ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF SOCIOLOGY

PERCEPTIONS AND EXPERIENCES OF FARMERS` ON FARMER TRAINING CENTER BASED AGRICULTURAL EXTENSION SERVICES IN ANTSOKIA GEMZA WOREDA, *NORTH SHEWA ZONE, AMHARA REGIONAL STATE*:

MA THESIS

BY

BIZUYE KOKOBE

NOVENBER, 2023

ADDIS ABABA, ETHIOPIA

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

DEPARTMENT OF SOCIOLOGY

Farmers Perceptions and Experiences of Farmer Training Center-Based Agricultural Extension Services in Antsokia Gemza Woreda, *North Shewa Zone, Amhara Regional State*

By

Bizuye Kokobe

ID: GSR/2638/12

Advisor: Abeje Berhanu (Dr.)

A Master Thesis submitted to the Department of Sociology, in partial fulfillment of the requirements for the Master of Arts degree in Sociology

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

A THESIS SUBMITTED FOR DEFENSE

APPROVAL SHEET – I

This is to certify that the thesis entitled: ***"Perceptions and Experiences of Farmer Training Center-Based Agricultural Extension Services in Antsokiya Gemza Woreda"***, submitted in partial fulfillment of the requirements for the Master of Arts Degree in Sociology and is a record of original research carried out by ***Bizuye Kokobe, ID No- GSR/2638/12***, under my supervision, and no part of the thesis has been submitted for any other degree or diploma.

The assistance and help received during the course of this investigation have been duly acknowledged. Therefore, I recommend it to be accepted as fulfilling the thesis requirements.

Abeje Berhanu _____ _____ _____

Name of Major Advisor Signature Date

ADDIS ABABA UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THESIS SUBMITTED FOR DEFENSE

APPROVAL SHEET – II

We, the undersigned members of the board of the examiners of the final open defense ***Bizuye Kokobe*** have read and evaluated her thesis entitled ***"Farmers` Perceptions and Experiences of Farmer Training Center-Based Agricultural Extension Services in Antsokiya Gemza Woreda"***, and examined the candidate. This is therefore to certify that the thesis has been accepted in partial fulfillment of the requirements for the Master of Arts degree in Sociology

_____	_____	_____
Name of Chairperson	Signature	Date
_____	_____	_____
Name of Advisor	Signature	Date
_____	_____	_____
Name of Internal Examiner	Signature	Date
_____	_____	_____
Name of External Examiner	Signature	Date

AUTHOR'S DECLARATION

I declare that this thesis is my genuine work, and that all sources of materials used for this thesis have been duely acknowledged. The thesis has been submitted in partial fulfillment of the requirements for the Master of Arts degree in Sociology at Addis Ababa University and it is deposited at the University library to be made available for users under the rule of the library. I declare that this thesis is not submitted to any other institution anywhere for the award of any academic degree, diploma or certificate.

Brief quotations from this thesis are allowable without special permission, provided that accurate acknowledgement of source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the department or the Dean of College of Post Graduate when in his/her judgment the proposed use of the material is in the interest of scholarship. In all other instances, however, permission must be obtained from the author and advisor of this thesis.

Name: ***Bizuye Kokobe*** **Signature**: ----------

Place: School of Graduate Studies, Addis Ababa University

Date of Submission: ----------

Acknowledgments

My sincere most profound gratitude goes to my advisor Abeje Birhanu (PhD) for his kindness and entire limitless efforts in guiding me through ideal and moral support in each step of my progress for the successfully accomplishment of the study. I would like to extend my gratitude to Ato Alemu Getachew for his valuable and constructive suggestions and comments for this study.

My thanks also go to the Department of Sociology Addis Ababa University for contributing greatly starting approving to the success of this study through professional consulting.

