



SCHOOL OF GRADUATE STUDIES

**ASSESSING THE CONTRIBUTION OF BANANA PRODUCERS'
COOPERATIVES IN ENHANCING VALUE CHAIN DEVELOPMENT IN
CASE OF ARBA-MINCH ZURIYA WOREDA, GAMO ZONE, ETHIOPIA**

MSc THESIS

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**Assessing the Contribution of Banana Producers' Cooperatives in
Enhancing Value Chain Development in Case of Arba-Minch Zuriya
Woreda, Gamo Zone, Ethiopia**

**A Thesis Submitted to School of Graduate Studies, in Partial Fulfillment of
the Requirements for the Degree of Master of Science in Agribusiness and
Value Chain Management**

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We hereby certify that we have read and evaluated this thesis entitled “**Assessing the Contribution of Banana Producers’ Cooperatives in Enhancing Value Chain Development in Case of Arba-Minch Zuriya Woreda, Gamo Zone, Ethiopia**” prepared under our guidance by Yetsena Yakob Taka. We recommend that the thesis be submitted as fulfilling the requirement for the award of a MSc. Degree in Agribusiness and Value Chain Management.

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DEDICATION

This thesis is dedicated to my mother, Zewuditu Godana, and my father, Yakob Taka, who laid the foundation for my education and my present status

DECLARATION

I declare that this MSc thesis entitled “**Assessing the Contribution of Banana Producers’ Cooperatives in Enhancing Value Chain Development in Case of Arba-Minch Zuriya Woreda, Gamo Zone, Ethiopia**” is my original work and has not been presented for any degree at any other university, and all sources of material used for this thesis have been properly acknowledged.

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ACRONYMS AND ABBREVIATIONS

AISCO	Agricultural Input Supply Corporation
CDC	Cooperative Development Council
CSA	Central Statistical Agency
FAOSTAT	Food And Agriculture Organization Statistics
FCA	Financial Conduct Authority
FDRE	Federal Democratic Republic Of Ethiopia
GDP	Gross Domestic Product
GMM _P	Gross Marketing Margin of Producer
ICA	International Cooperative Alliance
ILO	International Labor Organization
NBE	National Bank of Ethiopia
NCBA	National Cooperative Business Association
SNNP	Southern Nations Nationalities And Peoples
TGMM	Total Gross Marketing Margin

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ABSTRACT

This study aims to assess the contribution of banana producer cooperatives in enhancing value chain development. Two-stage sampling procedures were used for the selection of 113 sample household heads. Both primary and secondary data were used for this study. Both descriptive and econometric analyses method were used. The result of the Likert scale indicates that the majority of members of banana-producing cooperatives have a positive perception towards the socioeconomic impact of cooperative in value chain development. Banana producers received higher returns when they sold their banana directly to rural retailers. The result of the econometric analysis by the probit regression model the variables were age, educational level, farm size, income, access to information, and awareness about cooperatives was found to significantly determine banana producers' decision to join banana primary cooperatives. Major challenges of primary banana producer's cooperatives in the study area were lack of capital, illegal traders, little awareness about cooperatives, cheating in weight balance, and fluctuation of the domestic banana price. In addition, opportunities in the study area were the availability of suitable agro-ecology and the existence of cooperative experts at the Kebele level. From the finding, it is therefore recommended that the locale government and other concerned bodies give special attention to encouraging and attracting rural producers to cooperatives because cooperatives are the basis for value chain development.

Key Words: Producer's cooperative, banana, market outlet, probit model, value chain

1. INTRODUCTION

1.1. Background of Study

Banana (*Musa spp.*) is a crop of major economic importance in the world. As a leading fruit, it is a commercially important crop in international trade, both in quantity and value (Zenebe *et al.*, 2015). In 2021, world banana production will be 119.83 million metric tons (FAOSTAT, 2021). For many African, Asian, and Latin American countries, banana is one of the most important fruits for foreign exchange earnings (FAOSTAT, 2012).

Ethiopia is agro-climatically suitable, with great potential for banana and other fruit production (Wiersinga *et al.*, 2008). Cavendish banana is the main fruit crop that is widely grown and consumed in the country. In terms of consumption and production, among the horticultural crops of the country the dessert banana is the leading fruit crop and it is believed to cover about 86% (478,251.04 tones) of the total fruit production. Especially the South Ethiopia region and Southwest Ethiopia region are the leading banana producing region which accounts for 68.72% (37,076.85 hectares) area of land coverage by banana production, 77.53% (370,784.17 tones) of the fresh banana produce and 22.38% (1,504,207) of the banana producers. This has enabled the region to benefit from increasing food security, income generation, job opportunities, and local and regional economic development (Zenebe *et al.*, 2015; CSA, 2014; CFC, 2004).

From the South and Southwest Ethiopia region, Gamo, Bench Maji, and Sheka zones are the major banana production zones and Gamo zone taking about 70% of the total banana market supply of the country (CFC, 2004). The supply of banana from the zone comes from three sources: the government farm, the producers' fruit and vegetable marketing union, and individual producers. Irrigated banana production (Dwarf, Medium height and Giant Cavendish) presently covers about 11,000 ha of land in Arba Minch Zuriya and Mirab Abaya Woreda (Zinabu *et al.*, 2019; Fanos, 2014).

In Arba Minch Zuriya Worde of Gamo zone banana production in the dates back to the early 1980s. During that time the crop lands of the smallholder farmers were occupied by maize, cotton and sweet potato. Then, there were frequent trials which were held to introduce the crop to the nearby Lante area, even though that effort was not successful at that time since banana was not perceived as an important cash as well as nutritional crop. In 1984, however, the effort was able to cover the 4.2 hectares of the then Lante cooperatives land by the Cavendish banana variety and later it was expanded to individuals land and the surrounding Woreda. The Arba Minch banana is the most preferred variety of banana in the country and has the highest demand throughout the markets of the country at present and it is used as a livelihood option for households in the Arba Minch Zuriya Worde (Fanos, 2014).

According to study by different scholars in study area, production is still limited to backyard and small-scale production most of the production is supplied to domestic markets. This may be due to production

and marketing constraints of banana. This constraints in the production and marketing of banana in in study area were El Nino effect (moisture stress), disease and pest attack, flooding and poor agronomic practice, poor harvesting and handling practices and presence of illegal traders, lack of appropriate storage facilities, lack of cooling store and truck, the road access to the banana farm, lack of alternative markets, cheating in weight balance measurement, limited access to updated market information, lack of awareness for producers to join banana marketing cooperatives and limited knowledge of cooperative committee members about business management respectively (Abayneh and Awoke ,2021; Girma *et al.*,2020; Benyam *et al.*, 2019; Kassa *et al.*,2020; Teklay *et al.*,2016 and Zenebe *et al.*,2015).

Therefore, by solving problems in the banana value chain, producer cooperatives contribute to the producer's strong economic value by sharing and pooling resources, expanding market linkages, increasing their bargaining power, generating higher income for their products, and playing a greater role in reducing transaction costs and providing warehouses access. It also provides its members with quality supplies and services at affordable prices (Virendra *et al.*, 2015 and Girma *et al.*, 2020). Despite the role of producer cooperatives, banana marketing cooperatives are low (6.7%) and value chain development is limited in Arba Minch Zuriya Woreda. Therefore, this study was conducted to assess the perception of banana producers in the socioeconomic impact of cooperative in value chain development in the study area, estimate the market share of banana producers in banana marketing channels in the study area, identify factors affecting banana producers decisions to join cooperatives in the study area and identify challenges and opportunities of banana cooperatives in the study area

1.2. Statement of the Problem

Despite the region's potential for banana cultivation, several issues persist throughout the production, processing, and marketing stages, undermining the overall efficiency and profitability of the banana value chain. However, banana producers are not the decision-makers regarding the selling price. As a result, traders share the highest margin of the final consumer price of banana. This may be due to production and marketing constraints of banana (Kassa *et al.*, 2020).

According to study by different scholars in the study area the problems faced in the banana value chain were El Nino effect (moisture stress), disease and pest attack, flooding and poor agronomic practice, poor harvesting and handling practices and a high cost of input, a quality problem like over ripening and deterioration of banana fruit before selling, a lack of banana marketing centers, limited access to market information, weak banana producers marketing cooperatives, and limited knowledge of cooperative committee members about business management (Girma *et al.*, 2020; Zinabu *et al.*, 2020; Molla,2017 and Abayneh and Awoke ,2021).

Therefore, business organizations like producer cooperatives can overcome the problems from farm plots to consumer plates through collective actions to address the constraints at every stage of banana value chain development for sustainable value chain development and It empowers them and enables

them to overcome various barriers in the value chain by accessing storage and transportation facilities, building up production skills, accessing extension and information services, and increasing market integration, price negotiation, and quality control for their members in banana cooperatives (Girma *et al.*, 2020 and Zenebe *et al.*, 2015). Therefore, I will be better to focus on the gaps and the challenges from VCD and cooperative in the study area.

1.3. Objectives of the study

1.3.1. General objective

The general objective of this study is to assess the contribution of banana producers' cooperatives in enhancing value chain development in the case of Arba-Minch Zuriya Woreda, Gamo Zone, Ethiopia

1.3.2. Specific objectives

The specific objective of this study was to:

- assess the socioeconomic impact of cooperative in value chain development in the study area
- estimate the market share of producers in banana marketing channels in the study area
- identify factors affecting banana producers decisions to join cooperatives in the study area
- identify challenges and opportunities for banana cooperatives in the study area

1.4. Research Questions

- Does a banana cooperative have significant impact on value chain development?
- What is the share of producers who sell banana through different market outlets in the study area?
- What are the factors affecting banana producers decisions to join cooperatives in the study area?
- What are the major challenges and opportunities for banana cooperatives in the study area?

1.5. Scope and Limitations of Study

1.5.1. Scope of the study

Geographically, this study was delineated on only Arba Minch Zuriya Woreda of the Gamo zone. Besides, the study specifically addressed only the primary cooperative purpose of the commodity banana. Conceptually, it was focused on the assessing the perception of banana producers in the socioeconomic impact of cooperative in value chain development in the study area, estimate the market share of banana producers in banana marketing channels in the study area, identify factors affecting

banana producers decisions to join cooperatives in the study area and identify challenges and opportunities for banana cooperatives in the study area

1.5.2. Limitations of the study

This study was done based on the cross-sectional data collected at a given time. This way, unlike time series data, the result of this study might lack time trend analysis, which in turn might not be used to give an inference for periods. The other limitation this study might have is that the data gathered from producers is based on their recall and reminding. Usually, smallholder producers have no habit of recoding the production, marketing, and other transactions in their respective businesses. They often might be unable to provide the required data for scientific research accurately. Thus, computations done based on such a guessing or recalled data might be limited to some extent.

1.6. Significance of the Study

The result of this study would enable us to know the socioeconomic impact of banana cooperatives in value chain development and determinates of banana producers' decisions to join cooperatives. The study also aimed to estimate the market share of banana producers in different market outlets and the challenges and opportunities for primary banana cooperatives in the study area. Thus, it was useful to different stakeholders. For instance, it was useful for the management bodies of the primary banana cooperatives under consideration as well as other cooperatives operating under similar conditions. The findings were also used as input for the local cooperative agency and other interested institutions in cooperatives while devising a policy on increasing cooperative success. Finally, this study was a good stepping stone for other studies on the role of banana producers' cooperatives in value chain developments and the determinants of banana producers' decisions to join cooperatives.

1.7. Organization of the Thesis

The thesis is organized into five chapters. Chapter one contains the background of the study, statement of the problem, objectives of the study, research questions, significance, scope, and limitations of the study. Chapter two deals with a literature review on topics related to the study. Chapter three presents the research methodology part, including a description of the study area, data types, sources, and methods of data collection, sampling technique and sample size determination, and methods of data analysis. Chapter four presents results and discussions of both descriptive and econometric analysis. The last chapter, Chapter 5, contains conclusions and recommendations.

2. LITERATURE REVIEW

2.1. Theoretical Review

2.1.1. Definitions and Principles of Cooperatives

A cooperative is defined as “an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly owned and democratically controlled enterprise” (ICA, 2014). A cooperative is also defined as “an organization of persons, usually of limited means, who have voluntarily joined together to achieve a common economic end through the formation of a democratically controlled business organization, making an equitable contribution to the capital required and accepting a fair share of the risks and benefits of the undertaking” (ILO, 2015).

There are seven internationally recognized cooperative principles (ICA, 1995).

1. Voluntary and Open Membership: Cooperatives are voluntary organizations; open to all persons able to use their services and willing to accept the responsibilities of membership, without gender, or social, racial, political, or religious discrimination.

2. Democratic Member Control: Cooperatives are democratic organizations controlled by their members, who actively participate in setting their policies and decision-making. Men and women serving as elected representatives are accountable to the membership. In primary cooperatives, members have equal voting rights (one member, one vote), and cooperatives at other levels are also organized democratically.

3. Member Economic Participation: Members contribute equitably and democratically to control the capital of their cooperative. Members usually receive limited compensation, if any, on capital subscribed as a condition of membership. Members allocate surpluses for one or all of the following purposes: developing their cooperative possibly by setting up reserves, part of which at least would be indivisible; benefiting members in proportion to their transactions with the cooperative; and supporting other activities approved by the membership.

4. Autonomy and Independence: Cooperatives are autonomous, self-help organizations controlled by their members. If they enter into agreements with other organizations, including governments, or raise capital from external sources, they do so on terms that ensure democratic control by their members and maintain their cooperative autonomy.

5. Education, Training, and Information: Cooperatives provide education and training for their members, elected representatives, managers, and employees so that they can contribute effectively to

the development of their cooperatives. They inform the general public, - particularly young people and opinion leaders,- about the nature and benefits of cooperation.

6. Cooperation among Cooperatives: Cooperatives serve their members most effectively and strengthen the cooperative movement by working together through local, national, regional, and international structures.

7. Concern for Community: Cooperatives work for the sustainable development of their communities through policies approved by their members.

2.1.2. Importance of Cooperative

Cooperatives are important for cooperation and collective action as well as building and reinforcing communities, which are crucial to sustainable development. They help stabilize regional economies and provide a favorable climate for further investment, reduce inequality, promote equitable sharing of the costs and benefits of sustainable development, promote economic democracy, and empower marginalized groups (Nugussie, 2010). Thus, cooperatives have long been recognized to play an important role in society that translates into the improvement of the living conditions of their members (Wanyama *et al.*, 2009).

According to the National Cooperative Business Association (NCBA), cooperatives are set up in order to help members strengthen their bargaining power, maintain access to markets, capitalize on new market opportunities, obtain needed products and services, and improve income opportunities, as well as reduce costs and manage risks (NCBA, 2005). In addition, ILO observes that cooperatives create sustainable employment, contribute to decent work promotion, improve working conditions for women and men, and provide essential infrastructure and services in areas neglected by the state and investor-driven enterprises (Wanyama *et al.*, 2009). She also joins others in agreeing that cooperatives are useful to small producers because they help to mobilize assets, knowledge, and skills and make problems easily accessible to traders and buyers. Wanyama *et al.* (2009) report that some international agencies, for example, the United Nations, ILO, ICA, and the European Union, view cooperatives as organizations that help to meet all dimensions of right-off-way problems and have the advantages of identifying economic opportunities for the poor, empowering the disadvantaged, and providing security.

