existence of regular annual meeting and capable to attend between members who bought additional share and who didn't bought at 1% probability level (table 8). This implies that as members more aware about the existence of regular meeting and capable to attend the demand for additional share would be increased. The probable reason was that as members able to exercise their right and duty, the commitment and trust on their cooperatives would be improved.

Evaluating and executing coops activity: From total respondent 92 (48.42%) of the respondents were agreed and suggested that they had a role on evaluating and executing the activity of cooperatives of which 59 (54.13%) and 33 (40.74%) were from members who bought additional share and who didn't bought respectively. About 58 (30.52%) of the respondents were disagree on the existence of transparency and accountability on evaluating and executing the activity of cooperatives. The remaining 40 (21.05%) haven't opinion regarding to evaluating and executing coops activity. The chi-square test revealed that a significant difference between two groups with regard to transparency and accountability on evaluating and executing cooperative activity at 1% probability level was observed (Table 6). This showed that as encourage members to evaluate and executing cooperative activity they

got more information behalf of strengthen and weakens of their organization and they focus to solve their problem from root base thus, members had more demand for additional share to build their coops and solve their financial bottle neck through bought additional share.

Approving audit report: From total respondent 71 (37.37%) of the respondents were agreed and suggested that they have a role to approve audit report of which 49 (44.95%) and 22 (27.16%) were from members who bought additional share and who didn't bought respectively. Whereas, 88 (46.32%) of the respondents were disagree on role of approving audit report of which 47 (43.12%) and 41 (50.62%) were from members who bought additional share and who didn't bought respectively. The chi-square test revealed that a significant difference at 1% probability level between two groups with regard to transparency and accountability on approving audit report was observed (Table 6). This reveled that developing the transparency and accountability by auditing coops in yearly base and disclosing audit report to members, to build sense of belongingness that ultimately motivation to participate for additional share would be improved.

Electing board: From total respondent 96 (50.52%) of the respondents were agreed and suggested that there were transparency and accountability on electing board of which 67 (61.40%) and 29(35.80%) were from members who bought additional share and who didn't bought respectively. Whereas, 76 (38.42%) of the respondents were disagreed and pointed out that there were not transparency and accountability to elect their board members rather the government body highly interfere to did this activity of which 30 (27.50%) and 46 (56.70%) were from members who bought additional share and who didn't bought respectively. About 18 (9.40%) of the respondent had no opinion regarding to transparency and accountability on electing board. The chi-square test revealed that a significant difference at 1% probability level between two groups with regard to transparency and accountability on electing board of cooperatives was observed (Table 6). The likely reason was that as members of cooperatives recharge their responsibility to elect their board, the trust and confidence on management body would be improved and clear insight would be developed through miss utilized resources and corrective direction would be made to improve the cooperative financial performance that ultimately members had appetite for bought additional share.

Table 86: Members' Perception on Transparency and Accountability

Degree of Transparency and Accountability	Members who buy additional share (109)		Members who didn't buy additional share (81)		Total		2
	No	%	No	%	No	%	
	Annual meeting						
Strongly disagree	15	13.76	18	22.22	33	17.37	
Disagree	4	3.67	7	8.64	11	5.79	
Neutral	18	16.51	22	27.16	40	21.05	
Agree	36	33.03	22	27.16	58	30.53	
Strongly Agree	36	33.03	12	14.81	48	25.26	13.03**
Evaluating and Executing							
Strongly disagree	22	20.18	23	28.39	45	23.68	
Disagree	9	8.26	4	4.94	13	6.84	
Neutral	19	17.43	21	25.92	40	21.05	
Agree	26	23.85	25	30.86	51	26.84	
Strongly Agree	33	30.27	8	9.87	41	21.58	13.47***
Approving Audit report							
Strongly disagree	13	11.93	21	25.93	34	17.89	
Disagree	7	6.42	5	6.17	12	6.32	
Neutral	14	12.84	17	20.99	31	16.32	
Agree	39	35.78	29	35.80	68	35.79	
Strongly Agree	36	33.03	9	11.11	45	23.684	16.41***
Electing board							
Strongly disagree	7	6.40	16	13	23	12.11	
Disagree	23	21.10	30	37.00	53	27.80	
Neutral	12	11.00	6	3.11	18	9.40	
Agree	19	17.40	20	24.60	39	20.51	
Strongly Agree	48	44.00	9	11.10	57	30.00	14.73***

*** and ** represent level of significance at 1% and 5% respectively

Source: Survey result, 2016

4.3. Econometrics Result

Demand for additional share in case of Admas Farmers' Cooperative Union was determined by various, demographic, socioeconomic and institutional factors. For the parameter estimates to be efficient, Variance Inflation Factor was employed to detect the existence of multicollinearity among explanatory variables by using STATA software version 12 before running the Tobit model. The VIF values were ranging between 1.14 and 2.71 and the mean VIF value was 1.65. This revealed that all the explanatory variables have no serious multicollinearity problem. Hence, all the hypothesized variables were included in the estimation of econometric model.