Table of Contents

Contents **Pages**

List of Tables

List of Figures

List of Acronyms

ADLI = Agricultural Development Led Industrialization

AGWAO = Antsokia Gmeza Woreda Agricultural Office

ATVET= Agricultural Technical and Vocational Education and Training

ATVT =Agricultural Technical and Vocational Training Colleges

CADU= Chilalo Agricultural Development Union

DAs = Development Agents

EPID = Extension and Project Implementation Department

FAO = Food and Agricultural Organization

FGD = Focus Group Discussion

FMPTC= Farmers Multipurpose Training Centre

FTC = Farmer Training Centre

MOARD= Ministry of Agriculture and Natural Resources

MPP = Minimum Package Program

NGOs = Non-Government Organization

PADETES= Participatory Demonstration and Training Extension System

US = Untied State

WADU= Wolaita Soddo ATVET College

Abstract

The main objective of this study is to investigate farmers' perceptions and experiences regarding farmer training centers (FTCs) and the extension services provided in these centers focusing on Antsokiya Gemza Woreda North Shewa Zone, Amhara region. A ddescriptive survey research design with a mixed research approach, combining qualitative and quantitative research methods was used to collect both quantitative and qualitative data. The quantitative sample consisted of 148 farmers and 12 development agents drawn from 4 FTCs covered by the study. In addition, 6 key informant interviews were conducted with woreda agricultural extension officers and kebele chairpersons selected from the sampled FTCs through purposive selection of the informants. The techniques of data collection for the study included questionnaire, qualitative interview guides and observation and four FGD groups' checklists. The findings of the study indicated that most of the FTCs in the Woreda do not fulfill the basic requirements to serve as centers for farmers' training, knowledge generation and dissemination and as sources of improved farm management practices. The result of the study further revealed training programs often lack adequate preparation and readiness, as there was no any standardized modular training provided for the farmers. The result of the study further showed that the FTCs did not provide the necessary improved agricultural extension services like new irrigation system livestock improved mechanism and did not help the farmers improve their welfare by increasing productivity. Moreover, the study found that lack of infrastructural facilities and materials, inadequacy of practical training, budget constraints, low community participation and lack of support from concerned stakeholders were the major obstacles hindering the implementation of FTC-based agricultural extension program. To improve FTCs performance, it is essential that FTCs should be strengthened in terms of trained manpower, adequate infrastructure, training facilities, and materials.

Key Words: *Farmer training center, Extension, Perception*

CHAPTER ONE

INTRODUCTION

1.1 Back ground of the study

The Ethiopian economy depends on agriculture and more than 85% of the country population lives in rural areas. Rural development is a strategy to improve in the economic and social life of people in rural areas. According to Ethiopia's Rural Development Policy and Strategy (2001), one of the main means of implementing modern agricultural methods was the extensive use of human labor to motivate human work in agriculture agricultural education and training. This method focuses on educating and training the agricultural labor and enabling them to use modern agricultural technology and techniques. Agricultural extension is a fundamental tool in the agricultural sector as it facilitates knowledge transfer and enhances crop yields resulting from improved agricultural activities. Improving smallholder farmers' access to agricultural services, especially in sub-Saharan Africa, is a central challenge facing governments in the region and yet food insecurity is greatly impeding development cited in (Cloete P. *et al*. 2019, Larsen and Theus, 2009).

Agriculture is the backbone of the Ethiopian economy, the Agricultural Development Led-Industrialization (ADLI) strategy has been devised by the Federal Democratic Republic of Ethiopia, which was used to raise the necessary funds for the development of industry and other areas sectors of country development can be achieved through agricultural production and productivity develops reliably. One of the main reasons for the low productivity of agricultural production is its lack of training courses for farmers, low qualification, lack of new agricultural technologies and lack of know-how and the ability to adopt this new farming technology. To this end, the government works development strategy to change most traditional farming practices to small farmers and improve their standard of living by increasing agricultural production and productivity and ensuring the country's sustainable economic growth cited in (Haile, 2020, Muluken and Mary, 2017).

