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Determinants of Cooperative Level Performance Variability among Agricultural Cooperatives in Gamo Zone, South Ethiopia Region

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Abstract

This study aimed to explore the performance of agricultural cooperatives in the South Ethiopia Region. A mixed research approach was used by combining a quantitative survey with key informant interviews. Data were collected from 46 sample cooperatives in the Gamo Zone by involving three leaders from each cooperative. Descriptive and inferential statistical data analysis methods were employed, including Tobit model regression. The result shows that 19 (41.3%) of the sampled cooperatives had not marketed grain, and 11 (23.91%) cooperatives had no profit report in 2022/23. Eight variables affect the financial and grain marketing performance of the cooperatives. The age of the chairperson and distance to the cooperative Office negatively and significantly affect financial performance, with an impact of less than 5%. In contrast, the leadership experience of a chairperson, serving only members (boundary), union membership, availability of storage, and frequency of audit have a positive and significant impact, with an impact of less than 5%. The leadership experience of the chairperson, serving only members, and capital assets positively and significantly affect grain marketing performance. This research is limited to agricultural cooperatives and may lack the strength for generalizing to other cooperatives, and researchers need to further research. Encouraging primary cooperatives to join unions, frequent audits, serving members with diverse service portfolios and developing a storage facility will improve performance. Focus also should be on auditing and supervision of cooperatives to enable them to be on track. This paper fulfils an identified need to study the performance of agricultural cooperatives and ways of improving their performance.

Keywords: *Performance; agricultural cooperatives; marketing; profit; Tobit; Gamo Zone*

1. INTRODUCTION

Transaction cost economic theory focuses on the importance of cooperatives in reducing transaction costs that organizations face during business transactions (Peklé, 2016; Pingali *et al*., 2019). Cooperatives as hybrid organizations with business and non-profit orientations are considered quite important in agriculture (Ishak *et al*., 2020). Smallholder farmers face a number of obstacles that keep them from joining larger markets and benefiting from economies of scale (FAO, 2017). One of the main causes of the challenges facing agriculture and rural development in these countries is the inability of the market to satisfy the needs of smallholder households in rural and isolated areas.

Since the market liberalization and free market economy system took effect, market failures have made it difficult for developing nations to meet the development needs of rural populations and agriculture. Infrastructure, market information, economies of scale to lower transaction costs, a lack of markets for produce, financial services to market agricultural inputs and outputs, and other problems are the main causes of these failures (Tefera *et al*., 2019). Smallholders' capacity can be increased by agricultural cooperatives, which also have the potential to make agriculture viable to meet rising demand while enabling them to overcome obstacles through improved skill development, market access, lower transaction costs, resource pooling, information sharing, and collective bargaining power in market relations (Longo, 2016; Pionetti, 2011).

The government policy of reaching at least 70% of rural households with farmers' organizations in 2002 contributed a lot to the development of cooperatives in Ethiopia (Bolton, 2019). However, open membership policy and delivering services regardless of membership create incentive and investment problems in cooperatives (Bernard & Taffesse, 2012; Gelo et al., 2019). Following the shift in orientation of traditional cooperatives after 1988, cooperatives are facing strong market competition and a need for value addition in agricultural markets, and a need for considering organizational performance of collectives (Ishak et al., 2020).

Beyond encouraging participation in cooperative organizations, the country has paid less attention to the organizations' performance (Merihun & Endrias, 2017; Tewodros, 2017; Zena & Genet, 2019). Therefore, it is worthwhile to consider whether these cooperatives'

performance in Ethiopia is successful and to pinpoint elements that contribute to their success. Theories and empirical data on collective actions, however, are still being debated and contradicted with regard to performance, group size, contribution (investment), participation, and the effects of collective actions on raising household incomes (Krishna, 2003).

Furthermore, empirical research has revealed conflicting findings regarding the impact of group size on cooperative performance (Kifle et al., 2021; Pokharel et al., 2020). In Ethiopia, some externally induced cooperatives have a history of failure, while others have notable success stories (Yenenesh et al., 2020). The inconsistent performance of these cooperatives highlights the need to examine the factors influencing their effectiveness. Various studies conducted in Ethiopia, including those by Etenesh (2018), Kifle et al. (2021), Mustefa (2020), Solomon et al. (2019), and Tafesse et al. (2021), have focused on the factors affecting membership. However, research exploring the organizational-level performance of agricultural cooperatives, using cooperative organizations as the unit of analysis, remains scarce.

Several studies, including those by Temesgen (2015) and Kifle et al. (2021), examined commercialization through various metrics, such as the volume of grain marketed, overall sales, and the market orientation of smallholders. These authors also investigated cooperative performance, taking into account a range of performance indicators. They reported several internal and external factors that impact the performance of agricultural cooperatives and emphasized the importance of incorporating financial indicators into performance assessments.

It is therefore critical to investigate the performance level of Ethiopian cooperatives where there are diverse challenges ranging from member dimension to cooperative level and government support and other macro-level contexts. Performance of cooperatives has the power to drive member participation, commitment, satisfaction and sustainability. This study brings novelty in terms of unit of analysis, as many previous studies considered performance at the member level and considered the marketing and financial performance of agricultural cooperatives. Provided that agricultural cooperatives play an important role in agricultural production and marketing; the results of this study will improve the performance of the sector as it pinpoints key areas of improvement.

2. CONCEPTUAL FRAMEWORK OF THE STUDY

The conceptual framework for this study was developed by combining various previous empirical works and conducting a preliminary survey in the study area. The performance of agricultural cooperatives was measured by the amount of grain marketed, and the gross profit achieved at the cooperative level. The goal was to figure out why some cooperatives succeed while others fail. It was expected that both internal and external factors would have an impact on agricultural cooperative performance.

A performance study was conducted at the cooperative level, with agricultural cooperative organizations used as the unit of analysis, using data collected from cooperative management (BoD) and an audit report. In the figure below, the linkages among study variables are depicted. Performance is expected to be affected by the features of chairpersons and leaders, institutional, governance and structural characteristics, physical factors, infrastructure and external linkages and support.