A total of 20 explanatory variables were considered, out of which 11 variables were found to be significantly influence demand for additional share. According to the results of Tobit regression model, important variables affecting demand for additional share in Admass Union were found to be gender, model farmers, participation on coops training, non-farm income, total land size, access to mass-media, distance from coops, dividend payment, access to output marketing service, level of transparency and accountability and level of satisfactions on service provided by coops are the determinant of demand for additional share. Among these variables the results show that participation on training, access to mass-media, dividend payment, transparency and accountability as well as level of satisfactions on coops service were highly significant in influencing the demand for additional share and level of shareholding (Table, 7).

Gender: The econometric model result revealed that gender differentials among the member had found negatively determining the demand for additional share at 10 percent probability level. The negative sign indicates that male members were less likely to participate in bought additional share from their cooperatives as compared to women members. Giving a chance for one female farmer to become a member of cooperatives, the probability to bought additional share were found more by 18.82 percent as compared to male members. Similarly, the marginal effect result reveals that as one female farmer become a member of cooperatives as compared to male, the demand for additional share were more by 0.35 among members who bought additional share and by 0.45 among the whole sample respondents. This shows that even if female cooperative members were few in numbers their participations in bought

additional share were more than that of male members. The plausible reason is that the women members have better saving culture through traditional saving institute like '*ikub*' as compared to male.

Model Farmers: Farmer status being model or non-model farmers had found positively determining the demand for additional share at 10 percent probability level. Model farmers were bought more additional share as compared to marginal farmers. The result shows that changing one marginal farmer to model farmers the probability to bought additional share increases by 14.79 percent. Similarly, changing one marginal farmer to model farmers' increases the demand for additional share by 0.29 among members who bought additional share and by 0.39 among the whole sample respondents. In fact, model farmers are those who registered the highest productivity in agricultural sector specially grain production in the study area. This able those to actively participate in input and output marketing thereby, the relation with their PCs were strong enough ultimately motivated to buy additional share from their coops.

Participation on cooperative training: Members' participation in cooperative training had found positively determining the demand for additional share at 1 percent probability level. The result revealed that, members who participated in cooperatives training have more interest for additional share than non-participant members by 29.53 percent. Correspondingly, members who participated in cooperatives training as compared to non-participant, the demand for additional share were more by 0.75 among members who bought additional share and by 1.05 among the whole sample respondents. This implies that, as members have exposure to different cooperative training the motivation to bought additional share from his coops would be improved. This is due to the fact that training develops positive attitude and knowledge about their cooperative and strengthens managerial and operational capabilities of members to effectively discharge their responsibilities and realizing their full potential.

Non-farm Income: Non-farm income had found negatively determining the decision to bought additional share at 5 percent probability level. Each additional one Birr from non-farm income source decrease the probability to bought additional share by 2.23 percent. In the same way, the marginal effect result reveals that each additional one Birr from non-farm income source decrease the demand for additional share by 0.044 among members who bought

additional share and by 0.060 among the whole sample respondents. This condition may be due to the increment of their non-farm income of the members so their daily activities shift from the usual practice or cooperative business thinking to entrepreneur business thinking and practices.

Total cultivated land: Land size had found positively determining demand for additional share at 10 percent probability level. For each additional one hectare of cultivated land for cooperative members the probability to bought additional share increased by 0.67 percent. Likewise, one more additional hectares of cultivated land increases the demand for additional share by 0.01 among members who bought additional share and by 0.02 for the entire sample. The results imply that as cultivated land increases demand for additional share also increase. The probable reason is that large cultivated land enables to produce more farm output. As more and more land is brought under cultivation, agricultural input as well as income is expected to increase due to the increased output. Therefore, having larger size of cultivated land enhances a farmers' capacity to bought additional share. Very unlikely to provide a quick solution to rising plot of land but significant amounts of land are still remain in less productive uses for some time. This can be diverted through improving technical efficiency of crops as well as farmers itself for optimal output production through adoption of new technologies and providing full extension services.