One of the directions for implementation of the development strategy aimed at agriculture is, for example, establishment of agricultural technical and vocational schools those teach and train qualified professionals whose job is to work closely with farmers. The second direction of development strategy is to establish farmer training centers to provide training for farmers by the professionals that graduate from the colleges. The main reason for establishing, Farmer Training Centers, is produce skilled farmers who can transform the country’s

agricultural production from a subsistence production to a market-oriented production system of sustainable economic growth through increasing production and industrial productivity and efficient use of natural resources of the country (MOARD, 2009).

According to (Haile, 2020), FTC offered two types of training for farmers. These are short-term and modular training. The short-term training is delivered to 15 to 20 farmers over a period of approx, 3-20 days in demonstration areas or in model farmers' fields. The organization of modular training takes special consideration of the size of participants in order to reduce or avoid the adverse effects of large class size. Combined with rooms for such training offer space for 20 to 30 trainees. The main reason for establishing farmers training centers is to produce skilled farmers that can transform the country's agricultural production from subsistence to a market-oriented production system, bringing a sustainable' economic growth by raising the sector's output and productivity and effectively using the natural resources of the country. Farmers' training centers are important in improving the living conditions of farmers through improved agricultural productivity and the adoption of new farm technology in order to increase productivity, but in Ethiopia, the majority of them do not provide the targeted service. In many areas of the country, the farmers training center serves as storage, and the service provided by the center is low when compared to the cost incurred for its construction. The Farmers′ training centers are important not only for improving income but also for the adoption of new farm technology.

The establishment of FTC program in study area was started in 2004. As the information taken from Antsokia Gemza woreda office of agriculture and rural development, currently there are 11 FTCs in the woreda. And they are started training for farmers since their establishment, but perception and experience of farmers has not been studied in the study area. In such context, the idea of this research was needed. Therefore, this study was carried out to investigate perceptions and experiences of farmers' on FTC based agricultural extension services. To this end the following questions are formulated.

What is the present status of FTCs in relation to its level of function?

How do the farmers perceive FTC activities and performance?

What is the contribution of FTC for enhancing the life of farmers?

What types of factors are affecting the performance of FTCs in the study woreda?

1.2 Statement of the problem

Farmer Training Centers (FTCs) were designed and used to promote agricultural development in the provision of extension services in many developing countries. As part of a broader agricultural development-led Industrialization (ADLI) to which the FTC was to contribute, transformations of rural areas in Ethiopia not limited to agricultural development only. Out of FTC approach, extension services ranging from capacity building to improved utilization of agricultural technologies for market-oriented information, communication and advice services would be provide. In order to achieve the above goals, the FTC must consist of at least three extension agents trained in plant, animal sciences and natural science and management and should be built on land that has a minimum of natural resources two-hectare site for demonstration to any FTC nationwide cited by(Fanos, 2015)

A study by (Andarge, 2017) showed that ‘‘ the determinates of smallholder farmers’ participation in agricultural extension programs ’’ were reviewed with special attention to socio-economic aspects. These are educational level, gender, availability of jobs, access to information, transport problems, market problems, the Spread of problems related to labor force extension in Kebele and spread of problems in groups and in farm organizations or in, except educational level and household heads' access to information negatively affect their participation status. The results of this study showed that the highest percentage of heads of household in the sample participated in agricultural development programs, their commitment was varied.

Dawit and Gemechu (2020) who examined ``farmers' perceptions of improved Quncho teff Variety in Gindeberet district`` indicated that farmers' perceptions of technology varied generally attached to the advantages of technology components. Farmers examine the benefits from the point of compatibility with their current situation, including labor demand, profitability and other social necessities related to technology adoption. Preparing farmers for adoption of technology is influenced by their positive perception of its benefits. The results indicated that an improved it in an improved variety of Quncho teff was perceived to be suitable with references to the characteristics that are perceived as highly important by farmers based on the overall perception of the level of agreements, which showed relatively best performance in the study area.

Gizaw (2018) studied the impacts of farmers training centers in enhancing the livelihoods of rural farmers, but this specific study in addition to FTC contribution focuses on perception and experience of farmers, current status of FTC.

