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Ministry of Agriculture

Tigray Participatory Small Scale Irrigation Development Program (PASIDP II)

Assessment on Existing Challenges Affecting Functionality of Irrigation Marketing Cooperative

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Tigray Region Participatory Small Scale Irrigation Development Program (PASIDP II) Coordination Unit

Sub-Component Agribusiness Linkage and Market Access

I. Acronyms

List of acronyms and abbreviation

BOARD	Bureau of Agriculture and Rural Development
CSA	Central Statics Agency
Das	Development Agents
DCSI	Dedebit Credit and Saving Institution
FGD	Focused Group Discussion
GDP	Gross Domestic Product
HVC	High value Crops
ICA	International Cooperative alliance
IFAD	International Fund for Agriculture Development
IMF	Micro Finance Institutions
IFC	Irrigation Farmers Cooperatives
IWUA	Irrigation Water user association
KII	Key Informant Interview
NGO	Non-Government organization
RUSSAACCOs	Rural Saving and Credit Cooperatives
SDG	Sustainable Development Goal
PASIDP	Participatory Small Scale Irrigation Development Program
PRA	Participatory Rural Appraisal

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V. Executive summary

Irrigation cooperatives in the past years were assigning as to manage the overall irrigation scheme activities. Structurally it was established by the cooperative proclamation rule and procedures that would responsible for the cooperative agency. There by managing water rather than performing marketing activities. Members of these cooperatives depended entirely on cooperatives to cater for financial and market needs of their produce. Marketing of input and output were undermined instead cooperative leaders deeply engage in managing and distribution of water. Currently members and non-members have not trusted cooperative leaders. Significant numbers of irrigation cooperatives have closed down their membership fees and supply of produces. To this upshot most of the cooperative fail to operation input-output marketing activities. This study therefore sought to determine the factors that influence performance of irrigation cooperatives. The guiding objectives of the study were to assess existing functionality of the cooperatives, to examine the challenges of cooperatives from the farmers and cooperatives point of view, to identify the extent of support provided by the program, implementing actors and other institutions (such as, Cooperative agency, Bureau of Agriculture, Bureau of Trade, financial institutions and other GOs/NGOs) and to suggest problem solving and applicable recommendations. This study adopted a descriptive research design. The population of the study was 1457 members of the cooperative. Through random sampling a sample of 175 members was obtained and data was collected using questionnaires. Validity of the instruments was ensured through opinions and expert judgments of university experts. Data was analyzed using descriptive statistics with the help of the Statistical Package for Social Sciences. The study found that about 70% age respondents lied between 25 and 46 years, 84% of respondents found male and the remaining 16% are female headed households.

The study reported that dominant cash crop grown by respondents was onion about 21%; tomato 19 %; maize 9 % cabbage 7% garlic 5%. The remaining 39 % of respondents replied that they grew other crops. On the other hand farming experience of respondents specifically for irrigation farming is critical. The survey study found that 85.5 % of respondents reported that they have more than eight year experience of irrigating farm. The remaining 14.5% of them were having between 1 and seven years of experience.

Irrigation cooperatives offer trainings for the members and the response in the study indicates that 82.2% have attained training while 17.8 % did not received any technical training. Implied that of the members of the irrigation cooperatives believe training to members and leaders have great impact on the performance. It is further revealed that Cooperatives offering Seminars, workshops

and where conferences are open for all members of staff. From total of 172 respondents who participated in the study only 12.21% respondents participated in general assembly of the cooperative and 87.79% did not participate. This indicates that majority of the respondents were unwilling to participate in annual meetings are of great impact towards poor performance of the irrigation cooperatives. Respondents were asked about infrastructure access of the command area in performing marketing functions. Accordingly; road access, storage facility, mobile network and office availability were considered. The finding indicated that from the total 45 % of them are easily reached in road; 27% of the have storage facilities; 100% of them have network access and also only 9% them have their own office.

Most of the cooperatives have not been audited (except Alaje-Lemlem takota and adfelasi irrigation). The study assess the status of documentation and reporting system of the cooperative and found that all them have cash receipt and cash payment voucher though efficiency of record keeping found very poor most of them have no income and expense ledger; Baekel and hadas gereb gibe have but not practiced. On the other hand the study showed all off the irrigation cooperative have not price estimation document.

The study also reported that water shortage was the major challenge for production as at many places rainwater was the only source of their irrigation and despite having comparative geographical advantage, lack of quality seed and in-puts was reported second severe problem, the sole source of these inputs were either multipurpose cooperatives or traders (unknown source) that didn't follow any quality criteria, pest problem was found to be increasing each year and they had been using way above the recommended dose as that was the only way they saw from minimizing pest damage, lack of technical facility was another severe problem. Marketing related problems generated from FGDs are listed as road access (transportation cost), lack of storage facility, fluctuation in price, lack of market price information, price distortion by local middlemen. Institutional challenges such as technical support, leadership ability, leader commitment and members business skills were also critical challenges.

1. Introduction

1.1 background of the study

Small-scale irrigation schemes provide a worthwhile livelihood for smallholder farmers, though those farmers struggle to obtain a guaranteed and consistent market for their produce. This article focuses on constraints and Opportunities that different types of smallholder irrigation farmers in South Africa have in meeting requirements of fresh produce markets. It draws on findings from 94 household interviews, in-depth life histories, and in-depth interviews with stakeholders. The findings reveal that not all farmers are able to effectively market their produce, while not every smallholder is suited to the same type of market. Matching of smallholder characteristics with particular markets is thus necessary (Bulisani Lloyd Ncube 2018)

Smallholder farmers in irrigation schemes are able to produce crops for their subsistence needs and for sale.

The irrigation water provides a buffer against the risk of rain-fed agriculture that the majority of smallholder farmers depend. However, smallholder farmers, who are relying on informal markets and speculative marketing, struggle to obtain a guaranteed and consistent market for their produce (Torero 2011:3; Chikazunga *et al.:*2008; Wiggins and Keats 2013:25). Small-scale irrigation schemes provide a worthwhile livelihood for smallholder farmers, though those farmers struggle to obtain a guaranteed and consistent market for their produce. Smallholder farmers in irrigation schemes are able to produce crops for their subsistence needs and for sale. The irrigation water provides a buffer against the risk of rain-fed agriculture that the majority of smallholder farmers depend. However, smallholder farmers, who are relying on informal markets and speculative marketing, struggle to obtain a guaranteed and consistent market for their produce.

The deregulation of marketing boards has left smallholder farmers exposed to complex and competitive market conditions that are difficult to meet The informal markets become the easiest route of channeling smallholders' produce as they are not only closer to smallholder farmers, but also have easier entry conditions compared to formal marketing channels. The formal markets are useful for smallholder farmers that are able to consistently meet the quantity and quality requirements. As smallholders constitute a differentiated group, the markets they access should equally be differentiated. Linkages with alternative markets (formal and informal) will ensure that smallholder irrigators obtain a consistent income stream for their produce

The economies of many countries are currently undergoing transformation to adjust to market oriented reforms. The involvement of governments and parastatals in the national economies has been harmful in many ways and as a result, they are called upon to intervene less, and to let markets work. In a number of countries, government policy has consisted of approaches that resulted in less rather than more effective operation of cooperative organizations.

The concept of agricultural cooperatives refers to the conventional classification of cooperatives (Helm, 1968). It is an association of farmers and other rural households who have voluntarily joined together to fulfill a common socio-economic objective (basically raising income) by undertaking suitable business activities, making contribution to the capital required and accepting fair share of the risks and benefits of the business according to the principles of cooperation as reformulated by ICA. They can operate and expand their business and service activities through the process of networking as primary, secondary or tertiary cooperative. Village level primary agricultural cooperatives need to act effectively in adjusting their size and scope of activity in accordance with the demands of the members to meet their complex requirements of planning, production and off-farm activities.

In fact, cooperative marketing may be considered as a process of marketing of produce by a marketing society formed of the producers themselves, its purpose it to enable the growers to market their produce at better prices, followed by the intention of securing better marketing services and ultimately contributing to improvement in the standard of living of member

Marketing cooperatives are organized upon the concept of returning earnings from activities related to marketing of farm products to the farmer-members on the basis of business done with or through the cooperative, as opposed to returning profit to outside investors on the basis of investment. Most farmers-owned marketing cooperatives are typically involved in the first stage of marketing activities at the farm gate on the behalf of their members. Some cooperatives go one or more steps further into the food processing of manufacturing stage, i.e., vertically integrate forward, attempting to capture the margins of high value-added activities. Economic literature suggests that such action by farmer cooperatives would be beneficial to producers, farmers and consumers

1.2 Rational of the study

Cooperatives are at the heart of addressing farmer's problems and challenges in vegetable production. The vision of PASIDP II to commercialize and eventually industrialize vegetable production rests on these cooperatives. However, these cooperatives aren't financially and institutionally efficient. Without properly addressing the inherent issues in financial and institutional health of cooperatives, nothing concrete can be done. That is why the following Study on performance of financial and institutional analysis of vegetables cooperatives in PASIDP sites has been proposed.

Farmers producing vegetables face different types of risks like biological risks, production risks and marketing risks; the volatility of vegetable markets decrease the bargaining power and market power of the farmer as an individual. Co-operatives believe in common liabilities and consumption, when group of farmers pool their resources and products at a place the resulting co-operative is powerful than the sum of its parts. Not only they can fetch better price for their products, they can cost efficiently market their products and reduce the overhead costs by sharing. Cooperatives enable its members to organize their dispersed resources, skill, means capital and yield collective welfare. However it needs to be pointed out that cooperatives cannot be successful without active participation of its members. There is a lot to be gained when individual farmers think and act as a group to sustain their livelihood, agriculture product as well as their socio-economic well-being.

Problems of inefficient marketing can be solved by the promotion of the cooperative marketing and by regulating the market. Cooperative marketing is emerging as and efficient marketing system in different part of the globe. Cooperatives help its members to raise their socioeconomic status by reducing number of intermediaries providing appropriate value of their produce (Thakuri, 1999). Cooperative are involved in value addition through processing, helping the farming community indirectly by stabilizing the market place, and developing the new markets or creating new consumption by supplying newly developed processed items. In addition, it protects local farmers and consumers by checking and interfering in the business carried out by large private companies, who try to maximize their benefits in domestic markets by unfair market control. It strengthens the bargaining power of member farmers as they are not compelled

to sell over-produced volume at dumping –level prices when cooperatives have the capacity to absorb this excess volume. It provides complementary banking services and other marketing activities.

Despite the increasing realization of the role that they can play in improving the performance of rural markets, mediating access to input and output markets and agricultural technologies, producer organizations tend to have ambitious objectives that call for multiple functions and face complex challenges that undermine their ability to provide desired services (Chirwa *et al.*,2005; Shiferaw *et al.*,2009). While some producer organizations have made considerable progress in improving their members' incomes through better access to market and other services, many of them have not succeeded in attaining economic viability. Many farmer organizations are undermined by attempts to take on too many or over-ambitious objectives that range from covering all kinds of commodities in diverse regions to providing public goods (e.g. market information, agricultural extension, advocacy) to their communities. Balancing between social inclusiveness, culture of reciprocity and non-market exchanges, and economic efficiency to achieve competitiveness in core market activities is a persistent challenge (World Bank, 2008; Bernard and Spielman, 2009). Their performance is also undermined by inadequate market infrastructure and lack of supportive market institutions including well-defined policies and enabling regulatory environments (Shiferaw *et al.*, 2008). Continued government interference and tendency to replace rather than compliment other service providers and the private sector create undesirable rigidities and inefficiency. In other cases, non-targeted subsidies and dependence on external funding or donor interference may undermine self-reliance, accountability to members and sustainability (Chirwa *et al.*, 2005). This study focused on overall challenges of irrigation cooperative marketing performance.

1.3 Objective of study

The general objective of the study was to find out the functionality of irrigation marketing cooperative and its challenges in PASIDP I and II Woredas. Specifically:

- To assess existing functionality of the cooperatives
- To assess the challenges of cooperatives from the farmers and cooperatives point of view

- To identify the extent of support provided by the program, implementing actors and other institutions (such as, Cooperative agency, Bureau of Agriculture, Bureau of Trade, financial institutions and other GOs/NGOs)
- To suggest problem solving and applicable recommendations

1.3 Scope the study

To assess regional market opportunity for irrigated high value crops (HVC) this study geographically limits its scope to 13 PASIDP *Woredas* of Tigray Region and focused on participatory market-oriented value chain diagnosis aimed at identifying i) potential challenges of high value crops, ii) potential market places, iii) access to infrastructure and their characteristics, iv) market linkages and potential markets, v) quality requirements of target market and its measurement, vi) enabling environment in market chain and its gap, vii) type and source of major inputs required, viii) financial service providers, xi) constraints and potentials irrigation cooperatives.

1.4 Limitation

This assessment involve the new and existing cooperatives established as irrigation and marketing cooperatives at scheme level among 11 PASIDP I and II sites (cooperatives) of the program intervention areas. The study has two major scope delineations, (i) geographic delineation focusing on only 11 PASDIP target Woredas (ii) crop delineation targeting only on crops produced using irrigation either from PASDIP schemes or traditional practices. These two scope delineation paused the following study limitations. The marketing of any high value crops in Tigray region extends to products coming from/going to neighboring and distant regions in the country let alone non-PASDIP Woredas in the Region. In the study neither non-PASDIP Woredas with in Tigray Region nor other areas outside Tigray Region were considered. Similarly, destination markets for both rain-fed high value crops and irrigated high value crops are more or less the same as marketing of any crop produce in general it is not segmented into production type in Tigray Region like elsewhere in Ethiopia.

2. Framework of the study

A cooperative could be defined as an autonomous association of individuals who voluntarily cooperate for their mutual, social, economic, and cultural benefit through a mutually owned and democratically run enterprise. Cooperatives act as economic enterprises as well as self-help organizations can uplift the ultra-poor and uplift their socio-economic condition. Cooperatives have collective concern for the group and the welfare of their members which could be a template in current economy of the world where the rich are getting richer and poor are getting poorer. Co-operatives may very well hold the key to economic equity and long term stability. Cooperatives in developing countries open up realistic avenues for realization sustainable development goals (SDGs).

Co-operatives are built on a foundation of values which each member respects and accepts. The major seven principles of cooperatives are as follows:

- Voluntary and Open Membership
- Democratic Member Control
- Member Economic Participation
- Autonomy and independence
- Education, Training and Information
- Co-operation among Co-operatives
- Concern for Community

2.1 Types of farmer cooperatives

Farmer cooperatives can be of different types like marketing, farm inputs supply, and related-service cooperatives. Following types of cooperatives have been found in the literature

2.1.1 Marketing cooperatives

Marketing cooperatives are formed with the primary aim of marketing of agriculture produce of its members. Marketing can be a difficult job for an individual farmer due to the costs involved and lack of bargaining power. Cooperatives can achieve economy of scale in this regard and substantially reduce overhead costs and command market power. Many marketing cooperatives however have not been successful due to the fact that they could not predict the market accurately enough and couldn’t make quick market decisions. The agility was lost and became uneconomic. It is therefore agriculture marketing cooperate needs agility, negotiations skills, and seer guesswork.

2.1.2 Farm supply cooperative

A farmer needs many inputs in his farm for production of food. Many of the inputs are time sensitive and are required to implement at specific periods in plant life. Timely availability is one dimension and cost of these inputs is another dimension. A cooperative on this regard can be a vehicle to supply the inputs at reasonable costs and the profits still remains in the cooperative.