Access to Mass-media: Access to mass-media about internal capitalization transmitted by Admas Union had found positively determining the demand for additional share at 1 percent probability level. The members who heard the information about oil-refinery factory by weekly broadcast through Welkite FM 89.20, the probability to bought additional share were found more by 32.84 percent, the demand for additional share were more by 0.61 among members who bought additional share and by 0.75 among the whole sample respondents as compared to those members who didn't heard the information. The probable reason is that media and newspaper have a power to create awareness and change attitudes of the cooperative members that can broke impossibility perception.

Distance from Coops: Distance from cooperatives had found negatively determining the decision for additional share holding at 10 percent probability level. This implies that as the farmers live far-away from the cooperative office increases by 1Km the probability to bought

additional share decrease by 3.92 percent. Similarly, the marginal effect result reveals that as the farmers live far-away from the cooperative office increases by 1Kms, level of shareholding decreased by 0.08 among members who bought additional share and by 0.11 among the whole sample respondents. This implies that farmers far from PCs were less in bought additional share as compared to their counterparts residing nearby PCs. This might be due to the fact that as farmers locate far from PCs there is limited access to input and output markets, market information and getting consumer goods such as oil and sugar. Moreover, distance to PCs leads to higher transaction cost which reduces the benefits accrues to the farmer. More importantly, longer distance from PCs discourages farmers from participating in market-oriented production as well as less interest to participate in cooperative affairs. Furthermore, the cooperative promoter agent focuses in helping in creation of awareness may be concentrated on the nearest households to the coops office because one cooperative promoter has responsibility of more than two Kebeles.

Dividend Distribution: Dividend distribution had found positively determining the demand for additional shareholding at 1 percent probability level. The result revealed that members who got dividend for one year were bought more share than those who didn't gate dividend by 27.40 percent. The demand for additional share was more by 0.58 among members who bought additional share and by 0.79 among the whole sample respondents as compared to those members who didn't gate dividend. The profits of a cooperative, usually called savings, are returned to the members in proportion to participation and level of shareholding. The likely reason is that provision of dividend to members improves members' sense of ownership and strengthening the trust on their coops, which leads to actively participate on a matter of their PCs.

Output marketing: Output marketing had found positively determining the demand for shareholding at 10 percent probability level. The result revealed that members who sold their produce through cooperatives were bought additional share than those who didn't sold their produce through cooperatives by 15.28 percent. The demand for additional share was more by 0.32 among members who bought additional share and by 0.45 among the whole sample respondents as compared to those members who didn't sold their produce through cooperatives. In fact, output-marketing service is a core service of PCs to members to protect

them from price exploitation specially during harvesting season. Well-functioning cooperatives tend to guaranteed output marketing services for members, who create conducive environment for PCs as well as for members to build hydrogen bond between them thereby, members were interested to bought additional share from their coops to capacitate their PCs.

Transparency and accountability: Transparency and accountability of board to cooperative members had found positively determining the demand for additional shareholding at 1 percent probability level. The result shows that members who were agree in existence of transparency and accountability of board were bought more additional share than those members who were disagreed by 9.82 percent. The demand for additional share was more by 0.19 among members who bought additional share and by 0.27 among the whole sample respondents as compared to those members who disagreed in existence of transparency and accountability of board. This implies that as the board and management of cooperatives develop the transparent and accountability practices to members the commitment and trust were developed that ultimately members motivated to buy additional share from their cooperatives.

Level of satisfaction: Cooperatives provisions of different services such as, supply of fertilizers, variety of improved seed, agro-chemicals and consumable good had found positively determining the decision for additional share holding at 1 percent probability level. The result revealed that members who were satisfied with cooperative service were bought more additional share than unsatisfied members by 17.46 percent. The demand for additional share was more by 0.35 among members who buy additional share and by 0.47 among the whole sample respondents as compared to unsatisfied members. This implies that as the level of members' satisfactions improves from unsatisfactory to satisfactory the members were enthusiastic to bought additional share from their cooperatives to sustain their satisfactions.