According to a study (Bijman, 2012), cooperatives contribute to macro-coordination; they improve the efficiency of market outcomes in value chain developments. According to the institutional economics perspective, cooperatives are sometimes seen as a distinct coordination mechanism based on trust and reciprocity (Borzaga, 2017). Agricultural co-operatives play an important role in the provision of agricultural inputs (fertilizers, improved seeds, and pesticides) to smallholders, distributing 95 percent of all fertilizers used (FCA, 2015).

2.1.3. The role of producers' cooperatives in the Ethiopian economy

In Ethiopia, the agricultural sector generally accounts for about 40% of the gross domestic product (GDP) (NBE, 2014) and is dominated by smallholder producers. Yet, agricultural land degradation and deforestation, drought, unreliable weather, poor infrastructure, and market imperfections are among the important problems constraining the agricultural sector and rural livelihood development. Agricultural cooperatives, among others, are premeditated to overcome these constraints through rendering many services, such as input and output marketing, expanding financial services in rural areas, purchasing agricultural machinery, equipment, and implements and leasing them to producers, as well as establishing small agro-processing industries (FDRE, 1998).

They are also expected to establish various social institutions to provide different social services. Economic impacts: evidence indicates that cooperatives in Ethiopia have been creating enormous socioeconomic benefits for members through distributing agricultural inputs, providing improved technologies, and encouraging producers to produce high-value crops. For instance, cooperatives imported and distributed a total of 906,220 tons of fertilizers from 2005–2008, which is about 70% of the total fertilizers the country imported each year (FCA, 2014). The positive impact of cooperatives on income, productivity, marketed surplus, and household savings may be attributable to the services and basic cooperatives provided for their members.

The cooperative union and basic cooperatives supply modern fertilizers and improved seeds to their members. The cooperative members can get easy access to agricultural inputs in their respective localities through basic cooperatives (Megersa *et al.*, 2017). Even if they lack capital on a credit basis, members can get cooperative services just by being members. By reducing transaction costs, the cooperative services motivate producers to invest and improve the productivity of their land. An increase in productivity increases the marketable surplus. An increase in productivity and marketable surplus in turn increases household income. An increase in household incomes increases motivation toward input supply. In turn, adequate access to input supply increases land productivity, income, and household savings (Megersa *et al.*, 2017).

Generally, compared to private traders, input supply through cooperatives has created easy access for producers at a reasonable price (Emana and Nigussie, 2011). In addition, cooperatives are involved in the distribution of improved seeds, farm implements (such as water pumps), pesticides and herbicides, modern beehives, and other agricultural inputs. For instance, in the 2012–13 cropping season, cooperatives distributed about 110,578.4 tons of improved seeds of different types (FCA, 2014). Moreover, they also play important roles in the supply of nonagricultural inputs such as construction materials and consumable and agricultural products of good quality, quantity, and at reasonable prices.

Cooperatives are also involved in output marketing, creating market opportunities, and serving as a market channel. The presence of cooperatives has by large created competitive markets, protected the

producers, and even benefited non-member producers (Nigussie, 2010). Other important economic benefits of cooperatives are the direct and indirect employment opportunities they create for many individuals. According to the Financial Conduct Authority (FCA), cooperatives have been playing important roles in economic benefits, ensuring a fair share of resources, and reducing income disparity (FCA, 2014).

2.1.4. Producers' cooperative and value chain

A cooperative ownership structure constitutes an opportunity for vertical coordination between the farming activities of the producers and the marketing activities of the cooperative firm. This ownership structure is designed to safeguard the specific investments of the producers (the members). However, vertical coordination in value chains implies that the producer is no longer the only transaction partner making specific investments; the cooperative firm also invests in specific assets, such as its reputation among customers and perhaps a brand image. The cooperative needs to safeguard these investments, for instance, by introducing more hierarchical governance in member-coop transactions or even by excluding members who are unable to comply with the standards needed to protect the brand (Bijman and Bart, 2010).

Cooperative members may also be subject to the 'paradox of embeddedness, which means that an organization has difficulty accessing new information and learning new routines and skills because it is too embedded in one network. Earlier, we argued that vertical coordination in value chains requires more information exchange and more central decision-making. While bonding social capital works well for horizontal coordination, particularly in small and homogeneous groups, it may be less suitable for vertical coordination, as vertical coordination implies value chain participants with partially conflicting interests (Uzzi, 2018).

2.1.5. Constraints of Ethiopian Producer's Cooperatives

Ethiopian cooperative movement faced many problems and challenges that needed to be addressed by the cooperative itself and the government. For many years, issues such as lack of capital, undertaking of conventional activities, weak structure, absence of good governance, lack of teamwork between cooperatives in the fields of business, training, education, and enabling services, lack of managerial talent, and lack of integrity among the management and the members in some cooperatives have contributed to the inefficient performance of cooperatives in Ethiopia (Meniga, 2015).

Institutional weakness

The cooperative movement has been suffering from the inadequacy of trained personnel right from its inception. Lack of trained personnel has been caused by two major factors. The function of cooperative societies suffers from several weaknesses. Some of these are: taking no care of the needs of credit

seekers or their repaying capacity at the time of granting loans; making no adequate provision for the return of loans; unsatisfactory keeping of accounts; lack of coordination among various divisions of the cooperative structure; too much dependence on outside sources of finance; and lack of adequate auditing (Meniga, 2015 and Debeb and Yenesew, 2019).

Lack of Capital

Most cooperatives are dependent on the internal resources of capital, which are share capital, fees, and accumulated profits. Due to that, many cooperatives are facing problems generating and getting sufficient capital to implement their activities. The issue of lack of capital can hinder the cooperative from maintaining a good level of accountability, where compliance with related regulations on financial reporting can be neglected by cooperative societies if they are inactive and under liquidation process (Meniga, 2015 and Debeb and Yenesew, 2019).

Low participation of members in cooperative activities

According to the cooperative promotion office, the low participation of members in cooperative activities is the main problem. Due to a lack of awareness and training on cooperative-related issues, most of the cooperative members are not actively participating in the decision-making, planning, and implementation of the business activities of the cooperative. When members of the cooperatives have good knowledge of cooperative services and advantages, their participation can increase. Producer's cooperatives in Ethiopia lack awareness about the importance of collective action; cooperative formation in the country is exogenous, and cooperatives might be less willing to accept new members (Mohammed, N. and Wan Lee, 2015, Abebaw and Dejen, 2019 and Meniga, 2015).

2.2. Empirical Review

2.2.1. Role of producers' cooperatives for value chain development

According to a study by Sathapatyanon *et al.* (2017), they studied the role of producer organizations and networks in the rice supply chain in Thailand. The finding showed that key production and marketing problems, such as increased transaction costs and market uncertainties confronting cooperative organizations, have been diminished as a result of the networks. Key problems of the members of the cooperatives, such as the exploitation and opportunistic behavior of traders to whom they sell their products, have been reduced as a result of joining the cooperatives.

According to a study by Zenebe *et al.* (2015) in the Gamo Gofa zone, producer cooperatives are a group of village-level producers formally organized into producer cooperatives to market their banana and access or purchase inputs in the banana value chain. Such collective action by producers in the Gamo Gofa zone has empowered and enabled them to overcome various barriers, own their own

storage and transportation facilities, build up their production skills, get access to extension and information services, and, at large, become part of the market economy.

2.2.2. Producers share from different market outlets

According to a study by Girma *et al.* (2020) on the analysis of the banana value chain in Ethiopia and approaches to sustainable value chain development in Arba Minch zuriya woreda from the three market outlets, producers got the highest value share (46.67%) from outlet 1 (producer to rural retailer). According to a study by Kassa *et al.* (2020) on the value chain analysis of banana in Bench Maji and Sheka Zones of Southern Ethiopia, the result showed that outlets II and IV (producer to retailer and producer to collector, respectively) are the most advantageous banana market outlets for the producers. Both outlets make producers gain collective bargaining power and also help them get a fair market price.

According to a study by Kshirsagar *et al.* (2019), the marketing efficiency of mangoes in the South Konkan region was studied. The result showed that producer share in consumers' was estimated and reported to be highest in outlet V (90.90%), where producers sold their produce directly to consumers. This also indicated that out of the total money paid by consumers, producers received 90.90 percent.

According to a study by Girma *et al.* (2016) on the sustainability assessment of a banana value chain in the case of Arba Minch, Ethiopia, The result showed that producers received the highest value share from outlet 1 (46.67%) and the lowest share from outlet 2 (24.83%), due to the involvement of local traders in this outlet. Producers received their highest value share (31.20%) from the market cooperative outlet. According to a study by Mateows *et al.*, (2015), market chain analysis of agro-forestry products was studied in the case of fruit in Tembaro District, Kembata Tembaro Zone, and South Ethiopia. The finding illustrated that the producer's share (GMMp) is highest (76.1%) from the total consumers' price in producer to local collectors' market outlet.

2.2.3. Factors affecting the producer's decision to join the cooperative

A study by Mbagwu *et al.* (2018) studied factors influencing the membership of producers' in cooperative societies in Abia State, Nigeria, using a probit mode. The study found that age, farming experience, income, household size, and poverty level influenced cooperative membership in the study area. A study by Balgah (2018) studied factors influencing coffee producers' decisions to join cooperatives in Cameroon using a logistic model. The result showed that the area of land under coffee cultivation, dominant income source, household size, experience in coffee farming, and timely payment of producers' dues by the cooperative were the key factors influencing coffee producers' decision to join the cooperative or not ($P = 0.05$).

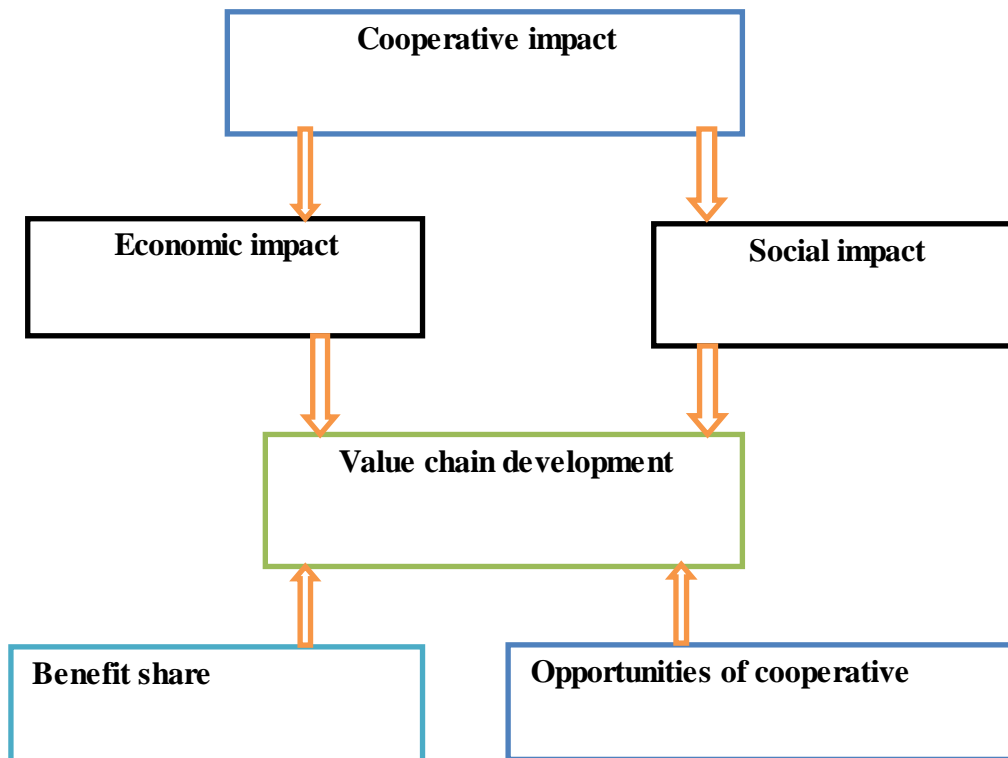
A study by Bizualem and Saron (2018) studied factors influencing producers' membership preferences in agricultural cooperatives in Ethiopia using by probit model namely the age of the household head, need to access credit, need to access agricultural inputs, perception of producers towards the adequacy attractiveness of dividend distributed, awareness about the socio-economic importance of primary cooperatives, trust towards cooperative management committees, households' need to access cooperative as a market outlet, and the need to access training from primary cooperatives were found to significantly determine smallholder producers' decision to joining agricultural cooperatives in Ethiopia.

According to a study by Jaafar *et al.* (2017), analysis to examine factors affecting the membership of sustainable oil palm grower cooperatives among oil palm smallholders in Malaysia using stepwise multiple linear regressions showed that factors like gender, non-farm occupation, and knowledge of cooperatives, community/society involvement, household income, commitment, perception, management, and communication were identified as significantly influencing respondent's decisions to become members of the cooperatives.

Dejen and Matthews (2016), studied factors affecting producers cooperative membership increment in Bench Maji zone, south-western Ethiopia using by binary logistic regression model namely level of education, information/media access, training, marketing, and cooperative promotion offices support, embezzlements of assets, an attitude of producers towards cooperatives, leadership commitment, trust among members and management committee, and awareness level were found to statistically and significantly influence producers' cooperative membership in the study area.

According to a study by Zeweld Nugusse *et al.*, (2013), the determinants of rural people joining cooperatives in northern Ethiopia were studied using the probit model. The finding illustrated that information access, special skills, membership in a rural association, frequency of attending a public meeting or workshop, household head education, credit access, training access, number of family members in school, distance to the main market, availability of infrastructure, farmland ownership, and farmland sizes are the major explanatory variables statistically influencing rural people in joining the cooperative societies in the study areas. According to a study by Othman *et al.* (2012), factors influencing cooperative membership preferences in Malaysia were studied using logistic regression analysis and showed that age and occupations are important predictors of cooperative membership preferences.

2.3. Conceptual Framework of Study



Source:Own sketch(2021/22)

Figure 1. Conceptual Framework of the Study

3. RESEARCH METHODOLOGY

3.1. Descriptions of the study area

Arba Minch Zuriya woreda is one of the major banana-producing areas in Ethiopia. It is located about 505 kilometers south of Addis Ababa and 275 kilometers southwest of Hawassa. It lies at an altitude ranging from 746 to 1800 meters above sea level, with an average temperature ranging between 15°C and 30°C and an average annual rainfall above 888 mm (Yishak, 2013). The woreda is bordered in the south by the Dirashe special woreda, in the west by Bonke woreda, in the north by Gacho Baba woreda, in the northeast by Mirab Abaya, in the east by Oromia Region, and in the southeast by Amaro special woreda. Based on the 2007 Census conducted by the Central Statistical Agency of Ethiopia (CSA), this district has a total population of 164,529, of whom 82,199 are men and 82,330 are women. The woreda has 18 kebeles (the smallest administrative unit in the current Ethiopian government structure) with different agro-ecology and farming systems.