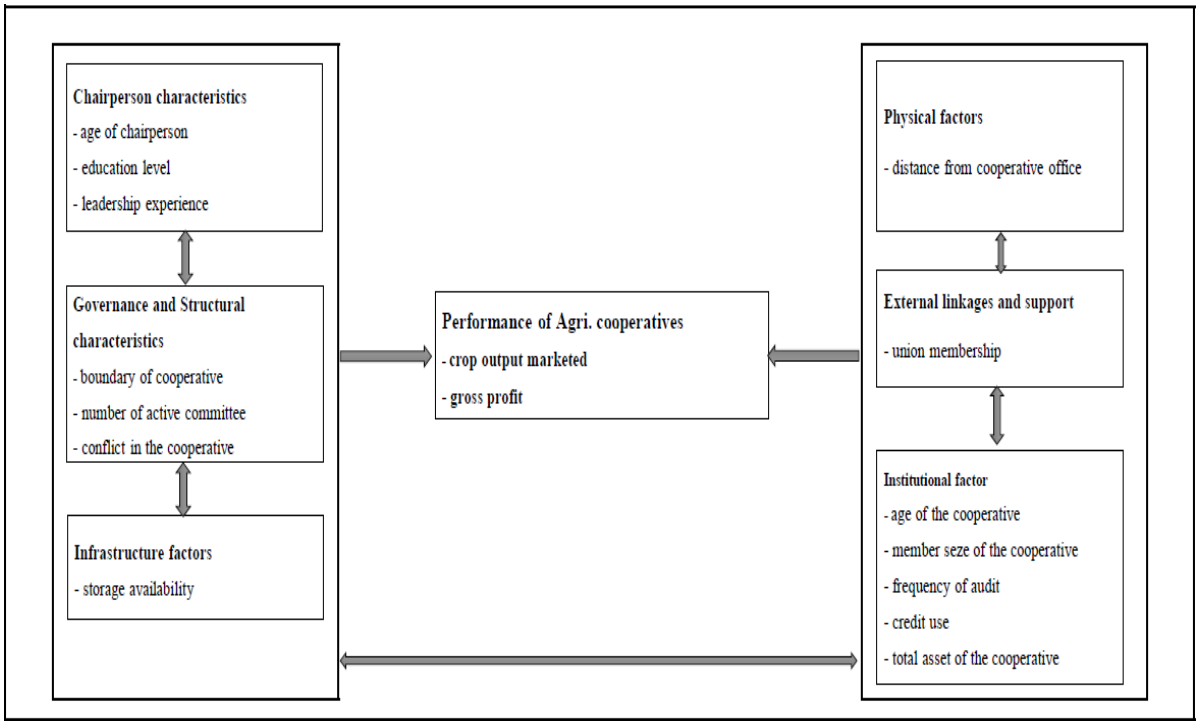


Figure 1

Conceptual Framework of the Study
Source: Developed for own study (2023)

3. RESEARCH METHODOLOGY

3.1. Description of the Study Area

Gamo Zone is located in the South Ethiopia Region, with approximate coordinates of 50.57 - 60.71"N latitude and 360.37 - 370.98"E longitude (Gamo Zone Department of Plan Unpublished Report, 2023). According to the (2007) National Population and Housing Census, the total population of the Zone in 2022 was 1,775,403, consisting of 883,207 males and 892,197 females, with an annual growth rate of 2.9%. More than 85% of the population relies on agriculture for their livelihood (CSA, 2024).

The Zone is divided into three ecological areas: highland (30.1%), midland (41.44%), and lowland (28.46%). The farmland is small and dispersed. The main cereal crops grown in the Zone are maize, tef, barley, wheat, and sorghum. Significant root and tuber crops such as sweet potatoes, potatoes, enset (false banana), and cassava are also grown The most common fruits grown in the area are bananas, mangoes, and apples, while coffee, groundnut, cotton, and sesame are prominent cash crops.

According to an unpublished report from the Gamo Zone Cooperative Development Office (2022), there were 358 primary cooperatives in the year 2020. The report indicates that the Zone has 106 primary multipurpose cooperatives with a total of 12,991 members, which includes 2,377 women and 10,618 men. The cooperatives collectively hold a capital of 239,755,395 ETB and have 126,825 members. Additionally, there are six unions (secondary tie cooperatives) with 241 members, holding a capital of 97,265,202 ETB.

3.2. Research Design

A mixed research design was used with the combination of a descriptive research design for quantitative data and a grounded theory design (thematic approach) for qualitative data based on cross-sectional data. A multistage sampling technique was employed, where sample woredas (districts) were randomly selected after stratifying based on agro ecologies. First, one woreda (district) was selected from every agroecology. Second, all agricultural cooperatives in selected districts were sampled (55), and finally, the data of 46 agricultural cooperatives with an audit report in 2022/23 were considered. Three members of the executive committee were involved from each of the 55 agricultural cooperatives for data collection.

Among agricultural cooperatives in sample woredas (Arba Minch Zuria, Boreda and Dita), multipurpose cooperatives were considered for their relevance for this study and for their roles in agricultural input and output marketing in the area. Out of fifty-five (55) agricultural (multipurpose) cooperatives in three selected woredas (Arba Minch Zuria, Boreda and Dita), following a multistage sampling technique, forty-six (46) multipurpose cooperatives that were audited in 2023 were selected.

First, three sample woredas (districts), Arba Minch Zuria, Boreda and Dita woredas were selected from three agro-ecologies of the Zone. These districts were selected for a large number of agricultural (multipurpose) cooperatives. Second, multipurpose cooperatives in three sample woredas were categorized as audited and not audited in 2023. Third, all audited multipurpose cooperatives (46) were selected for the study.

Out of these 46 cooperatives 14 (30.4%) were from Arba Minch Zuria, 19 (41.3%) were from Boreda *Woreda* and 13 (28.3%) were from Dita *Woreda*. From an agro ecological perspective, 15 (32.6%) are from highland (*Dega*), 12 (26.1%) are from midland (*Woina-dega*) whereas 19 (41.3%) multipurpose cooperatives are from lowland (*Kolla*) areas. Census method of sample size determination was followed based on recommendation of Cochran (1963) cited in (Nanjundeswaraswamy & Divakar, 2021). Cochran (1963) suggested that when the population under consideration is small, all population can be sampled which enhances accurate preciseness. Accordingly, the sample size is 46 as all audited multipurpose cooperatives were considered for analysis where total of 138 cooperatives leaders participated as data sources.

Out of the 46 cooperatives, 14 (30.4%) were from Arba Minch Zuria, 19 (41.3%) were from Boreda Woreda, and 13 (28.3%) were from Dita Woreda. From an agro-ecological perspective, 15 (32.6%) were from highland areas (Dega), 12 (26.1%) were from midland areas (Woina-dega), and 19 (41.3%) were from lowland areas (Kolla).

The census method of sample size determination was utilized based on the recommendations of Cochran (1963), as cited in Nanjundeswaraswamy and Divakar (2021). Cochran (1963) suggested that when the population is small, it is beneficial to sample the entire population, which improves the accuracy of results. As a result, the sample size consists of 46, as all audited multipurpose cooperatives were included for analysis, with a total of 138 cooperative leaders participating as data sources.