Table 97: Estimated parameters of Tobit

Explanatory Variables	Estimated Coefficient	S. Error	T-value	Change in probability $\frac{\partial F(z)}{\partial X_i} = f(z) \frac{S_i}{\dagger}$	Change among MBASH $\frac{\partial E(Y_i / Y_i^* > 0)}{\partial X_i}$	Marginal Effect Among Whole $\frac{\partial E(Y_i)}{\partial X_i}$
Age	0.0302	0.2594	1.17	0.0054	0.0107	0.0146
Gender	1.0955	0.6330	1.73*	0.1882	0.3479	0.4495
Model farmers	0.8393	0.5066	1.66*	0.1479	0.2888	0.3885
Educational Level	-0.5251	0.0578	-0.91	-0.0093	-0.01856	-0.0252
Dependency ratio	0.2354	0.2629	0.90	0.0419	0.0832	0.1134
Participation on training	1.7564	0.6650	2.64***	0.2953	0.7488	1.0532
Non-farm Income	-1.2562	0.5096	-2.47**	-0.02234	-0.04439	-0.06049
Farm Income	-0.1962	0.5730	-0.34	-0.0348	-0.0683	-0.0925
Land Size	0.0377	0.0216	1.74*	0.0067	0.0133	0.0181
TLU	-0.0956	0.0712	-1.34	-0.0170	-0.0338	-0.0460
Amount of Credit	-0.0163	0.0561	-0.29	-0.0029	-0.0058	-0.0078
Access to Mass-media	2.0020	0.7413	2.70***	0.3284	0.6054	0.7548
Price of Share	0.9284	0.5925	1.57	0.1617	0.3051	0.4017
Duration in Coops	-0.456	0.5269	-0.87	-0.0812	-0.1613	-0.2198
Distance from coops	-0.2206	0.1230	-1.79*	-0.0392	-0.0780	-0.1062
Distance from union	-0.0149	0.0238	-0.63	-0.0026	-0.0053	-0.0072
Dividend	1.5710	0.5701	2.76***	0.2740	0.5789	0.7933
Output marketing	0.8646	0.5117	1.69*	0.1528	0.3238	0.4484
Trans and Accountability	0.5522	0.1080	5.12***	0.0982	0.1952	0.2659
Level of Satisfactions	0.9819	0.1879	5.23***	0.1746	0.3470	0.4728

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

Source: Survey result, 2016

Chapter five

5. SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1. Summary

If female got a chance to be members of coops they would have actively participated to contribute for their coops. Even though, female's participation in the coops is encouraged; female involvement was very low, in the study area. This is due to the fact that male headed members hold more resources as compared to female farmers. If male headed from one family become a members of coops the wife or the female who live under that family consider themselves as a member of coops and were not involving in coops matter by themselves.

As farmers have more TLU they have a capacity to bought more additional share than counterpart who have less TLU. This is due to the fact that poultry and small ruminants like goat and sheep were served as a source of income during shortage of cash.

The farmers who had large farm size were bought more additional share from their coops. Because the large size of land requires more agricultural input and determines the amount of produce per annum which created more attachments through output marketing between coops and members. Thereby, members' participation to bought additional share from their cooperatives was increased.

As farm income of households increase the purchasing power for additional share were also increased. This is due to the fact that farm income was expected to increase by production enhancement activities by better application of agricultural input and by loss prevention activities. These activities was a joint activity of Agricultural and Cooperative Promotion office that ultimately convinced members to bought additional share due to improvement of their farm income.

As non-farm income increased the members did not buy additional share from their coops. This is due to the increment of their NFI of the members so their daily activities shift from coops business thinking to entrepreneur business thinking and practices.

Providing training on the objectives to issued share, the benefit accrued from project, internal capitalization, coops principle and value motivating members to bought additional shares.

As farmers got information from original source they were motivated to bought additional shares from their cooperatives because, promotions through radio, magazines and newspaper have positively influences on changing the awareness and attitudes of members.

The farmers who sold their produce to coops were bought more shares as compared to those who sold their produce to local market (consumers, retailers and whole sellers'). This is due to the fact that as farmers sold their produce to coops got dividend distribution based on participation on output marketing and strengthens the linkage between members and coops which enhance the willingness to bought additional share from their coops.

Members strictly needed the dividend payment not considered the amount of payment. This will be the good opportunity for General Assembly to optimized internal capital through maximizing their reserve fund more than 30 percent. This can be also supported by Ethiopia cooperative proclamation article 33 of No. 2/2004, the article suggested that the distribution of net profit shall be determined by the General Assembly. This is due to the fact that farmers believed that "something was better than nothing". Even if the coops were not earned profit, audit report should be disclosed for members to strengthen the relationship between members and management of coops to build transparency. Ultimately the trust, commitments and confidence on their coops were developed. Thereby members were actively participated to buy many additional shares.

5.2. Conclusions and Recommendations

From the overall analyses, the following major conclusions and recommendation are drawn for significant variable as follows:

The result of the study indicated that male members were less likely to participate in bought additional share from their cooperatives as compared to women members. Therefore, Government body, Cooperative Promoters and Primary Cooperatives should have to promote equity and equality between women and men through access to the same opportunities and resources to incorporate women farmers to become cooperative members in addition to their husband and empowering women in cooperatives to develop their skills and create conducive environment to giving award for model women farmers to motivate their participation and ultimately develop sense of owners in the long term by all of family members.