Hailu (2014) conducted a study on the problems and effectiveness of farmers` training centers. The study emphasized on knowledge and skill but the present study focuses on perception in addition to knowledge Bekelech (2014) undertook a study on the effectiveness of farmer training centers in the economic life of rural adults but this study focuses on perception and experience of all categories of farmers.

Most of the available studies mainly focused on investigating FTCs and their provision of agricultural extension services, with the main focus being on the challenges, prospects, and effectiveness of FTCs and farmers' participation; with few studies on the perception and experience of farmers on FTCs providing agricultural extension services. By considering these issues in detail, this study attempted to investigate farmers' perceptions and experiences about farmer training centers (FTCs) and the extension services provided in these centers, focusing on the Antsokia Gemza Woreda context

1.3 General Objective of the Study

The main objective of this study was to investigate farmers' perceptions and experiences about farmer training centers (FTCs), and the extension services provided in these centers, focusing on Antsokia Gemza Woreda North Shewa Zone, in the Amahara region.

The specific objectives include:

1. To investigate the current situation of FTCs in the study area.
2. To examine farmers' perceptions and experiences about FTC based agricultural extension services
3. To see FTCs contributions to improving farmers' welfare using improved agricultural extension services.
4. To examine the factors affecting the performance of FTCs.

1.4 Scope of the Study

The study focused on farmers' training centers and farmers who found Antsokia Gemza woreda that only included four FTCs selected by simple random sampling techniques. The study gave attention to investigating farmers' perceptions and experiences about farmer training centers (FTC) - based extension services, focusing on Antsokia Gemza district.

1.5 Limitations of the study

The research focused on investigate farmers' perceptions and experiences about farmer training centers (FTCs), and the extension services provided in these centers, Antsokia Gemza Woreda North Shewa Zone, in the Amahara region**.** The study had their own limitations like scope focus only farmers` perceptions and experiences and only Antsokia woreda and the researcher was used one time cross-sectional survey data and it is difficult to know by randomly selected 'trained' and 'untrained' farmers` perception and experiences.so for future studies should consider using longitudinal research methods.

1.6 Significance of the study

The finding of this study will provide first-hand information to government; non-government organizations and policy makers about perceptions and experiences of farmers on FTC based services, the status of FTCs, existing gaps, and their major constraints which prevent them to operate effectively. These findings will be helpful especially for the district agriculture and rural development office in planning, organizing, leading and controlling different activities concerning FTCs and perceptions of farmers in the future. It also serves as a reference point for additional study.

1.7 Organization of the thesis

The contents of the research paper are organized into five chapters. The first chapter introduces the main theme of the inquiry, the background of the study, the statement of the problem, the research objectives, and scope of the study, the significance of the study and the definition of terms. The second chapter encompasses reviews of related literature. The third chapter includes the methodological part of the study, including the research method, study area, study population, sampling technique, sampling procedure, data collection process, analysis technique, and, ethical considerations and others. The fourth chapter discusses the main findings of the study. The last chapter focuses on summary, conclusion and possible recommendations based on the findings of the study.

CHAPTER TWO

REVIEW OF THE RELATED LITERATURE

2.1 Definition of key concepts and terms used in this study

Farmer training center: a training and information institution that serves as the focal point for agriculture development activities within a certain rural kebele administration and that provide various training to farmers (MoARD, 2009)

Agricultural Extension: facilitates the access of farmers, their organizations and other market actors to knowledge, information, and technologies; facilitates their interaction with partners in research, education, agribusiness, and other relevant institutions; and assists them to developing their own technical, organizational and managerial skills and practices (Christoplos, 2010).