3.3. Techniques of Data Collection

Enumerators with expertise in survey methodology were selected based on their experience, educational qualifications, and relevant background in areas such as cooperatives, agriculture, and statistics. A total of 19 enumerators were chosen and trained to use the data collection instrument (the questionnaire) and the Kobocollect application. The data collected from cooperative organizations includes information about the characteristics of the chairperson and leaders, as well as institutional factors, governance, and structural characteristics of the cooperatives. It also covers aspects related to external support, linkages, and infrastructure issues within the cooperatives. Additionally, data concerning the marketing of cereal grains and financial performance (specifically gross profit) were gathered. Qualitative data were collected through Key Informant Interviews (KIIs), with participation from 18 key informants

3.4. Data Analysis

The quantitative data were analyzed by employing descriptive and inferential statistics. Descriptive statistics including mean, percentage, standard deviation, minimum, maximum and frequency distributions were used. Inferential statistics like ANOVA also employed to compare the performance variability among sampled *Woredas*. Tobit model regression was used to analyze factors affecting performance variability among agricultural cooperatives. The data from KII were analyzed through narration.

3.4.1. Econometric Model Specification

Cooperative performance can be approached through internal financial performance, stakeholder, customer, and internal business process (Wayan *et al*., 2019), marketing of member outputs (Bernard & Taffesse, 2012) by employing 2SLS (2 stage linear square) and Generalized method of moment (GMM). Others used the quantity of grain marketed through cooperatives, market share, purchase price, and marketing cost (Etenesh, 2018) by employing Multiple linear regression (MLR). It can also approached through farm output productivity, commercialization, and household livelihood aspects by employing binary logit model. In this study, the performance of agricultural cooperatives was examined using the methods of (Bernard & Taffesse, 2012) and (Ali *et al*., 2023), with a focus on grain marketing by agricultural cooperatives and gross profit.

A number of factors, including governance, organizational, physical, and institutional characteristics, and leader characteristics, can cause differences in the marketed output and profit between cooperatives. The Tobit model was used to examine both internal and external factors affecting agricultural cooperative performance, with the amount of grain marketed by agricultural cooperatives and gross profit serving as dependent variables. We have alternative models for data on agricultural cooperative performance measured by gross profit and amount of grain marketed, such as Ordinary Least Squares (OLS), censored Tobit, truncated model, and corner solution. According to the data collected from the sample cooperatives, there are many true zeros and we reject using truncated regression and corner solution as there is no truncation then we compared OLS and Tobit model. Tobit model was preferred over MLR as the data have many zeros which fails to meet some assumptions of OLS. OLS are not appropriate for data set with many true zeros where the dependent variable limited (bounded). Hence, censored Tobit model is appropriate when the dependent variable is left censored with true zeros (Mario & Samuele, 2021).

Greene (2003) employed the tobit model in the form of:

Y * = *X* b +e, where e_i is normally distributed with zero mean and constant variance.

Y* is gross profit and grain marketed. Thus, the value of the level of gross profit value is with lower limit of 0.

$y* = Xi\beta + ui$, u/x ~ Normal (0, σ^2) Y = max (0, y^*)

These equations constitute what is known as the standard censored tobit model (after Tobin, 1956) or type I tobit model (which is from Amemiya's 1985 taxonomy):

$Y^*_i = X'_i\beta' + \boldsymbol{\varepsilon}'_i$

For a Tobit model, the dependent variable can take the value of zero or positive values as follows:

$Y_i = y^*_i$ if $X'_i\beta' + \varepsilon'_i > 0$ and

$Y_i = 0$ if $X'_i\beta' + \varepsilon'_i \leq 0$

Where: y^*_i is a latent dependent variable, X'_i is a matrix of variables, β' is a parameter vector to be estimated, and $\varepsilon\Omega$ is a random disturbance term. The model assumes that: $\varepsilon\Omega \sim N(0, \text{ȝ})$. Based on (Maddala, 1992), the coefficients of performance were estimated by the maximum likelihood estimation: $f(y_1 \ldots y_n) = \prod_i^n (1/2\pi\sigma^2)^{1/2} \exp[-1/2\sigma^2 (y_i-\alpha-\beta x_i)^2]$ and the log-likelihood function for the tobit model. Marginal effect of explanatory variables on

performance of agricultural cooperatives was computed and analyzed by using STATA commands.

3.5. Variable Definition for Factors affecting Performance of Agricultural Cooperatives

Dependent Variable

Performance of agricultural cooperatives was approached by amount of crop output marketed and gross profit of the agricultural cooperatives.

Independent variables

Performance of agricultural cooperatives was expected to be affected by internal and external factors. In this study, factors affecting performance of agricultural cooperatives are categorized as internal factors related to member characteristics, chairperson and leaders' characteristics, governance and structural characteristics and external factors related to physical factors and external support and business links to the agricultural cooperatives.

1. Age of chairperson is a continuous variable. Young aged chairpersons were expected to perform better than those with old age and affect it was expected to affect performance of agricultural cooperatives negatively.
2. Education level of leaders of cooperative organization is a count variable of highest level of education status achieved by chairs of cooperative organization. Higher level of education level completed is expected to affect the performance of agricultural cooperatives as it has potential in improving overall performance, leadership, links with other organizations, utilization of improved communication tools and better planning and monitoring skills (Dendup & Aditto, 2020). Therefore, in this study also education was expected to affect performance of cooperatives positively.
3. Chairperson's leadership experience is continuous variable measured in years of leadership experience and expected to affect marketing and economic performance positively as experience enable to understand organizational issues very well, being creative and proactive in solving problems, making business relationship, better planning and so on (Dendup & Aditto, 2020). In this study, chairperson's leadership experience was hypothesised to affect performance positively.
4. Age of cooperative organizations is continuous variable measured in number of years after organization. It is expected to affect performance positively due to experience, business volume and member size advantage gained through time (Dendup & Aditto,

2020); Gezahegn *et al.*, 2021). Adane and Mekuria (2020) reported negative effect of age of cooeprative organizations on members' overall satisfaction. In this study, age of cooperatives was expected to affect performance positively.

5. Member size is a continuous variable measured in number of members in cooperatives and it is expected to affect performance positively. Optimum level of member size has advantage in size and contribution to cooperatives capital accumulation (Dendup & Aditto, 2020; Getaw *et al*., 2019; Kifle *et al*., 2021; Pokharel *et al.*, 2020). In this study, member size in number was expected to affect performance of cooperative positively.
6. Volume of capital in Ethiopian birr is continuous variable measured in ETB and expected to affect performance positively as volume of capital enable the cooperatives to operate their business smoothly with advantage of size (Dendup & Aditto, 2020; Gezahegn *et al.*, 2021; Kifle *et al*., 2021). In this study, volume capital of cooperative organization was expected to affect performance positively.
7. Conflict experience is presence of conflict in the cooperative organizations either between leaders and members or among leaders of the cooperative organizations. It is a dummy variable measured as 0 for no conflict and 1 otherwise. Conflict affect performance negatively (Kifle *et al*., 2021) due to its potential of harming activities of cooperatives, trust, motivation and commitments of leaders and members. In this study, presence of conflict in the cooperative organization was expected to affect performance negatively.
8. Boundary of cooperatives is a dummy variable to be measured as 0 for those with limited boundary (serving only members) and 1 otherwise. It is expected that cooperatives with services limited to their members are more likely to perform better than those with wide boundary (Tadesse and Badiane, 2018). In this study, it was expected to affect performance of cooperatives positively if cooperatives have limited boundary.
9. Distance from cooperative office is a continuous variable to be measured in kilometres is expected to affect cooperative level performance of agricultural cooperatives and members' satisfaction negatively as cooperatives in a distance places are less likely to get technical support and follow up from cooperative offices (Ali et al., 2023; Temesgen, 2015) . In this study, distance from the cooperative offices was expected to affect growth in crop output marketing and profit negatively.
10. Storage facilities is a dummy variable to be measured as 0 for those with storage facilities and 1 otherwise. Storage facilities are among components of cooperative success factors

(Temesgen, 2015; Tewodros, 2017). Storage facilities enable cooperatives to store crops from members to enable bulk selling for economies of scale advantage. Therefore, in this study also it was expected to affect performance of cooperative positively.