The result of the study revealed that Model farmers were bought more additional share as compared to marginal farmers. Therefore, Agricultural office jointly with Cooperative promoters should have to give high attention for best practices recorded by model farmers for increasing production and productivity that have been drawn for scaling up to the rest of the farmers and plan so as to increase the production and productivity of most of cooperative member nearer to the model farmers.

The result revealed that, members who participated in cooperatives training have more appetite for additional share than non-participant members. Therefore, Admas Farmers Cooperative Union, with his different partners advised to work effectively to providing training and education for primary cooperative; board, managers and the employees for effective discharge of their responsibilities and for realization of their full potential and promote experience sharing from cooperatives that have better experience in improving the internal capital. Ultimately, awareness, member commitment and trust can be developed. District Cooperative Promotion office jointly with primary cooperative should also give attention to providing regular training opportunities for all members to create sense of ownership among members.

Non-farm income had found negatively determining the decision to bought additional share. Therefore, Agricultural expert and cooperative organizers at kebele (village) level should have to give attention for cash crops and advice farmers to produce commercial crops based on market demand ultimately farmers shifting to more ambitious small-scale commercial agricultural productions and diverting their investment to agricultural project thereby open their mind for buying additional share in their cooperatives.

Land size had found positively determining demand for additional share. In short-run promoters and primary cooperatives should have to target farmers with larger farms when recruited as new members' of cooperatives. However, for long-run Admas union, Agricultural office and Primary cooperatives should give attention to improve the use of cultivated land for cash crop production to fertile farmers income and devising way to incorporating new technology, like blending fertilizers to improve economic efficiency of members. Thereby, members trust and commitments will be developed that enables to develop the internal capital by buying more additional shares.

The result shows that the members who heard the information about oil-refinery factory by weekly through mass-media were bought more share than members who didn't heard the information. Information is power to the cooperative members when it is timely, accurate and relevant. Therefore, Admas Union jointly with different partners like government and nongovernmental organizations should strengthen the broadcasting through Welkite FM and local community radio, to disseminate important information to create transparent operation system and to develop the trust of members on their coops and also inviting model primary cooperatives to sharing the experiences to the rest of cooperatives which can create conducive competition environment between cooperatives and members as well. The Agricultural Transformation Agency already develops the system in which farmers can get information about agriculture with free paid by calling to 8028; however, farmers did not aware well so that ATA and Government should have to give attention on adopting these technologies to access farmers more information.

The distance of the cooperative office from the members' house was negatively influenced the participation of additional shareholding. Moreover, one cooperative provide service for two and above kebeles (village) and currently the number of cooperative members in the study

area are growing from time to time and the demands for technical and managerial support become increasing. Therefore, Admas Union jointly with Zonal Cooperative Promotion Office, and other partners should have to hired staff members at union level to strengthen service provided to cooperative. Moreover, Agricultural office, District Cooperative Promotion Office and Cooperative management should give attention to facilitating marketing service and integration of services as equal to the nearer farmers. Thereby, the members of the cooperative will develop sense of ownership which inspired to sustain their cooperatives though active participation on buying additional share.

The result revealed that members who got dividend for one year were bought more share than those who didn't gate dividend. Cooperative performance and progress clearly depends on the trust and commitment of members. Thus, to build these trust and commitments dividend payment plays par-amount significance. Therefore, Admas Union should have to hire the permanent accountant or some related field with attractive salary to solve the problem of turnover and to enable audit each primary coops in yearly based and also capacitate the Zonal and District Cooperative Promotion Office auditors to address all cooperatives under Admas union. Moreover, the cooperative board and general assembly should have to pay dividend to their members simultaneously optimize internal capital through maximizing their reserve fund to create sense of ownership in short run and in long-run rather than giving dividend establish a trust fund (giving share certificate rather than divided when income allows for it) or deposit in Members account and setting up Cost-Centers for each department to trace bank capitalized equities from members such as the use of converted shares in to investments that will ultimately increase transparency in addition of issued share. Moreover, Share issued in-kind should also adopted (exchange of share certificate with farmer's grain).

Output marketing service had found positively determining the demand for additional share and requires closer coordination of production and postharvest activities to ensure delivery of high quality and homogeneous products. Therefore, Admas Union, primary cooperatives and Agricultural office should jointly establish stirring committee to follow up these activities. An effective involvement in output marketing are major tools need to be considered by all primary cooperatives especially during harvesting season to benefit members from exploitation of down price by grain traders. Due to lack of committed board, educated manpower and

organized staff members other financial institution such as microfinance are not volunteer to give loan for cooperatives. To do so Admas Union, and other partners of Admas should support cooperatives through fulfilling the proper and qualified personnel that give service at all working time and designing modality to link microfinance to cooperatives to extend short term credit facilities to overcome cash shortage during harvesting time to strengthen them in output marketing. The more the members benefit by output marketing, the more members will be encouraged their cooperatives through buying additional share to sustain those benefits and contribute to their coops as well.