The woreda is known for its highest production of banana and other cereal crops. However, banana production takes the lion share and is the main source of income generation for the household in the woreda. The major cereal crops grown in the district are maize and teff. Moreover, vegetables produced in the woreda are tomato and onion, and fruit products like banana, mango, and avocado. There are ten banana producers' cooperatives in Woreda.

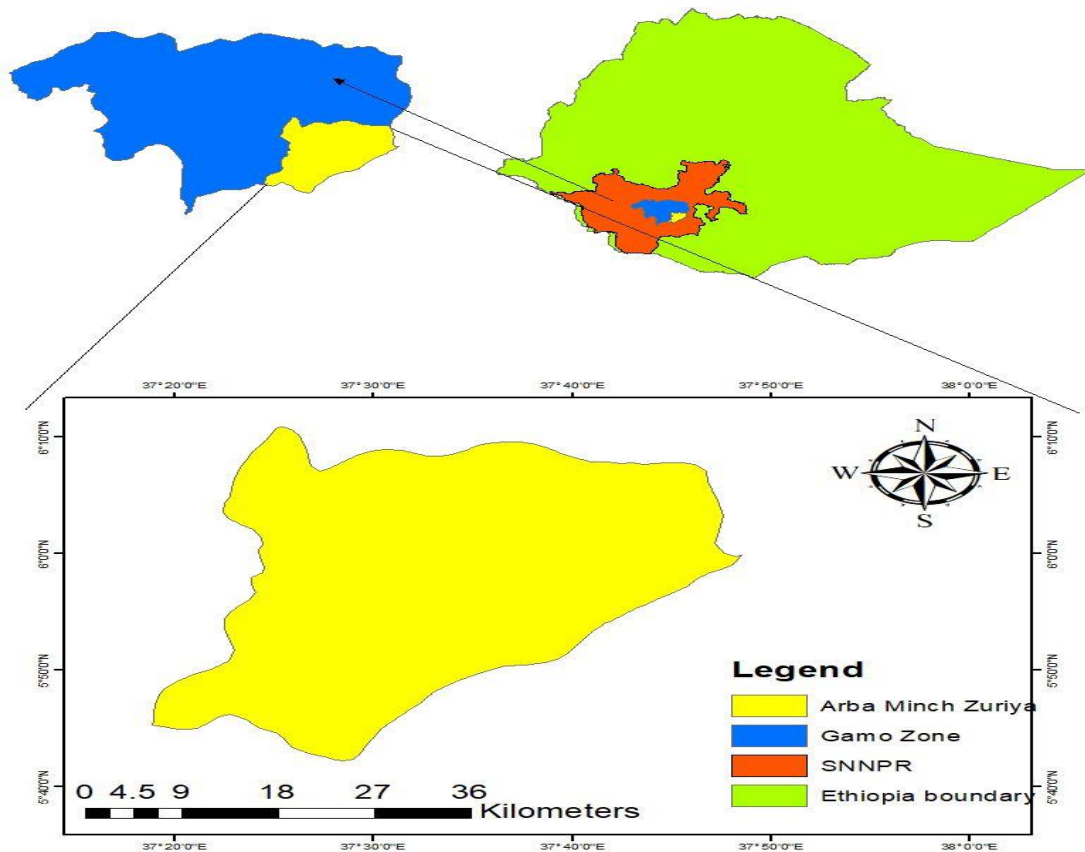


Figure 2. Study area map manipulated using Arc GIS 10.3.1

3.2. The Study Design

The study used a cross-sectional research design because the data were collected at one point in time. The research design in general was quantitative and qualitative. Mainly, the data for this thesis was collected through a sample survey. To achieve the objectives of the study, the researcher used a quantitative and qualitative research approach. The quantitative approach is supposed to be an advanced technique of descriptive statistics, and the researcher also used the chi-square test and t-test of association as inferential statistics to examine the association between the dependent variable and the independent variables.

3.3. Data Sources and Types

To achieve the objectives of the study, data was generated from two sources: primary and secondary data sources. The primary data were collected from cooperative members, non-member banana producers, and other banana traders in the banana marketing chain. Secondary data were collected from relevant sources such as the internet, journal papers, and books in the Arba Minch zuriya Woreda agricultural office. Both qualitative and quantitative data types were collected from mainly primary and secondary data sources.

3.4. Sampling Technique and Sample Size Determination

3.4.1. Sampling Technique

The target population for this study was the smallholder banana producers (members and non-members) and other actors along the banana value chain. For this study, in order to select representative producers, purposive and two-stage sampling procedures were used for the selection of sample household heads. Arba Minch Zuriya woreda was selected purposively as it was one of the highest banana-producing woredas in Gamo Zone.

In the first stage, ten major banana-producing kebeles of the total 18 kebeles in the woreda were stratified based on production potential into three categories: high-producing, medium-producing, and low-producing kebeles. In the second stage, three sample kebeles (namely Genta Kanchama, Zayse Elgo, and Kola Shele kebeles), one from each stratum, were selected randomly. In the third stage, smallholder producers in each of the three sample kebeles were stratified based on banana cooperative membership status into two member producers and non-member producers. Then, a total of 113 sample banana-producing producers (50 members and 63 nonmember sample producers) were selected randomly and proportionally

Table 1. The sampling procedure of the producer

Kebeles	Total Households (N)	Stratum	Member	Non-member	Sampled (n)	Member	Non-member
Kola Shele	1475	Low	217	1258	34	14	20
Zayse Elgo	1698	Medium	93	1605	40	20	20
Genta Kanchama	1682	High	217	1467	39	16	23
Total	4855		525	4330	113	50	63

Source: Arba Minch Zuriya Woreda Agriculture Office (2021/22)

3.4.2. Sampling of Traders

Data from local traveling traders, banana marketing cooperatives, wholesalers, retailers, and consumers was selected for the purpose of calculating the marketing margins. These are 6 local traveling traders, 4 wholesalers, 6 retailers (2 rural and 4 urban), 3 banana producers' cooperatives, and 6 consumers who were selected for an interview. Local traveling traders and rural retailers were selected from study kebeles, whereas wholesalers and retailers were selected from arba Minch city. Local traveling traders were selected based on information from banana producers in each Kebele. Selections of wholesalers

were supported by information from local traders and cooperatives in their linkage. Retailers were selected based on information from wholesalers.

3.4.3. Sample Size Determination

Using Kothari's (2004) sample size determination formula, about 113 banana producers were used in this study. Accordingly, the required sample size at a 95% confidence level was used to determine the sample size required to represent the population.

$$n = \frac{Z^2pqN}{e^2(N-1)Z^2pq} \quad \text{equation 1}$$

Where N is the total population of banana-growing producers in the woreda (12522), n is the sample size for the study, Z is the selected critical value of the desired confidence level under the normal curve (1.96), and p is the estimated proportion of non-members that are present in the population, which is 0.92 in this study. q = 1 - p is 0.08, and e is the desired level of precision, which is 0.05.

$$n = \frac{1.96^2(0.92 \times 0.08)12522}{0.05^2(12522 - 1)1.96^2(0.92 \times 0.08)} = 113$$

3.5. Methods and Tools of Data Collection

3.5.1. Method of Data Collection

The data were collected from cooperative and non-cooperative banana producers by using a formal survey, a structured, and semi-structured and focus group discussion. The primary data obtained from key informant interviews is an additional source of information for the research to make it more realistic. The semi-structured interview schedule was pretested by selected samples of the population to ensure the simplicity and understandability of the questions, and an amendment was made based on the findings of the pre-test.

As regards the secondary data, written materials, annual reports published, and an unpublished document were used. Likewise, applicable data, such as publications, magazines, and issues, were referred to. Marketing activities like weighing, packing, transporting, and storing and production activities like weeding and sucker removal were used through observation methods.

3.5.2. Tools of Data Collection

The structured and semi-structured interview schedules were designed for cooperative members and non-member banana producers, and the unstructured interview schedule was designed for key informant

interviewees to achieve the objectives of the study in a simple way to tabulate and analyze the data, to make it easy for respondents to respond, and to save their time. In this thesis, data about perception of banana producers in the socioeconomic impact of cooperative in value chain development in the study area was measured using Likert items, where each item involved choosing a response category as 'strongly agree, agree, neutral, disagree, and strongly disagree to reflect one's level of agreement with a statement about the perception of banana producers in the socioeconomic impact of cooperative in value chain development.

From each of the three banana marketing cooperatives, one FGD was made in each cooperative. The key informant interview covered primary cooperative leaders, Arba Minch zuriya Woreda farmers' cooperative office and marketing office, cooperative experts at Kebele level, and banana traders. For this observing procedure, an audio recorder and a phone camera were used. In order to triangulate and get reliable data, key informants interviews with cooperative administrators, traders, woreda, and marketing offices were conducted.

3.6. Methods of Data Analysis

After the data collection, the collected data was coded to simplify further tasks. The respondents' scores were summarized and made ready for analysis. Three types of data analysis, namely descriptive statistics, inferential statistics (chi-square and t-test), and econometric analysis, were used for analyzing the data from producers and banana traders.

3.6.1. Descriptive Statistics Analysis

Descriptive statistics like frequency, percentages, Likert scale, mean, and standard deviation were used in examining and describing marketing share, the role of banana cooperatives in value chain development, and the challenges and opportunities of banana cooperatives. The researcher used inferential statistical analysis tools like chi-square and t-test analysis outputs to assess the presence of significant mean and proportional differences among members and nonmembers regarding some characteristics relevant to the study.

Marketing margin

In a commodity subsystem approach, the institutional analysis is based on the identification of the marketing channels. When there are several participants in the marketing chain, the margin is calculated by finding the price variations at different segments and comparing them with the final price to the consumer. The consumer price is then the base, or common denominator, for all marketing margins. The total gross marketing margin is always related to the final price, or the price paid by the end consumer, and is then expressed as a percentage (Mendoza, 1995).

$$\text{TGMM} = \frac{(\text{end buying price} - \text{first selling price})}{\text{end buyer price}} \quad \text{equation 2}$$

TGMM is the total gross marketing margin. It is useful to introduce the idea of producers' gross margin (GMMp), which is the portion of the price paid by the consumer that goes to the producer. The producers' margin is calculated as follows:

$$\text{GMMp} = \frac{(\text{end buying price} - \text{marketing gross margin})}{\text{end buyer price}} \quad \text{equation 3}$$

Where this implies GMMp = the producer's share of the consumer price

3.6.2. Econometric Analysis

To determine the important factors that affect producers' decision to join banana cooperative membership in the study area, a probit regression model was employed with the help of STATA version 15. This model was selected for the following reasons: The dependent variable is binary and qualitative, and therefore, the probit regression model is the best to use. Because the dependent variable, i.e., membership status in banana cooperatives, is not a continuous one, the goal of the probit regression model is a bit different because it predicts the likelihood that the dependent variable, membership status in banana cooperatives, is equal to 1 (rather than 0), given certain values of the explanatory variables. Similar studies by Bizualem and Saron (2018) have used binary probit regression.

It is used to predict the probability of an event occurring. In the case of the probit model, the dependent variable is categorical and can only take on one of the two values, such as yes or no, true or false (Aldrich, 1984). The explanatory variables used were both continuous and categorical (or binary). Therefore, in the probit model, the decision of a producer to join a cooperative (Gujarati, 2004) was specified as follows

$$Y^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_k X_k + \varepsilon, \varepsilon \sim N(0, \delta^2) \quad (4)$$

$$y_i = \begin{cases} 0, & \text{if } y_i^* \leq 0 \\ 1, & \text{if } y_i^* > 0 \end{cases} \quad (5)$$

Where Y^* is the latent variable that was observed in linear regression, y_i represents the probability of the binary dependent variable of the individual household deciding whether or not to be a member of banana cooperatives. β shows the coefficient of independent variables that needs to be estimated; X_i represents the socio-economic, demographic, and institutional factors that were expected to affect the cooperative membership; and ε indicates the error term.

The relationship between an independent variable and the outcome of the probability is interpreted by means of the marginal effect, which accounts for the partial change in the probability of the dependent

variable, membership in a cooperative. The marginal effect associated with the explanatory variables X on the probability $P (Y_i = 1/X)$, holding other variables constant, can be derived as

$$\frac{\partial p_i}{\partial X_{ik}} = \beta_i \quad (6)$$

This represents how much the probability of a change in the dependent variable is expected to increase or decrease for a unit change in an explanatory variable.

3.7. Definition of Variables

Dependent variable

Cooperative membership (coop): The dependent variable in this model is a dummy (binary) variable representing producers' cooperative membership status; taking a value of one if producers are members of banana producer cooperatives and zero if not.

Independent variables

The explanatory variables were hypothesized to influence the producer's membership in banana cooperatives and hypothesized as follows:

1. Sex of household head (SEX): This is a dummy variable taking a value of 1 if the head of the household is male and 0 if otherwise. Male-headed households might be more interested in becoming members of banana cooperatives due to their opportunities and culture of participating in cooperatives and clubs in the surrounding communities. Furthermore, they are the ones who attend meetings of campaigns for membership, while women are left at home to attend to household care. As confirmed by Abebaw and Haile (2013), this variable influenced cooperative membership decisions in that male-headed households are more likely to participate in agricultural cooperatives than female-headed households.

2. Age of household head (AGE): This is a continuous variable defined as the farm household head's age at the time of interview and measured in years. The age of the household head is considered because the head of household is the one who makes decisions on the farm regarding whether or not to be a member of a cooperative. The study by Bizualem and Saron (2018) found that an increase in the age of households positively affected the probability of joining a primary cooperative.

3. Education of household head (EDUC): This is a continuous variable defined as the household head's educational level at the time of the interview. The higher the education levels, the better the knowledge and awareness of the producer of the importance of primary cooperatives. Hence, those producers with higher formal education are in a better position to know the benefits of cooperatives and are more likely to join cooperatives. So this variable was expected to affect cooperative membership

positively. Dejen and Matthews (2016) found that the education of the producers has something to do with the cooperative membership.

4. Family size (FS): This variable is a continuous explanatory variable measured in terms of the total number of families the household has in terms of the active labor force (15–65 years of age). In the rural agricultural context, larger households are associated with more labor for banana production, processing, and marketing-related activities. The study by Mojo et al. (2015) showed that family size is another variable that affects the membership decision positively. Therefore, the variable was expected to have a positive effect on cooperative banana membership.

5. Banana farm size (BFS) is a continuous variable that represents the land allotted to banana production in hectares. As the land of the household for banana production increases, the yield proportionally may increase, which in turn forces the producers to join cooperatives to sell their product. Francesconi *et al.* (2010) revealed that producers who produce under the required level (with a small banana farm size) are excluded from agricultural cooperatives. Therefore, this variable was expected to have a positive influence.

6. Total annual income (TAIN): It is a continuous variable, and it refers to the sum of all money received from on-farm and off-farm activities. On-farm income refers to the total annual earnings of the family from the sale of crops, livestock, and livestock products. Off-farm income represents the amount of income the producers earn in the year from nonfarm activities. It is measured in terms of birr. Bizualem and Saron (2018) found an increase in income and an increase in coffee-marketed surplus. Total annual income was expected to influence membership negatively or positively.