11. Membership in cooperative unions is a dummy variable to be measured as 0 for those with no membership in cooperative union and 1 otherwise. It is expected that having membership in union affects performance positively as it enable to share resources, information, bargaining power, access market (increase economies of scale) and improve competitiveness (Adane & Mekuria, 2020; Sebhatu et al., 2020). In this study, membership in cooperative unions was expected to affect marketing and economic performance positively.
12. Credit use is a dummy variable to be measured as 0 for cooperatives not used credit and 1 for those used credit. Credit is important for cooperatives to ease financial shortages. Access to credit positively affect performance of cooperatives (Temesgen, 2015; (Tewodros, 2017). In this study therefore, credit amount used was expected to affect performance positively.
13. Frequency of audit is a count variable of audit frequency of a cooperative in last three years. Audit service is important for cooperatives to show leaders their track and areas of improvement needed. Technical support and follow up assist cooperatives to perform better (Yenenesh *et al*., 2020). In this study also audit was expected to positively affect performance.

Table 1

Description, Measurement and Expected Relationship of independent variables with performance of agricultural cooperatives

No.	Variable	Variable Description	Measurement	Expected relationship with performance
1	Age of chairperson	Continuous	years	
2	Educational level of leaders	Continuous	grade completed	+
3	Chair's leadership experience	Continuous	years	+
4	Age of cooperatives	Continuous	years	+
5	Member size in number	Continuous	number	+
6	Volume of capital in ETB	Continuous	ETB	+
7	Conflict experience in cooperatives	Dummy	1 for yes and 0 for No	-
8	Service boundary of cooperatives	Dummy	0 for limited to members and 1 otherwise	+
9	Availability of storage facilities	Dummy	1 for yes and 0 otherwise	+
10	Distance from cooperative offices	Continuous	kilometre	-
11	Membership in unions	Dummy	1 for yes and 0 otherwise	+
12	Credit use	Dummy	1 for yes and 0 otherwise	+
13	Frequency of audit	count	number	+

Source: Own creation for study based on empirical studies, 2023

4. RESULT AND DISCUSSION

In this section, descriptive statistics of background characteristics of sample agricultural cooperatives is discussed followed by descriptive statistics of performance of the cooperatives. The last part is on econometric model regression result on determinants of financial and marketing performance of agricultural cooperatives. Discussions are also made in comparison with empirical studies.

4.1. Background characteristics of sampled agricultural cooperatives

4.1.1 Descriptive Statistics of Background Characteristics of Agricultural Cooperatives (Continuous Variables)

Based on the audit status of 55 agricultural cooperatives in three sample Woredas, 46 multipurpose primary cooperatives were selected for data collection on variables that were expected to affect performance. According to the survey results for these cooperative organizations as shown in Table 2, the average age of the chairpersons is 52.59 years, and their highest education level completed is 6.79 years. Some cooperative chairpersons did not complete formal schooling. Another significant factor expected to influence the cooperatives' performance is the leadership experience of their chairperson, which in these organizations has a mean of 10.43 years. The mean age of the agricultural cooperatives is 9.39 years. The mean distance of the cooperatives from the *Woreda* (district) cooperative Offices is 13.20 km.

Table 2

Descriptive Statistics of continuous Variables (N= 46)

Predictor Variable	Mean	Std. Dev	Min	Max
Age of chairperson	52.59	9.42	39	75
Educational level of chairperson	6.76	3.30	0	15
Chairpersons' leadership Experience	10.43	7.34	1	41
Age of the cooperative	9.39	3.50	2	23
Distance from cooperative Offices	13.20	10.10	0.8	42.00
Frequency of audit	1.5	0.75	1	3
Total asset the organization in ETB	655342.6	698287.8	19748.95	3200000.00
Total asset of the cooperative/members	82.29	3267.53	537.79	3647.44
Total members of the cooperative	226	175.18	20	768

Source: Own computation from survey, 2024

The size of the cooperative organization is a factor that affects the performance of collective groups. Empirical works define cooperative size by using different indicators including total capital/asset of the collectives, members size, sales volume, number of professionals employed under the collective groups and others. In this study, as shown in Table 2, the capital/asset of the collective group and member size are used as a proxy for the size of the collective group. The mean total asset value of the cooperatives is 655,342.59 ETB while the mean asset value of the cooperatives per member is 21,333.33 ETB. The minimum and

maximum value of total assets and assets per member reveals that there is a great disparity among cooperatives. The mean member size of the surveyed cooperatives is 226.

4.1.2. Descriptive Statistics of Background Characteristics of Agricultural Cooperatives (discrete Variables)

Failure of cooperatives after formation and registration is an important problem in the history of Ethiopian cooperatives owing to various factors. Ethiopian cooperative history shows that most cooperatives externally initiated particularly by politically induced were failed in many areas of the country. In this study, cooperatives are identified by their initiator and only 23 (50%) out of forty-six (46) cooperatives are initiated by their members while 23 (50%) were initiated by others including government and NGOs. Regarding external support during the formation of the cooperatives, 29 (63%) of the cooperatives did get either material or financial support or both.

The survey result in Table 3 reveals that 34 (73.9%) multipurpose cooperatives out of 46 are serving both members and non-members of the cooperatives. This study revealed that only nine (19.6%) sampled cooperatives have professional managers while the rest 37 (80.4%) have no professional managers revealing trained human power is important factor related to performance and success of cooperatives in the area. Credit access and use is important for cooperatives, but most cooperatives get challenged in this regard. In this survey also only 2 (4.3%) out of 46 cooperatives used credit in 2023 highlighting difficulty of access to credit. Key informants of the study in Kolla Shele *kebele* (*Kebele* is lower administrative unit in Ethiopia) of Arba Minch Zuria *Woreda* also strongly insisted the problems to get credit due to many bureaucratic challenges

Table 3

Descriptive Statistics of discrete variables

Variable	Description	Frequencies of Response	Percentage
Initiator of the cooperatives	Members	23	50
External support	Yes	29	63
Presence of conflict	Yes	7	15.2
Boundary of the cooperative	Members only	12	26.1
Professional manager	Yes	9	19.6
Use of Credit	Yes	2	4.3
Membership in cooperative unions	Yes	25	54.3
Presence of storage facilities	Yes	32	69.6

Source: Own computation from survey, 2024

Membership in cooperative unions (secondary ties) is expected to enhance the capabilities of primary cooperatives by providing access to credit and taking advantage of economies of scale in the marketing of agricultural inputs and outputs. In sampled *Woredas*, the result in Table 3 reveals that 25 out of 46 (54.3%) multipurpose cooperatives members of cooperatives unions, while 21 (45.7%) cooperatives are not member of unions indicating the need for interventions in this area. Upon investigating the reasons why primary cooperatives are hesitant to join unions, the results of key informant interviews suggest that although the union initially showed promising activity, its effectiveness has diminished due to political interference in the administrative and financial management of the unions.