Except fertilizer supply cooperatives are not at the position to offer delighted satisfaction in supply of improved seed, agro-chemicals and consumer goods to its members in the study area. Therefore, Cooperative Promotion Office and Union should conduct regular supervisions to make coops creditworthy, to diversify their services, and improve level of member's satisfactions. Intact by-laws that can increase the supply of improved seed multiplication on FTC and in each kebeles and on selected small scale farmers to satisfy the members and to become self-reliance in improved seed supply based on members demand. Moreover, SPCs should also jointly act with primary multi-purpose agricultural cooperatives to satisfy seed demands. More importantly cooperatives should give great emphasis to operate effectively their service rendering activities as the source of their return such as output marketing, input supply, consumer good supply and other services demanded by members.

Finally, given the limitations of this study, there are some implications deserving further research which could possibly make some additions over the present study. This study was done using a cross-sectional data. However, the results of cross-sectional data do not show the change over time that may be important for a follow up development strategies. Due to lack of data and audit report of primary cooperatives the relation on demand for additional share in cooperatives and union level could not be measured. Thus, inclusion of these data when available may be important for future research.

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7. APPENDICES

Appendix Table1. Tobit Regretion

Tobit regression	Number of obs	=	190
	LR chi2(20)	=	191.74
	Prob > chi2	=	0.0000
Log likelihood = -266.89628	Pseudo R2	=	0.2643

NumbersofSharebought	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
Age	.0302628	.0259378	1.17	0.245	-.0209388	.0814644
Gender	-1.095487	.6330498	-1.73	0.085	-2.345138	.1541639
ModelFarmers	.8392741	.5066263	1.66	0.099	-.1608147	1.839363
EducationalLevel	-.0525063	.0577501	-0.91	0.365	-.1665058	.0614933
DependencyRatio	.2354366	.2629518	0.90	0.372	-.2836346	.7545078
ParticipationonTraning	1.756413	.6650024	2.64	0.009	.4436868	3.069138
NonFarmIncome	-1.256234	.5095638	-2.47	0.015	-2.262121	-.2503465
FarmIncome	-.1962077	.5729958	-0.34	0.732	-1.327311	.9348956
LandSize	.0377191	.0216317	1.74	0.083	-.0049822	.0804205
TropicalLiveStock	-.0955628	.0712289	-1.34	0.182	-.2361699	.0450443
AmountofCcredit	-.0163108	.0561481	-0.29	0.772	-.1271481	.0945264
AccesstoMassmedia	2.002045	.7413341	2.70	0.008	.5386392	3.465451
PriceofShare	.9283968	.5924622	1.57	0.119	-.2411334	2.097927
DurationofMembersinCoops	-.456463	.5269878	-0.87	0.388	-1.496746	.5838198
DistanceofMembersfromCoops	-.2206418	.1230337	-1.79	0.075	-.4635124	.0222288
DistanceofmembershousefromUnion	-.0148964	.0238176	-0.63	0.533	-.0619128	.03212
Dividend	1.571033	.570127	2.76	0.006	.4455932	2.696474
OutputMarketingService	.864609	.5117477	1.69	0.093	-.1455896	1.874808
TranceparencyandAccountability	.5522807	.1079655	5.12	0.000	.339155	.7654063
LevelofMembersSatisfaction	.9819023	.187923	5.23	0.000	.6109392	1.352865
_cons	-2.220046	1.714147	-1.30	0.197	-5.6038	1.163708
/sigma	2.241187	.1526078			1.939937	2.542437