7. Access to agricultural inputs (ACCIP): This is a dummy variable, taking 1 if producers responded that they need access to agricultural inputs from primary cooperatives and 0 if otherwise. Producers need agricultural inputs from cooperatives, which is supposed to increase the probability of membership. The study by Bizualem and Saron (2018) revealed that more producers can be pooled into agricultural cooperatives when cooperatives provide agricultural inputs and technologies. Thus, this variable was hypothesized to affect the banana cooperative membership positively.

8. Awareness about cooperatives (AC): This variable is defined as the awareness of producers towards the socio-economic importance of cooperatives. It is a dummy variable, taking 1 if producers have positive awareness about cooperatives and 0 if not. Producers who have a better awareness of the socio-economic importance of cooperatives are likely to decide to be members of a cooperative. The study by Nazirah *et al.* (2017), Dejen and Matthews (2016) showed that producers who had more knowledge about cooperatives were more interested in being members of agricultural cooperatives. Thus, this variable was expected to influence primary banana cooperative membership positively.

9. Access to information (ACCI): It is a dummy variable that takes a value of 1 if the producer has access to information and 0 if otherwise. Information access plays a great role in creating awareness

about the socioeconomic benefits of primary banana cooperatives. The information about the idea of cooperatives distributed through the media would motivate households to use the cooperatives, or it would encourage them to join the cooperatives. Therefore, this variable was expected to have a positive effect on cooperative membership. The findings of Dejen and Matthews (2016) revealed that access to information affected the decision of producers to join or not join primary cooperatives.

10. Perception of producers towards the adequacy of dividends (PPAD): As producers believed that the dividend given was relatively adequate, their membership preferences for agricultural cooperatives would increase. The result of the study by Bizualem and Saron (2018) revealed that the perception of producers towards the adequacy of dividends affected the cooperative membership status. Hence, the attractiveness of dividend distribution was hypothesized to affect producer's decisions to join primary banana cooperatives positively.

Table 2. The summary of the definition and hypothesis of variables in the model

Independent variables	Descriptions	Expected effect on coop membership
Sex of household head	Dummy: 0. Female; 1. Male	+/-
Age of household head	continuous, measured in years	+
Educational status	Continuous: measured in grade	+
Family Size	Continuously measured in numbers	+
Banana farm size	Continuously measured in hectares	+
Total annual income	Continuously measured in numbers	+/-
Access to inputs	Dummy 0. No, 1. Yes	+
Access to information	Dummy: 0. No, 1. Yes	+
Awareness about cooperative	Dummy 0. No, 1. Yes	+
Adequacy of dividend distribution	Dummy 0. No, 1. Yes	+

4. RESULTS AND DISCUSSIONS

4.1. Demographic and Socio-Economic Characteristics of Respondents

4.1.1. Banana producer household head mean characteristic for continuous variable

As shown below in Table 3, the average age for members was 51.1 and 45.68 for non-members. This result indicates that most of the cooperative member producers were found in the non-productive age group. This result also indicated that most of the non-cooperative member producers were found in the productive age group. The mean difference between members and non-members was 5.42, and this variable was a significant difference at less than 5% ($P = 0.017$) significance level.

As shown below in Table 3, the mean educational level for members was 6.78 and 3.30 for non-members and the mean difference between the two groups was -3.48, which was statistically significant at a 1% ($P = 0.000$) significance level. The result indicated that producer's household family size, member groups were 5.34 and 4.49 for non-member group. The mean difference between the two groups was -0.85. This showed that member and non-member producers have significant differences at a 1% ($P = 0.0135$) significance level.

Land size among both member and non-member groups was relatively cooperative; members had large land sizes. Cooperative members have 1.7 hectares on average, and non-members have 1.46 hectares of land on average and with a mean difference of -0.22 hector and this indicates statistically insignificant because of ($P = 0.30$). As regards the total annual income of the household head, the average income was about 389671.3 birr, and member and non-member producers were about 402912 birr and 379162.9 birr, respectively. The estimated amounts of banana product in quintals per hectare were 159.64 qt/ha for members and 175.7 qt/ha for non-members, respectively.

Table 3. Banana producer household head mean characteristic for continuous variable

Variables	Member(N=50)	Non- member(N=6 3)	Total	Mean diff	T-test(P- value)
	Mean	Mean	Mean		
Age of household head	51.1	45.68	48.08	-5.42	-2.41(0.017) **
Educational level	6.78	3.30	4.8	-3.48	-7.80(0.000) ***
Family size	5.34	4.49	4.87	-0.85	-2.51(0.0135) **

Banana farm size	1.7	1.46	1.57	-0.22	-1.02(0.30)
Annual income	402912	379162.9	389671.3	-	-0.54(0.5933)
Banana productivity (qt/ha)	159.64	175.7	168	.23749. 14	0.43(-0.7914)

Source: Survey result, 2021/22 ***, **, * represents the level of significance at 1%, 5%, and 10%, respectively.

4.1.2. Banana producer household head mean characteristic for the dummy variable

As shown below in Table 4, four dummy variables were accessed: agricultural input, access to information, adequacy of dividends, and awareness about cooperatives, which have significant differences among members and non-members in the study area. In Table 4, about 98% of the respondents were male-headed, while 2% were female-headed. On the other hand, of the non-cooperative members, about 93.65% were male-headed and 6.35% were female-headed households. There was no significant association between member and non-member households in terms of sex. This indicates that both men and women participate in banana production and marketing, but male households have a higher level of participation in banana production and marketing than female households. This indicates that both male and female members participate in cooperative banana production and marketing. However male-member households have a greater participation in banana marketing than female members in cooperative banana marketing. Therefore, cooperatives could give attention to increasing women's improvement strategies to empower women's contribution to banana marketing cooperatives.

Concerning access to input in the study area, there is a large and significant difference between members and non-members in participation at banana cooperatives. From the member group, 68% get access to agricultural input, and the remaining 32% do not, but only 38.10% get access to agricultural input, and for the most part, 61.90% do not get it from the non-member group. The result shows that there is a significant difference between the member group and the non-member group at a 1% (= 0.002) significance level.

Below Table 4, the results show that 80% of members have access to information, the remaining 20% do not, 11.11% of non-members have access to information, and 88.89% do have access to information in the study area. This shows a significant difference between members and non-members who have access to information at a 1% (= 0.000) significance level. Of the members, 94% of households believed that the dividend given was relatively adequate, and the remaining 6% were not adequate. 30.16% of non-members believed that the dividend given was relatively adequate, and the

remaining 69.84% did not believe it. This shows a high difference between members and non-members, and it was statistically significant at a 1% ($p = 0.000$) significance level.

Lastly, in the case of awareness of producers towards the socio-economic importance of cooperatives between members and non-members, a large percentage of member respondents (94%) have awareness about cooperatives, and 23.81% are non-members. This shows a high difference between both groups, and it was statistically significant at a 1% significance level.

Table 4. Banana producer household head mean characteristic for the dummy variable

Variables	Member(N=50)		Nonmember(N=63)		Total(N=113)	Pearson χ^2 test (p-value)
	freq	%	freq	%	%	
Sex of household head						
Male	49	98	59	93.65	95.58	1.2426(0.264)
Female	1	2	4	6.35	4.42	
Access agricultural input						
Yes	34	68.00	24	38.10	51.33	9.9788(0.002)
No	16	32.00	39	61.90	48.67	
Access information						
Yes	40	80.00	7	11.11	41.59	54.4560(0.000)***
No	10	20.00	56	88.89	58.41	
Adequacy of the dividend						
Yes	47	94.00	19	30.16	58.41	46.7682(0.000)***
No	3	6.00	44	69.84	41.59	
Awareness about cooperative						
Yes	47	94.00	15	23.81	54.87	55.4605(0.000)***
No	3	6.00	48	76.19	45.13	

Source: Survey result, 2021/22 ***, **, * represents the level of significance at 1%, 5%, and 10%, respectively.

4.1.3. Banana marketing aspects of producers

4.1.3.1 Selling methods of producers

As shown in Table 5 below, the majority of producers, 57 (50.44%) of the non-member group, were selling their banana directly to local traveling traders, and 6 (5.31%) of the non-member producers sold their banana directly to the rural retailer. From the results, almost the majority of non-member producers

were selling their banana directly to local traveling traders. The outcome shows that local traveling traders were influencing non-member banana producers by giving credit, commission, and other benefits. Of all of the respondents, 50 (100%) of cooperative member producers were selling their banana directly to cooperatives. From the outcome, it is possible to conclude that the cooperative members are using a single way of selling their products in the study area.

Table 5. Selling methods of banana producers

Selling methods	Member(N=50)		Nonmember(N=63)	
	freq	%	freq	%
Direct to a local traveling trader			57	50.44
Direct-to-rural retailer			6	5.31
Direct to cooperative	50	100	4	6.35

Source: Survey result, 2021/22

4.1.3.2. Sources of information and market related

Banana producers had access to market information from different sources. The sources of market price information and who sets the selling price for banana in the study area are discussed below in Table 6.

In the study area, as to sources of information, other people who buy played a great role in market price information since 60 (95.24%) of the non-member respondents received market price information from another person who bought banana; only 3 (4.76%) of non-members respondents received market price information from the local market.

As regards sources of market information, cooperatives play a great role in providing market price information. About 70% (30) of the cooperative members received market price information from the cooperatives, and 30% (15) of the cooperative members received it from other people who buy banana. This suggests that the cooperative members are getting market information from more than one source. However, most of the information is received from cooperatives.

The result shown in Table 6 is that 18 (36%) member respondents) and 19 (30.16%) of non-member respondents responded that the price was set by buyers, and 32 (64% of member respondents) and 44 (69.84%) of non-member respondents responded that the price was set based on demand and supply. The outcome shows that the producer's price decision during selling is less influenced by the buyer, and the result implies that the banana marketing price was set based on demand and supply in the study area.

Table 6. Market price information and related issues

Item	Response	Member(N=50)		Nonmember(N=63)	
		freq	%	freq	%
	From another	15	30	60	95.24

Source of information	person who buys				
	Local market			3	4.76
	Cooperative	35	70		
Who sets the selling price for banana?	Buyer	18	36	19	30.16
	Based on demand and supply	32	64	44	69.84

Source: Survey result, 2021/22

4.2. The perception of cooperative member on socioeconomic impact of cooperative

The banana cooperative member perception on socioeconomic impact of cooperative for value chain development was assessed by a Likert 5-point scale (strongly agree (SA): 5 points; agree (A): 4 points; neutral (N): 3 points; disagree (DA): 2 points; and strongly disagree (SDA): 1 point). The decision rule was used. 1-1.80 mean score for strongly disagree, 1.81-2.60 mean score for disagree, 2.61-3.40 mean score for neutral, 3.41-4.20 mean score for agree, and 4.21-5.0 mean score for strongly agree.

4.2.1. Banana cooperative member perception on social impact of cooperative

The results below in Table 7 show that, on average, about the social impact of cooperatives, 30.33% of respondents responded strongly agree, 56.33% responded strongly agree, 4% were neutral, 6.33% disagreed, and 3% strongly disagreed. The overall mean score value of social impact was 4.06, which implies that the cooperative members had a positive perception toward the impact of the banana producers' cooperative for value chain development. The majority of respondents (29, or 58%), agreed with the statement that gender equality exists in banana producers' cooperatives. 25 (50%) of respondents strongly agreed with the statement that I am getting market information from my cooperative. 35 (70%) of respondents agreed with the statement that cooperatives are given complete and accessible information on production and productivity.

As a result, in Table 7 below, the majority of respondents, 23 (46%) agreed with the statement that the relationship between members and the committee was trust-based. 38 (78%) agreed with the statement that cooperative members have higher bargaining power than non-members on the banana market, and 28 (56%) strongly disagreed with the statement that cooperatives have high banana quality due to good handling and logistics.

The majority of respondents agreed or strongly agreed with the social impact of cooperative membership statements. This shows that the respondent producers have a positive perception toward the social impact of banana producers' cooperatives in value chain development.

Table 7. Banana cooperative member perception on social impact of cooperative

Likert Statement (Item)	Response					Mean
	SDA(1) N (%)	DA (2) N (%)	N(3) N (%)	A(4) N (%)	SA(5) N (%)	
Gender						
Gender equality exists in banana producers' cooperatives.	0	3(6)	3(6)	29(58)	15(30)	4.12
Market information						
I am getting market information from my cooperative.	9(18)	9(18)	0	7(14)	25(50)	3.6
Production information						
Cooperatives give complete and accessible information on production and productivity.	0	2(4)	1(2)	35(70)	12(24)	4.14
Stockholder relationship						
The relationship between members and the committee is trust-based.	0	2(4)	2(4)	32(64)	14(28)	4.16
Bargaining power						
Cooperative members have higher bargaining power than non-members in the banana market.	0	0	2(4)	38(76)	10(20)	4.16
Product quality						
In cooperatives, banana is high quality due to good handling and logistics.	0	3(6)	4(8)	28(56)	15(30)	4.10

Source: Survey result, 2021/22

The results below in Table 8 show that, on average, about the economic impact of cooperatives, 43% of respondents responded strongly agree, 33.3% responded agree, 6.3% were neutral, 7.5% disagreed, and 9.58% strongly disagreed. The majority of respondents 33 (66%), agreed with the statement that the production potential of members in cooperatives was higher than that of non-members. 27 (54% of respondents) agreed with the statement that, as a cooperative member, my revenue earned from banana

sales increased from year to year. 30 (60%) of respondents strongly agreed with the statement that the cooperative is the priority market outlet for selling banana because it gives more profit compared to other traders.

As a result, in Table 8 below, the majority of respondents, 23 (46%) agreed to the statement that I believe my cooperative pays me a fair price for my banana compared to another trader, 27 (54%), strongly agreed to the statement that I trust the weighing scale of the cooperative any more than other traders, and 19 (38%), strongly disagreed with the statement that I am happy with my cooperative's profit dividend distribution every year.

The majority of respondents, 23 (46%) agreed to the statement that cooperatives create job opportunities for their members, and 20 (40%) agreed to the statement that cooperatives increase my family members' employment opportunities. 16 (32%) of respondents disagreed with the statement that cooperative members set prices through negotiation. 36 (72%) of respondents strongly agreed with the statement that weighing, loading, and packing banana leaves and transportation are the only value-adding activities of the cooperative. The majority of respondents, 27 (54%), strongly agreed with the statement that a cooperative is my priority choice to get agricultural inputs, and 42 (82%) strongly agreed with the statement that cooperatives supply agricultural inputs at lower prices than others. The majority of respondents agreed or strongly agreed with all twelve economic impact statements. This shows that the respondent producers have a positive perception toward banana producers' cooperatives for value chain development.