60 years old male key informant in Boreda *Woreda* (Zefine Manuka *Kebele*) said that their primary cooperative is a member of cooperative union called "*Hidota"* which is mainly engaged in marketing of cereal grain was very strong and had been satisfying its members. Currently, this union is facing challenges like interference from outside and he informed that they are obliged to pay money to different affairs (not related to their business) of the government and are even not allowed to ask why they are paying the money. Therefore, it needs to make cooperatives free from political interference and support them in various ways to empower them. Another 46 years old male key informants from the same *Kebele* said that "The Hidota Grain Marketing Union'' is based, said that "*the union was initiated and supported mainly by an NGO called NURU International and after its phase-out, the Union's overall activities became weak*". This highlights the disadvantages of externally inducing collective groups and the importance of making strategic support and exit.

Agricultural cooperatives entail infrastructure such as offices and storage facilities to carry out their organizational activities. A total of 32 cooperatives (69.6%) indicated that they have storage facilities, which play a critical role in marketing agricultural (crop) products and providing agricultural inputs to farming households. The findings show that a significant number of cooperatives have storage facilities even if they are not actively involved in marketing of agricultural products. The outcome necessitates significant efforts to empower these cooperatives, enabling them to engage in activities that can enhance the livelihoods of their members by improving agricultural production, productivity, and marketing output.

This can be achieved through providing training, credit supply to cooperatives, and other forms of support.

4.2. Performance of Agricultural Cooperatives in the Study area

Both financial and non-financial aspects are taken into account when analyzing performance in this study. The amount of crop output marketed is used to measure and analyze the non-financial performance, while the gross profit in ETB is used to measure and analyze financial performance. The frequency distribution of grain marketing shows that out of 46 agricultural cooperatives surveyed, 15 (32.6%) had not marketed grain from 2021 to 2023 whereas 19 (41.3%) agricultural cooperatives had not marketed grain output in 2023. Frequency distribution of gross profit on the other hand shows out of 46 agricultural cooperatives, 2 cooperatives recorded no profit from 2021 to 2023 and 11 cooperatives had no profit in 2023.

As shown in Table 4, the average grain crop sold in quintals over 2021 to 2023 was 86.73. In 2022–2023, cooperatives sold an average of 63.12 quintals of grain, while 19 (41.3%) cooperatives did not report selling any quintals of grain. The average amount of grain crop marketed in quintal per member in 2022/2023 was 0.52.

Table 4

Descriptive Statistics of performance of Agricultural Cooperatives in 2022/23 (N=46)

Cooperative Performance Indicators	Mean	Std. Deviation	Minimum	Maximum
Grain marketed in qt.	63.12	98.30	0.00	400.00
Grain marketed in qt. per member	0.5249	1.56	0.00	10.30
Gross profit in ETB	49624.92	60257.65	0.00	225185.00
Gross profit per member in ETB	517.00	1188.29	0.00	7462.59

Source: Own computation from survey data, 2024

Gross profit is most commonly used financial performance indicator in cooperatives' performance studies (Ahmad & Burhan, 2019; Tafesse *et al*., 2019). In this study also, profit is considered as indicator of performance of agricultural cooperatives in the study area. The financial audit report of cooperative is used as data source for analysis. As it is depicted in Table 4, mean gross profit of cooperatives is 40,868.94 ETB. Mean gross profit of agricultural cooperatives last year was 49,624.92 ETB. Mean gross profit per member last year (2022/23) was 517.00 ETB. In the Table 4, key performance indicators for grain output marketing and financial performance are depicted.

4.2.1. Descriptive Statistics of performance of Agricultural Cooperatives by Woredas

An essential metric for assessing and evaluating agricultural cooperative performance is grain marketing performance (Bernard & Taffesse, 2012; Yenenesh *et al*., 2020). Table 5 shows that, over the past three years, agricultural cooperatives have marketed the most grain crop in Boreda *Woreda* (175.33 qt.), followed by Ditta *Woreda* cooperatives (39.37 qt.), and cooperatives in Arba Minch Zuria *Woreda* (AMZ) have marketed the least amount (17.47 qt.) per three years.

The average amount of grain crops sold by agricultural cooperatives in the sample *Woredas* over 2021 to 2023 is 86.73 quintals as shown on Table 5. Cooperatives in the area sold an average of 63.12 quintals of grain during the 2022/23 production year. The highest mean amount sold by cooperatives in the area was 118.96 quintals from Boreda *Woerda*, followed by 30.42 quintals from AMZ, and 16.73 quintals from Dita *Woreda*. Another crucial performance indicator that is calculated for each cooperative is the grain marketing performance per member in quintals. The average amount of grain sold per member is 0.52 quintal, while the highest amounts per member are 1.00 quintal in AMZ, 0.43 quintal in Boreda, and 0.15 quintal in Dita *Woreda*.

Table 5

Performance of Agricultural Cooperatives by Sample *Woredas* in 2022/23 (N=46)

Woreda		Performance of Agricultural Cooperatives					
		Grain crop marketed			Gross profit		
		2021-23	2023	2023/ member	2021-23	2023	2023/member
AMZ	Mean	10.47	30.42	1.00	19950.93	44938.36	1226.25
	Std. Dev	21.76	65.66	2.75	19163.30	48973.55	1983.94
	Min	0.00	0.00	0.00	663.98	0.00	0.00
	Max	75.53	226.60	10.30	50427.31	149251.80	7462.59
Boreda	Mean	175.33	118.96	0.43	58896.53	61545.22	205.92
	Std. Dev	272.24	122.06	0.54	70894.12	75664.04	223.22
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	1040.64	400.00	2.33	221115.67	225185.00	710.36
Dita	Mean	39.37	16.73	0.15	37048.01	37250.03	207.85
	Std. Dev	99.36	26.46	0.34	44351.20	44875.81	335.78
	Min	0.00	0.00	0.00	0.00	0.00	0.00
	Max	356.67	75.00	1.15	15,1858.33	15,4000.00	1104.50

Source: Own computation from survey data, 2024

Financial performance is the most commonly used measure of the performance of cooperatives, with different indicators as proxy, including total sales volume, financial ratios, and profit (Ahmad & Burhan, 2019; Kifle *et al*., 2021; Mossisa, 2020; Tafesse *et al*., 2019). In this study, based on audit reports of agricultural cooperatives, the financial performance of agricultural cooperatives was analysed by considering proxies total gross profit and total gross profit per member in 2023.