2.1.3 Service cooperative

Service Cooperatives are institutions set to meet the member's need of credit services, processing needs, transport needs irrigation services etc.

2.1.4 Production cooperative

This is group of producers who produce same or similar product and pursue it collectively. Examples are milk, vegetables, livestocks, poultry cooperatives (Bataille-Chedotel and Huntzinger, 2012)

2.1.5 Processer cooperative

It would be uneconomical for individual farmers to set up processing centers of their agriculture commodity. Example could be cold storage center where the initial investment is high and thereby creating a high barrier to entry. This common need of the farmers in an area can be achieved through formation of processing cooperatives. In developing countries of the world large portion of harvest are lost due to unavailability of processing center, it is why processing cooperatives could very well hold the key to agriculture commercialization.

2.1.6 Environmental cooperatives

The short growing period of vegetables, quick high returns and geographical landscape of the country make vegetable sector extremely important for economic development and agriculture Commercialization. The variation in geography enables farmers at different places to explore different comparative advantage and due to which they can produce vegetables of same or higher quality with low opportunity costs.

2.1.7 Saving and credit cooperatives

The main objective of saving and credit cooperative is to provide savings and credit services in rural areas based on the idea of 'self-help. Collective activity might also help farmers to obtain credit. They may be able to borrow money to buy inputs and improve their farm which, in turn, can increase their income. Some farmers borrow money from traders but the traders usually charge high interest rates. If farmers could borrow from an established bank the rate of interest may not be so high and the farmer's bargaining relationship with the trader will be strengthened. Banks will not lend money unless the value of the loan can be covered by the value of the assets

of the person seeking the loan known as collateral. In other words, if the loan is not paid back, the bank can recover the money by seizing these assets. Most African farmers have very few assets and so they are not eligible for credit. Banks or micro-finance institutions (MFIs) are much more likely to lend money to groups of farmers. The total assets of the group may be enough to cover the loan and a binding agreement between the bank and a group of farmers is seen as a satisfactory assurance that any loans will be repaid. In addition, small loans made to many people are much more expensive to administrate by the bank than a larger loan made to a consortium of farmers. This makes large loans more attractive to the bank. Encouraging banks to make this kind of loan can be assisted if the farmers' group can make savings of their own in a secure credit or savings scheme. Several aid agencies now assist farmers in need of credit by offering matching.

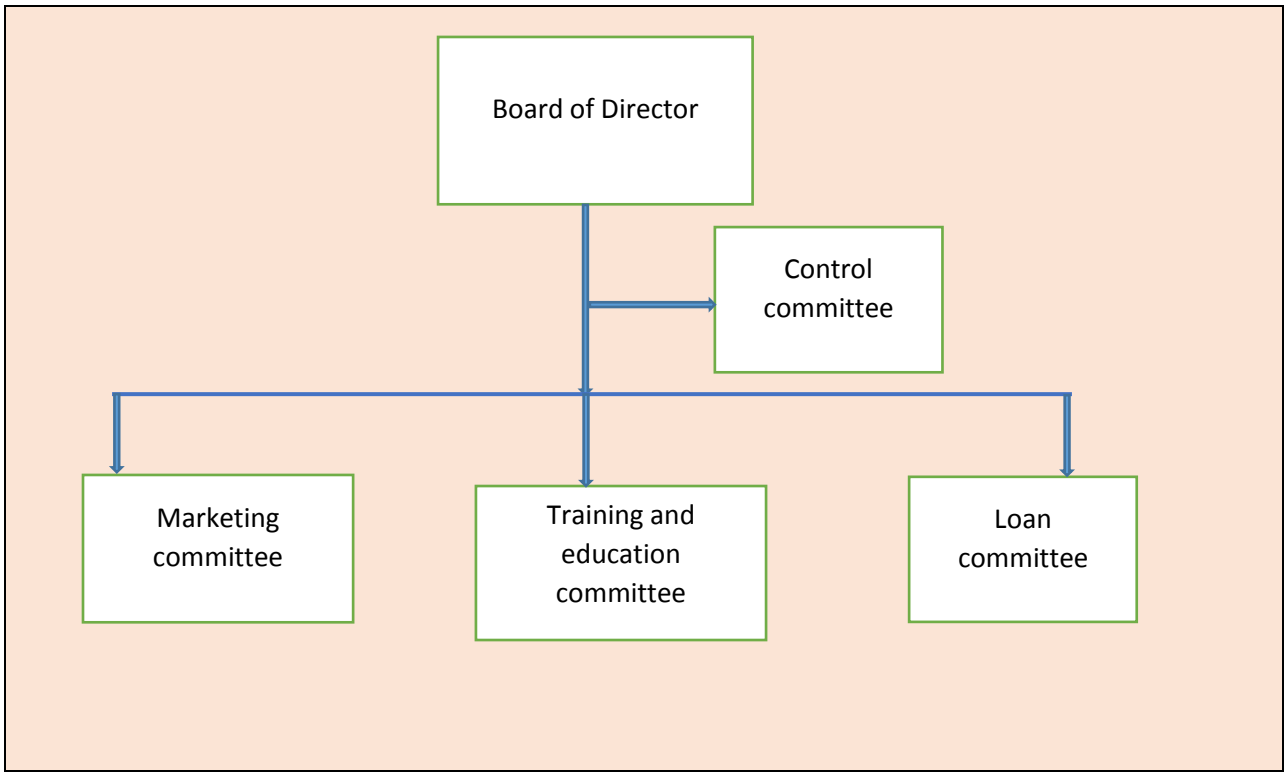
No doubt that, there is un taped potential that cooperatives as a producers' organization can form the basis for enhancing market access and entrepreneurial skills through collective action. However, collective action in marketing requires closer coordination of production, postharvest practices and marketing activities to ensure delivery of high quality and homogeneous products.

In practice, the functionality of cooperatives is constrained by shortages in skilled human resources (especially in cooperative business development). Moreover, the functionality of cooperatives is also constrained by shortage of capital and limited access to credit. An effective and sustainable cooperative movement requires overcoming major credit constraints and strengthening capacities of administrators and management.

If cooperatives are to be an innovative forms of organization and market institutions are going to help reduce transaction costs and enhance market opportunities for the poor, there is a need to understand how such collective action evolves and how it is sustained; the determinants of farmer participation; that enhance performance and effectiveness; and the government policy and complementary institutions support and supports from NG capacity building assistances are vital for the effectiveness of collective marketing action. However, such capacity building should aim at empowering cooperatives so that they can make key decisions and their operation with minimum or no external support.

2.2 Management hierarchy of the irrigation cooperative

Figure 1 management hierarchy of irrigation cooperative



Source: TRCA 2019

Farmers' cooperatives

A farmer cooperative is a business entity owned and controlled by its members for their mutual benefit. Control comes via membership rights to vote for and become directors. Members finance their cooperative through equity investments. The directors hire the manager and establish the policy under which the manager operates. While the manager and directors have little direct control over the external environment, they do have control over and the responsibility for how the cooperative adjusts to a continuously changing world environment.

Cooperatives face many problems and issues, both internally and externally.

2.3 Advantages of marketing cooperative

- Collection in one place to bulking of produce so that volume of produce can be achieved and the traders will be attracted to visit the farmer's place;
- Regular supply is possible if proper planning and management is done;
- Price fluctuation can be managed if there are practices like contract farming, agreements.
- Easy in communication for dissemination of information about price, volume and others;
- Cost of production can be reduced by procuring all necessary inputs using big transport;
- Collection of produce and transport to reduce marketing cost;
- Access to fund without collateral with group as a guarantee;
- Easy access of funds and other support services by the government and donors;
- More funds can be gathered from the members if big plans are envisioned;
- Post-harvest loss can be minimized;
- Provision of capacity building and training from the processing company;
- Bargaining power improved

2.4 Problems and Issues related to cooperative irrigation

2.4.1 Lack of marketing skills

Most of the cooperatives usually do not have marketing skill. They are managed by someone from the members of a group who do not have any knowledge on marketing and managing business as such. Cooperatives will have to use marketing strategy to run their business. Some of the innovative strategies followed are: fair price shop, branding, value adding, bargaining and others. They should advocate Government to support them in providing services and finance as a seed capital to start their business.

2.4.2 Lack of cooperation

Past experiences have shown that the group approach works only when the member of the group have similar problems. The most common problems with the farmers are marketing of their produce and receiving all types of inputs regularly. Farmers are reluctant to share their land or work in a common land for growing agricultural commodities. Group has worked in the land to grow vegetables and collectively sell in the local market. So, it is better to work in a group for collectively purchasing inputs such as seeds, fertilizers, chemicals, etc. so that the cost will be

reduced and also for marketing of their produce. It is evident that the single farmer will not be able to fulfill the large order placed by the market traders. Farmers can join hands working together by bringing their produce at the collection centers to sell the traders.

2.4.3 Weak economic status

Most of the cooperative societies are not financially strong enough to deliver vibrant products and services to ensure their market share. This is a basic challenge before the cooperatives. They should be made financially self-sustained by increasing the members and their contribution as a share capital.

2.4.4 Access to local market

It is very difficult to manage and is costly in marketing of produce far from the cultivation. There are more market opportunities if people can identify local market needs of the consumer and farmer can easily make a profit by selling it

2.4.5 Poor management

Cooperatives are efficiently managed by experienced, trained and professionally qualified staff under the supervision and control of democratically-elected boards of directors. Organization should be led and managed by energetic, professional and dynamic persons. Business should be conducted in accordance with modern management principles. The managers of cooperative business should be more professional in their market operations. They should be active enough to trace new marketing opportunities as and when they appear and make use of them for their further growth. They should make brilliant purchase decisions by studying the market trends. For example, investing more in fast moving products may increase the returns. Quality should be the key in cooperatives and steps should be taken to reduce the wastages and cost of goods sold. In short, the manager / secretary of a cooperative store should deliver his service in a professional way to prove himself competent and his business successful.

2.4.6 Leadership and understanding

Leadership and understanding between the team members are the success factors. If there is understanding between the members then it will be easy for visioning and planning of activities.

There will not be any dispute and will be an attitude of helping each other. Leaders should take care of providing marketing services to their members without his selfishness.

2.4.7 Lack of communication and participation among the members

Interaction between the members and the management committee of cooperative is very less and takes place when there are only economic activities. This has caused difficulty in understanding their problems and issues. Experience has shown that success of cooperatives is due to strong relationship and trust with their membership, which has been built over years through effective marketing support, services support and transparency of the exchange process.

2.4.8. Absence of common brands

To make cooperative businesses successful there is a need of more common brands which is absent today. Most likely success full cooperatives have individual names in each state, and they are well-known as cooperative products to people of that particular state only. Instead, if we could integrate them under a common brand it will be more successful and beneficial. It will be recognized as the cooperative product of developed countries not only by their own but also by the people throughout the world. This will reduce the marketing overheads, including promotion costs and will also result in high reach as a single advertisement serves the purpose.

2.4.9. Poor of Storage facilities

There is a common understanding that when there is oversupply produce can be stored and marketed later when price rises. Most agricultural crops are suitable for short-term storage, maybe for few days. Storage is usually expensive and spoils its freshness and quality. In most situations, when the produce is brought out of the store it has to compete with freshly arrived produce. Finally, farmer will get fewer prices, and in addition they have to pay for the storage costs as well. There are few crops suitable for long term storage. Storage in production areas is often not successful because the storage facilities are underutilized for most of the year and are uneconomic.

2.4.10 Middlemen make excessive profits

Why farmers do not get the retail market price? Consider the following case study to critically understand the profit share for middlemen. If the retail price of tomatoes is set at Br. 0.20 and if the same information is made available in the chart, farmers may not get the same price. There will be variation in the price received by the farmers due to various quality factors.

Traders are blamed for making more profits. Usually traders are the middlemen, who link the farmer's produce with the consumers. Sometimes they also build linkages with the different market far away from the production area. Many times, they are neglected and tried to sell directly in the market. Actually, the profit margins for the farmers are more than 60 per cent but due to low quantity of transaction, farmers are not benefited. For examples, if farmer sells 100 kg of tomato at the rate of Br. 8 per kg then will get total of Br. 800. The retail price of tomato is Br. 100, which shows that farmers have received 80 per cent margin where as traders margin is only 20 per cent. Traders still make good money taking advantage of selling in volume. If he sells 800 quintal, which is one mini truck load and makes profit of Br.1, 280.

2.4.11. Cooperatives formed only for the sake of getting government and donor's support.

Cooperatives should be managed in a more business-like manner – these are not social clubs or charity organizations. They should provide advice to the farmers on planting suitable crops, which earn them higher income. Regular dialogues among farmers, cooperatives and market authorities should be undertaken to resolve problems. For success, the farmers' orientation should be on improving productivity and quality. Farmers will have to take the risk at different stages of production until the marketing. So risk management strategies at various stages of marketing from production until the marketing will help to manage risk.

2.4.12. Old traditional business activities

There are many cooperatives, which do not take care of market trend and follow the same old business principles. They are not able to adjust themselves by providing knowledge on business techniques adopted by other professionals to their members.

2.5 Points to be considered for successful management of cooperatives

For successful management of cooperatives a capable manager is required. Capable manager should be recruited and trained for successful operation of regular business operation.

- Cooperatives should do networking and coordinate with the other cooperatives. Few similar activities shall be done together to minimize cost and to expand market.
- Cooperatives should be capable to update themselves with the market information.
- Should be able to prepare marketing plan and implement activities
- There should be transparency in activities, responsibility, and cash transaction.
- There should be proper management of accounting, asset, etc. and proper communication to all members.
- There should be regular monitoring of progress and achievements.

2.6 Input Markets and Output Markets

2.6.1 Input markets

The upstream end of vegetable value chains begins with production. According to Bunemann *et al.* (2006) these inputs include mineral fertilizers such as urea, ammonium nitrate, sulfates, and phosphates, organic fertilizers such as animal manures, composts, and bio-solids, and pesticides including herbicides, insecticides, nematicides, fungicides, and soil fumigants. Other inputs include equipment, energy, seeds, and seedlings. In another study Peterman *et al.* (2010) defined agricultural inputs in four main areas; (1) technological resources (including inorganic fertilizer, insecticide, improved seed varieties and equipment), (2) natural resources (including water and soil fertility), (3) human resources (including labor, extension services, and life-cycle concerns) and (4) social and political capital (including group membership, social networks, and political representation). All these products are applied with the ultimate goal of maximizing productivity and economic returns. In this case, according to Abdulai (2006) 'vegetable farm inputs ' as it applies to the area of agriculture can be defined as the resources that are used in vegetable farm production. Moreover, efficient production is not possible if necessary vegetable farm inputs of high quality are not available in time or if input prices are not affordable to farmers (Sebatta *et al.*, 2014). Thus there is a need to improved efficiency in the marketing of vegetable farm inputs in order to reduce their costs and increase their availability.

Most farm inputs for growing vegetables are purchased from agro-chemical retail outlets (Bunemann *et al.,* 2006) thereby making production costs of farmers susceptible to non-farm economic conditions. Consequently, over time, prices of vegetable farm inputs have increased over and above commodity prices, creating what can be described as a cost-price squeeze to small-scale farmers. Also, smallholder farmers can benefit from local research institutes such as universities, research institutes and colleges in the region. These organizations can assist smallholder vegetable growers with training on production skills and provide them with market information.