Table 8. Banana cooperative member perception on economic impact of cooperative

Likert Statement (Item)	Response					Mean
	SDA(1) N (%)	DA(2) N (%)	N(3) N (%)	A(4) N (%)	SA(5) N (%)	
Productivity						
The production potential of members of a cooperative was higher than that of non-members.	0	0	2(4)	33(66)	15(30)	4.26
Profitability						
As a cooperative member, my revenue from banana sales increased year over year.	1(2)	4(8)	4(8)	27(54)	14(28)	3.98
Cooperative is the first priority market outlet for selling my banana because it gives more profit compared to other traders.	3(6)	4(8)	3(6)	10(20)	30(60)	4.2
Fair-trade						

I believe my cooperative pays me a fair price for my banana compared to other traders.	1(2)	5(10)	5(10)	23(46)	16(32)	3.98
I trust the weighing scale of cooperatives more than other traders.	1(2)	2(4)	4(8)	16(32)	27(54)	4.32
I am happy with my cooperative profit dividend distribution every year.	19(38)	9(18)	2(4)	12(24)	8(16)	2.62
Employment						
The cooperative created job opportunities for their members.	1(2)	3(6)	2(4)	23(46)	21(42)	4.20
Cooperatives increase my family members' employment opportunities.	11(21)	5(10)	4(8)	20(40)	10(20)	3.26
Chain governance						
Cooperative members set their prices through negotiation.	16(32)	6(12)	3(6)	12(24)	13(26)	3.0
Value-adding activities						
Weighing, loading, and packing banana leaves and transportation are the only value-adding activities of the cooperative.	3(6)	2(4)	5(10)	4(8)	36(72)	4.36
Agricultural input						
Cooperative is my first priority choice to get my agricultural inputs.	0	1(2)	3(6)	19(38)	27(54)	4.44
Cooperatives supply agricultural inputs at a lower price than others.	2(4)	4(8)	1(2)	2(4)	41(82)	4.52

Source: Survey result, 2021/22

4.4. Banana marketing channels and margins

4.4.1. Banana value chain actors and their functions

The studies showed that banana pass through different channels before they reach their final consumers. The major actors participating in the banana marketing chain were banana producers, local traveling traders, banana producer cooperatives, wholesalers, urban retailers, rural retailers, and consumers. These actors were either firms or individuals who assumed different marketing functions along the marketing chain, and these actors assumed different marketing roles along the banana marketing chain in the study area.

Banana producers: In the study area, most banana producers are small-scale producers who sell their products at their roadside near the banana farm. Local traveling traders and banana marketing

cooperatives are the main sales outlets for banana producers. In the study area, in Table 3, on average, 1.7 hectares of land were allocated by members, and 1.46 hectares were allocated by nonmembers. The average land allocated by the respondents was about 1.57 hectares. In Table 3, the estimated amounts of banana productivity in quintals per hectare were 159.64 qt/ha for members and 175.7 qt/ha for non-members, respectively. Local traveling traders paid producers 21 ETB/kg (Table 10) for banana fruit, while banana cooperatives paid 23 ETB/kg (Table 10). Banana producers were involved in production (land preparation, growing, planting, protection (from weeds, pests, diseases, and animals), maturity checking, harvesting, and transport to the roadside for loading on the truck). They hired labor for land preparation, planting, weeding, watering, and harvesting. The harvested banana was transported to the roadside by daily laborers (see Fig.4 in Appendix F). They were also involved in post-harvest handling activities and packaging banana fruit with banana leaves before loading it to the truck on the roadside.

According to FGDs, producers were asked about the banana weed, sucker removal, and watering. They thought that the banana weeding and sucker removal was done manually by using a machete and hoe every 2 to 3 months (see Fig. 1 in Appendix F). Regarding watering, the producers applied irrigation water twice in a production year.

Producers were asked in FGDs about constraints on their ability to market banana in the study area. They stated that fluctuations in banana prices, a lack of organized market information, cheating in banana weight balance, illegal trading, limited awareness of the benefits of joining a producer's organization, a lack of a common banana marketing center, a lack of cooled facilities, refrigerated trucks, quality control and standards, poor packaging, and a lack of alternative markets were constraints in banana marketing for producers.

Local traveling traders: They are village-based middlemen who meet banana producers at their farm gate or roadside to purchase newly harvested banana and transport them to wholesalers. They are sometimes called farm gate collectors. They perform collection, weighing, loading, transporting, and unloading functions in the banana value chain in the study area. They bought 10–16 bunches as two quintals (200 kilograms) (see Appendix F fig. 2). They provide credit to producers for future banana purchases. Each traveling trader has a network with wholesalers from Addis Ababa and other major cities in the country. They load banana fruit onto open trucks covered with banana leaves for transportation. Their daily laborers usually stand, sit, or walk on the banana fruits during loading; this careless handling led to mechanical injuries to the banana fruits (see Fig. 3 in Appendix F).

The costs incurred by local traveling traders were on loading, and daily labor costs were 31.256 birr (Table 10). The gross margin was 17.46 percent in channel II. It was found from the results that about 51.37% of banana was marketed through traveling traders' market outlets in the study area.

Banana cooperative: In the study area, banana marketing cooperatives were formally organized and owned by banana producers to market their banana. According to the experts from the cooperative and

marketing offices, only four were active in the study area from eight formally organized banana cooperatives. Cooperatives accomplished the functions of market linkage, price negotiation, and quality control for their members. They sold banana to a wholesaler based on the behavior of its members. Of the total banana produced by sampled producers in the study area, about 45.57% were marketed through the cooperative outlet. In the study area, the banana cooperatives are unable to break the other trader network and lack the bargaining power to decide on the banana price because the management committee members of the cooperatives lack skills in business management and market linkage. Therefore, the producer's members in the cooperative were forced to withdraw from the cooperative.

Wholesaler: In the study area, wholesalers were involved in buying banana from banana marketing cooperatives and traveling traders and distributing them to retailers. Before buying the banana, the wholesaler collected information on market prices and the amount available in the area. Then, they set the price for the banana and informed traveling traders and marketing cooperatives to transport it to their store, which is in the major urban areas. They had an agreement with banana marketing cooperatives and local travelers to cover the transportation costs of banana from the study area to their store. Wholesalers usually store banana for a maximum of two to three days, depending on their quality. They demand a bunch of banana, which are sorted and distributed to retailers in the open wooden box. They had more access to communication networks and had more financial capability than other actors in the chain. The total marketing costs incurred by wholesalers were 368.69 birr (Table 10). The gross margin of wholesalers was 19.05 percent in channel II and 17.46 percent in channel III.

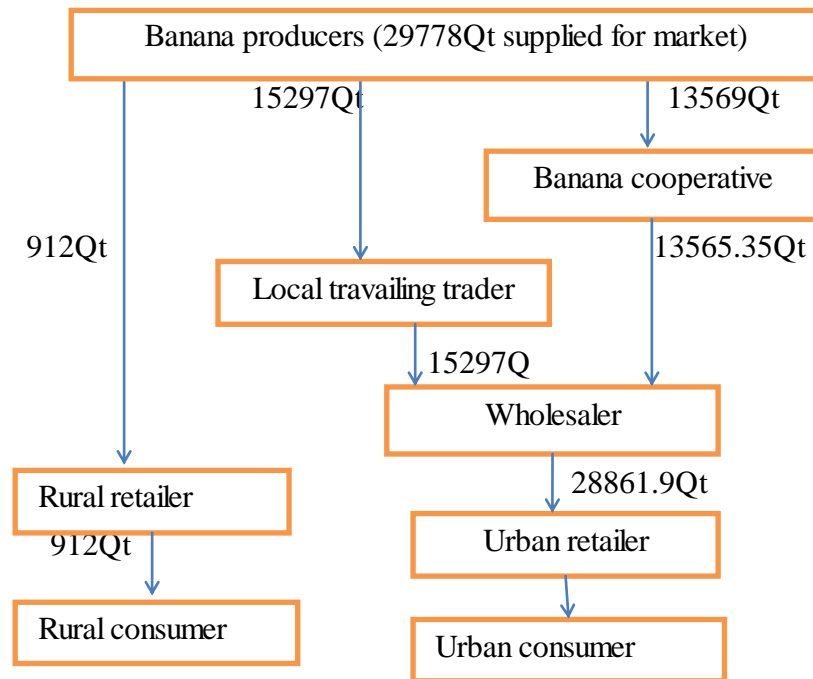
Retailer: Retailer involvement in the banana chain included purchasing from wholesalers, transporting to retail shops, and displaying and selling to consumers. They are the last link between producers and consumers. They are mostly bought from wholesalers and sometimes directly from the producers. There were urban and rural retailers in the study area. Rural retailers are based in rural markets or roadside sales and are involved in direct purchases from producers and urban retailers like supermarkets, and street and open market vendors sell to urban consumers. It was found that about 96.94% of banana in the study area were marketed through urban retailers, and the remaining 3.06% were traded through rural retailers.

Consumers: These are the final actors in the chain who buy banana for their consumption purposes. In the study area, the consumers were individuals, cafés, restaurants, hotels, and schools.

4.4.2. Marketing channels in the study area

The main banana marketing channels in the study area have been identified as three. The three main market outlets were started from the point of its production to its consumption. Banana producers are the first actors who are responsible for banana production. They harvest the fruit of banana and mostly sell it to rural retailers, local traveling traders, and banana marketing cooperatives. The survey result indicates that 29778 quintals of banana were supplied to the market by banana producers in the

production year in the study area. The channel association was made based on the quintal of banana that passed through each channel, as follows:



Source: Own sketch from survey result (2021/22)

Figure 3. Banana marketing channel in the study area

Channel I: Producer → rural retailer's → rural consumers =912quintal (3.06%)

Channel II: Producer → traveling trader → wholesaler → urban retailers → urban consumers=15297 quintal (51.37%)

Channel III: Producer → marketing cooperative → wholesaler → urban retailer → urban consumers=13569 quintal (45.57%)

Accordingly, from the total amount of banana supplied to the market (29778 quintals), the largest quintal of banana passed through channel II, which is about 15297 quintals of banana in the year 2021/2022, which was about 51.37% of the total quintal. Therefore, channels II and III together account for about 96.94% of the total banana flow, which indicates that the flow of banana in the study area is concentrated on these channels.

4.4.3. Gross Marketing Margins and Gross Profit Analysis

Production cost: The production cost includes the variable and fixed costs of the producer for banana production for one production year. On average, the volume of banana produce was 168 quintals per hectare, and its cost was ETB 1346.875 per quintal in the 2021/22 production year.

Marketing costs: The marketing costs of the banana traders included transportation costs, loading and unloading, product loss (spoilage), storage costs, tax and bat costs, commissions, and other costs. The results in Table 10 indicate that wholesalers incurred relatively higher marketing costs, which were associated with intensive work on transportation costs, unloading, product loss (spoilage), storage costs, tax and bat costs, commission, and other costs to sell the banana fruit to the next actors, while local traveling traders incurred the least marketing costs. The local traveling trader incurred the least marketing cost; the low market cost was because they did not work intensively, including unloading, product loss (spoilage), storage costs, tax and bat costs, and commission.

The selling price of producers was different in different marketing channels; the highest selling price was when producers sold directly to banana cooperatives. When producers sold their banana to cooperatives, they incurred relatively higher costs because producers did intensive work to transport them to the roadside by daily laborers whenever they targeted selling their banana to cooperatives. Costs incurred and prices received by major banana value chain actors in the study were identified.

Table 9. Production cost, cost, and volume of banana produced per hectare

Cost item	Cost in Ethiopian Birr (ETB)
Labor cost	
Banana cultivation	40000
Weeding and sucker removal	25000
Watering	10000
Harvesting	48000
Total labor costs	123000
Farm equipment, fertilizer, and land costs	
Hoe, spade, and machete	16000
Fertilizer	76000
Land tax	500
Total farm equipment, fertilizer, and land costs	92500
Interest cost (5%) (opportunity cost)	10775
Total production/operational cost	
Total cost per hectare	226275
Volume produced per hectare (quintal)	168
Cost price (cost per ha/volume produced per ha)	1346.875

Source: Survey result, 2021/22 Note: The farm equipment (hoe, spade, and machete) was used for one production session only.

Table 10. The marketing cost incurred by sampled banana traders (Birr/Qt)

Cost items	Local traveling trader	Cooperative	Wholesaler	Urban retailer	Rural retailer
Purchasing price	2200	2300	3300	4400	1800
Loading/ Unloading	15.63	15.63	23.44	-	-
Transport	-	-	156.25	100	57
Cleaning/sorting/grading	-	-	15.625	20	60
Storage	-	-	39	45	-
Tax	-	125	125	120	-
For daily labor	15.62	18.75	-	-	-
Spoilage	-	84	9.375	35	46
Total marketing costs	31.25	243.38	368.69	320	163
Selling price birr/Qt	2800	3300	4400	6300	3500
Profit birr/Qt	568.8	756.3	731.31	1,580	1537

Source: Survey result, 2021/22

The Total Gross Marketing Margin (TGMM) is the total consumer price left for different actors in the value chain. As a result, as indicated in Table 11, the TGMM was highest in channel II (66.67%), followed by channel III (63.49%). The result indicates that producers' share of the end buyer's price was less than 50% in two channels, except channel I. When producers directly sell to rural retailers, they have the highest gross marketing margin in the channel I (51.43%). This result was similar to the finding of Kassa *et al.* (2020), who studied the value chain analysis of banana in Bench Maji and Sheka Zones of Southern Ethiopia. The result showed that outlet I (producer to rural retailer) is the most advantageous banana market outlet for the producers.

This is because when the number of middlemen between farmers and banana consumers was small, the share of farmers increased. This is similar to the general truth, which means that as the number of middlemen between the two ends increases, the share of producers will decrease. This implies that producers would benefit more if they sold directly to rural retail market outlets and second to banana cooperatives. Though in this study, the numbers of middlemen in channels II and III are equally three, the producer's share of consumers' price is significantly different, having a value of lower (33.33%) and higher (36.51%), respectively. This is because of the activities performed by the actors in the marketing channels, which means the wholesaler in channels II and III adds more value and hence incurs more cost on the product before it gets into the hands of consumers.

Table 11. Gross marketing margins and gross profit of producer and traders

Actors		Banana marketing channels		
		I	II	III
Producer	Production cost	1346.9	1346.9	1346.9
	Marketing cost	-	-	-
	Selling prices	1800	2100	2300
	Gross profit	453.1	753.1	953.1
	GMMp (%)	51.43	33.33	36.51
Rural retailer	Purchasing price	1800		
	Marketing cost	163		
	Selling prices	3500		
	Gross profit	1537		
	GMMrr (%)	48.57		
Local traveling traders	Purchasing price		2100	
	Marketing cost		49.9	
	Selling prices		3200	
	Gross profit		1050.1	
	GMMltt (%)		17.46	
Cooperative	Purchasing price			2300
	Marketing cost			243.4
	Selling prices			3300

	Gross profit		756.6
	GMMco (%)		15.87
wholesaler	Purchasing price	3200	3300
	Marketing cost	368.7	368.7
	Selling prices	4400	4400
	Gross profit	831.3	831.3
	GMMw (%)	19.05	17.46
Urban retailer	Purchasing price	4400	4400
	Marketing cost	320	320
	Selling prices	6300	6300
	Gross profit	1580	1580
	GMMur (%)	30.16	30.16
	TGMM (%)	48.57	66.67

Source: Survey result, 2021/22

Where

- The average farm gate price for rural retailers was ETB 1800 per quintal, and rural retailers sell for rural consumers at ETB 3500 per quintal.
- The average farm gate price for traveling traders was ETB 2100 per quintal.
- The average traveling trader's selling price for wholesalers was ETB 3200 per quintal.
- The average wholesaler selling price for urban retailers was ETB 4400 per quintal.
- The average urban retailer's selling price for urban consumers was ETB 6300 per quintal.
- The average farm gate price for the cooperative was ETB 2300 per quintal.
- The average cooperative selling price for wholesalers was ETB 3300 per quintal.