As can be seen from Table 5, the average annual gross profit from 2021-2023 has been 40, 868.94 ETB. Boreda has the highest mean gross profit of 61,545.22 ETB, followed by AMZ with 44938.36 ETB, while cooperatives in Dita Woreda have the lowest mean gross profit of 37,250.03 ETB. The mean gross profit, calculated by dividing the total gross profit by the total number of cooperative members, is 517.00 ETB. Cooperatives in Boreda *Woreda* reported the lowest mean gross profit per member at 205.92 ETB, while AMZ *Woreda* cooperatives had the highest mean gross profit per member at 1226.25 ETB, followed by Dita Woreda cooperatives at 207.85 ETB.

Table 6

Mean difference of performance of agricultural cooperatives among Sampled *Woredas* (ANOVA test)

Performance Indicator	Mean difference	Sum of Squares	df	Mean Square	F	Sig.
Grain marketed	Between Groups	68.440	2	34.220	9.292	.000***
	Within Groups	158.361	43	3.683		
	Total	226.801	45			
Gross profit	Between Groups	25.056	2	12.528	.563	.574
	Within Groups	957.491	43	22.267		
	Total	982.547	45			

Source: own computation from survey, 2024

The ANOVA test shows that there is significant mean difference of grain crop market among sampled *Woerdas.* The post hoc analysis shows the significant mean difference on grain amount marketed is between AMZ and Boreda *Woredas* and between Boreda and Dita *Woredas*

4.2.2. Tobit model analysis of grain marketing performance of agricultural cooperatives

Grain marketing performance is another indicator to examine the performance of agricultural cooperatives in the area. Marketing of grain output is used as a proxy for marketing performance. The Tobit model was used to examine factors affecting the grain marketing performance of the cooperatives in the area. Thirteen independent variables were included based on an empirical and theoretical literature review. Out of these variables, four variables were found to be significantly affecting the grain marketing performance of agricultural cooperatives in the area. Leadership experience of cooperative chairpersons, cooperative boundary (serving members or both members and non-members), union membership, and cooperative size (capital) were found to be significantly affecting grain marketing performance.

The Tobit model is checked for goodness of fit and model specification by using the link test; other tests like heteroscedascity (tobcm) stata command test and multi-collinearity test by using the VIF test. All the tests assured that there is no problem of fitness or specification error, and it passed all other tests and found that the Tobit model is appropriate for the data set. After running the Tobit model, the influence of independent variables on the dependent variable (grain marketing performance) was analysed by running the marginal effect after Tobit by using the Stata command "dTobit2.".

As shown in Table 7, at the 10% significance level, cooperative chairpersons' leadership experience has a positive and significant impact on grain marketing performance, which is consistent with earlier predictions.

Table 7

Tobit model Regression Result on Factors affecting Grain Output Marketing Performance

LR chi^2 (13) = 32.24 Prob > chi^2 = 0.0022

Log likelihood = -72.432904 Pseudo R^2 = 0.1820

lnGRMRKTD	Coef.	Std. Err.	Marginal Effects after Tobit		
			uncondition al	condition al	probability
Age of chairperson	0 .0622	0.0667	0.0365	0.0258	0.0105
Edu. level of Chairperson	0.1849	0.1445	0.1086	0.0766	0.0314
Leadership experience	0.1193	0.0659*	0.0700	0.0494	0.0202
Conflict in the coop.*	-1.7535	1.2980	-1.0292	-0.7260	-0.2974
Service boundary *	2.3689	1.0404*	1.3904	0.9808	0.4018
Age of cooperatives	0.0538	0.1712	0.0316	0.0223	0.0091
Distance to coop office	-0.0276	0.0594	-0.0162	-0.0114	-0.0047
Credit use*	-.3270	2.0759	-0.1919	-0.1354	-0.0555
Union membership*	2.8104	1.0831*	1.6496	1.1636	0.4767
Storage facility*	-.9114	1.3200	-0.5349	-0.3773	-0.1546
Freq. of audit	0.7628	0.6482	0.4477	0.3158	0.1294
Total asset	1.74e-06	7.73e-07 *	0.0000	0.0000	0.0000
Cooperative size	0.0027	0.0038	0.0016	0.0011	0.0004
_cons	0.0027	0.0038			
Var (e.lnGRMRKTD)	5.27	1.5803			

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

Source: Own computation from survey, 2024

The marginal effect demonstrates that, when all other factors are held constant, the likelihood of grain marketing performance going uncensored rises by 2.02% for every year of increased leadership experience. This is due to the fact that chairpersons with leadership experience are more likely to connect with possible grain output outlets and are more likely to employ a variety of strategies in their quest for a better market. This finding, however, contradicts the findings of (Kifle *et al*., 2021) who found that the economic performance of agricultural cooperatives in Northern Ethiopia was adversely affected by leadership experience.

At the 5% significance level, serving only cooperative members has a positive impact on grain marketing performance as depicted in Table 7. When all other factors are held constant, the likelihood of the grain marketing being uncensored is 40.18% higher for cooperatives that serve only cooperative members than for those that serve both members and non-members of agricultural cooperatives. This is due to the fact that cooperatives are more likely to be able to manage marketing services for their members and better coordinate their members. This outcome is in line with earlier projections and the findings of *(*Getaw *et al*.,

2019) who discovered that offering club goods as opposed to public goods had a noteworthy and advantageous impact on Ethiopian marketing cooperative performance. Cooperatives are categorized in this study as either serving only members or serving both members and non-members. Cooperatives that provide for the public good are similar to those that serve both members and non-members, and vice versa. Thus, serving only members has a positive impact on cooperatives' grain marketing performance, which implies that offering club goods has a positive correlation with performance.

Cooperatives are more likely to have access to a better market for agricultural inputs and output when they are members of a union. Agricultural cooperatives' performance in grain marketing is positively and significantly impacted by membership in cooperative unions. As shown in Table 7, holding all other factors constant, the likelihood of grain marketing performance being uncensored increases by 47.67% when cooperatives join unions (secondary ties). This is due to the fact that unions are set up to help primary cooperatives gain access to better markets that can provide members with higher wages at competitive prices. However the result is against the work by (Kifle *et al.*, 2021) where union membership negatively influenced economic performance of agricultural cooperatives in Northern Ethiopia.