2.6.2 Output market

Output market is the market in which goods and services are exchanged (Krugman, 2013). According to Peterman *et al.* (2010), an output in agriculture is the quantity of agricultural produce or livestock produced or increased in a given time period in the farm whether consumed or used for further production. Some successful cooperative in the country, market their vegetables to the central market (regional and national market), supermarkets, hotels, schools and other sell their vegetables to traders who transport their vegetables out of the nation. In order for smallholder vegetable farmers to participate in these vegetable output markets, they have to understand consumer needs (Afari-Sefa *et al.,* 2012). Consumers always prefer different vegetables and are keen on how these vegetables are produced and marketed

3. Study Methodology

3.1 Site Selection and Description of the Study Area

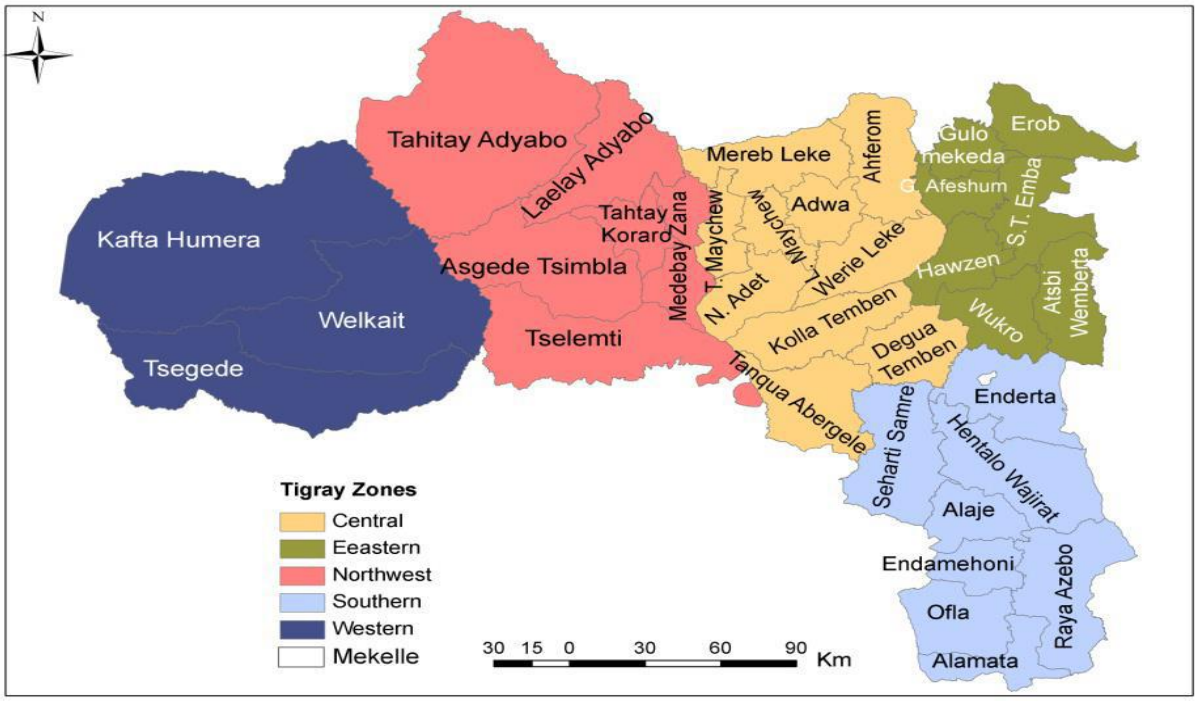
Ethiopia is a Federal Republic, with five administrative tiers: Federal, Regional, Zonal, *Woreda* and Kebele/Tabia. Tigray Region is one the 9 Regions and 2 Chartered Cities in which the Federal Democratic Republic of Ethiopia is composed. Tigray is located in the northern part of the country between 12015‘N and 14057‘N latitude and 36027‘E and 39059‘E longitude. The region is bounded by Eritrea to the North, the Sudan to the West, and the Ethiopian regions of Amhara and Afar to the South and the East respectively. Tigray consists of seven administrative zones including Mekelle town which are further divided in to 34 rural districts and 12 town districts. The Tigray Region has an estimated area of 80,000 square kilometers (GoE-TRS, 2019), from which 1.5 million hectare of land is cultivable. Currently one million hectare of land is under cultivation with 420,877 hectares of which is terraced. Wide range of altitudes (200 – 3900m), diverse soil types and high topographic variation (8% peak highlands, 39% midlands and 53% lowlands) characterize the Tigray Region. Together these factors create diversified agro-ecological conditions and many niches for production of diverse crops including high-value crops such as vegetables, roots and tubers, fruits, spices, stimulants and industrial crops. The key inputs in crop production are family labor and oxen traction.

The study is conducted in 11 PASDIP target Woredas found in 4 Zones of Tigray Region (Figure 1, Table 1). Although the Woredas are variable socio-demographically, all the PASIDP Woredas are characterized by extreme spatial and temporal rainfall variability, frequent drought and food insecurity.

The established Irrigation cooperative scheme is located in the command area Local Province in all PASIDP Woreda. The irrigation scheme has a size of approximately 742 ha and 2738 farmers of which 1457 farmers are member of the irrigation cooperatives (plot-holders). Less than a quarter of the irrigation scheme is utilized and not all farmers are actively farming consistently mainly due to water shortages. The irrigation scheme are diversion and gravity-fed from the perennial river through river canal and has night storages, all in all of the schemes are currently operational. The initial purpose of developing this scheme in the PASIDP I was to ensure that

households to increase volume of their produce but in APSIDP II not only in increase volume but also raise price of produce. The major crops grown at the scheme include maize, cabbages, tomatoes, pepper, onion, sweet potatoes, and garlic. The management structure of the established Irrigation coopertaive consists of a Cooperative led by the Cooperative Committee. The role of the Cooperative is to provide services and technical assistance, such as tractor services, advice, extension and marketing to farmers.

Figure 2 administrative map of the region



3.2. Sampling methods and sample sizes

The BoARD reports confirmed that the performance of the schemes and production status as well as respective opportunities and challenges vary across the *Woredas*; therefore, geographically, the study was based at population level considering all the 11 PASIDP project *Woredas* of Tigray Region. six of the PASDIP I *Woredas* (Raya Alamat, Raya Azebo, Atsbiwenberta, Tanka Abrgle, Woreileke and Merebeleke) and five of the PASIDP II (Tahtay maychew, Adwa, Merebleke and Ahferom) where the schemes are under agronomy development. In all the study *Woredas* households for individual interview were randomly sampled.

The sampling frame was derived from the list of PASIDP sites in the target *Woredas* and beneficiary households participating in irrigation farmers' cooperatives (IFC) only. For the

sampling of individuals for the survey, cooperative members were used as a target population. Accordingly, a total of 1457 cooperative members were estimated in all the eleven *Woredas*. Using Yamane's method total of 175 households was calculated as a total sample size. This sample size was distributed uniformly to subsample size of 11 IFCs members for PASIDP I and households from each of PASIDP II sites. A 175 individuals were participated in study including Individual household interviews, 105 FGD participants in the 11 Woredas (each FGD with 8 –12 people) (A total of 11 expert elicitation KII and 11 focus group discussions were held (Table 2). Yamane's method (1967) uses the formula.

$$n= N/1+N (e)^2$$

Where

n is number of respondent farmers,

N is the total number of cooperative members benefiting from the schemes;

e is the precision level. A 95% confidence level was taken and e= 0.05.

For the *Woredas* with the PASDIP schemes, the target population in each *Woreda* is relatively homogenous sharing the same scheme in the same command area and grouped in the same cooperative accessing comparable inputs and markets.

Table 1 sample respondents

No	**Woreda**	**Name of scheme**	**Target population**			Sampled household		
			Male	Female	Total	Male	Female	Total
1	T/abregele	Giba	247	113	360	10	5	25
2	Astbiwenberta	Adifelasi	105	28	133	13	2	15
3	Woreieleke	May timket	137	23	160	13	2	15
4	Marebeleke	Sebah	173	39	212	12	3	15
5	Alamata	Gerzel No 59	75	43	118	13	2	15
6	R/Azebo	Beru	63	12	75	13	2	15
7	Embaalaje	Adikorakuro	170	30	226	13	2	15
8	Ahferom	Daero	44	5	49	13	2	15

9	Merebleke	May tsahlo	31	18	49	13	2	15
10	Adwa	May-awso	23	5	28	13	2	15
11	Tahtaymachew	Beaker	39	8	47	13	2	15
			1107	324	1457	140	25	175

Table 2 summaries of participatory methods and sample size involved

Methods	**Sample**
Individual interviews	165 households
Focus group discussion (FGD) (13)	8 - 12 groups
Key informant interviews (KII)	11 informants

3.3. Data and data collection methods

The study was conducted in 2019 time period with Team of experts specializing in cooperative promotion, agribusiness and Statistician were involved. In all the study *Woredas* the respective enumerators spoke local languages. The enumerator's data collection was guided by local expert. The study is based on combination of data collection tools that bring together approaches of participatory rural appraisals (PRA) involving individual household interviews, focus group discussion (FGD), and Key informant interviews (KII), expert elicitation workshops), direct field observation and secondary data.

Individual household interviews –were conducted using semi-structured questioners. The tools were used to capture information on over all household characteristics, input use, agriculture production, marketing, institutional support and leadership skill. Datasets such as access to infrastructure and institutional services, market outlets, income derived from produce sales and proportions spent on farm inputs, production challenges and opportunities were collected.

Focus group discussion (FGD)-the FDGs were conducted with PASIDP scheme participants at each of the study *Woredas* except. The FDGs were held with households other than those involved in the individual interviews. The discussions were primarily used to capture quantitative and qualitative data related to the PASIDP performance and achievements since the schemes became operational, including inputs and output market access and benefits obtained

from the irrigation schemes to date and any challenges faced by the group. The FGD also involved the evaluation of cooperative performance.

Key Informant Interviews (KII): KII was held with individual informants from organizations represented in PASIDP project Regional Program Steering Committee (RPSC) members. These organizations like BoARD, TAMPA, Cooperative Agency and DCSI. Information related to key challenges in coordination, implementation and monitoring the irrigation farmer's cooperative from smallholder farmers' perspectives was discussed. Possible intervention strategies in coordinated innovation for development of market oriented high value crop production and marketing of input and output system addressed.

Direct field observation - the team observed and reviewed the work on the ground as implemented by cooperative efforts of partner organizations. Field observation assisted the team in contextualization of the irrigation practice among participating communities.

Secondary data- data derived from the literature including list of performance of marketing cooperative, their types and number of beneficiaries were gathered. Other dataset including marketing of input and output marketing status in Tigray Region was gathered and trends were assessed. The secondary data sources were both published and unpublished reports of different level of agricultural bureau (country, regional, zonal, *Woreda* and *Kebeles*), report from central statistical agency (CSA).

3.4 data processing and analysis

The data collected through questionnaire and interview were cleaned and checked for consistency after careful collection from primary and secondary sources. The data that collected through sample survey was edited at field level carefully, then categorized and coded for quantitative analysis. Frequencies and percentages were applied to arrive at conclusions and the data that obtained through document search and semi stricture interview were analyzed qualitatively by cross checking with different data sources from the study area.

To analyzing the data collected from questionnaires of respondents, key informant interview and focus group discussion; the study was adopted descriptive statistics.

Descriptive statistics

Descriptive method of data analysis such as percentages, means, standard deviations, tables and graphs were employed to examining and describing household demographic and socio-economic characteristics, institution linkage and challenges of program implementation using SPSS version 23 employed.

4. Result and discussion

This chapter deals with the results and discussion part of the study. To explain the demographic and socio-economic characteristics of the sample respondents', program institutional linkages and service delivered and over all status of the irrigation cooperative by descriptive analysis using SPSS is being employed.

There is a general poor performance of horticultural smallholder farmers in Ethiopia. They struggle to access capital for investing in value adding activities and have poor management (Masuku *et al*, 2016). These farmers still struggle, even when they are organized into cooperatives, and these challenges diminish the positive impact that rural agribusiness can contribute to rural economic growth and development.

4.1. Demographic and Socio - economic Characteristics

The demographic and Socio - economic characteristic of the study is presented with the help of descriptive analysis. To explain their effect on the on input and output marketing percentages, frequencies and graphs were used. It was assumed that demographic factors have an impact on increasing income. Literatures revealed that sex of households head, age of household, family size and education level of households influence the probability of income diversification.

4.1.1 Demographic and Socio – economic Characteristics of Respondents

Table 3 woreda and sex cross tabulation

Woredas	Sex		Total
	Female	Male	
Tahtay Maychew	2	15	17
Tankua Abergele	2	13	15
R/azebo	0	15	15
M/leke(sebah)	2	13	15
Mereb Leke (maytsahlo)	4	11	15
Alamata	3	14	17
Werei Leke (Maytsahlo)	5	13	18
Aheferom	4	11	15
Adwa	0	15	15
Atsbi Womberta	4	11	15
Alaje	1	14	15
Total	27	145	172

Table 4 age and sex of household heads

Tabia * Age Crosstabulation							
Tabia/kebelle	Age						Total
	18-24	25-35	36-46	47-57	58-68	69 and above	
Wehedet	1	5	4	1	4	2	17
Agbe	1	7	5	1	0	1	15
Beru-Kalina	0	5	8	2	0	0	15
D/Harmaz	0	5	5	4	1	0	15
Haftom	0	2	4	7	2	0	15
Gerjele	1	9	5	2	0	0	17
Hibret	0	1	9	8	0	0	18
H/Medeb	3	3	6	3	0	0	15
Mayawso	0	8	6	1	0	0	15
Debri	1	3	6	2	1	2	15
Tekea	0	0	10	3	1	1	15
Total	7	48	68	34	9	6	172
%	4	30	40	20	5	4	100

Table 5 sex and education level crosstabulation

		illiterate	Literate	Educated	Total
Sex	Female	15	11	1	27(16%)
	Male	50	68	27	145 (84%)
Total		65	79	28	172(100%)
Percentage		38	46	16	100

Source: survey result 2019

Demographic characteristics of respondents are provided in the Table above. Age of respondents' varied from youth (18 to 24) to elder (above 69). Majority of them (40 and 30 %) relied in the range of 36 to 46 and 25 to 35 respectively. Few respondents (9%) were above 58 years.

Sex of household head was another factor for household food security. From the descriptive result table 5 above, it is observed that 84% percent of households are found male headed and 16 % female headed households. Specifically, from the total literate respondents 19 % of them were female households and 81 % of them were male-headed households on the other hand proportion

of illiterate of female-headed household was higher than that of male headed households which is 23 % (15 respondents) while about 73 % (50 respondents) were unable to read and write. This implies that illiterate households face difficulties to prepare business plan and to calculate cost benefit analysis.

Survey respondents have attained primary and secondary education in all the districts (formal education). The proportion of respondents with post primary education was higher for Agbe and mayawso. In this study there were very few cooperative members without education in Debri and Haftom. Form the total respondents about 38 % of them are illiteracy in all the provinces command area since there are majority (about 62 % can read and write) of the respondents with education that were interviewed in this study, implying that they were able to independently access written information as shown in and prepared business plan.