4.5. Econometric Results

Determinants of cooperative membership: As proposed in the methodology section, 10 independent variables were modeled in the binary probit model. For overall goodness-of-fit, parameter estimates was assessed based on the likelihood ratio test. Applying the appropriate degrees of freedom, the model chi-square test indicated that the overall goodness of fit of the model was statistically significant at less than 1%. This indicates that the independent variables included in the model jointly explain the membership of primary banana cooperatives.

Table 12. Factors that determine banana producers' decisions to join cooperatives

Probit regression		Number of obs = 113			
		LR chi2(10) = 132.07			
		Prob > chi2 = 0.0000			
		Pseudo R ² = 0.8512			
Log likelihood = -11.542097		Marginal effects after probit y = Pr(coop) (predict) = .0888408			
Variables	Coefficient	Std.Err.	Z	P> z	dy/dx
Sex	-2.35	1.72	-1.36	0.17	-.7424865
Age	0.10	0.50	2.06	0.04	.0165412
Family size	0.22	0.28	0.81	0.42	.0358458
Educational level	0.84	0.32	2.61	0.009	.1356236
Banana farm size	1.35	0.81	1.67	0.095	.2174194
Access to agricultural inputs	0.71	0.84	0.85	0.395	.1149292
Awareness about cooperative	3.80	1.62	2.34	0.02	.6434898
Access to information	1.35	0.69	1.96	0.05	.2597566
Adequacy of dividends	1.70	1.58	1.44	0.15	.2519112
Total annual income	-0.0001	5.14	-1.95	0.05	-1.61e-06
_cons	-11.44	4.24	-2.70	0.007	-

Source: Survey result, 2021/22

The result of the probit regression model from ten explanatory variables showed that six variables, namely age, educational level, farm size, income, access to information, and awareness of producers about the socio-economic importance of cooperatives, were found to significantly determine banana producers' decision to join banana primary cooperatives. The predicted probability of households to be a member of the primary banana cooperatives was nearly 8.88%

Age of the household head (age): It significantly and positively determined banana producers' decision to join cooperatives at a significance level of less than 5% ($p = 0.04$). If the age of household heads increases in one year, *ceteris paribus*, the probability of joining a cooperative increases by 1.65%. This implied that people in the older age group are more likely to be members of cooperatives, and as producers continued longer, they could accumulate the resources and understand the importance and use of cooperatives to actively engage in the commitments and activities shared in the cooperatives. This result is similar to the findings with Bizualem and Saron (2018), Azmah *et al.* (2012), Divine (2014), and Mbagwu *et al.* (2018).

Educational level of household head: The variable educational level of household heads was statistically significant in determining membership in a primary banana cooperative at less than 1% ($p = 0.009$). The marginal effect value of 0.1356 for this variable indicates that an increase in the educational

level of banana producers by one schooling year would likely increase the probability of membership in primary banana producer's cooperatives by 13.56%. This result indicates that education increases producers' awareness of working in cooperatives. Since educated producers have more access to information, they begin to understand the use and benefits of cooperatives, and this awareness increases their participation in cooperatives. This result is similar to the findings with Woldegebria *et al.* (2013) and Dejen and Matthews (2016).

Banana farm size: This variable also influenced the membership of banana producers in primary banana cooperatives positively at a significance level of less than 10% ($p = 0.095$). The result showed that as the area of land allocated for banana production increased by one hectare, the probability of being a member of a primary banana cooperative increased by 21.7%. This is because ownership of large banana land plots increases the production size of banana, thereby increasing membership in primary banana cooperatives. This result is similar to the findings with Balgah (2018) and Francesconi *et al.* (2010).

Access to information (ACCI): Information access was expected to have a positive influence on cooperative membership. It is statistically significant at a 5% ($p = 0.05$) significant level. This shows that producers who have information access are more likely to be members of the cooperatives than producers without such access. Therefore, information access plays a great role in creating awareness about the benefits of cooperatives in the shortest amount of time for producers. The information about the idea of cooperatives disseminated through the media would motivate or encourage producers to join the cooperatives. The result of this study agrees with Dejen and Matthews (2016) and Woldegebria *et al.* (2013).

Awareness of producers towards the socio-economic importance of banana cooperatives: As expected, this variable determined the decision to primary banana cooperative membership positively and significantly at a less than 1% ($p = 0.02$) significance level. Compared to others, producers having a better awareness of the socio-economic importance of banana cooperatives would increase the probability of membership. The marginal effect value of 0.64 for this variable indicates that producers who have relatively better awareness of primary banana cooperatives than those who don't are likely to increase the probability of membership by 64%. The result of this study agreed with Bizualem and Saron (2018), Nazirah Chen Jaafar *et al.* (2017), and Dejen and Matthews Haile (2016).

Total annual income: The coefficient for income was negatively signed and statistically significant at a 5% level of probability. This result implies that any increase in income will lead to a corresponding decrease in membership in banana cooperatives by marginal effect value of $-9.99 \times 10^{18}\%$. This result disagreed with the finding of Mbagwu *et al.* (2018) and Nazirah *et al.* (2017) as they founded a positive relationship between income and the membership and participation of cooperative members.

4.6. Challenges and opportunities of banana cooperatives in the study area

The development of primary banana producer cooperatives in the study has been facing several challenges and opportunities. Some of the challenges of the banana primary producers cooperatives under study area raised by the respondents were the weak culture of working together, limited capacity to use modern technologies, lack of commitment of members in their cooperatives, limited capacity of the management committee, illegal traders, fluctuation of the domestic banana price, lack of transparency and accountability, little awareness about cooperatives, lack of professional skilled manpower, lack of trust, and limited training opportunities (Girma *et al.*, 2020; Zinabu *et al.*, 2020; Molla, 2017 and Abayneh and Awoke ,2021).

4.6.1. Challenges of banana cooperatives in the study area

Different challenges hinder cooperative growth. For simplicity of analysis, the challenges of the primary banana producer's cooperatives are discussed below in Table 14, and they are ranked by the respondents in their order of degree of challenge as more challenging, challenging, less challenging, or not challenging and not sure.

Weak culture of working together

“Ethiopians have the culture of eating together”. But this culture is not observed in commitment to work. These days, the government is encouraging rural people to organize themselves under agricultural cooperatives. But for people who have no habit of working together by mobilizing their resources collectively to achieve a better result, Most of the time, people wish to enjoy benefits at the expense of a few hard-working individuals. According to the focus group discussion, weak cultures of working together are the challenges that hinder cooperative growth (Debeb and Yenesew, 2019). To identify weak cultures of working together, the researchers asked the respondents, and the responses were given as follows: 32.7% responded as more challenging, 31.86% as challenging, 16.8% as less challenging, and 13.2% as not challenging, respectively.

Illegal traders

Illegal traders are traders who are not controlled by the trade offices. According to the focus group discussion, most of the respondents said that cooperatives are unable to break the illegal trader network and lack the bargaining power to decide on the banana price, and the management committee members of cooperatives lack skills and experience in business management and marketing linkage. Then the illegal traders provide credit, commission, loans, and buy at a high price. Therefore, producers organized in the cooperative were forced to sell their banana to illegal traders. As a result, the respondent's responses were 72.7% as more challenging, 25% as challenging, and 1.77% as less challenging, respectively.

Lack of transparency and accountability

It is the existence of the free flow of information among cooperatives that means all processes, decisions, and relevant information should be conducted in a transparent and accountable manner. Enough information is provided to understand and monitor them, and there is consensus on the best interests of the group in terms of policies and procedures (Debeb and Yenesew, 2019). According to the focus group discussion, most of the respondents responded that there was no free flow of information, processes, or decisions. As a result, the respondents' responses given were 50.4% as more challenging, 25.66% as challenging, and 18.5% as less challenging, respectively.

Little awareness of cooperative

In cooperatives, it is expected that all members and the management committee must be aware of the concept of cooperatives, the benefits of cooperatives, cooperative proclamation, cooperative management, membership rights and duties, and the by-laws of the cooperatives. When the awareness level of members is high, it is believed that there will be good management and cooperative growth (Debeb and Yenesew, 2019). During the focus group discussion, the respondents said that respondents have little awareness of the concept of cooperatives. As a result, respondents responded that 31.8% viewed it as more challenging, 1.77% viewed it as challenging, and 57.5% viewed it as less challenging and 8.85% as not challenging respectively.

Lack of skilled professional manpower

In the study area, the banana cooperative is managed by committees with no cooperative experience. As a result, respondents responded that 29.2% were more challenging, 9.75% were challenging, and 49.5% were less challenging and 11.5% as not challenging respectively.

Fluctuation of the domestic banana price

In the study area, producers depend on the trader's price, and there is no opportunity to negotiate with them. During the focus group discussion, respondents discussed that traders and brokers set the price, and the price is usually unstable. As a result, respondent's responses were 64% more challenging, 74.3% more challenging, and 22.12% as challenging, respectively.

Cheating in weight balance

According to the focus group discussion, cheating in weight balance was a major challenge in the study area, as 28.3% of respondent producers responded that it was more challenging, 55.75% as challenging and 15.9% as less challenging study area. Common problems faced in the area included unfair trade practices imposed by the cooperative employer at the market and producers being cheated through incorrect weighing scales.

Limited capacity of the management committee

The structure of cooperatives is made up of three levels: the general assembly, the management committee, and employees. Each structure has specific duties and responsibilities stated in the by-laws of the cooperatives. The management committee is substituted by the general assembly, which is responsible for managing operating policies and controlling cooperative business performances. However, in the study area, cooperative management committees have limited capacity to manage operating policies and control cooperative business performances (Debeb and Yenesew, 2019). According to the focus group discussion, the researchers asked the respondents and 48.6% of the respondents responded as more challenging and 51.33% as challenging, respectively.

Limited capacity to use modern technologies

Modern technology has the potential to achieve significant economic, social, and environmental benefits for cooperatives. It has become crucial to business operations across the cooperative. It is appropriate for cooperatives where the management committees need to communicate with members of the cooperative, accounting (recording) information, e.g., savings, loans, trading activities, annual accounts, and returns, and determining the society surplus, as well as sharing dividends, which must be accurate and timely processed (Debeb and Yenesew, 2019). According to the focus group discussion, the researchers asked the respondents and the response was that the capacity to use modern technologies is 54% more challenging and 48% more challenging for cooperatives in the study area.

Lack of capital

Capital is one of the important requisites for a sound cooperative business operation. There are two types of capital: equity and debt capital. Equity capital is delivered by the members, which are the owners of the business, and it is referred to as the net worth. It is the total liabilities that are subtracted from the total assets. For initial capital, the members of cooperatives should provide the capital to finance their operations. Then the cooperative delivers benefits to its members, and each member should contribute capital in direct proportion to the usage of services the cooperative provides (Debeb and Yenesew, 2019). In the study area, to identify the adequacy of capital, the researchers asked the respondents and the responses given were 84.9% as challenging and 15.04% as challenging, respectively.

Lack of trust

Trust is the member's self-confidence towards cooperatives, the management committee, and employees. It is expected that if members have confidence in the cooperatives, management committee, and employees, then they will participate in the business activities of the cooperatives. In the study area, the majority of the respondents have no trust in the board of directors, market managers, or employees. They expect that the board of directors, market managers, and employees will benefit from their products, and there were also management bodies that had no trust in the members in terms of product provision and loan repayment (Debeb and Yenesew, 2019). In the study area, to detect the challenges

of trust in cooperatives, the researchers asked the respondents and the responses were 38.9% as challenging and 55.75% as challenging and 5.31 as less challenging respectively.

Table 13.Challenges of banana cooperatives in the study area

Challenges	Degree of challenge									
	More challenging		Challenging		Less challenging		Not challenging		Not sure	
	N	%	N	%	N	%	N	%	N	%
Weak culture of working together	37	32.74	36	31.86	19	16.81	15	13.27	6	5.31
Illegal traders	82	72.6	29	25.66	2	1.77				
Lack of transparency and accountability	57	50.4	29	25.66	21	18.6	2	1.77	4	3.5
Little awareness about cooperative	36	31.9	2	1.77	65	57.5	10	8.85		
Lack of professional skilled manpower	33	29.2	11	9.73	56	49.6	13	11.5		
Fluctuation of the domestic banana price	84	74.4	25	22.12	4	3.54				
Cheating in weight balance	32	28.3	63	55.75	18	15.9				
Limited capacity of management committee	55	48.7	58	51.33						
Limited capacity to use modern technologies	61	54	52	46.02						
Lack of capital	96	84.9	17	15.04						
Lack of trust	44	38.9	63	55.75	6	5.31				

Source: Survey result, 2021/22

4.6.2. Opportunities of banana cooperatives in the study area

Opportunities raised by respondents in the study area were 113 (100%) availability of suitable agro ecology to produce banana fruit, 110(97%) increasing domestic banana market demand, 95 (84%) the

existence of cooperative experts at Kebele level, 75(66%) availability of training by colleges and universities specialized in cooperatives, 50 (44%) availability of different development collaborations (NGOs and government organizations), and 47 (42% government special attention and support).

Table 14. Opportunities of banana cooperatives in the study area

Opportunities	N	%	Rank
Availability of suitable agro ecology to produce banana fruit	113	100	1 st
Increasing domestic banana market demand	110	97	2 nd
The existence of cooperative experts at the Kebele level	95	84	3 rd
Availability of training by colleges and universities specializing in cooperative	75	66	4 th
Availability of different development collaborations (NGOs and government organizations)	50	44	5 th
Government special attention and support	47	42	6 th

Source: Survey result, 2021/22

5. CONCLUSION AND RECOMMENDATIONS

5.1. Conclusion

This study generally addressed assessing the contribution of banana producer cooperatives in enhancing value chain development. It specifically assessed the socioeconomic impact of cooperative in value chain development, estimated the market share of banana producers in different market outlets, and identified factors affecting banana producers to join cooperatives in the study area, and identified challenges and opportunities for banana cooperatives in the study area. For this purpose, data were collected from a total of 113 banana households (50 members of the primary banana cooperative and 63 nonmembers). From the study results, it is possible to conclude that the majority of members of banana-producing cooperatives have a positive perception towards the socioeconomic impact of cooperatives in value chain development. However, there is a variation in perceptual responses to different statement items. This implies that primary producer cooperatives play a vital impact in value chain development. The result of the gross marketing margin analysis indicated that banana producers have the highest gross marketing margin in channel II (51.43%), followed by rural retailers in the same channel (48.57%). This implies that producers would benefit more if they sold directly to rural retail outlets.

The result of econometric analysis by the probit regression model from ten explanatory variables showed that six variables, namely age, educational level, farm size, annual income, access to information, and awareness about cooperatives, were found to significantly determine banana producers' decision to join banana primary cooperatives by 1%, 5%, and 10%, respectively. The major challenges that hindered the development of primary banana producer cooperatives in the study area were ranked by the respondents in their order of degree of challenge as more challenging, challenging, less challenging, or not challenging and not sure. Accordingly, 84% of the respondents responded that the development of the cooperative was more challenging because of a lack of capital, 80% of illegal traders, 78% of little awareness about the cooperative, 70% of cheating in weight balance, and 64% of fluctuation in the domestic banana price. In addition to that, the producers also raised different opportunities in the study area: the availability of suitable agro ecology to produce banana fruit, the existence of cooperative experts at the Kebele level, the availability of training by colleges and universities specializing in cooperatives, government special attention and support, increasing domestic banana market demand, and the availability of different development collaborations (NGOs and government organizations).