4.2.3. Tobit Model result on factors affecting financial Performance (gross profit) of Agricultural Cooperatives

To support descriptive and correlation analysis of dependent variable (performance of agricultural cooperatives measured by gross profit), econometric model (Tobit model) was run to identify factors significantly affecting agricultural cooperatives performances. The gross profit is used as dependent variable in a model to identify factors affecting performance of agricultural cooperatives. For gross profit as dependent variable, OLS and Tobit models can be used, but Tobit model is more appropriate as OLS has limitations in censored data. The data have many 0 values on gross profit and that is censoring from below. OLS model is inconsistent in censored data due to violation of classical linear regression model assumptions.

To run the Tobit model, the model should be correctly specified, the main model should be linear, and error terms should be normally distributed. By using different tests, it was assured

that the model fully meets the above assumptions. After running the Tobit model, the model specification is checked by "*linktest"* where the result shows no specification error as hat square is insignificant (0.169). Model fitness was also checked by "*lfit"* test where the model appropriately fits to the data. Another important test done after Tobit model was "heteroskedastic" test to check whether the variances are constant across all observations (homoscedastic). This was done by using STATA command "*tobcm*" and the result shows the variances are constant across all observations. Multicollinearity among independent variables was also checked by VIF by using regress VIF STATA command.

According to the Tobit regression result, out of thirteen variables fitting to the model, eight variables found significantly affecting gross profit of agricultural cooperatives in the area. To analyze the effect of independent variables on dependent variable (gross profit), marginal effect was also computed after Tobit model. Out of eight variables significantly affecting performance of agricultural cooperatives, availability of storage facility significantly affect by probability of less than 1%, five variables (leadership experience of leaders, cooperative boundary, distance from cooperative Office, frequency of audit and total capital of the cooperative) significantly affect at probability of less than 5% while two variables (age of leaders and union membership of cooperatives) affect at error margin of less than 10%. Marginal effect after Tobit was also computed by using STATA command dTobit2. Probability of being uncensored is used to analyze the effect of a change in independent variable on dependent variables (gross profit of agricultural cooperatives).

Age of leaders of the cooperatives measured in years affect performance of agricultural cooperatives negatively and significantly at less than 10% significance level holding other variables constant which is against prior expectation. Aged cooperative leaders might have more responsibilities beyond cooperatives as they might have other social and households affairs than their younger counterparts which makes them to devote less time to serve in the cooperatives. Another reason might be younger chairpersons are more eager and cautious in managing cooperatives as they have better education and ability to understand better ways of doing things. Though this result is against initial expectation of the study, it matches previous studies by (Gezahegn et al., 2020). Marginal effects after Tobit also shows that when the age of the leader increase by a year, the probability of gross profit being uncensored decreases by 1.84% holding other variables constant.

Leadership experience of the cooperative leaders showed a significant positive influence on gross profit of agricultural cooperatives at 99% significance level. This result agrees with prior expectation of the study. The marginal effect also shows that when leadership experience of cooperative leaders increases by a year, the probability of the performance (gross profit) of agricultural cooperatives being positive increases by 1.96%. This result is similar with initial expectation of the study and also with previous studies by (Dendup & Aditto, 2020).

Boundary of cooperatives in terms of scope of service delivery, serving only members is positively and significantly influencing performance (gross profit) of cooperatives at less than 5% significance level. Provided the limited capital and trained personnel to support the activities of cooperatives, large scope adds more cost on cooperatives. This result meets initial expectation of the study and also previous studies by (Getaw *et al*., 2019;Tadesse & Badiane, 2018). They reported that cooperatives with limited range of services are more competitive than those delivering wide range of services. The marginal effects result after Tobit also shows that the probability of gross profit of cooperatives that serve only members being positive (above 0) is higher by 24.64% than those serving both members and non-members.

From the model result, the distance of agricultural cooperatives from *Woreda* Cooperative Offices (measured in kilometers) showed a significant negatively effect on performance (gross profit) which agrees with prior expectation of the study. This is due to the reason that when agricultural cooperatives are far away from cooperative Offices, they merely get supervision, inspection and audit services. The marginal effect also shows that when distance of agricultural cooperatives from Cooperative Offices increases by a kilometer, the probability of the performance (gross profit) of agricultural cooperatives being uncensored (above 0) decreases by 1.14% holding other variables constant. This result is similar with initial expectation of the study and also with empirical studies by (Ali *et al*., 2023;Temesgen, 2015).

Agricultural cooperatives in general and multipurpose cooperatives in particular participate in delivery of diverse services like; agricultural inputs, consumer goods and marketing of agricultural outputs which needs storage facility. In this study, availability of storage facility at cooperative level was expected to affect performance positively. The model result as

depicted in Table 8 shows positive and significant effect of availability of storage facility on performance of agricultural cooperatives at 99% significance level or less than 1% error margin. Holding other variables constant, when the cooperatives have storage facility, the probability of the performance (gross profit) of agricultural cooperatives being uncensored (above 0) increases by 55.16%. This result is analogous with previous expectation and other empirical studies by (Kifle *et al*., 2021; Temesgen, 2015).

Union membership of primary cooperatives was expected to affect performance positively as membership is expected to provide them with access to better market, get market information, economies of scale advantage, access to trainings and experience sharing from other primary cooperatives. In this study also union (secondary ties) membership positively and significantly affects performance (gross profit) at 90% significance level or less than 10% error margin. The marginal effect result also shows that when the primary cooperatives become member of unions (secondary ties) the probability of their gross profit is being uncensored is higher by 23.64% than those not a member in cooperative unions. This result is similar with initial expectation and with other previous studies by Hiskeal *et al*. (2022), but contrasting with studies by (Kifle *et al*., 2021) on "Exploring variability across cooperatives: economic performance of agricultural cooperatives in northern Ethiopia".

Table 8

Tobit model Regression Result on Factors affecting Financial Performance

LR Chi^2 (13) = 41.77 Prob > Chi^2 = 0.0001

Log likelihood = -103.92845 Pseudo R^2 = 0.1673

lnGRSPRFT	**Coef.**	**(Std. Err.)**	**Marginal Effects after Tobit**		
			unconditional	conditional	probability
Age of chairperson	-0.2156	0.0978*	-0.1641	-0.1174	-0.0184
Edu. level of Chairperson	-0.3218	0.2427	-0.2449	-0.1753	-0.0274
Leadership experience of Chairperson	0.2300	0.0986**	0.1750	0.1253	0.0196
Conflict in the coop.*	-2.0862	1.8563	-1.5874	-1.1361	-0.1777
Serving members only *	2.8923	1.4151**	2.2007	1.5751	0.2464
Age of cooperatives	-0.0709	0.2408	-0.0540	-0.0386	-0.0060
Distance to coop Office	-0.1349	0.0785**	-0.1027	-0.0735	-0.0115
Credit use*	3.2836	3.2097	2.4984	1.7882	0.2797

lnGRSPRFT	**Coef.**	**(Std. Err.)**	**Marginal Effects after Tobit**		
			unconditional	conditional	probability
Union membership*	2.7755	1.4275*	2.1118	1.5115	0.2364
Storage facility*	6.4755	1.8540***	4.9270	3.5264	0.5516
Freq. of audit	2.2080	0.9737**	1.6800	1.2024	0.1881
Total asset	0.0000003	0.0000001**	0.0000	0.0000	0.0000
Cooperative size	0.0053	0.0057			
_cons	11.9617	6.5820			
Var(e.lnGRSPRFT)	13.2671	3.3841			

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

Source: Own computation from survey 2024

Audit frequency is one of independent variables expected to affect performance of agricultural cooperatives. Audit helps cooperatives to know their financial status, any wrong doings and areas to improve which enable the cooperatives to be in right track and understand their financial and non-financial performances. Cooperatives those with frequent and regular audit have advantages to improve their performance and hence their profitability. In this study, audit frequency positively and significantly affects performance of agricultural cooperatives at 95% significance level citrus paribus.