Table 6 kebelle and education level cross tabulation

Tabia	Education Level			Total
	illiterate	Literate	Educated	
Wehedet	3	14	0	17
Agbe	2	6	7	15
Beru-Kalina	9	5	1	15
D/Harmaz	7	7	1	15
Haftom	11	4	0	15
Gerjele	3	14	0	17
Hibret	4	12	2	18
H/Medeb	4	9	2	15
Mayawso	3	4	8	15
Debri	10	3	2	15
Tekea	9	1	5	15
Total	65	79	28	172
Percentage (%)	38	46	16	100

Source survey result 2019

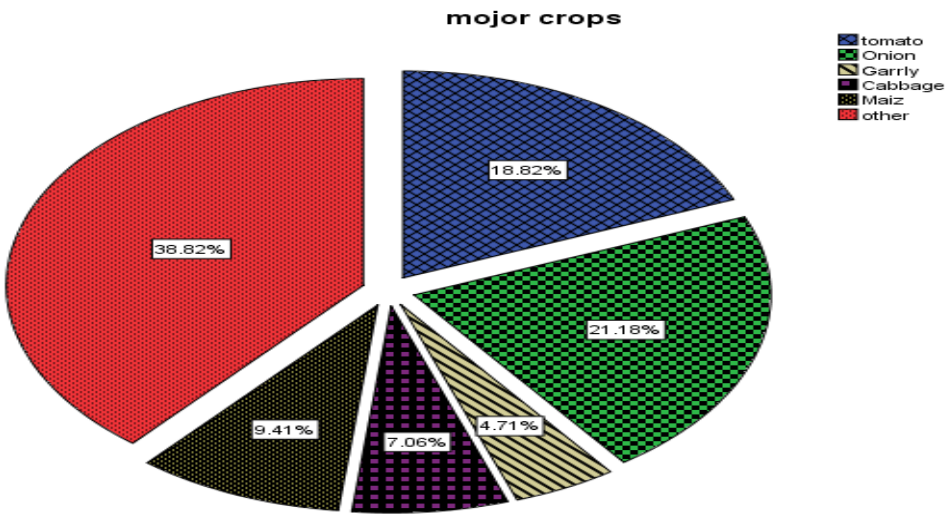
There are few differences between farmers in terms of their farm-characteristics as shown in Table 6 The farmer's age, size of the farm and number of years in farming may have or have no significant impact on the variability between farmers located in the in the studied schemes. Empirical studies reported that the age of the farmer is thought to improve farming practices of

the farmers and exposure to agricultural markets, whereas older farmers are oriented towards better paying markets since they possess more experience in farming. The level of education was investigated to determine the human capital level of farmers and the ability to interpret information. Thus, according to Montshwe (2006) people with higher educational levels are more able to understand information. Thus, education levels affects market information interpretation and hence, market participation level of farmers and understanding of both technical and management skills.

4.1.2 Household farming experience and source of income

Table 7 shows the farming practices of respondents. The rain fed agriculture is so simple than that of irrigation agriculture. The study focused on both PASIDP I and PASIDP II in which new vegetable irrigators are coming from the newly constructed projected scheme. So far about 85 % of the respondents have farming experience irrigation scheme and the remaining percent have less than 7 years' experience. The vegetable and fruit types recorded include tomato onion, garlic, cabbage, maize others. The figure below presented that the dominant cash crop grown by respondents was onion about 21%; tomato 19 %; maize 9 % cabbage 7% garlic 5%. The remaining 39 % of respondents replied that they grew other crops. On the other hand farming experience of respondents specifically for irrigation farming is critical. The survey study found that 85.5 % of respondents reported that they have more than eight year experience of irrigating farm. The remaining 14.5% of them were having between 1 and seven years.

Figure 3 major crops grown by respondents



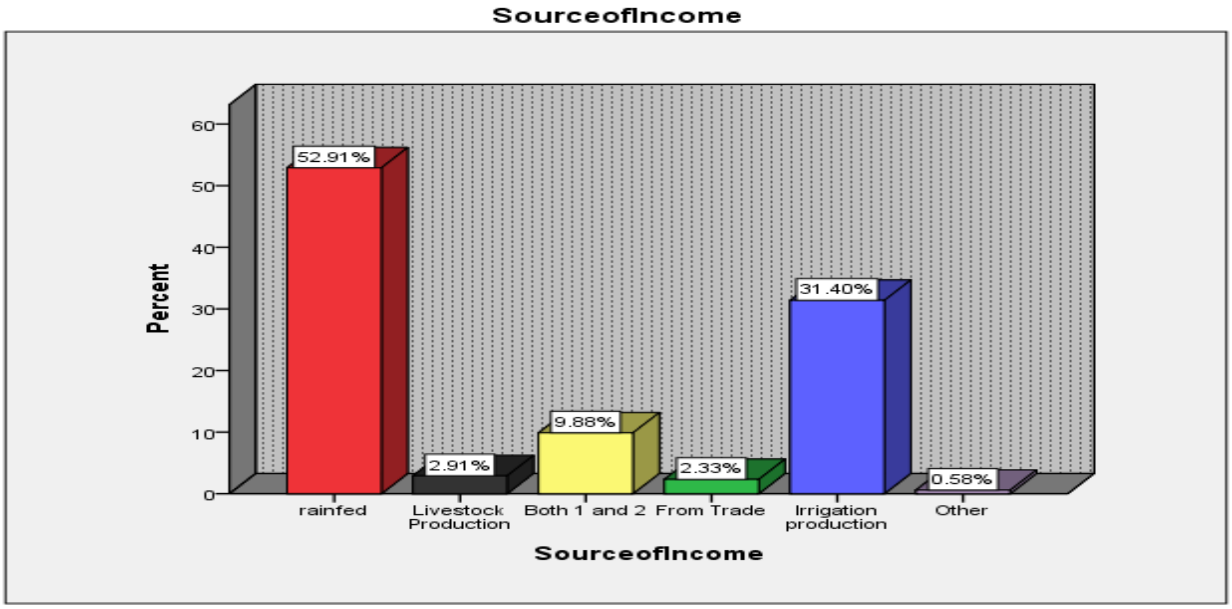
This figure also shows that the major marketing channels for vegetables are fresh produce markets (61.18%) followed by other crops sales (38.82). The irrigation cooperative on the other hand have not penetrated the main national selling channel (fresh produce markets) to a significant degree, and are mostly selling their vegetables through loose arrangements. The irrigation cooperative instead of trying to link with major fresh produce markets that is far, such as in regional and zonal market, efforts should be made to strengthen the direct local sales channel, as it has less stringent regulations and less transaction costs.

Table 7 Respondents irrigation farming practices in years

Frequency	Percent	Valid Percent		Cumulative Percent
1-2	4	2.3	2.3	2.3
3-5	10	5.8	5.8	8.1
6-7	11	6.4	6.4	14.5
Above 8 years	147	85.5	85.5	100.0
Total	172	100.0	100.0	

Source survey respondents 2019

Figure 4 respondents source of income



The figure above indicated that the major source of income for respondents, accordingly the rain fed as major source with 52.91 %, irrigation 31.4 % and the remaining 15.69 % replied that their source of income were like livestock, trade and other off arm activities.

4.2 characteristics of irrigation farming as business

The established Irrigation cooperative at kebelle level was to serve as a business arm to smallholder farmers based on the cooperative principle. In food insecure Woredas part of the country, crop production is largely dependent on rainfall. Overall performance is poor, and considered to be one of the major barriers to development in Ethiopia. Implementing irrigation in such areas is advocated as a great step forward in improving agricultural performance and rural livelihoods. Over the years small-scale irrigation schemes have been constructed for this purpose, but these schemes are not without challenges. There are reports of poor performances of small-scale schemes, which partly blame them on the weak management by Water User Associations (WUAs), other weak agronomic practices and inadequate institutional support. In general, proper governance of common pool resources, such as communal irrigation schemes, depends on the specific institutional arrangements that are in place. In group-managed irrigation schemes, governance entails the use of rules and

regulations to ensure sustainable use of resources. These rules and regulations aim at fulfilling different dimensions of governance, such as accountability, participation, and transparency and cooperation in the management of resources

Vegetable production and marketing have growing contribution to the national GDP by generating employment opportunities and poverty reduction to some extent (Pokhrel, 2010). Commercial vegetable farming has become an important asset of livelihood as it presumably support through food provision, income generation and employment (Yerima, & Tening, 2014). Commercial vegetable farming can be a good method for poverty reduction in many developing countries (Gurung et al., 2016). The profit from the commercial vegetable production can increased the income of the farm households (Mariyono, 2018). Vegetable farming is more beneficial than other cereal crops and offers job opportunities since it is more labor intensive (Bhatta & Doppler, 2016; Dias, 2011).

A farmer based organization can empower farmers and advantage to overcome the exploitation of farmers from the prospective buyers (Darkey, Dzoemku, Okorley, Gyimah, & Bluwey, 2014). The provision for possible support and training to the farmers can lead systematic farming with concerning food security (Asongwe et al., 2014).

Irrigation cooperatives offer trainings for the members and the response in the study indicates that 82.2% have attained training while 17.8 % did not received any technical training. Implied that of the members of the irrigation cooperatives believe training to members and leaders have great impact on the performance. It is further revealed that Cooperatives offering Seminars, workshops and where conferences are open for all members of staff, out of 172 respondents who participated in the study only 12.21% respondents participated in general assembly of the cooperative and 87.79% did not participate. This indicates that majority of the respondents were unwilling to participate in annual meetings are of great impact towards poor performance of the irrigation cooperatives. The finding further revealed on how levels of duration and frequency of conducting training and meeting of the members could influence performance of the irrigation cooperative in all the established irrigation cooperatives indicated that did not carried out according to the bylaws.

Figure 5 members participation on general meeting

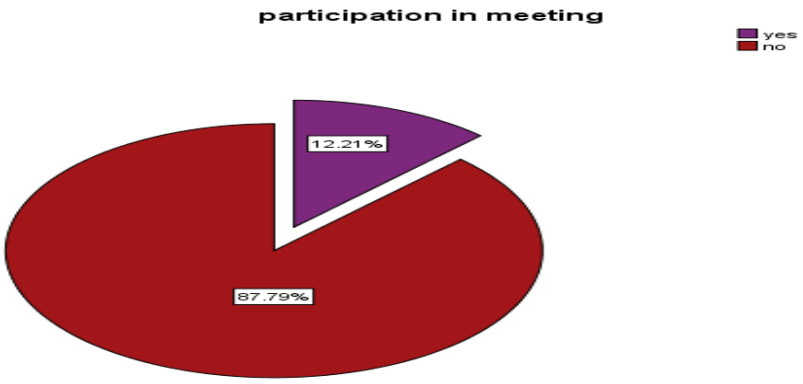


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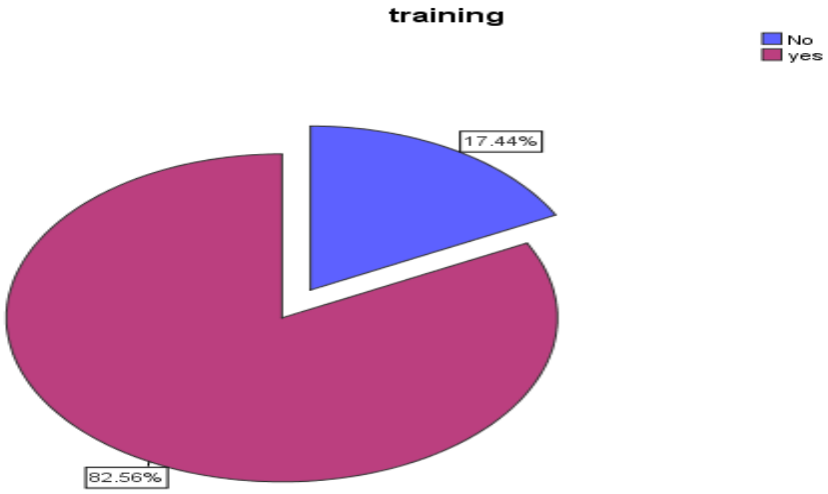
Figure 6 respondents training attendance



Source survey result 2019

Although irrigation cooperatives were trained usually they did not include in marketing-related training, and therefore is unlikely to have a direct effect on the choice of marketing channels. The study reported that the training they received and conferences took part on vegetable crop production and marketing was not based on their priorities. Though this had the disadvantage of

ensuring a guaranteed market for farmers' produce, farmers were never exposed to the marketing dynamics and challenges involved in selling their produce. After the transfer of management responsibilities to farmers, the marketing of commodities at the established Irrigation cooperative suffered, due to the farmers' lack of experience in marketing in addition to capacity constraints. As a result, not all the farmers are successfully selling their produce at present; PASIDP schemes, which are one of the oldest farmers' cooperative on the scheme, show a decline trajectory in marketing ability at the years.

Table 8 respondent's availability of farm land

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	6	3.5	3.5	3.5
	Yes	166	96.5	96.5	96.5
	Total	172	100.0	100.0	100.00

Source: Survey result of 2019

Table 9 Woreda and major crop cross tabulation

Wereda * mojor crops Crosstabulation							
Wereda	mojor crops						Total
	tomato	Onion	Garrly	Cabbage	Maiz	other	
Tahtay Maychew	6	3	1	1	5	0	16
Tankua Abergele	12	3	0	0	0	0	15
R/azebo	6	1	1	5	0	1	14
M/leke (sebah)	1	1	4	2	0	7	15
Me/ Leke (haftom)	1	0	2	0	0	12	15
Alamata	1	1	0	4	0	11	17
Werei Leke	0	0	0	0	0	18	18
Aheferom	0	0	0	0	0	15	15
Adwa	2	13	0	0	0	0	15
Atsbi Womberta	2	0	0	0	11	2	15
Alaje	1	14	0	0	0	0	15
Total	32	36	8	12	16	66	170

Source: Survey result of 2019

4.3 institutional setup of the irrigation cooperative

Table 10 conducting annual meeting

conducting annual general				
		general meeting		Total
		No	yes	
Wereda	Tahtay Maychew	0	17	17
	Tankua Abergele	3	12	15
	R/azebo	0	15	15
	M/leke (sebah)	0	15	15
	Mereb Leke	0	15	15
	Alamata	0	17	17
	Werei Leke	2	16	18
	Aheferom	0	15	15
	Adwa	3	12	15
	Atsbi Womberta	0	15	15
	Alaje	2	13	15
Total		10	162	172

Source survey result 2019

Table 10 above depicts that from the total respondents 162 replied that annual general meeting have been conducted. Few respondents from Tanka Abregle, Werie leke and Ahferom and Alaje respond that no annual general meeting carried out on the other hand the frequency of conducting general meeting varies from Woreda to Woreda irrigation cooperative. The figure below showed that from the total respondents 97 of them replied that once, 39 of the said that the general meeting held more than twice per year and few respondents said no general meeting at all. Participation on general meeting is critical to influence leader and bring accountability. Most of the respondents replied as they are participating in general meeting. Only 21 percent of them respond as none participants. From the total participants 11 of them did not know their leaders.