5.2. Recommendations

The following recommendations were drawn by a researcher based on the results:

- The result of the marketing margin analysis shows that the gross marketing margin earned by the banana producer when selling through the cooperative marketing outlet was found to be greater than the gross marketing margin obtained when selling through the local working trader (privet trader) marketing outlet. Therefore, producers in the study area are highly recommended to supply their banana products through the cooperative market outlet to get a better marketing margin.
- The private trader gave a better price, credit, and commission to cooperative member producers, who were motivated to sell their banana to the private trader in demand for a better price, credit, and commission. This discouraged banana cooperative marketing in the study area. Then, banana cooperatives are recommended to play a vital role in creating a proper pricing system, giving credit, and creating trust to meet the needs of members.
- The result displayed that educated producers have relatively more access to information, and they came to better understand how to join and use the benefits of primary banana cooperatives in the study area. Hence, the cooperative promotion office at the study area and zonal level should facilitate both formal and informal education and skill training opportunities to increase banana producers' awareness and improve their decision to join a cooperative.
- Additionally, there were opportunities and challenges for the growth of primary banana producer's cooperatives in the study area that needed to be taken into consideration by the concerned bodies in policy making, and those opportunities needed to be boosted and promoted for further benefits.
- According to the result, lack of capital, illegal traders, little awareness about cooperatives, cheating in weight balance, and fluctuation of the domestic banana price were major challenges that primary banana cooperatives were challenged with. In this regard, the federal government should give special attention, allocate a sufficient budget, and facilitate other sponsors to support cooperatives in finance. Illegal trading routes must also be excluded and controlled by the concerned regulatory body.
- According to the result, primary producers' cooperatives play a vital role in value chain development. Therefore, the local government and other concerned bodies should give special attention to the organization of rural producers in cooperatives because a cooperative is the base for value chain development.

6. REFERENCES

- Abayneh Feyso and Awoke Mensa., 2021. Smallholder banana-based farming system dynamics of Arba Minch Zuriya District, the case of Gamo Zone, Ethiopia: Qualitative exploration. *Cogent Food & Agriculture*, 7(1), 1930425.
- Aldrich, J.H. and Nelson, F.D., 1984. *Linear probability, logit, and probit models* (No. 45).
- Authority, Financial Conduct.,2015. The FCA's approach to advancing its objectives.
- Balgah, R, A., 2019. Factors influencing coffee farmers' decisions to join cooperatives. *Sustainable Agriculture Research* 8(1), pp. 42-58.
- Benyam Tadesse and Abatneh Temesgen., 2019. Value chain analysis of banana in Mizan aman town of Benchi Maji zone, southwest Ethiopia. *Int. J. Horticult. Agricul. Food Sci* 3, no. 1.
- Beyene Negatu, Hans Kromhout, Yalemshay Mekonnen, and Roel Vermeulen., 2016. Use of chemical pesticides in Ethiopia: a cross-sectional comparative study on knowledge, attitude and practice of farmers and farm workers in three farming systems. *Annals of Occupational Hygiene* 60, no. 5, pp. 551-566.
- Bijman J, Constantine Iliopoulos, Krijn J. Poppe, Caroline Gijssels, Konrad Hagedorn, Markus Hanisch, George WJ Hendrikse., 2012. *Support for farmers' cooperatives*. Wageningen.
- Bijman, J. and Doorneweert, B., 2010. Collective Entrepreneurship and the Producer Owned Co-operative. *Journal of Co-Operative Studies*, 43(3), pp.5-16.
- Bizualem Assefa Gashaw and Saron Mebratu Kibret., 2018. Factors influencing farmers' membership preferences in agricultural cooperatives in Ethiopia. *American Journal of Rural Development*, 6(3), pp.94-103.
- Borda,R, A, Hazel ,J, Linda,S, and Sara, V., 2016. What makes rural co-operatives resilient in developing countries? *Journal of International Development* 28, no. 1, pp. 89-111.
- Borda-R, A, and Sara,V., 2014. Rural co-operative resilience: the case of Malawi." *Journal of Co-operative Organization and Management* 2, no. 1 pp. 43-52.

- Borzaga, Carlo, and Ermanno C. Tortia., 2017. Co-operation as Co-ordination Mechanism: a new approach to the economics of co-operative enterprises." *The Oxford Handbook of Mutual, Cooperative, and Co-owned Business*.
- Borzaga, Carlo, Simone Poledrini, and Giulia Galera. 2017. Social enterprise in Italy: Typology, diffusion and characteristics.
- Buis Maarten L., 2010. Stata tip 87: Interpretation of interactions in nonlinear models." *The stata journal* 10, no. 2 (2010): 305-308.
- CFC (Common Fund for Commodities) (2004) Development of Organic Banana Production and Export in Sudan and Ethiopia to the Middle East and Europe. FC/CC/34/FISGB/10. Appraisal Report, Addis Ababa, Ethiopia.
- CSA (Central Statistical Agency of Ethiopia) (2014) Agricultural Sample Survey. Report on Area and Production of Major Crops. Volume I, VII and VIII. Statistical Bulletin 578. Addis Ababa, Ethiopia.
- CSA (Central Statistical Agency of Ethiopia) (2021) Agricultural Sample Survey. Report on Area and Production of Major Crops. Volume I, VII and VIII. Statistical Bulletin 578. Addis Ababa, Ethiopia.
- Debeb, D. and Yenesew, A., 2019. Challenges and prospects of cooperatives in Ethiopia with reference South Gondar zone-Ethiopia, *European Journal of Business and Management*. ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Volume 7, Issue 12
- Dejen Debeb and Matthews Haile, 2016. "A study on factors affecting farmers" cooperative membership increment in Bench Maji zone, south-western Ethiopia," *Journal of developing country studies*, ISSN 2224-607X (Paper) ISSN 2225- 0565(online). Vol.6, No.2.
- Eden Kebede., 2014. The impact of national bank regulation on banks performance: evidence from the private banks of Ethiopia. *Unpublished MSc thesis, Addis Ababa University*.
- Fanos Mekonnen., 2014. The history and future of banana in Arba Minch, Ethiopia.. *Livestock and Irrigation Value chains for Ethiopian Smallholders (LIVES)*. Retrieved March 14, pp. 2016.
- FAOSTAT., 2012. United Nations Food and Agriculture Organization Statistical.

- FAOSTAT.,2021.United Nations Food and Agriculture Organization Statistical.
- Federal Cooperative Agency (FCA), 2015. Unpublished data, Addis Ababa, Ethiopia.
- Federal Democratic Republic of Ethiopia (FDRE). 1998. Establishment of Cooperative Societies, Proclamation No. 147/1998. Addis Ababa: Federal Negarit Gazeta.
- Francesconi, G. N., & Heerink, N. 2010. Ethiopian Agricultural Cooperatives in an Era of Global Commodity Exchange: Does Organizational Form Matter? <https://doi.org/10.1093/jae/ejq036>.
- Gebeyanesh Zerssa, Debela Feyssa, Dong-Gill Kim, and Bettina Eichler-Löbermann., 2021.Challenges of smallholder farming in Ethiopia and opportunities by adopting climate-smart agriculture. *Agriculture* 11, no. 3 pp. 192.
- Girma Gezimu Gebre and Eweg Rik., 2016. Sustainability assessment of a banana value chain: The case of Arba Minch, Ethiopia. *Journal of Agribusiness*, 34(2).
- Girma Gezimu Gebre, Eweg Rik, and Albertien Kijne., 2020. Analysis of banana value chain in Ethiopia: Approaches to sustainable value chain development." *Cogent Food & Agriculture* 6, no. 1, pp.1742516.
- Gizaw Wasihun and Desu Assegid.,2021. Trend of cereal crops production area and productivity, in Ethiopia. *Journal of Cereals and Oilseeds* 12, no. 1, pp.9-17.
- Gujarat., 2004. Basic econometrics.
- Gumisiriza, Robert, Joseph Funa Hawumba, Mackay Okure, and Oliver Hensel., 2017. Biomass waste-to-energy valorization technologies: a review case for banana processing in Uganda. *Biotechnology for biofuels* 10, pp. 1-29.
- Haile, D.D.M., 2016. A Study on Factors Affecting Farmers' Cooperative Membership Increment in Bench Maji Zone, Southwestern Ethiopia. *Sustainable Development*, 6(2).
- ICA (International Co-operative Alliance). (1995). Co-operatives value and principles.
- ILO (International Labor Organization). (2015). Conclusions Concerning the Promotion of Sustainable Enterprises. ILO, International Labor Conference, June 2007
- Jaafar, N.C., Abdullah, R., Salleh, K.M., Ahmad, S.M., Bakar, H.A. and Mansor, N.H., 2017. Factors Affecting Membership Of Sustainable Oil Palm Grower Cooperative (KPSM) Among

- Independent Oil Palm Smallholders In Malaysia. *IOSR journal of humanities and social science*, pp.12-26.
- Kahsay Berhe, Ranjitha Puskur, Worku Teka, Dirk Hoekstra, and Azage Tegegne., 2008. Innovation in banana value chain development in Metema district, Northwestern Ethiopia: IPMS experiences.
- Kassa Tarekegn, Akililu Asado, Tesfaye Gafaro, and Yishak Shitaye (2020). "Value chain analysis of banana in Bench Maji and Sheka Zones of Southern Ethiopia." *Cogent Food & Agriculture* 6(1) 1785103.
- Khan, Zeyaur R., David M. Amudavi, Charles AO Midega, Japhether M. Wanyama, and John A. Pickett.,2008. Farmers' perceptions of a 'push-pull' technology for control of cereal stemborers and Striga weed in western Kenya. *Crop protection* 27, no. 6, pp. 976-987.
- Kshirsagar, P. J., S. M. Shigawan, S. S. Wadkar, and J. M. Talath (2019). "Marketing efficiency of mango in South Konkan region." *International Research Journal of Agricultural Economics and Statistics* 10, no. 1 51-58.
- Kumar, Virendra, K. G. Wankhede, and H. C. Gena., 2015. Role of cooperatives in improving livelihood of farmers on sustainable basis." *American journal of educational research* 3, no. 10, pp.1258-1266.
- Mateows, N., Amanuel, T.W. and Asfaw, Z., 2015. Market chain analysis of agro-forestry products: the case of fruit at Tembaro District, Kembata Tembaro Zone South Ethiopia. *International Journal of Business and Economics Research*, 4(4), pp.201-216.
- Mbagwu, Godwin Ndubuisi Ikechukwu., 2018. Factors influencing membership of farmers' in cooperative societies in Abia state, Nigeria. *Scientific papers series management, Economic engineering in Agriculture and rural development* 18, no. 1.
- Megersa Debela, Sisay Diriba, and Hailemichael Bekele.,2018. Impact of cooperatives membership on economy in eastern oromia: the case ofharamaya agricultural FARMERS' COOPERATIVE UNION (hafcu). *Annals of Public and Cooperative Economics* 89, no. 2, pp. 361-376.
- Mohammed, N. and Lee, B.W., 2015. Role of cooperatives in rural development, the case of south nations nationalities and people region, Ethiopia. *Science Journal of Business and Management*, 3(4), pp.102-108.

- Mojo D, Fischer C, Degefa T 2015. Social and environmental impacts of agricultural cooperatives: evidence from Ethiopia. *Int J Sustain Dev World Ecol* 22(5):388– 400, <http://dx.doi.org/10.1080/13504509.2015.1052860>
- Molla Mekonnen Alemu., 2017. Banana as a cash crop and its food security and socioeconomic contribution: The case of Southern Ethiopia, Arba Minch. *Journal of Environmental Protection*, 8(3), pp.319-329.
- Muthyalu Meniga.,2015. Growth and challenges of cooperative sector in Ethiopia. *Growth* 4, no. 3.
- Natarajan, V. "O. Chandra sekhar reddy, Hiwot Bekele., 2015.Evaluation of the effectiveness of financial performance of cooperatives". Case study of lume adama farmers' cooperative union, east shoa zone, Oromia regional state, Ethiopia. *International Journal of Latest Research in Science and Technology Volume* 4, pp. 90-96.
- Nazirha Che Jaafar, Ramli Abdullah, Kamalrudin Mohamed Salleh, Siti Mashani Ahmad, Hamdan Abu Bakar, and Nur Hanani Mansor, 2017. "Factors affecting membership of sustainable oil palm grower cooperative (KPSM) among independent oil palm smallholder in Malaysia," *IOSR journal of humanities and social science*, (IOSR-JHSS). Volume 22, Issue 8, Ver. 10, PP 12-26.
- Othman, A., Kari, F., Jani, R. and Hamdan, R., 2012. Factors influencing cooperative membership and share increment: an application of the logistic regression analysis in the Malaysian cooperatives. *World Review of Business Research*, 2(5), pp.24-35.
- Sathapatyanon, J., Kuwornu, J.K., Shivakoti, G.P., Soni, P., Anal, A.K. and Datta, A., 2018. The role of farmer organizations and networks in the rice supply chain in Thailand. *Journal of Agribusiness in Developing and Emerging Economies*, 8(3), pp.554-578.
- Shasho Megersa, Abdella Gure, Melaku Alemu, and Sisay Feleke., 2017. Qualitative assays and quantitative determinations of laccases of white rot fungi from plantation and natural forests of Arsi forest enterprise, Ethiopia." *World Scientific News* 67, no. 2, pp.303-
- Teklay Tesfaye, Yeman Kahsay, Selamawit Girmay, and Gebremedhin Welu.,2016 Value chain analysis of banana in Tekeze river basin, North Ethiopia. *Journal of Biology, Agriculture and Healthcare* 6, no. 21, pp.34-40.

- Uzzi, B., 2018. Social structure and competition in interfirm networks: The paradox of embeddedness. In *The sociology of economic life* (pp. 213-241). Routledge.
- Wanyama, F.O., Develtere, P. and Pollet, I., 2009. Reinventing the wheel? African cooperatives in a liberalized economic environment. *Annals of public and cooperative economics*, 80(3), pp.361-392.
- Wiersinga, R.C., Snels, J.C.M.A. and Admiraal, L., 2008. Ethiopian-Netherlands horticulture partnership: Prospects and challenges for refrigerated container transport of fruits and vegetables from Ethiopia to the Middle East.
- Yishak, B. (2013). Gamo Gofa Zone diagnosis and planning document, SNNP. (compiled by LIVES project coordinator).
- Zenebe Woldu, Ali Mohammed, Derbew Belew, Zekarias Shumeta, and Adam Bekele., (2015) Assessment of Banana Production and Marketing in Ethiopia. *International Journal of Sciences: Basic and Applied Research*, 24, 283-307.
- Zeweld Nugusse, W., 2010. Why some rural people become members of agricultural cooperatives while others do not. *Journal of Development and Agricultural Economics*, 2(4), pp.138-144.
- Zeweld Nugusse, W., Van Huylenbroeck, G. and Buysse, J., 2013. Determinants of rural people to join cooperatives in Northern Ethiopia. *International Journal of Social Economics*, 40(12), pp.1094-1107.
- Zinabu Ambisa, Bikila Tesfa, Temsgen Olani, and Diriba Abdeta., 2019. Review on the production and marketing of banana in Ethiopia. *World Journal of Agriculture and Soil Science* 2, no. 1, pp. 1-9.