When the frequency of audit increases, the probability of gross profit of agricultural cooperatives being uncensored (above 0) also increases by 18.81% while expected value of gross profit conditional on being uncensored and unconditional expected value of gross profit also increases by 172.04% and 189.6% respectively. This result in lines with initial expectation of the study and also with studies by (Kifle *et al*., 2021) where they reported that presence of audit committee within the cooperative organization positively affected financial performance of cooperatives in Northern Ethiopia. The study also matches previous study by Otache *et al*. (2023) in Nigeria where they revealed that setting clear internal guidelines and procedures of undertaking activities and continuous checking of these improve performance of employee-based credit saving cooperatives.

Total capital of a cooperative organization was expected to affect performance positively. However, the Tobit result reveals capital of agricultural cooperatives negatively and significantly affecting performance at 95% significance level which is against prior expectation of the study. The reason for this might be many cooperatives in AMZ *Woerda*

with large capital are not undertaking other business activities that can increase their profit. 43 years old female key informant from Kola Shele Kebele of Arba Minch Zuria (AMZ) *Woerda* also reported that agricultural cooperatives in the study area sell consumer goods to both members and non-members of the cooperatives mainly by influence of the government where the prices is fixed and set by government bodies which is not covering their administrative costs and affecting their financial capital negatively. The result is also consistent with previous study by Mekonnen (2021) where this author revealed that size of cooperatives is negatively correlated with financial sustainability of saving and credit cooperatives in Eastern Ethiopia. Marginal effect result shows that when capital of agricultural cooperatives increase by one ETB, the probability of gross profit of agricultural cooperatives being uncensored (being above 0) decline by 0.000000029%.

5. CONCLUSION AND IMPLICATIONS

5.1. Conclusion

This study aimed to assess the performance levels and factors influencing the performance of agricultural cooperatives in Southern Ethiopia. Data were collected using a structured questionnaire and key informant interviews.

The analysis of agricultural cooperatives' performance in the area reveals a concerning trend in marketing effectiveness. Only 58.7% of cooperatives successfully marketed their grain output. Additionally, 15 cooperatives (32.6%) did not engage in grain marketing activities from 2021 to 2023, and 19 cooperatives (41.3%) did not market cereal grain crops at all in 2023. Identifying the challenges related to marketing services is an important area for future improvement. The financial performance assessment also indicates that agricultural cooperatives in the area are underperforming financially. Out of the 46 cooperatives audited, 11 (23.9%) reported no profit. Moreover, the average gross profit per member of the cooperatives is 517 ETB, which is a minimal amount. Therefore, it can be concluded that the performance of agricultural cooperatives in both marketing and financial aspects is not satisfactory for their members. However, the performance of cooperatives varies significantly across the sampled Woredas. Furthermore, the auditing of agricultural cooperatives is not conducted regularly, leading to poor dividend distribution in many of them.

On the other hand, the analysis of factors affecting the performance level of agricultural cooperatives in the area indicates that variables including leadership experience of chairperson, union membership, service boundary and total asset of the cooperatives found influencing both marketing and financial performance. Whereas; age of chairperson, availability of storage facility, frequency of audit and distance from the cooperative Offices found significantly influencing financial performance of agricultural cooperatives in the area.

Leadership experience found positively and significantly affecting performance of agricultural cooperatives. Financial performance and capital asset negatively correlated meaning cooperative organizations are not investing financial capital on business activities that can boost profit. Furthermore, many cooperatives are not engaged in cereal grain marketing. Union membership positively and significantly influence performance, but primary cooperatives are not joining unions where only 45.7% cooperatives are affiliated to unions in the area. Majority of sampled cooperatives (80.4%) are run without the assistance of professional managers and adhere to the traditional cooperative model.

Even though financial capital is essential to cooperative business operations, only 2 (4.3%) of the sampled agricultural cooperatives were able to obtain credit, indicating a challenge with credit availability. Key informant interviews also revealed that lengthy bureaucracy makes it difficult for cooperatives to access credit.

Another factor crucial to consider is that a number of sampled cooperatives have inadequate control mechanisms and the survival of cooperatives is in jeopardy as nine cooperatives have not been audited in the last three years (2021-2023). Cooperatives without audits were unable to determine their financial situation and were unable to pay dividends to their members. It was also found that financial capital has a negative correlation with agricultural cooperative performance, indicating that agricultural cooperatives with better financial capital are not reinvesting the capital on other profitable ventures.

5.2. Implications for future Research

Concerned bodies should work on regular auditing and dividend distribution to members, utilization of available financial capital for business expansion and improving services to their members. Further research may look at financial performances of agricultural

cooperatives based on different financial performance metrics, such as ratios and financial performance of other types of cooperatives.

Union membership found significantly affecting both financial and marketing performance of cooperatives and highlights future work on strengthening unions and encouraging primary cooperatives to join and boost from economies of scale.

The governance style of cooperatives is crucial to their ability to compete in the market and provide services to their members and the larger community. Therefore, the agricultural cooperatives and cooperative Offices should review governance structure and appoint qualified managers to oversee day-to-day operations. Government agencies and other supporting organizations may consider access to credit to increase cooperatives' financial capital.

Future works can explore the impact of dividend allocation on members' involvement, dedication, and financial contributions to their cooperatives. Subsequent studies can look into the issues and difficulties surrounding financial capital investment. Agricultural cooperatives in distance from cooperative Offices should get better attention for audit and supervision services as it distance from cooperatives Offices negatively and significantly influencing financial performance.

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Ethics statement

Consent to Participate

Informed consent was obtained from all individual participants included in the study.

Consent to publish

We declare that all of the material in the manuscript is owned by the authors and/or no permissions are required.

Ethical approval

Approval was obtained from the ethics committee of University. The procedures used in this study adhere to the tenets of the Declaration of Helsinki.

Clinical trial number: not applicable**.**

7. DATA AVAILABILITY STATEMENT

The data collected for analysis of this research is available at Mendeley Data and Digital Commons Data at https://data.mendeley.co/datasets m /kd8422nbjj/1

8. DECLARATION OF INTEREST

We here declare that all authors of the article have no conflict of interest.

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