Farmers' Perception**:** farmer perceptions as the farmer's subjective preferences, which are fundamental characteristics that may impact decision-making processes (Mathewos &Elias, 2023)

Farmers' Experience: experience/skill refers to the expertise, talents or abilities you have that help you perform a farmer's daily duties. Key farmer skills include problem-solving, interpersonal, farm management and organizational skills The Intended Editorial Team, (2023)

Agricultural Technology: is the use of technology in agriculture, horticulture, and aquaculture with the aim improving yield efficiency, and profitability (Chukwuemeka ,2022)

2.2 Agricultural Extension in Ethiopia

The development of agriculture in Ethiopia began in 1931 with the establishment of the Ambo Agricultural School, one of the oldest institutions and the first agricultural high school to offer general education with an emphasis on agriculture. Aside from educating students and demonstrating on the ground the potential impact of improving agricultural varieties and practices, the school was not an extension in the true sense of the word as we understand it today. Only in, with the establishment of the Ministry of Agriculture in 1943, did the country experience limited expansion activity in various areas (Belay, 2002).

The concepts of the land grant system in the United States of America (USA) had three responsibilities: teaching, research, and extension. Land Grant College`s mandate included

providing local research and technology results to farmers, as well as importing improved technologies and practices from abroad and presenting them to farmers cited in: Suleiman and Nuradin, (2020) Ibrahim (2004). The Land Grant College-based extension system in the United States later spread to other countries including in Ethiopia.

Accordingly, various types of agricultural expansion programs have been implemented in Ethiopia, including the University System Agricultural Extension Program (1953-1960), the Comprehensive Project (1960-1970), the Minimal Project (1970-1980), Farmers Program Agricultural Development Project and Agricultural Systems Research Project (1985 -1990). Major challenges during this period included the instability of the extension system, the transience of extension programs and projects such as WADE, CDU, EPIC and MPP; lack of common understanding between technology generators and support personnel; insufficient representation and participation of farmers; insufficient skilled workforce, limited finances; one-way communication, insufficient or non-existent monitoring and evaluation.

Numerous reforms have been implemented over the years to fill the gaps in the various systems that have been put in place, leading to the current system. In 1993, Sasakwa-Global 2000 began demonstrating agricultural technologies as a pilot project for major grain crops. The SG-2000 demonstration was clearly a huge success, attracting the attention of senior government officials and development professionals, encouraging them to replicate the SG-2000 experience across the country. This approach was then used as the basis for the current bundled service extensions.

In 1995, the government designed and implemented the participatory demonstration and extension system (PADETS) as an essential element of the country's extension system. Its main goal was to increase smallholder participation and demonstrate the improvement of agricultural technologies to improve the productivity, income and livelihood of the rural community. The government has established and deployed 25 ATVETs in different parts of the country to train qualified agents for FTC. To date, more than 83,000 DAs have been trained and graduated, of whom around 56,000 of them work in agriculture (MoANR (2017).

It has been more than a decade since the FTC based farming extension system was introduced. FTCs were established to serve as centers for information and knowledge sharing, training and demonstration of technology and innovation close to local farmers. Currently, the government has established 12,500 FTCs and will build the rest to meet the national goal of 18,000 FTCs. The centers are managed by a management committee composed of 7 to 10

elected officials and farmers. The Committee is chaired by a Kebele chief who is also a farmer. During its monthly meetings, this committee plans, administers and evaluates a training and demonstration program. In addition, it organizes farmers who help set up and maintain demonstration fields.

The centers offer a wide range of services: training and awareness services for farmers to improve agricultural techniques (through training courses, exhibitions, demonstration farms, field days and farmer-to-farmer training); market-oriented information and consultancy services; meeting and communication of objects; and seeds and seedlings of a new crop. These FTCs are one of the key tools for providing additional services in the future and can serve as symbols of the current successes that the country has achieved in agriculture (MoANR 2017).

2.3. Farmers' Training Centers (FTC) in Ethiopia

Farmer Training Centers are training and information centers that serve as focal points for agricultural development activities within a specific village government in Kebele, specifically to train farmers in agricultural extension services.

One of the directions of implementation of the ADLI is the establishment of agricultural technical and vocational schools (ATVT), which educate and provide qualified specialists aimed at close cooperation with farmers. Useful experiences also from China, India, and Indonesia is adopted and implemented taking into account the current situation of our country. The second direction of the development strategy is the establishment and management of training centers for farmers that train farmers with professionals who have studied at the colleges. The main objective of establishing farmer education centers is to train skilled farmers capable of transforming the country's agricultural production from subsistence production to a market-oriented production system and to achieve sustainable economic growth by increasing industrial output and productivity and utilizing natural resources to achieve (MoARD ,2009).