Figure 7 members participation on general meeting

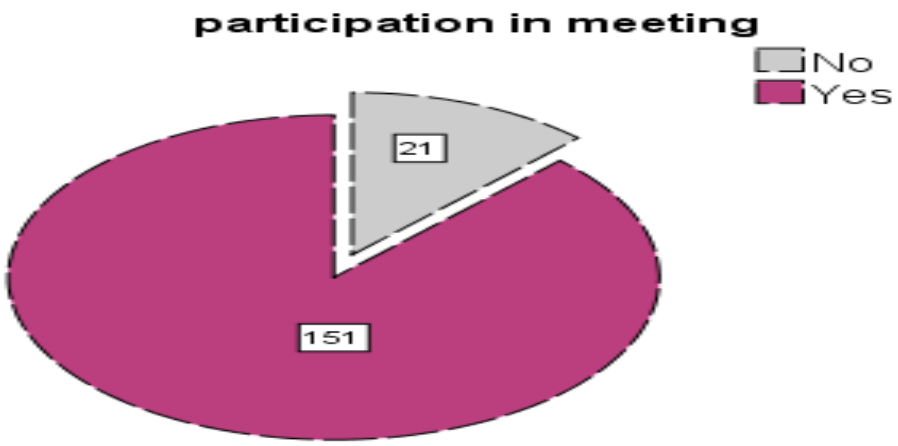


Figure 8 frequency of conducting general meeting

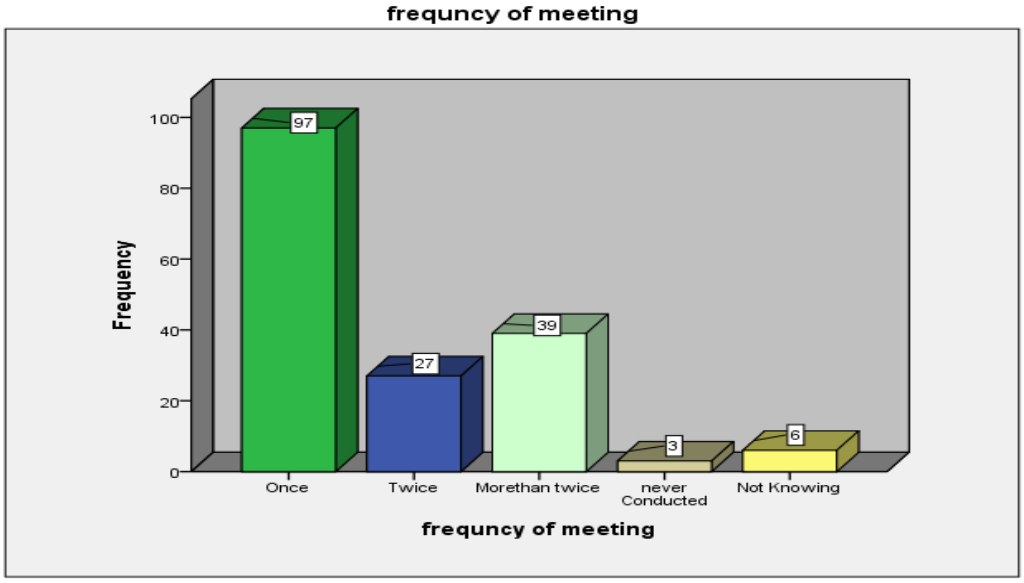
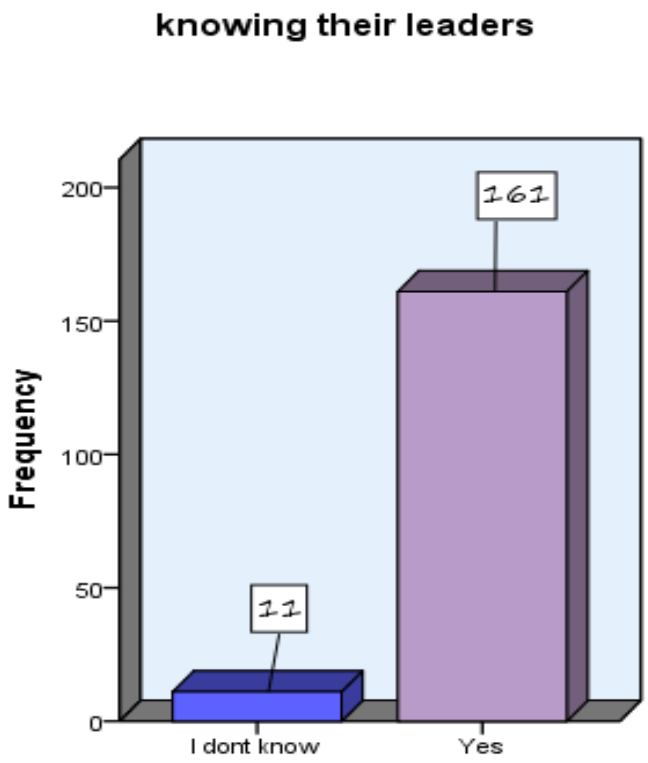


Figure 9 Respondents perception of their leaders



Respondents were asked about role and responsibility of the irrigation cooperative, accordingly 94 % of them knew the role and responsibility and the remaining 6 % of them did not know their leaders where they elected them. Contrary; leaders did not perform their duties; this implied that trusts in the leadership and community pressure are the foci of factors influencing member commitment to the cooperative.

4.3.1 Irrigation water user association and irrigation cooperative

According to the PASIDP II implementation manual the Irrigation Water Users Associations (IWUAs) or Groups, which are the ultimate owners and operators of the irrigation schemes, will receive technical support from the Bureaus of Water/Agriculture/Irrigation organization for irrigation extension, water management and maintenance. With the support of locally available NGO, Woreda and kebelle officials and involving the respective DA, efforts will be made to form and organize the Irrigation water user association without affecting their traditional values

but on the regional patterns of water management practices. The proposed organizational structure of the IWUA could be allowed to retain the traditional, indigenous structure, and the bylaws will be built on these local values and indigenous wisdom. The respective legitimate institution of the regions, in particular, the Cooperative Promotion Office will be involved to prepare draft bylaws and rules and regulations for the formation of IWUAs will be prepared beforehand by the respective Regions using the models, which were used earlier or modified as proposed. No construction activity will commence until the IWUA is in place and IWUA has agreed in writing that it is willing to shoulder the responsibility of O&M once the scheme was completed With regard to their roles and functions during scheme planning, construction and operations and maintenance will be necessary for the sustainability of the schemes. (PASIDP II, 2016)

On the other hand irrigation cooperative; in many cases, emerged only slowly mainly in areas of high agricultural potential where commercial crops are grown and tended to serve mainly large commercial farmers, leaving many smallholder farmers especially in low potential areas exposed to high transaction costs and market failures. The demand and use of improved productivity-enhancing inputs (improved seed and chemical fertilizers) declined substantially in many countries following liberalization (competitiveness of irrigation cooperative) as input costs increased or the timely delivery of necessary inputs and essential credit facilities cannot be assured. This has created a renewed interest in rural institutions and farmer organizations that make use of collective action to compliment government and private sector responses for enhanced coordination in rural commodity markets.

This is because such organizations can enhance economies of scale and facilitates access to input and output markets when individual marketing of produce or buying of inputs does not make economic sense due to small quantities, large spatial distances and subsequently high marketing costs, characteristics of most smallholder production in rural community.

Underdeveloped market infrastructure and lack of effective farmer organizations that represent and mobilize the capabilities of small and scattered producers in many rural areas creates disincentives for private sector investment and agro-enterprise development even when the agricultural potential is high. This leads to coordination failures that diminish investments at

different levels and prevent opportunities for correcting market imperfections and undermine economic development (Kydd and Dorward, 2004). Despite the increasing realization of the role that they can play in improving the performance of rural markets, mediating access to input and Output markets and agricultural technologies, producer organizations tend to have ambitious objectives that call for multiple functions and face complex challenges that undermine their ability to provide desired services (Shiferaw, 2009). While some producer organizations have made considerable progress in improving their members' incomes through better access to market and other services, many of them have not succeeded in attaining economic viability.

Their performance is also undermined by inadequate market infrastructure and lack of supportive market institutions including well-defined policies and enabling regulatory environments (Shiferaw, 2008). Continued government interference and tendency to replace rather than compliment other service providers and the private sector create undesirable rigidities and inefficiency. In other cases, non-targeted subsidies and dependence on external funding or donor interference may undermine self-reliance, accountability to members and sustainability to the irrigation cooperative (Chirwa, 2005).

The experiences of various types of producer organizations in providing marketing and other agricultural services to smallholder farmers; the determinants of membership to these producer organizations, the challenges they face and the key design and policy issues that contribute to their success in attaining efficiency and sustainability are also reviewed and presented. While presenting the challenges to learn from experiences and avoid pitfalls, the key interest is in defining policy issues and ways to harness unutilized opportunities to encourage the growth and development of producer organizations to support the agribusiness sector for small holder farmer is critical.

Synergy among the IWUA, IFC, saving and credit cooperative, multipurpose cooperative, unions and other located in the locale community is most likely advantageous to use common resource; to share experience and attained technical and financial support from public and private sectors. The finding from the study revealed that there was poor coordination among these institutions. The table below indicated that member's participation taking three institutions. Accordingly the

proportion of beneficiaries (IWUA member) in coop is 39 % and in SACCO 28 % which indicated that membership increment has been done weakly. Table 11 showed that scheme beneficiaries (IWUA) members proportion to members of the irrigation cooperative and saving and credit cooperatives. In case of irrigation cooperative still significant number of the IWUA did not members in which highest percentage reported in Alaje and Atsbiwenberta where 72.9% and 73.9 % respectively. On other hand the study report that effort made to the members of IWUA to become members of saving and credit cooperative was very poor which is all of the schemes reported under 39.7 % of beneficiaries were members of SACCos.

Table 11 member participation on these institutions

s/no	Kebelle	IWUA	Coop.	SACCOs	% of coop in IWUA	%of SACCO in IWUA
1	Tahtay Maychew	121	71	34	58.7	28.1
2	Tankua Abergele	662	360	210	54.4	31.7
3	R/azebo	82	45	32	39.02	39.02
4	M/leke(sebah)	400	212	105	53	26.15
5	M/ Leke(maytsahlo)	317	49	34	15.5	10.7
6	Alamata	118	80	50	67.7	42
7	Werei Leke	258	160	60	62	23
8	Aheferom	174	49	29	28	16.6
9	Adwa	115	65	15	56.5	13
10	Atsbi Womberta	180	133	21	73.9	11.6
11	Alaje	310	226	123	72.9	39.7

Source survey result of 2019

4. 4 Difference in cooperatives

Table 4.8 compares differences in the establishment of cooperatives that were engaged in collective marketing between 2004 and 2018. The age of the cooperative varies from 14 year to 1 year. The table suggests that marketing cooperatives are mostly found in PASIDP I and II woreda these cooperatives established upon members' initiative, to manage the overall scheme activities. The mixed role water management and marketing of input-out linkage with an initial 21 appointed leaders facilitated by cooperative officers, and are more likely to engage in water distribution than collective marketing. The analysis presented in table 7.6 presented the weak

performance due to the presence of technical and leadership challenges these cooperatives did not engage in collective marketing. Finally the marketing linkage activities via the cooperative became delicate and seized.

The study implied that the number of founding members can vary widely in all the organizations ranging from 47 - 336 members, maytsahlo and syemti Ruba respectively. In 2012, the average increment of cooperative counted 85 members. The average growth in number of members from establishment to 2012 is estimated at 35% of the total number of cooperatives investigated.

Failure of members to maintain financial contribution to the cooperative may jeopardize the very existence of the cooperative. Particularly in the formation stage of the cooperative, member contributions are crucial. The startup and annual fees was very few and did not enough to perform marketing function.

Table 12 year of establishment and total capital of irrigation cooperative

s/no	Kebelle	Year of establishment (E.C)		Total capital			
		Established	Certified	Current asset	Fixed asset	Saving	Total
1	Tahtay Maychew	2011	2011	13800	19000	11000	43800
2	Tankua Abergele	2007	2008	24000	544000	12000	580000
3	R/azebo	2007	2007	0	388592	0	388592
4	M/leke (sebah)	2006	2007	0	38134	0	38134
5	M/Leke (matsahlo)	2010	2010	13500	19000	0	32500
6	Alamata	2005	2006	0	145930	0	145930
7	Werei Leke	2007	2007	7462	60000	0	67462
8	Aheferom	2010	2010	3500	35000	0	38500
9	Adwa	2011	2011	12500	19000	0	31500
10	Atsbi Womberta	2008	2008	30000	100000	0	130000
11	Alaje	2006	2007	46190	120000	12000	178190
Sum				150952	1488656	35000	1674608

Source FGD result 2019

Empirical findings are revealing that there is a significant difference at 5% between cooperatives that are old and those that are located in distant areas from the markets. The cooperatives that are old have better experience in accessing markets than those that are new because of the exposure (knowledge) from agribusiness and entrepreneurial skills over years. Another important finding

from these results is that the regions where the cooperatives are situated play a very important role. This is basically because of level of support from government, private parastatals and NGOs. The climate in these regions also plays a vital role in terms of agricultural potential for smallholder farmers in both provinces.

Respondents were asked about infrastructure access of the command in performing marketing functions. Accordingly; road storage and mobile network were considered the finding indicated from the total 45 % of them are easily reached in road; 27% of the have storage facilities;100% of them have network access and also 9% them have own office facilities.

Table 13 access to infrastructure (road, store, mobile network and office availability)

s/no	Kebelle	Road	Store	Network	Have Office
1	Tahtay Maychew	Inaccessible	No	Accessible	No
2	Tankua Abergele	accessible	Yes	Accessible	No
3	R/azebo	accessible	No	Accessible	No
4	M/leke (sebah)	inaccessible	No	Accessible	No
5	Mereb Leke	Inaccessible	No	Accessible	No
6	Alamata	accessible	Yes	Accessible	No
7	Werei Leke	inaccessible	No	Accessible	No
8	Aheferom	Inaccessible	No	Accessible	No
9	Adwa	accessible	No	Accessible	No
10	Atsbi Womberta	accessible	No	Accessible	No
11	Alaje	accessible	Yes	Accessible	Yes

Source survey of 2019

4.3.2 The Role of Extension

Given the constraints that smallholder farmers face in penetrating and sustaining their engagements in informal and formal markets, the role of an institutional support system is essential. Studies have revealed how critical institutional and organizational supports are in bridging this gap (Amrouk *et al.* 2013). The latter showed that there is a positive relationship between the ability of smallholder farmers to access markets and the provision of appropriate extension and training. The institutions available at the irrigation Scheme include the Extension Services and the Irrigation Cooperative. The role of the Extension Services is to provide technical assistance to the irrigation farmers. This

embraces agronomic advice, training of farmers, assistance with marketing of produce, and assistance with purchase of inputs. The roles of the irrigation cooperative are to manage the allocation of new technologies to the farmers, and assistance with marketing their produce. Despite the establishment of irrigation cooperatives and provision of extension support (both of which are facilitated by government), marketing of commodities is not at all coordinated.