. mfx

Marginal effects after tobit

y = Linear prediction (predict)
 = -.10394273

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
Age	.0302628	.02594	1.17	0.243	-.020574 .0811	48.7421
Gender*	-1.095487	.63305	-1.73	0.084	-2.33624 .145268	.126316
ModelF~s*	.8392741	.50663	1.66	0.098	-.153695 1.83224	.626316
Educat~l	-.0525063	.05775	-0.91	0.363	-.165694 .060682	3.65526
Depend~o	.2354366	.26295	0.90	0.371	-.279939 .750813	.831228
Partic~g*	1.756413	.665	2.64	0.008	.453032 3.05979	.110526
NonFar~e	-1.256234	.50956	-2.47	0.014	-2.25496 -.257507	3.05386
FarmIn~e*	-.1962077	.573	-0.34	0.732	-1.31926 .926843	.215789
LandSize	.0377191	.02163	1.74	0.081	-.004678 .080116	10.8789
Tropic~k	-.0955628	.07123	-1.34	0.180	-.235169 .044043	4.92496
Amount~t	-.0163108	.05615	-0.29	0.771	-.126359 .093737	4.47321
Access~a*	2.002045	.74133	2.70	0.007	.549057 3.45503	.810526
Priceo~e*	.9283968	.59246	1.57	0.117	-.232808 2.0896	.8
Durati~s	-.456463	.52699	-0.87	0.386	-1.48934 .576414	.684211
Distan~s	-.2206418	.12303	-1.79	0.073	-.461783 .0205	2.79912
Distan~n	-.0148964	.02382	-0.63	0.532	-.061578 .031785	19.5289
Dividend*	1.571033	.57013	2.76	0.006	.453605 2.68846	.415789
Output~e*	.864609	.51175	1.69	0.091	-.138398 1.86762	.257895
Trance~y	.5522807	.10797	5.12	0.000	.340672 .763889	2.72504
Levelo~n	.9819023	.18792	5.23	0.000	.61358 1.35022	.552027

(*) dy/dx is for discrete change of dummy variable from 0 to 1

```
. mfx, predict(p(0,.))
```

Marginal effects after tobit

```
y = Pr(NumbersofSharebought>0) (predict, p(0,.))
= .48150431
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	x
Age	.0053811	.00463	1.16	0.245	-.003695 .014458	48.7421
Gender*	-.1881772	.10249	-1.84	0.066	-.389048 .012694	.126316
ModelF~s*	.1478838	.08736	1.69	0.090	-.023342 .31911	.626316
Educat~l	-.0093363	.01029	-0.91	0.364	-.029506 .010834	3.65526
Depend~o	.0418638	.04679	0.89	0.371	-.04984 .133567	.831228
Partic~g*	.2952822	.09919	2.98	0.003	.100873 .489692	.110526
NonFar~e	-.2233754	.09189	-2.43	0.015	-.403475 -.043275	3.05386
FarmIn~e*	-.0348263	.10145	-0.34	0.731	-.233674 .164022	.215789
LandSize	.006707	.00387	1.73	0.083	-.000882 .014296	10.8789
Tropic~k	-.0169924	.01277	-1.33	0.183	-.042018 .008033	4.92496
Amount~t	-.0029003	.00999	-0.29	0.772	-.02248 .016679	4.47321
Access~a*	.3283724	.10229	3.21	0.001	.127885 .52886	.810526
Priceo~e*	.1617467	.09936	1.63	0.104	-.032987 .356481	.8
Durati~s	-.0811653	.09357	-0.87	0.386	-.264556 .102225	.684211
Distan~s	-.0392331	.02185	-1.80	0.073	-.082067 .003601	2.79912
Distan~n	-.0026488	.00424	-0.62	0.532	-.010961 .005663	19.5289
Dividend*	.274009	.09513	2.88	0.004	.087562 .460456	.415789
Output~e*	.1527886	.08852	1.73	0.084	-.020703 .326281	.257895
Trance~y	.098203	.01997	4.92	0.000	.059053 .137353	2.72504
Levelo~n	.1745955	.03586	4.87	0.000	.104319 .244872	.552027

(*) dy/dx is for discrete change of dummy variable from 0 to 1

. mfx,predict(e(0,.))

Marginal effects after tobit

y = E(NumbersofSharebought|NumbersofSharebought>0) (predict, e(0,.))
 = 1.750959

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
Age	.0106946	.00919	1.16	0.245	-.007321	.02871		48.7421
Gender*	-.3478891	.18046	-1.93	0.054	-.701584	.005806		.126316
ModelF~s*	.288818	.16897	1.71	0.087	-.042349	.619985		.626316
Educat~l	-.0185553	.02042	-0.91	0.364	-.058585	.021474		3.65526
Depend~o	.0832015	.09296	0.90	0.371	-.098996	.265399		.831228
Partic~g*	.7488095	.33674	2.22	0.026	.088814	1.40881		.110526
NonFar~e	-.4439438	.18124	-2.45	0.014	-.799164	-.088724		3.05386
FarmIn~e*	-.0683142	.19651	-0.35	0.728	-.453466	.316837		.215789
LandSize	.0133297	.0077	1.73	0.084	-.001766	.028425		10.8789
Tropic~k	-.0337712	.02545	-1.33	0.184	-.083644	.016101		4.92496
Amount~t	-.0057641	.01987	-0.29	0.772	-.0447	.033172		4.47321
Access~a*	.6054028	.18639	3.25	0.001	.240092	.970713		.810526
Priceo~e*	.3051228	.18025	1.69	0.091	-.048169	.658415		.8
Durati~s	-.1613106	.18533	-0.87	0.384	-.524559	.201938		.684211
Distan~s	-.0779732	.04249	-1.84	0.067	-.161255	.005308		2.79912
Distan~n	-.0052643	.00841	-0.63	0.531	-.021747	.011219		19.5289
Dividend*	.5788888	.21665	2.67	0.008	.154256	1.00352		.415789
Output~e*	.3237664	.20225	1.60	0.109	-.072634	.720167		.257895
Trance~y	.1951719	.03916	4.98	0.000	.118413	.271931		2.72504
Levelo~n	.346997	.07064	4.91	0.000	.208545	.485449		.552027

(*) dy/dx is for discrete change of dummy variable from 0 to 1

.