To achieve the above strategies, FTCs were established in rural kebeles where the main objective is to reach farmers through improved agricultural extension technologies and farm management practices by deploying Das who have been trained at ATVETs. The DAs have been trained three interrelated fields of agriculture: crop, livestock and natural resource management. Currently, there are about 12,500 FTCs established throughout the country,

though the target was around 18,000 FTCs. So far, as stated above, some 83,000 DAs have graduated from these FCTs (MoARD,2017).

The country's first multipurpose agricultural training center (FMPTC) was established in 1980 at Agarfa in Bale, Oromia region. Its main goal was the dissemination of agriculture technologies among the rural people in order to improve the quality of agricultural production and the living conditions of the rural people and the country as a whole. Drawing experience from the FMPTC, the government embarked on a large scale project of establishing FTCs targeting each rural kebele in the country. The FTC was to serve as a support and information center, a three-six-month modular training center for farmers, and a source of project advice. The plan is for local communities to gradually take control and management of the FTC (Berhanu et al.2016).

FTCs were expected to play an active role in connecting farmers to other institutional support services such as the provision of funds, credit, the promotion of cooperatives and the marketing of agricultural products. In order to transform farm advisory services, farmers need to be trained to improve their knowledge, skills and attitudes related to self-determination, access to information, access to improved farming practices and better lives (Birhanu et al.,2016).

2.4 Farmers' Perceptions and Experience of FTCs –based Agricultural extension services

Farmer training centers are important to provide farmers with training not only to increase their productivity, but also to improve their ability to adapt to new agricultural technologies. As the lack of technology adaptation is another factor affecting agricultural productivity, most farmers are unable to adapt to new technologies and may use outdated technologies. According to Mesfin, (2017) perception is which we receive information or stimuli from our environment and convert it into psychological awareness. However, not all innovations have spread at the same rate. Different innovations are objectively different and are likely to be perceived as different by the decision-making farmer. Thus, the perception of differences would influence the decision to accept or reject a particular innovation. In this way, farmers receive and accumulate incentives that indicate whether the characteristics of the best chickpea production technologies are superior to local and traditional technologies.

Cited in Mesfin, (2017) ,Rogers (1983) has classified characteristics of innovations which can influence their rate of adoption. These characteristics of innovations are: relative advantage to current tool or procedure, compatibility with the pre-existing system, complexity or difficulty, trial ability (testability) and observability of its effects. These qualities interact and judged as a whole.

A positive perception of improved technology by farmers increases the likelihood that the technology will be more widely adopted and used. A positive perception significantly and positively influenced families' adoption decisions. Furthermore, according to cited in: Atrsaw et al.(2021) Almaz and Begashaw (2019), a positive attitude towards teff row planting packages has had a positive and significant impact on package acceptance. Therefore, the farmers' positive perception of the improved Teff technology packages has a positive impact on the decision to adopt the technology. It is a continuous variable measured through perception.

The importance of farmer participation in farm extension services, both as a means to an end and as an end in itself, is well known among development professionals. In addition, farmers are important actors at the local level. Their participation in all phases of development and implementation of extension programs increases the efficiency and effectiveness of planned changes as it facilitates mutual learning between stakeholders, develops a sense of ownership of the change program and results in lasting change both on the farm and in the behaviors of farmers. Therefore, the success of the scale-up program largely depends on the role that farmers play in the program (Atrsaw et al,.2021).