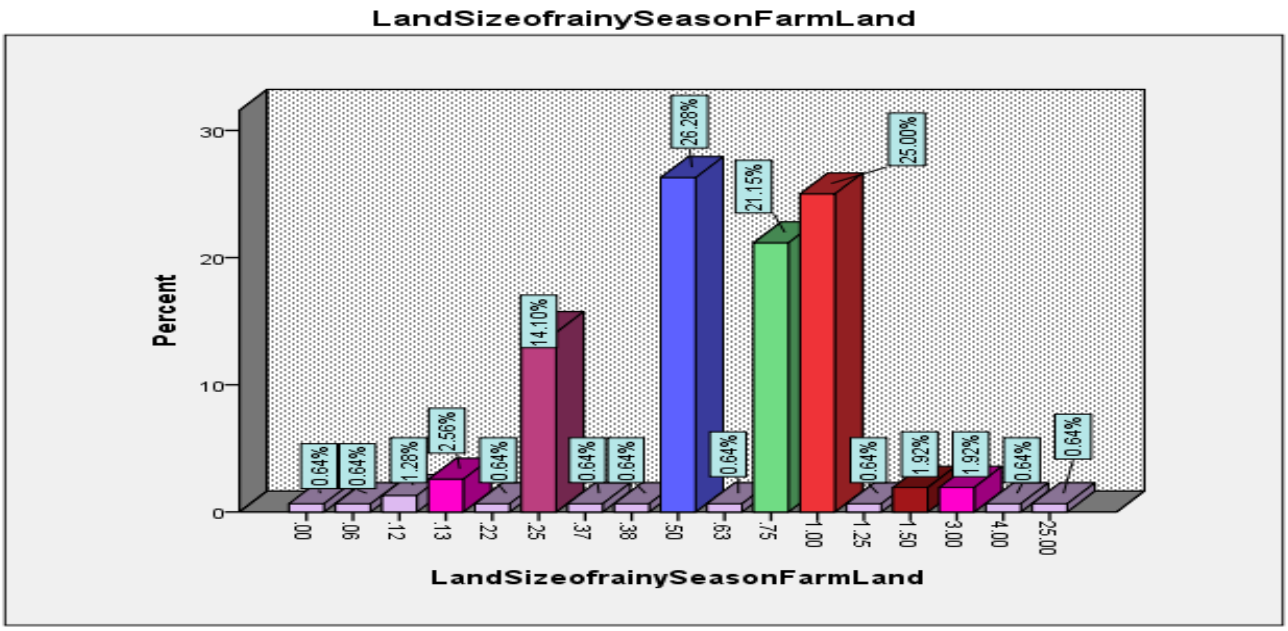
The figure 4.10 indicated that all of the respondents have their owned land with majorities of 0.5 hector. The study also indicated that majority of respondent have 0.25 hectare irrigated land size. To further explore the answer to the question why irrigation cooperative performances poor on creating market linkage perspectives from agronomic aspect, the study has analyzed the effect of cooperative members land size both on rain fed and under irrigation to the yield and the profits from vegetable production. To this effect average rain fed land size is 0.70 ha with maximum 3 ha and the average irrigated land size 0.32 ha with maximum and minimum size of 1 and 0.24ha respectively.

Table 14 Rain fed and irrigated land of respondents

Description	Respondents		Mean	Minimum	Maximum	Sum
	Valid	Missing				
Rain fed	168	4	.7034	.00	3.00	118.17
Irrigated	172	0	.242	.00	1.00	55.76
Average yield	172	0	152	15	320	8475.5

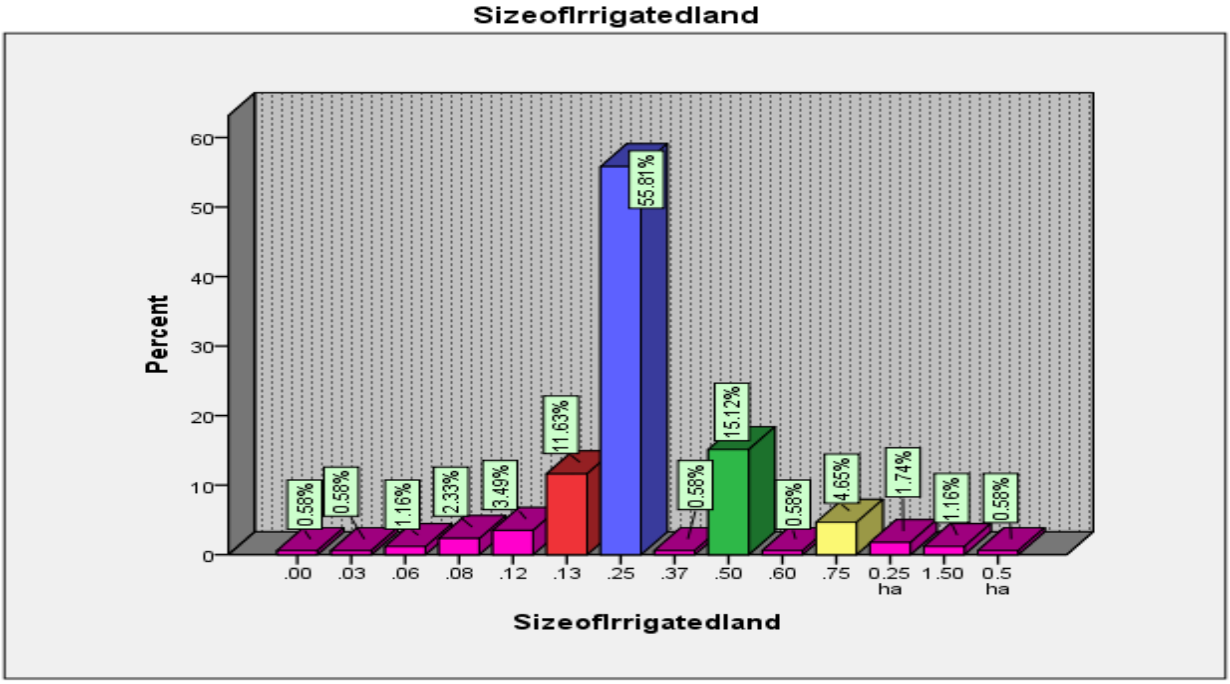
Source survey result 2019

Figure 10 Rain fed agriculture



Source survey result 2019

Figure 11 respondents size of irrigable land



The extension officers and Irrigation Cooperative at Irrigation Scheme have not established any formal arrangements for farmers to access markets yet. Farmers source crop inputs and market their produce separately. The only organized initiative in place is the multipurpose cooperative, through which farmers' input (especially fertilizer) are sold to local members. Extension officers cited problems with securing in access to input (seeds, pesticides and herbside) formal markets for the farmers owing to stiff competition from commercial farmers around, who are consistent in providing the required quality and quantity of input. No formal contracts between IFC and buyers have ever been established. On the other hand farmers produce crops are speculatively low quality and less in quantity without proper agronomic support for extension advisory services.

Access to reliable markets is a critical pre-condition for farmers to achieve higher and more consistent farm incomes with the subsequent result to create a motive and well informed farmers against crop and market failure (Vorley and Thorpe 2014:22). In-depth interviews with the FGD participants revealed that these farmers considered themselves as 'successful farmers' during the periods/years when they are able to produce more quantity of their produce without considering market value of the produce . This suggests that successful farming is only possible when farmers are linked with reliable produce markets. The least successful years were the years in which farmers could not sell their produce due to inaccessible markets or low levels of production in high value of crops.

The table below presented that from the total respondents 98 (57 %) of them have practiced cluttering system of production but the remaining 43 % challenged to produce in cluster. It varied from Woreda to Woreda, Adwa, Ahferom, M/leke (sebah) and Rayazebo did not produced in cluster. To further explore the extension support from input usage and their source the study asked question on input usage and sources ; accordingly it showed that 55.6 % of them used known improved seed and the remaining 44.4 % were not using known seed. The table below also indicated that the irrigation cooperative supplied input for member only 10% of the respondents; majority 54.6 % of the respondents reported that as they bought from traders, the remaining 4.3 and 3.1 % were supplied from NGOs and other sources respectively. This finding implied that households fail to use improved input from the known source of supplier.

Table 15 Woreda * cluster Cross tabulation

Count				
List of Woredas		Cluster production system		Total
		No	Yes	
Wereda	Tahtay Maychew	0	17	17
	Tankua Abergele	0	15	15
	R/azebo	13	1	14
	M/leke (sebah)	12	3	15
	Mereb Leke	5	10	15
	Alamata	4	13	17
	Werei Leke	8	10	18
	Aheferom	11	4	15
	Adwa	13	2	15
	Atsbi Womberta	4	11	15
	Alaje	3	12	15
Total		73	98	171

Source survey result 2019

4.4 input access and agriculture productivity

Table 16 Usage of Improved Seeds and its sources

Description		Frequency	Percent	Valid Percent	Cumulative Percent
Use of improved seed	No	76	44.4	44.4	44.4
	Yes	95	55.6	55.6	55.6
	Total	171	100.0	100.0	
Missing	System	1	.6		
Total		172	100.0		
Source of input	Cooperative	17	10.4	10.4	10.4
	Agriculture (multipurpose)	45	27.6	27.6	27.6
	Trader	89	54.6	54.6	54.6
	NGO	7	4.3	4.3	4.3
	Other	5	3.1	3.1	3.1
	Total	163	94.8	100.0	100.0
	Missing	9	5.2		
Total		172	100.0		

4.5 irrigation cooperative output marketing

We key informants of the study reported that there is a significant association between members trust to the cooperative and their commitments members' trust to the cooperative and selling to the cooperative. Trust among members and investment on cooperatives. There are important factors that determines trust and commitment to the cooperative; distance from the cooperative, role in the management of the coops, age of the cooperative, history of bad event are prominent members decision whether to supply or not to the cooperative.

Most irrigators (farmers) in command area sell their produce through the informal market channels, which are easier to enter in the market, compared to the formal channels (more competitive). The informal markets have been stretched from farm gate market to local market (all round the scheme) on the other hand the established Irrigation cooperatives at the kebelle level (Scheme), by virtue of its location along the main road, and close to township, is well served by woreda and zonal traders and hawkers that purchase their products for sale in area, potential markets such as zonal cities universities, hospitals, military campus and regional traders are near to these schemes.

Table 4.13 comparison of the major marketing channels for the key crops grown by the proportion of irrigation farmers' cooperative. The commodities mostly sold through local hawkers include onion, tomato, pepper, cabbage, garlic, maize and others. A smaller proportion of farmers also sell onion, tomato and maize to regional wholesalers. A pattern emerges from this data most of the commodities sold to traders are perishables, such as onion, cabbages and tomatoes. This implies that selling perishable commodities requires good linkages with regional traders who can purchase larger volumes than hawkers and local markets.

A large proportion of farmers mentioned local sales to neighbors and local traders commodities sold through this channel include the 'subsistence' crops such as vegetables and fruits. This local selling channel is based on social relations (kinship) amongst households; it is thus distinct from other channels that are based on a commercial relationship. Though local sales (to neighbors and kin) are important to smallholders (especially subsistence farmers), they are not designed to move large volumes of produce. Out of the farmers irrigation cooperative models of farmers from Giba, Adikorakuro and Gerzele scheme interacted with the formal markets were noted by their own initiative. In the study which can be defied active interaction that involves farmers

planning what the market needs in advance of production (contract agreement), growing what the market needs, and contacting the buyers when the produce is ready for sale.

From the study some respondents from Atsbi Wonberta, W/leke, M/leke and Ahferom reported that as selling their produce via traders which is a passive mode of interaction comprises farmers who grow mostly for household consumption, and sell the excess produce to buyers that happen to visit the markets. Most farmers in this category were selling their produce via neighbours and kin. Both model and other farmers face challenges of selling their produce, though the later are in a worse situation, when they intend selling larger volumes. Also, their selling is mostly unplanned, but rather speculative. A critical success factor for selling to these model farmers, according to the life history of these is having contact details of traders. These farmers do not wait and hope that traders will come to collect their produce, but actively engage and communicate with potential buyers when their produce is ready for collection. Not surprisingly, these are the farmers that claimed that they do not experience major challenges in marketing their produce.

Aggregate Marketing via cooperative

Formal marketing channels (in this context, the irrigation cooperative) are the preserve of a few irrigation farmers that have been able to penetrate them. In all most of the cooperatives located in the region selling practice to the potential market is most likely facilitated through the NGOs as a pilot program. Although the farmers appreciate this initiative, it does not have the capacity to purchase all the farmers' produce; some farmers were not happy and have not trust with the purchase prices offered by the irrigation cooperative.

Trusts in the leadership and social pressure are the foci of factors influencing member commitment. Some respondents of the study replied that as they have blame with leaders in performing role and responsibilities based on the cooperative principles.

From the 11 irrigation farmers' cooperative interviewed through focused group discussion, only one (Alaje- Toketa coopertaive) has practice aggregate sell to traders and hawkers through a

loose market arrangement. Their secret lies in their ability to provide produce required by traders in the right quality and volumes.

On the other hand members did not need to supply their produce for the coopertaive. The crops they have sold to traders they believed that in order to participate in the formal markets, such as supplying, one needs to produce large quantities and the right quality of crops and they get cash on hand and have been hiring a truck to traders in their individual capacities for transporting their produce to market (T/Abrgel- Giba scheme). Thus far, they have been satisfied with the prices received. The loose informal arrangements give them the flexibility of choice in terms of whom to sell their produce without any contractual obligations.

The figure below showed that only 4.07 % of the respondents sell their produce through cooperative and 95.93 percent.

Figure 12 aggregate selling through cooperative

Source survey result 2019

Table 4.13 showed that the potential markets for each of the irrigation scheme. Geographical location factors are found to play important roles for vegetable market. Farmers living in villages with a relatively large distance to the nearest agricultural spot market are more likely to sell their

output to wholesalers and less likely to sell it to small dealers. Proximity to a potential market usually means more potential buyers. In particular, there will be more itinerant small dealers with relatively limited travel radius near a wet market. These small dealers prefer to buy apples from sellers nearby to economize on their costs. Similar results are found for the number of plots cultivated by a household. Farm households with a large number of plots usually live in relatively remote, hilly or mountainous areas which are less accessible for small traders. The table below indicated that farmers challenged to access market for their irrigation farm produce. The local market for adikorakuro and adifelasi is 3 km far from the command area on the other hand the remaining schemes located at 14 km for adwa to 41 km for maytimket. This implied that getting woreda, zonal and regional market is difficult for stallholder farmers.

Table 17 local, woreda, zonal and regional market and proximity

List of Woredas	Targeted market			
	Local	Woreda	Zonal	Regional
Tahtay Maychew	Chila (15 km)	W/maray (32km)	Axum (52km)	Mekelle (272km)
Tankua Abergele	Abiadi (40km)	Abyadi (40 km)	Mekell (90 km)	Mekelle (90km)
R/azebo	Mekoni (25km)	Mehoni (21 km)	Maichew (62km)	Mekelle (135km)
M/leke(sebah)	Hasea (25km)	Adwa (48)	Adwa (48km)	Mekelle (228km)
M/eke(m/tsahlo)	Hasea (17 km)	Adwa (42 km)	Adwa (42km)	Mekelle (222 km)
Alamata	Alamata (35 km)	Alama (35 km)	Alamata (35 km)	Mekelle (180Km)
Werei Leke	E/arbi (41 km)	E/arbi (41 km)	Axum (67km)	Mekelle (175 km)
Aheferom	G/sernay (20 km)	Entcho (39)	Entcho (39)	Mekelle (185km)
Adwa	Adwa (15 km)	Adwa (10)	Axum (30 km)	Mekelle (220 km)
Atsbi Womberta	Haiki (3 km)	Atsbi (23)	Mekelle (63km)	Mekelle (63km)
Alaje	Tekea (3km)	Aishu (13 km)	Machew (35)	Mekelle (90km)

Source: Survey result 2019

4.6 financial capacity of the irrigation cooperative

Finance is crucial to the success of the cooperative. The three basic cooperative principles, namely user-ownership, user-control and user-benefit (Dunn, 1988), are tied to each other by the members' financial stakes in the cooperative. Failure of members to maintain financial contribution to the cooperative may jeopardize the very existence of the cooperative. Particularly in the formation stage of the cooperative, member contributions are crucial, but also difficult. According to a survey by Bhuyan and Leistritz (2001), raising equity and debt capital rank first

and second respectively amongst the most important problems for a cooperative in the start-up stage In Europe and North America, cooperatives have three main sources of capital. First, members contribute by paying membership fees. Second, members buy membership shares. Third, members purchase investment shares. However, the most important source of capital for the cooperative is retained earnings. This means that a cooperative do not distribute all surplus to its members, but add part of it to the general reserves. The percentage retained earnings can differ per cooperative. In addition to these sources of equity capital, cooperatives may raise debt capital. Debt capital is money borrowed with a legal obligation to repay it under stated interest rates, terms, and conditions. Agricultural cooperatives use many of the same debt capital sources as other businesses, although it more common for agricultural cooperatives to obtain loans from cooperative banks.