```
. mfx,predict(ystar(0,.))
```

Marginal effects after tobit

```
y = E(NumbersofSharebought*|NumbersofSharebought>0) (predict, ystar(0,.))
= .84309434
```

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]	X
Age	.0145717	.01255	1.16	0.246	-.010033 .039177	48.7421
Gender*	-.4494777	.21845	-2.06	0.040	-.877623 -.021333	.126316
ModelF~s*	.388498	.224	1.73	0.083	-.050527 .827523	.626316
Educat~l	-.025282	.02786	-0.91	0.364	-.079884 .02932	3.65526
Depend~o	.1133637	.12678	0.89	0.371	-.135118 .361846	.831228
Partic~g*	1.05319	.47216	2.23	0.026	.127776 1.9786	.110526
NonFar~e	-.6048821	.24901	-2.43	0.015	-1.09294 -.116822	3.05386
FarmIn~e*	-.0925324	.26452	-0.35	0.726	-.610985 .42592	.215789
LandSize	.0181619	.01056	1.72	0.085	-.002526 .038849	10.8789
Tropic~k	-.0460139	.03487	-1.32	0.187	-.114358 .022331	4.92496
Amount~t	-.0078537	.02708	-0.29	0.772	-.060933 .045225	4.47321
Access~a*	.7548034	.20431	3.69	0.000	.354367 1.15524	.810526
Priceo~e*	.4017411	.22769	1.76	0.078	-.044522 .848004	.8
Durati~s	-.2197889	.25225	-0.87	0.384	-.714196 .274618	.684211
Distan~s	-.10624	.05758	-1.85	0.065	-.219094 .006614	2.79912
Distan~n	-.0071727	.01146	-0.63	0.531	-.029633 .015287	19.5289
Dividend*	.7932866	.29647	2.68	0.007	.212219 1.37435	.415789
Output~e*	.4484176	.28334	1.58	0.114	-.10692 1.00376	.257895
Trance~y	.2659255	.05517	4.82	0.000	.157788 .374063	2.72504
Levelo~n	.4727902	.10059	4.70	0.000	.275645 .669935	.552027

(*) dy/dx is for discrete change of dummy variable from 0 to 1

Appendix Table 1: The result of multicollinearity test for continuous variables

. vif

Variable	VIF	1/VIF
Age	2.71	0.369627
NonFarmInc~e	2.42	0.412780
Dividend	2.10	0.475155
Trancepare~y	2.01	0.497334
FarmIncome	1.89	0.529492
Distanceof~n	1.78	0.562107
LandSize	1.75	0.572908
OutputMark~e	1.73	0.578157
TropicalLi~k	1.67	0.597016
LevelofMem~n	1.62	0.617924
Educational	1.55	0.645608
AccesstoMa~a	1.50	0.668886
Durationof~s	1.39	0.720110
AmountofCr~t	1.37	0.727841
ModelFarmers	1.36	0.737104
Participat~g	1.35	0.738955
Distanceof~s	1.35	0.743387
PriceofShare	1.17	0.858263
Gender	1.16	0.865492
Dependency~o	1.14	0.874236
Mean VIF	1.65	

Appendix Table2: Conversion factors used to compute tropical livestock unit

Animal category	Conversion factors
Calf	0.34
Heifer	0.75
Cow and ox	1.00
Horse/mule	1.10
Donkey (adult)	0.70
Donkey (young)	0.35
Camel	1.25
Sheep and goat (adult)	0.13
Sheep and goat (young)	0.06
Chicken	0.013

Source: Storck *et al.*, 1991