The potential role of farmer attitudes in adoption and the impact of certain otherness; unit factors; Taking on the innovation. Most farmers received adult education, and most of them had negative attitudes towards the education they received. While farmers' attitudes towards training on improved technologies had a positive and weak impact on innovation adoption, farmers' perceptions of the limitations of technology training and implementation seem to have a greater impact. Using a practical demonstration method to train farmers in new technologies would lead to higher acceptance of innovations by farmers. Participation in corporate engagement would result in lower technology adoption rates (Kazeem1 ela,,2017)

According to cited in Gebra, (2018) Morgan and Murdoch (2000;), knowledge is one of the key elements that binds partnerships, by playing a prescriptive or negotiated role. Prescriptive knowledge is associated with rules and norms that lead to conformity, and where coercive elements are possibly exercised. Negotiated knowledge; on the other hand, tends to be about local autonomy and cooperative action. The different types of knowledge define the power relations within partnerships. The prescriptive type of knowledge is considered a characteristic feature of knowledge transfer and use in Ethiopian agriculture.

Ethiopian farmers have a wealth of local knowledge and practices. However, they are rarely given the opportunity to participate in government innovation activities. While small farmers in fragmented environments have benefited from local knowledge/practices, newly imported or locally produced skills and technologies are still seen as more important. For Ethiopian smallholders, experience is even more valuable than education, as few farmers have any education (Gerba,,2018).

Because the agricultural sector is still largely traditional, the focus of the extension system is on promoting the adoption of new knowledge or technologies through teaching and learning (training). As a result, transfer of technology is the most conventional and prevalent approach to accessing agricultural knowledge, in which science-based farming practices are pushed to farmers to enhance learning and adoption. However, farmers` poor farm management experience and lack of access to the desired agricultural inputs act as bottlenecks, impeding the agricultural transformation of the country (Gerba,,2018)

2.5 Contributions of farmer training centers to development

Training centers help increase farmers' agricultural knowledge and skills. In addition, they offer training and advisory services to farmers to increase production and productivity and promote marketable production through the efficient use of natural resources. Training centers are also a source of information on agricultural markets and prices and other information MoARD (2009). In this regard, farmer training centers play an important role in the implementation of the current strategy for agricultural development and rural extension. A program under the plan that promotes the introduction of new technologies and transforms society's work culture and attitudes to improve incomes and living standards of the rural community and improve the country's economic growth.

MoARD (2009). in addition to conducting multi-sectorial activities that create positive change for the farmer, the centers work to train farmers who:

Able to adopt technology easily and quickly;

Can compare different technologies and select the most productive ones;

Can analyze market information and develop a plan based on market conditions;

Able to engage in non-agricultural activities alongside farming;

Able to use natural resources and local knowledge while protecting them; and,

Able to save money, grow economically, and can be an example to others

According to Hail (2014), agricultural development plays a key role in developing the lifestyle and productivity of Ethiopians, especially farmers. The Ethiopian government is developing strategies for this development. One strategy for developing local knowledge-and management-based farming practices is to establish a FTC in every Kebele in the country. The main mission of these centers is to create modern farmers with skills and knowledge through the use of new and improved agricultural technologies and supporting the development of agriculture.

In order to achieve these goals, the centers must carry out their duties and responsibilities effectively. The center becomes effective; Achieve farming development by completing the requirements proposed by the government and various scientists. These requirements include selection of appropriate teaching materials and equipment, quality and number of development workers/trainers, incentives and motivation of development workers, leadership qualities, community engagement and participation, target audience, organization of opportunities and communication within the service, financial resources, and monitoring and evaluation of the offered training.

Gizaw(2018) the Role of the Advisory Service Approach in Agricultural Development in Ethiopia is often seen as a leader in its commitment to growth. The Ethiopian government firmly believes that an effective and efficient expansion system should play an important role in transforming subsistence farming into a commercial agricultural production system by facilitating the adoption and use of agricultural technologies that increase productivity and quality. However, lack of land ownership, insufficient investment in microcredit facilities, and a lack of competition in input supplies and markets limit farmers' willingness to risk the land improvements needed to increase production. Improving agricultural production,

productivity and sustainability will depend on farmers' willingness and access to new technologies. Agricultural extension and extension services play an important role in addressing this challenge. It helps by giving farmers access to: and using proven technologies, and that their concerns and needs are adequately addressed by the relevant service providers. When new agricultural technologies are developed by research institutes (universities and private companies) and by farmers, agricultural extension services are required to transfer these technologies to their customers.