Marketing cooperatives operating in highly competitive markets often need more equity capital than their members can or are willing to contribute. One of the classical strategies for a cooperative to grow without obtaining additional equity capital is merge with another cooperative (Richards and Manfredo, 2003). If mergers are not attractive, and members cannot contribute more capital, outside investors may be an option (Chaddad and Cook, 2004). For instance, in The Netherlands and Finland cooperative law allows equity capital investment from outsiders (Brusselaers et al., 2014). This cooperative financial strategy may have implications for the internal governance structure of cooperatives (Bijman et al., 2014).

Unlike developed counties cooperative, where equity capital is provided by all members together (either as investment or through retained earnings), the equity capital of developing countries cooperatives mainly comes from a small portion of members (the core members) and from subsidies provided by the government (Yuan and Gao, 2012). Finance is seen as the largest difficulty for the development of cooperatives, because most of the smallholder members do not have capital to invest in their cooperative (Wang and Dong, 2009; Zheng et al., 2011). In addition, cooperatives have difficulties in obtaining loans from commercial banks. Some cooperatives receive financial support from the local government.

We thus can summarize that the main difference in finance between in less developed countries cooperatives and their developed countries counterparts are shown in the difference in

development stage. In the start-up phase, cooperatives rely heavily on the core members, who constitute a small portion of the total members, while the start-up capital of the cooperatives in the on other hand is contributed by all members. Moreover, in the later stage of development, some cooperatives receive financial support from the government, which composes part of the capital needed for their development. However, some other cooperatives' additional capital mainly comes from retained profits and members' additional investments

Agriculture has been the predominant profession for survival of Ethiopian community since ages. Agriculture share in global economy has been decreasing even though the need of agriculture products has been increasing. This is partly due to rise of other sectors and partly due to economy of scale where few producers can produce amounts of food. This decreasing trend of agriculture share is also evident in our country economy where it occupies 28.9 percent of total economy in 2016/17. This is a drop from 31.1 percent from 2015/16. The fact that two third of population still identify themselves as farmers is indicative of influence of agriculture in the way of life of people.

Cooperatives are at the heart of addressing farmer's problems and challenges in vegetable production in Dhading. The vision of PASIDP is to commercialize and eventually industrialize vegetable production, rest on these cooperatives. However, these cooperatives aren't financially and institutionally efficient. Without properly addressing the inherent issues in financial and institutional health of cooperatives, nothing concrete can be done. Farmers producing vegetables face different types of risks-biological risks, production risks and marketing risks; the volatility of vegetable markets decrease the bargaining power and market power of the farmer as an individual.

Co-operatives believe in common liabilities and consumption, when group of farmers pool their resources and products at a place the resulting co-operative is powerful than the sum of its parts. Not only they can fetch better price for their products, they can cost efficiently market their products and reduce the overhead costs by sharing. Cooperatives enable its members to organize their dispersed resources, skill, means, and capital and yield collective welfare. However it needs to be pointed out that cooperatives cannot be successful without active participation of its

members. There is a lot to be gained when individual farmers think and act as a group to sustain their livelihood, agriculture product as well as their socio-economic well-being.

Problems of inefficient marketing can be solved by the promotion of the cooperative marketing and by regulating the market. Cooperatives help its members to raise their socioeconomic status by reducing number of intermediaries providing appropriate value of their produce (Thakuri, 1999). Cooperative are involved in value addition through processing, helping the farming community indirectly by stabilizing the market place, and developing the new markets or creating new consumption by supplying newly developed processed items. In addition, it protects local farmers and consumers by checking and interfering in the business carried out by large private companies, who try to maximize their benefits in domestic markets by unfair market control.

It strengthens the bargaining power of member farmers as they are not compelled to sell over-produced volume at dumping –level prices when cooperatives have the capacity to absorb this excess volume. To address these challenges the financial status of the irrigation cooperative is critical issue. Table 3.15 below showed that the financial status of these irrigation cooperatives. Most of the cooperatives have not been audited (only Alaje-Lemlem takota), adifeasi irrigation cooperative audited but has not received audit report. The study assess the status of documentation and reporting system of the cooperative and found that all them have cash receipt and cash payment voucher though efficiency of record keeping found very poor most of them have no income and expense ledger; Baekel and hadas gereb gibe have but not practiced. On the other hand the study showed all off the irrigation cooperative have not price estimation document.

Table 18 status of record keeping and availability of financial document (yes, no)

s/no	Kebelle	Voucher		Ledger		Member registration	Sales estimation	Audit	Total
		Cash receipt	Cash payment	income	Expenses				
1	Tahtay Maychew	Yes	Yes	Yes*	Yes*	Yes*	No	No	43800
2	Tankua Abergele	Yes	Yes	Yes*	Yes*	Yes*	No	No	580000
3	R/azebo	Yes	Yes	No	No	No	No	No	388592
4	M/leke (sebah)	Yes	Yes	No	No	No	No	No	38134
5	M/Leke (matsahlo)	Yes	Yes	No	No	No	No	No	32500

6	Alamata	Yes	Yes	No	No	No	No	No	145930
7	Werei Leke	Yes	Yes	No	No	No	No	No	67462
8	Aheferom	Yes	Yes	No	No	No	No	No	38500
9	Adwa	Yes	Yes	No	No	No	No	No	31500
10	Atsbi Womberta	Yes	Yes	No	No	No	No	Yes**	130000
11	Alaje	Yes	Yes	yes	No	No	No	Yes	178190
	Sum								**1674608**

Source survey 2019 * and ** not practiced and has not received audit report.

Repayment capacity of the cooperative is its ability to repay the loans taken by the institution. Significant studies on financial analysis of agricultural cooperatives have been done.

4.7 opportunities and challenges of irrigation cooperative

4.7.1 Opportunities for irrigation cooperative

According to Irungu *et al.* (2011), there are several factors that influence smallholder farmers to participate in high-value markets. These factors are land size, the presence of good transport, communication systems, skills on vegetable cultivation, transaction costs, and level of education of the vegetable farmer, the presence of irrigation systems, technology, fertilizer use, and availability of high quality seeds.

Opportunities that enable smallholder vegetable farmers to become preferred suppliers in the high-value market are presence of good climatic condition and availability of training opportunities from various agricultural organizations (Isaac *et al*., 2006). The presence of good climate condition that favors vegetable production in the region will help increase vegetable production for smallholder farmers. Furthermore, farmer's training (capacity development) and farm demonstrations are good as they do help to improve production and marketing in terms of quality and quantity (Neven *et al.*, 2002).

Lack of or uncertain markets are a challenge for the vegetable producer. Market uncertainties such as volatile price have been a threat for produces who operated at high cost and expected to cover the cost through the price set also poor agricultural policies has been a threat as the support from the government is limited example subsidies provided by the government have not been able to help

most of the rural areas farmers as the remaining 50% of the cost that should be paid by the farmer have been observed to be too high for them to afford (Al-Hassan *et al.,* 2006).

Identification of constraints and opportunities in vegetable farming is very crucial for the growth and development of the vegetable farming. Constraints indicate the hindering issues related to the vegetable farming and suggest the designing and implementation of appropriate interventions that address the constraints (Ruel and Levin, 2002). Contrarily, opportunities can help to find the potential market and areas where the poor farmers can participate as vegetable entrepreneurs (Emana and Gebremedhin, 2007).

In the Region, there are agro-climatic conditions suitable for growing various tropical crops (Lyatuu *et al.,* 2009). This is one of the opportunities for the development of sustainable vegetable production since there is a continued supply of water for irrigation purposes, good extension services and availability of vegetable seeds from several research institutes in the area (Temu and Marwa, 2007).

Unlike the developed countries, which have a temperate climatic zone where the production of vegetable crops is limited to seasonality, most Sub-Saharan African countries have a tropical climate that is suitable for the production of different vegetable crops (Temu and Marwa, 2007). According to Ambrose-Oji (2009), Favorable climate and ample irrigational possibilities make one region possible for the growth of a variety of vegetable crops.

However, horticulture is the fastest growing industry in Ethiopia and it has a high contribution to the growth of the horticultural sector, though the highest contribution came from China (Mubarik, 2003). However, in recent years, 40% of the increase in horticultural crops (including vegetables) came from developing countries, 52% from China while 8% came from developed countries (Mubarik, 2003). Currently the vegetable production in developing countries is increasing at a significant rate; hence there is an opportunity for smallholder vegetable farmer to export their vegetables to developed countries like Europe.

The other factor is the growth of supermarkets, tourist hotels, universities and colleges whereby smallholder vegetable farmers can sell their produces. According to Reardon (2004),

Supermarkets were traditionally viewed by development economists, policymakers, and practitioners as the rich world's place to shop. However, today supermarkets are no longer places where only rich people shop. Over the past ten years or so, they have spread from the wealthy suburbs of the main cities to poorer areas and much smaller towns (Afari-Sefa *et al.*, 2013). This has happened in response to some forces, many of them which are interconnected. According to Neven *et al.* (2002), one of the reasons is raising incomes that are also associated with higher ownership of fridges, motorcycle, and cars that facilitate supermarket shopping.

The other reason is urbanization, more female participation in the labor force which has increased the opportunity cost of time and the desire to emulate western culture, spurred on by the globalization of the media and advertising (Reardon, 2004).

The followings are opportunities for vegetable growers

- Increased urbanization
- Increased demand for processed and fresh foods
- Growth supply chain with which cooperatives can make contract
- Increased income/economic growth
- Infrastructural development
- Rural roads, which allows farmers to transport their outputs and input with trucks
- Per unit transportation cost for cooperatives than for individuals
- Rural electrification
- communication (ICT, Mobile subscription, 4G service, growing apps, cheaper phones)
- good policy for agribusiness
- clear policy and procedure for rural cooperative

4.7.2 Challenges of irrigation cooperative

Though there are positive factors that influence smallholder farmers to participate in high-value markets, there are also challenges that smallholder vegetable farmers meet. These challenges are farmers still find it difficult to participate in markets. Very few smallholder farmers participate in distant markets. According to the study by (Makhura, 2001), which investigated that the transaction costs barriers in the market participation of smallholder farmers, it was found out that marketing by smallholder farmers and cooperatives was constrained by poor infrastructure,

distance from the market, lack of assets (for example own vehicles and motorcycles) and inadequate market information.

However according to Jaffe (2003), lack of bargaining power along with various credit bound relationships with the buyers which require the seller to market his produce under credit provision and get paid after quite some time thus this has caused farmers to be exploited during the transaction where most of the farmers become price takers. The majority of the farmers are smallholders and hence, unable to obtain a fair price for their produce due to presence of middlemen and market information asymmetry (Mubarik, 2003). This results in farmers not being able to sustain their livelihood. These challenges also apply to smallholder vegetable farmers in Arusha Region in Tanzania.

Also, the structure of the traditional vegetable supply chains is such that there are a large number of intermediaries (e.g. vegetable collectors, transporting agents, commission agents) between the producer and the final consumer (Navindra, 2003). Additionally, according to Kodithuwakku (2000), the marketing margins of all these intermediaries coupled with almost 30 to 40 percent of the vegetables being wasted as post-harvest losses have eventually resulted in producers receiving a low price for their produce while on the other end consumers are compelled to pay an inflated price for their purchases.

According to Jaleta (2007), small market channels and insufficient information regarding price were among factors affecting the commercialization of smallholder agriculture. Furthermore, Emana and Gebremedhin (2007), in their study on market chain analysis argued that the marketing of horticultural crops are affected by inadequate local markets, poor pricing system, lack of domestic markets to absorb oversupply, low produce prices, many intermediaries, and weak marketing institutions and poor coordination of farmers. Emana and Gebremedhin (2007) further argued that poor handling and packaging of products, poor pricing systems, and limited information sharing affect the marketing of vegetables.

A cooperative is considered to be an institutional vehicle that can help farmers to deal with the above described challenges. Cooperatives can improve farmers' bargaining power in both input and output markets (Fischer and Qaim, 2012) and facilitate information flows between farmers

and the market (Mojo et al., 2017). In addition, compared with bilateral contracts or other types of market institutions, a cooperative is generally more inclusive of smallholders (Verhofstadt and Maertens, 2014). By strengthening the market position of smallholder farmers, cooperatives can contribute to alleviating poverty and rural development (Bernard and Spielman, 2009).

- The boundary of the coops
- Rigid of pricing system
- External interventions
- lack of good governance
- Membership and benefits
- Members trust and commitment
- Leaders commitment

4.7.2.1 Production problem

Farmers in the study area had numerous problems inhibiting them to achieve their full production potential. Initially a focus group discussion was conducted in each cooperative to list out the major production constraints. Based on this a list of major production problem was prepared, then, during household interview schedule each respondent was asked to rate each problem on a severity scale. The list of problem generated from FGDs are problem of pest attack, lack of water lack of quality seed, lack of training, lack of financial resources, high price of inputs, and lack of technical facility and lack of inputs in times.

Below is rank of the problems; absence of irrigation (water shortage) was the major challenge for production as at many places rainwater was the only source of their irrigation and despite having comparative geographical advantage (possibility of off-season production) they couldn't cultivate vegetables yearlong. Lack of quality seed and in-puts was reported second severe problem, the sole source of these inputs were either multipurpose cooperatives or traders (unknown source) that didn't follow any quality criteria. Farmers had hardly any choice regarding the variety they planted and would plant choosing from the options available in the shop. Here agro dealers and cooperatives had tremendous power in terms of farmer's adoption which made them vulnerable to commissions from seed and fertilizers manufacturers. Pest problem was found to be increasing each year and they had been using way above the recommended dose as that was the only way they saw from minimizing pest damage. Lack of

technical facility was listed the least severe as most of the farmers had been part of multiple trainings and many even questioned the efficacy of trainings offered by government institutions labeling them impracticable at field level.

The FGD discussants forward the following constraints related to output marketing through cooperative

- Not cluster based production system followed.
- Farmers market orientation (business mindset of producer)
- Very challenging to access seed and chemical (in terms of quality, quantity, access and price).
- Problem of fertilizer (remoteness)
- Low technical supported from kebelle and woreda
- Poor water management (efficiency problem)
- low experience among farmers (standardization problem)
- Poor research finding and dissemination.
- Low quality and quantity of produce (bulkiness)

4.7.2.2 Marketing problem

Production is only job half done for farmers as marketing forms the other half. Despite being connected through highway marketing was a challenge in many regards. Initially a focus group discussion was conducted in each cooperative to list out the major marketing constraints. Based on this a list of major marketing problem was prepared, then, during household interview schedule each respondent was asked to rate each problem on a severity scale. The list of problem generated from FGDs are road access (transportation cost), lack of storage facility, fluctuation in price, lack of market price information, price distortion by local middlemen.

Cooperatives reported that the number of middlemen coming to the collecting centers had dwindled over the years. Earlier buyers from used to come but now only local middlemen are their buyers due to which these local middlemen lower farmer's price and distort the market. The inherent volatile nature of vegetable market troubled farmers as they never knew what to expect and hardly had any idea how well off they would be in a given season. Farmers normally

transported vegetables from their command area which lie at comparatively remote area (inaccessible) than the collection center situated near highway, once they brought those vegetables to collection centers they have no option but to sell as taking back would not make any sense and would only incur further economic and biological losses. This extremely decreased their bargaining power and this forced them to sell at buyer's price. The agriculture-road through which vegetables were transported wasn't pitched and would cause challenges during monsoon yet farmers agreed that this was a huge improvement to their earlier condition when they used to carry those vegetables on their backs in or donkeys. Farmers weren't up to date with the current market prices in major market however many farmers had started keeping records of their year sales with prices for comparison.