7. APPENDIX

Appendix A: Cooperative Members and Non-Members Questionnaire

This questionnaire was prepared by Wolkite University's College of Agriculture in the agribusiness and value chain management departments with the title "Assessing the Contribution of Banana Producers' Cooperatives in Enhancing Value Chain Development in Case of Arba-Minch Zuriya Woreda, Gamo Zone, Ethiopia" So your participation in giving the truth and relevant information will have a great role for the researcher, so considering this, I would like to ask that you give relevant and timely information for the below-listed questions.

1. Personal information and socio-demographic profile

Please simply circle the box, choose the number, and write in the blank space.

1.1. Kebele: _____

1.2. Name of respondents/HH-head: _____

1.3. Sex: 0. female; 1. male

1.4. Marital status of respondents

1. Single
2. Married
3. Widowed
4. Divorced

1.5. Age: _____

1.6. Education: _____

1.7. Number of households (15–65 years old): _____

1.8. How long have you practiced production of banana?

1.9. What was the estimated amount of annual income for last year (2021/22)? _____ Birr

A. For Members

1.9. Name of the cooperative: _____

1.10: When did you join? _____year

1.11: Why did you join the cooperative?

- Compulsory
- Expected benefits
- Followed others

1.12 As a member of the banana producers' cooperative, what is your role in the cooperative?

13: How does being in the cooperative benefit you as a banana producer?

1. Improves current livelihood welfare
2. Important in times of emergency
3. Reduced burden or risk of crop failure
4. Access to technical advice
5. Higher prices
6. Other(Specify)_____

1.14. Do you participate in the cooperative activity?

0 No. 1: Yes

1.15. How do you participate in the cooperative activities?

1. Attend meetings
2. Decision making
3. Election of new leaders
4. Producer trainings/seminars
5. Events organized by the cooperative
6. Sharing of profit
7. Other(Secify)_____

1.16. How does the cooperative practice its democratic values?

1. Holding regular elections
2. Equal representation of all members
3. Observing the constitutional principles (rules and regulations)
4. Other (Specify) _____

1.17. How does the cooperative elect its leaders?

1. Through election
2. Volunteering
3. Self-appointed
4. Other(Specify) _____

1.18. Do you think cooperative management is accountable and transparent?

0 No 1 Yes

1.19. If your answer to Q*1.18 is yes or no, what are the reasons for your answer?

B. For non-members

1.20. What is the reason for not joining the banana producer's coop?

1. No real benefits
2. No clear idea about the socio-economic importance of banana producer's cooperatives
3. High membership fee
4. Bad coop leadership
5. Requirements are high
6. Other (Specify) _____

1.21. Do you perceive any loss of benefits for not having joined the cooperative?

0 No 1 Yes (Specify) _____

1.23. Do you think cooperative management is accountable and transparent? 0 No 1 Yes

1.24. If your answer for Q*1.23 is yes/no what are the reasons for your answer?

2. Challenges and opportunities of banana cooperatives for member

2.1. What are the challenges that hindered the banana cooperatives in your area?

2.2. What are the opportunities of banana cooperatives in your area?

3. Banana production and marketing aspect for both member and non-member

3.1. When did you start banana farming? _____

3.2. On how many hectares of land do you cultivate banana? _____

3.3. Did you sell banana in the 2021/22 production season?

0 No 1 Yes

3.4. If your answer for Q*3 is yes, how did you sell your banana in 2021/22?

- a. Direct to local traveling trader
- b. Direct to retailer

- c. Direct to consumer
- d. Direct to cooperative
- e. Direct to wholesaler
- f. Other (Specify) _____

3.5. From where did you get agricultural inputs? _____

3.6. Do you think cooperatives supply agricultural inputs at lower prices than others?

0 No 1 Yes

3.7. Do you prefer to get agricultural inputs from cooperatives?

0 No 1 Yes

3.8. Did you have information about the nearby market price before you sold the banana?

0 No 1 Yes

3.9. If Q8 yes from where do you get market information?

- 1. from the person who buys
- 2. Local market
- 3. Cooperative
- 4. Others (Specify) _____?

3.10. What are the major banana market chain actors in your district?

- a. Local traveling trader
- b. Wholesaler
- c. Cooperatives
- d. Consumer
- e. Retailer
- f. others (specify) _____

3.11. Did you need a cooperative marketing channel to sell your banana?

0 No 1 Yes

3.12. If your answer for Q* 12 is “yes” why? Specify _____

3.13. Which market outlet do you prefer to sell your banana? (Multiple responses are possible)

- 1. Local traveling trader
- 2. Cooperatives
- 3. Rural retailer
- 4. Wholesaler

3.14. How many banana did you sell in the year (kg) 2021/22 _____

3.15. How much did you use for home consumption (kg) _____

3.16. Total Quantity Produced (2021/22 (kg) _____

3.17. Average selling price for cooperatives (Birr/kg in 2021/22) _____

3.19. Average selling price for other traders (Birr/kg in 2021/22) _____

3.20. How much and to whom did you sell your banana?

(√)	Purchaser	Amount /Qt	Selling price	Remark
	Rural Retailer			
	Local traveling trader			
	Cooperatives			
	Wholesaler			

3.21. Who sets the selling price of banana?

1. Buyer
2. Based on demand and supply
3. Negotiated
4. Others (specify) _____

3.22. Do you think the benefit that banana cooperative members received in the form of dividend is adequate? 0. No 1. Yes

3.23. Do you have any clear idea about the socio-economic importance of banana producer's cooperatives? 0 .No 1. Yes

4. Banana producer cooperative member perception on the impact of cooperatives' in value chain development in the study area

The following sections are concerned with member perception toward each cooperative impact in value chain development and its measures. Please indicate to what level you agree or disagree with statements for each item by having a tick mark (√) in front of the boxes of your choice once only: strongly agree (SA): 5 points; agree {A}: 4 points; neutral (N): 3 points; disagree (DA): 2 points; and strongly disagree (SDA): 1 point.

4.1. Economic impact

No	Economic impact	Likert Statement (Item)	Response				
			1	2	3	4	5
1	Productivity	E.1. The production potential of members of a cooperative was higher than that of non-members.					
2	Profitability	E.2.1. As a cooperative member, my revenue earned from banana sales is increasing year over year.					
		E.2.1. Cooperative is the first priority market outlet for selling my banana because it gives more profit compared to other traders.					
3	Fair-trade	E.3.1. I believe my cooperative pays me a fair price for my banana compared to other traders.					
		E.3.2. I trust the weighing scale of cooperatives any more than other traders.					
		E.3.3. I am happy with my cooperative's profit dividend distribution every year.					

4	Employment	E.4.1. Cooperatives created job opportunities for their members.						
		E.4.1. Cooperative increases my family member's employment opportunity						
5	Chain governance	E.5. Cooperative members were set prices through negotiation.						
6	Value-adding activities	E.6. Weighing, loading, and packing with banana leaves and transportation are the only value-adding activities of cooperative						
7	Agricultural input	E.7.1. Cooperative is my first priority choice to get my agricultural inputs.						
		E.7.2. Cooperative supplies agricultural inputs at a lower price than others.						

4.2. Social impact

No	Social impact	Likert Statement (Item)	Response				
			1	2	3	4	5
1	Gender	S.1. Gender equality exists in banana producers' cooperatives.					
2	Market information	E.2. I am getting market information from my cooperative.					
3	Product information	S.3. Cooperatives are given complete and accessible information on production and productivity.					
4	Stockholder relationship	S.4.1. I believe my cooperative pays me a fair price for my banana compared to other traders.					
		S.4.2. Producers cooperative bargaining power					
5	Product quality	E.5. In cooperatives, banana is of high quality due to good handling and logistics.					

Appendix B: Key informant interview

Woreda//-----Keble-----Date

The title of the interview -----

1. What are the impacts of banana cooperatives in value chain development?

2. What are the main factors affecting banana producers decision to join cooperatives in your area?

- -----
3. What are the challenges that hinder the banana cooperatives in your area?

- -----
4. What are the opportunities for banana cooperatives in your area?
 5. Who are the banana actors and what is their role in the banana value chain in your area?

Appendix C: Focus group discussion

Woreda//-----Kebele-----Date

The title of the interview -----

1. What are the impacts of banana cooperatives in value chain development?
2. What are the main factors affecting banana producers decision to join cooperatives in your area?
3. What are the challenges that hinder the banana cooperatives in your area?
4. What are the opportunities for the growth of banana cooperatives in your area?
5. Who are the banana actors and what is their role in the banana value chain in your area?

Appendix D: Trader's Questionnaire

1. Name of Respondents -----

2. Sex of trader: Female 1. Male

3. Marital status of respondents

1. Single
2. Married
3. Widowed
4. Divorced

4. Age of trader: _____

5. Education of traders

6. Family size of traders' _____

7. What major businesses have you engaged in?

1. Local traveling trader
2. Wholesaler
3. Rural retailer
4. Urban retailer

8. For how long have you been in this business?

9. From whom did you purchase banana?

1. Producers
2. Cooperatives
3. Local traveling trader
4. Wholesaler
5. Retailer
6. others (specify

10. Average purchasing price per kg of banana _____

11. How do you attract your suppliers?

1. By giving credit to purchase inputs
2. By giving a better price relative to others
3. By fair weighing
4. By visiting them.
5. others _____

12. How many traders supplied banana to you? _____

13. What is the average quantity supplied by each trader? _____

14. Do you have your own place of purchase?

0. No 1. Yes

15. If yes, Q14 would mention the name of the market place: _____

16. Estimated average costs incurred in trading banana in 2021/22

17. Estimated average costs incurred by Primary Cooperative

Cost component	Cost/birr
Purchasing cost	
Cleaning/sorting/grading	
Storage	
Loading and unloading	
Transport	
Utility and communication costs	
Commission cost	
Tax	
Other expenses	
Total marketing costs	
Selling price	

18. Estimated average costs incurred by traveling trader

Cost component	Cost/birr
Purchasing cost	
Cleaning/sorting/grading	
Storage	
Loading and unloading	
Transport	
Utility and communication costs	
Commission cost	
Tax	
Other expenses	
Total marketing costs	
Selling price	

19. Estimated average costs incurred by wholesaler

Cost component	Cost/birr
Purchasing cost	
Cleaning/sorting/grading	
Storage	
Loading and unloading	
Transport	
Utility and communication costs	
Commission cost	
Tax	
Other expenses	
Total marketing costs	
Selling price	

20. Estimated average costs incurred by retailers

Cost component	Cost/birr
Purchasing cost	
Cleaning/sorting/grading	
Storage	
Loading and unloading	
Transport	
Utility and communication costs	
Commission cost	
Tax	
Other expenses	
Total marketing costs	
Selling price	

Appendix E: STAT OUT PUT

Table in Appendix 1. Probit model regression result

```

. probit Coop_membership Sex_farmer Age educ_lev Family_size Farm_size Access_input Awareness_cooperati
> Access_information Adequacy_dividend Income

Iteration 0:  log likelihood = -77.576185
Iteration 1:  log likelihood = -16.489938
Iteration 2:  log likelihood = -13.128394
Iteration 3:  log likelihood = -11.638054
Iteration 4:  log likelihood = -11.542929
Iteration 5:  log likelihood = -11.542097
Iteration 6:  log likelihood = -11.542097

Probit regression                               Number of obs   =       113
                                                LR chi2(10)    =       132.07
                                                Prob > chi2    =       0.0000
Log likelihood = -11.542097                    Pseudo R2      =       0.8512

```

Coop_membership	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
Sex_farmer	-2.351222	1.723205	-1.36	0.172	-5.728642	1.026198
Age	.1028477	.0499845	2.06	0.040	.0048799	.2008156
educ_lev	.8432607	.3213494	2.62	0.009	.2134274	1.473094
Family_size	.2228769	.2767323	0.81	0.421	-.3195084	.7652622
Farm_size	1.351839	.8102227	1.67	0.095	-.2361683	2.939846
Access_input	.711568	.8360051	0.85	0.395	-.9269718	2.350108
Awareness_cooperative	3.803282	1.624118	2.34	0.019	.6200686	6.986496
Access_information	1.349674	.6894119	1.96	0.050	-.0015485	2.700897
Adequacy_dividend	1.704796	1.180263	1.44	0.149	-.6084774	4.01807
Income	-.00001	5.14e-06	-1.95	0.051	-.0000201	4.71e-08
_cons	-11.43785	4.238448	-2.70	0.007	-19.74506	-3.130647

. mfx

Marginal effects after probit

y = Pr(Coop_membership) (predict)
= .08884086

variable	dy/dx	Std. Err.	z	P> z	[95% C.I.]		X
Sex_fa~r*	-.7424865	.40069	-1.85	0.064	-1.52783	.04286	.955752
Age	.0165412	.01091	1.52	0.129	-.004836	.037918	48.0796
educ_lev	.1356236	.0878	1.54	0.122	-.036471	.307718	4.84071
Family~e	.0358458	.03839	0.93	0.350	-.039405	.111097	4.86726
Farm_s~e	.2174194	.17356	1.25	0.210	-.122744	.557583	1.56858
Access~t*	.1149292	.13992	0.82	0.411	-.159303	.389162	.513274
Awaren~e*	.6434898	.19771	3.25	0.001	.255984	1.031	.548673
Access~n*	.2597566	.22233	1.17	0.243	-.175995	.695508	.415929
Adequa~d*	.2519112	.18403	1.37	0.171	-.108773	.612596	.584071
Income	-1.61e-06	.00000	-1.67	0.096	-3.5e-06	2.8e-07	389671

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

Table in Appendix 2.VIF value for continuous variables for multicollinearity test

vif

Variable	VIF	1/VIF
Farm_size	3.93	0.254446
Income	3.72	0.269099
Family_size	1.34	0.748300
Age	1.24	0.807298
educ_lev	1.01	0.990133
Mean VIF	2.25	

Table in Appendix 3.Pearson correlation coefficients for dummy variables

. pwcorr Sex_farmer Access_input Access_information Adequacy_dividend Awareness_cooperative

	Sex_fa~r	Access~t	Access~n	Adequa~d	Awarene~e
Sex_farmer	1.0000				
Access_input	-0.0373	1.0000			
Access_inf~n	-0.0804	0.2470	1.0000		
Adequacy_d~d	-0.0943	0.1841	0.5664	1.0000	
Awareness_~e	0.0643	0.2198	0.5128	0.6418	1.0000

Appendix F: Photos taken by the researcher



Figure in Appendix 1. Banana weeding and sucker removal in the study area



Figure in Appendix 2. Banana weighing in the study area



Figure in Appendix 3. Banana transportation in the study area



Figure in Appendix 4. Banana collected to roadside by daily laborers