The FGD discussants forward the following constraints related to output marketing through cooperative

- No know production plan,
- No market oriented production system,
- lack of alliance,
- low quality of produce
- no clear crop calendar,
- infrastructure problem like storage, road access, office facility
- fixed market alternatives (difficult to compute in regional market)
- Less attention from woreda
- Lack of Material like weight scale, Kasa …
- Lack of timely market information,
- linkage with potential buyers,
- low technical support and others.
- inadequate water supply

5. Conclusion and recommendation

5.1 conclusion

Smallholder farmers in developing countries can, in theory, sell their products to several types of markets: local (rural), emerging urban, regional and international. Of these, local markets are the

easiest to reach due not only to logistical differences since transportation, quality standards, and scale issues are less of a concern at the local level, but also because of less competition from larger domestic and international producers. Smallholder farmers have come to the conclusion that farmers have formed cooperatives to solve their socio-economic problems. Some of these problems are financial, institutional, infrastructure facility and technical challenge to access different market. Agricultural cooperatives are seen as an institutional solution to support the supply of input and marketing of output that could lead to commercialize of smallholder farmers.

However, this study suggests that agricultural commercialization through cooperatives faces a number of challenges that demands a great need of external support from NGOs, Governments and Private sectors in which those cannot always sustain collective marketing activities over time unless some internal problems such as free rider, internal conflicts issues, market failure and other issues are addressed. The irrigation cooperative require support from financial institutions such through bootstrapping which is a highly creative way of acquiring the use of resources without borrowing money or raising equity financing from traditional sources.

Collective action seems to be more sustainable in regions where market and/or governance conditions are more favorable. Furthermore, collective marketing activities appear to be more sustainable in cooperatives established on the voluntary initiative of farmers. Members of the cooperative greatly agreed on the advantages of cooperative. However, collective competitiveness of these cooperative decreases rapidly after few years formed. Cooperatives founded on the voluntary initiative of farmers are instead less likely to engage in collective marketing at an early stage, but they are more likely to sustain these business and entrepreneurial activities over time. Findings from this study also show that support from the government to agricultural cooperatives should focus on building managerial capacity, so as to prepare cooperative members to confront the challenges coming from the market place that creates strong collective competitiveness.

Members should be trained on business, logistical and technical skills to fit in these high value chains. Further research is needed to identify good managerial practices to be applied by different typologies of cooperatives in different market environments. This study shows that markets access plays a very important role is smallholder farming. Market access improves the

productivity of subsistence agriculture as it serves facilitate purposes agriculture commercialization with the subsequent of alleviating food deficiency at household level of the rural population on side and improving the incomes of farmers. In Beaekel irrigation cooperative the linkage made with Selam union and the initiatives created by Lemelem takota irrigation cooperative leader were imperative; not only the members of these cooperatives of the scheme but also non-members have confidence to bargaining with local traders by considering these cooperative as potential buyers.

To further explore the answer to the question how irrigation cooperatives performance is poor the study has analyzed the effect of cooperative membership which finds that although cooperative membership has significantly positive effects on the supply of produce, purchase of input and funding capital to the cooperative it has no significant difference found member increment from year to year.

The study results reveal production constraints like land nature, fertilizer, improved seed supply, agro-chemicals, extension services and crop choice as basic factors that increase irrigated yields significantly in quality and quantity to explore production comparative advantages. The results also show that the factors limit to supply bulky products. Marketing constraints like access to road, storage facility, market information, price fluctuation, access to finance are also fund as hurdle of irrigation cooperative implementation capacity. Governance of the irrigation cooperative generally has a positive association with the above production and marketing constraints, some dimensions of irrigation governance are critical. Participation, transparency and accountability greatly influence positively members trust, commitment and its sustainability to the irrigation cooperatives. The record keeping and documentation system also found very poor.

5.2 recommendation

The study concludes that levels of education and training of irrigation cooperatives members influences the performance of irrigation cooperatives. The study therefore recommends that irrigation cooperatives in PASIDP sites should constantly check on the levels of education and carry out training activities as such training would help enhance their cooperatives performance. The study recommended that organized marketing for products influences the performance of

irrigation cooperatives. Irrigation cooperative in should enhance the level of application of organized marketing for products activities so that they enhance the performance of their irrigation cooperatives. Irrigation cooperatives should enhance their governance mechanisms as such would enhance transparency and accountability which would improve performance of their irrigation cooperatives. The study also recommends that the management of irrigation cooperative should embrace technology and use the current forms of technology to enhance the performance of their irrigation cooperatives.

Generally the study forwards the following recommendation:

- Establishing cooperatives for commodities where there is significant market failure is not sufficient condition. Cooperative once established by strong follow up and monitoring should supplemented
- Cooperatives have to create exclusive benefits for members to invest on them
- Let members' own, freely act and commit to their organizations
- Revisit strategies of promotion …members promoters
- Strong agronomic and research institution support on the application of technologies like fertilizer, new varieties, chemicals and farm equipment's
- Consistent follow up production technical support on crop selection, cluster production, staggering system and pest management.
- Strong support on water management (water efficiency techniques) and its distribution.
- Improve the capacity of agro-dealers (should quality inspections) to supply quality input.
- Irrigation cooperatives steered by continuous follow up and monitoring from public sector in their early stage.
- Access to market infrastructure (road and storage) should be improved.
- Business skill, leadership, and experience sharing for members and cooperative leaders
- Developing strategies on saving and credit options of the irrigation cooperative should improve.
- Promotion activities to increase membership and capital should be strengthened.
- Create stro ng alliance with local institutions like saving and credit coop, multipurpose coop, IWUA and woreda union to share resource and co-work

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7. Annex

7.1 Assessment of functionality challenges of irrigation cooperative Prepared for household survey

Participatory small scale irrigation development (PASIDP II)

Assessment of existing challenges of the irrigation cooperative functionalities

Questionnaire to be filled by irrigation cooperative member's .This questionnaire is prepared by PASIDP II and coop agency staff. This questionnaire is designed for conducting the assessment of the existing challenges of irrigation cooperative in performing the set objective. The purpose of this questionnaire is to collect data on about the profile of the organization, input marketing, credit service, output marketing and others.

Dear respondents, there are four parts of questions to be completed by you. Then follow the specific instructions which are illustrated under each part and try to indicate your position for that relatively represents your idea from the possible alternatives. For closed - end questions please choose the relevant answer that expresses your response from the alternatives and fill the space provide under each questions for open-end Questions

Questionnaires developed for members of irrigation cooperative

General information

1.1. name of HHs head (member)

_____

1.2. Zone :_____Woreda : _____kebelle: _____kushet: _____

1.3. Age of HH (year) :

1.4. sex: 0) F 1) M

1.5. marital status : 1) married 2) Single 3) divorced 4) others specify

1.6. Religion: 1) orthodox 2) Muslim 3) protestant 4) catholic 5) others_____

1.7. Agriculture practice experience (years)_____

1.8. Education level: 1) illiterate 2) read and write 3) literate grade _____

1.9. Number of family _____

1.10. Source of income 1) rain fed 2) livestock sources 3) both 4) petty trade 5) irrigation 6)others, _____

2. About Agriculture

2.1. Land for cultivation? 0) no 1) yes

2.2. If your answer for question number 2.1 is yes fill the following table

S/no	Land holding	Own land	Rent land		Land share		total
			Renter	Renee	Share in	Share out	
1	Rain fed						
2	Irrigation						
3	Grass land						
4	ገደና						
5	Forest						
	Total						

2.3. Major crops covered for irrigated land (%)

1. _____
2. _____
3. _____
4. _____

3. Institutional set up and support

3.1 Did annual general assembly conducted? 0) no 1) yes

3.2 How many times meetings conducted annually ? 1) once 2) twice 3) more than two time 4) never 5) I do not know

3.3 If your answer for question number 3.2 is 4 what was the reason for?

……..

3.4 If the irrigation cooperative conducts general meeting did you participate in the meeting? 0) no 1) yes

3.5 If your answer for question number 3.4 is yes what were the points articulated?

ተ/ቁ	List of Agendas	1) higher 2) medium 3) lower
1	Leader appointment and evaluation	

2	Adapting of rules, regulation and by lows	
3	Demand for irrigation input	
4	Market searching	
5	Performance evaluation and plan adaptation	
6	Water management and maintenance	

3.6 Did you have leader? 0) no 1) yes

3.7 If your answer for question number 3.6 is yes how did you nominated leaders?

1) By general assembly 2) by kebelle leaders 3) by woreda or kebelle experts 4) others _____

3.8 How did you evaluate service provided by leaders? 1) higher 2) medium 3) lower

3.9 Did your IFC have employees? 0) no 1) yes

3.10 If your answer for question number 3.9 is yes what professions did they have?

……

……

3.11 Did your cooperative have bylaw? 0) no 1) yes

3.12 If your answer for question number 3.11 is yes what was the reason behind not for proper implementation.

3.13 How was the payment of process? 1)

3.14 Did you attend any technical training?

3.15 If your answer for question number who was training provider.

1) coop. 2) agriculture 3) IFAD 4) others

3.16 Did you think that the training was enough for you?

3.17 About marketing information? 0) yes 1) no

3.18 If the answer for 3.18 is yes who would your source of information? 1) form farmers 2) from relatives 3) radio and TV 4) woreda coop. 5) traders 6) others

3.19 Market linkage support from different stakeholders?

4 About input for agriculture

4.1 Do you use improved seed?

4.2 If Yes where your source of the seed?

1) From coop. 2) from agriculture 3) from trade 4) NGO 5) others

4.3 If not why was the reason?

S/no	Challenges	1)high 2)medium 3)low
1	Access problem	
2	Quality of seed	
3	Price of seed	
4	Availability of seed	

4.4 How do you evaluate the quality of the seed? 1. High 2. Medium 3. Low

4.5 Is there and body the can control quality standard? 0) no 1) yes

4.6 Did you use chemicals? 0) no 1) yes

4.7 If yes, your source? 1) Form coop. 2) from agriculture 3) from trader 4) from NGO 5) others.

4.8 Main challenges related to chemical access and usage?

S/no	Challenges	1)high 2)medium 3)low
1	Access problem	
2	Quality of seed	
3	Price of seed	
4	Availability of seed	

4.9 Did you use fertilizer? 0) no 1) yes

4.10 If yes the source of fertilizer? 1) Form coop. 2) from agriculture 3) from trader 4) from NGO 5) others.

4.11 The rate of fertilizer per hectare.

4.12 If your answer for number 4.11 is no what was the reason for?

S/no	Challenges	1)high 2)medium 3)low
1	Access problem	
2	Quality of seed	
3	Price of seed	
4	Availability of seed	

4.13 Did you practice cluster production system? 0) no 1) yes

5 Marketing system

5.1 Where did you sell your produce? 1) to coop. 2) to traders 3) to consumers 4) others-------

5.2 Did you supply your produce to the cooperative? 0) no 1) yes

5.3 If your answer is no why

1.....
...
2.....
.....
3.....
.....
4.....
.....
5.....
.....

5.4 How did you perform your selling procedure?

1. Direct cash on hand
2. In credit or advance
3. Half in cash and half credit

5.5 How do decide market price? 1) by seller 2) buyer 3) agreement 4) others_____

5.6 If market fails what alternative strategy did you follow?

1) back to home 2) sell at lower price 3) disposal at market place 4) store for the coming season 5) others_____

6 Credit services

6.1 Did you service credit from any credit service provider? 0) no 1) yes

6.2 If your answer for question no 6.1 is yes,

Source of credit	Time	Amount	Reason for)	intrest

From relatives				
From coop.				
Form informal				
From government				
From NOGs				
Banks				
MFIs				
others				

6.3 List the main challenges related to credit services?_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

7.2 Assessment of functionality challenges of irrigation cooperatives Prepared for FGD

Profile of the cooperatives

- Site of scheme _____
- Name of the cooperative _____
- Year of establishment _____
- Year of certification _____
- Number of members (male female) up to date Male_____ Female _____Total _____
- Total beneficiaries Male _____ Female_____Total _____
- Total irrigable land in hectors _____
- Three major crops grownup 1. _____2._ _____3._____
- Membership/ registration fee in Br. _____
- Institutional arrangement _____
- Amount of Capital _____
- Assets- Fixed and current _____
- Executive committee number and composition _____
- Type of service providing _____

  _____

  _____
- Availability of Office facility_____
- Efficiency in book keeping and financial recording _____

  _____
- Alignment to Auditing service _____
- Communication and infrastructure facilities _____
- Business plan preparation and implementation_____
- Planning, budgeting and implementation, accordingly _____
- Available monitoring, evaluation and feedback from Cooperative agency and others _____

  _____

  _____
- And other issues should be included as a background of that specific cooperative_____

  _____

  _____

  _____

Input Supply

- Members input demand trend in type and amount at least for three years back _____
- Trend of Input supplied for Members in type and amount at least for three years back _____
- Input storage and distribution center facility _____
- Do the cooperatives meet input demand of their members in type, quality, cost and time of delivery?_____
- Means of transportation to distribute inputs for farmers _____
- Transaction system – in cash, credit or other _____
- Challenges regarding input supply from cooperative leaders and members point of view_____
- Suggested solution _____

Output Marketing

- Type of marketing service _____
- Do members deliver their product to cooperatives for marketing purpose?_____
- Collection center and storage facility for member's harvest _____
- Type of exchange or transaction system (in cash or immediate payment, in advance or after sale)_
- Market linkage created with institutions, whole sellers and others _____

- At least three years back trend of production and sold through cooperative in type and amount ___ _____
- Pricing and Profit sharing mechanisms _____
- Challenges regarding output marketing from the cooperative leaders and members point of view _ _____ _____ _____ _____
- Suggested solutions _____ _____ _____

Credit Access

- If there is provision of credit for its members, show the inquiry, allocation and received loan amount trend for the last three years_____ _____
- Lending capacity _____
- Interest rate and other modality _____
- Saving mechanisms, if any_____
- **Main challenges and opportunities during input and output marketing through FIC** ---------- ----------

7.3 Assessment of functionality challenges of irrigation cooperatives Prepared for KII

- What are major crops grown up in the command area
- How do membership/ registration fee in Br leaders collected?
- What do you think about Institutional arrangement of the irrigation cooperative
- How do evaluate amount of Capital of irrigation cooperative?
- What major service do irrigation cooperative providing for their members?
- How do the efficiency in book keeping and financial recording?
- How do you think about communication and infrastructure facilities of the irrigation cooperative?
- How do you evaluate business plan preparation and implementation
- Planning, budgeting and implementation, accordingly and available monitoring, evaluation and feedback from public and private sectors.
- What do you think about other issues should be included as a background of that specific cooperative
- Members input demand trend in type and amount at least for three years back
- Trend of Input supplied for Members in type and amount at least for three years back _____
- Do the cooperatives meet input demand of their members in type, quality, cost and time of delivery?
- What are the major changes regarding input supply from cooperative leaders and members point of view and your suggested solution

Output Marketing

- How do think that members deliver their product to cooperatives for marketing purpose?
- Type of exchange or transaction system (in cash or immediate payment, in advance or after sale)_
- Challenges regarding output marketing from the cooperative leaders and members point of view and your suggested solutions.

Credit Access

- Main challenges and opportunities during input and output marketing through FIC