Extension services are organized and offered in various forms with the aim of increasing farmers' productivity and income. The question is how farmers can access knowledge; adopt information and increase yields and income. In this context, the scaling-up approach to agriculture ensures that clear ways to achieve the scaling-up goal are defined. However, the success of scaling towards this goal will depend on the advisory service approach used to reach or communicate with farmers. It contributes to the well-being of farmers and other people in rural areas (Alemayehu &Marta ,2018).

2.6 Current status of FTC in Ethiopia

In Ethiopia, agriculture is the backbone of the economy so based on this fact the government is implementing a development strategy with the aim of transforming traditional farm practices of the majority of small farmers and improve their living standards by boosting farm outputs and productivity as well as to bring a sustainable economic growth in the country. For achieve this strategy, the government is established two organizations that provide training and skillful agricultural agents and farmers (MoANR, 2009).

One is the agricultural technical and vocational institutes that train and place qualified professionals who have the task of working closely with farmers, and the other is the farmers` training centers where farmers are trained by professionals graduate from the colleges. The main reason for establishing farmer training centers is to produce skilled farmers capable of transforming domestic agricultural production from subsistence production to a market-oriented production system to lead to sustainable economic growth. Sectorial production and productivity and efficient use of the country's natural resources(MoANR,, (2009).

The Ethiopian agricultural extension system is based on Farmer Training Centers (FTC) supported by qualified DAs. The government is now nearing its goal of establishing an FTC in every kebele. About 12,500 FTCs have been established to date, and regional governments are actively working to establish the remaining FTCs in order to meet the national goal of

18,000 FTCs. Although it is widely accepted that FTCs serve as a starting point to change farmer behavior and guide them towards modern and commercial agriculture MoANR (2017).The established FTCs are found at varying levels of functionality and currently most of them are not capable of providing the expected services to farmers and put the result.

2.7 Contextual factors influencing the effectiveness of FTCs in Ethiopia

According to Fisseha (2009), there are several factors that contribute to effectiveness of farmers' training center. And also there are factors those affects negatively the operation of FTCs from those the hinder factors the major impediments which hamper the effective operation of FTCs to achieve their mandatory roles were found to be as follows:-

2.7.1 Farmers limited involvement in FTCs management

Existing FTC guidelines state that FTCs should be owned and administered by farmers. However, due to low awareness and a lack of clarity about the underlying benefits of the FTC, farmers tend to view the FTC as a government institution rather than their own. The problems are compounded by the FTC's insufficient resources, the DA's little effort to implement changes, and the FTC's use of activities unrelated to enlargement. As a result, many FTCs have been inactive. Within the FTC there are FTC administrative committees that are not functioning as intended to (Fisseha ,2009), .

2.7.2 Insufficient resources to run and manage FTCs

One reason for the FTC's poor performance is a lack of funds for operations and restructuring. For example, almost all FTCs (except those supported by projects or NGOs) do not have sufficient funds and space for practical training, establishment of demonstration areas and other basic infrastructure and facilities such as basic furniture, farming tools, ICT and training materials. Most FTCs are not serviced or repaired in a timely manner (Seyoum,2013).

Poor business plans in the FTC and large skills gaps in the FTC-MC and DA have exacerbated resource constraints. Furthermore, there is very little support and pressure from local and regional authorities. In particular, this was not enough in terms of value-added management of physical and financial resources, technical advice and regular monitoring to keep the FTC functioning properly. The FTC should not generate any revenue of its own. Income providers had no legal right to the reuse of the income they generated. However, recent efforts have been made in several regions to be able to use the revenues of these FTCs.

2.7.3 Most FTCs have no long-term plans for sustainability

Most FTCs lack a long-term vision and plans to support and contribute to agriculture. This is primarily because the FTC-MC and DA are unaware of the long-term benefits of the FTC and are limited in their ability to create and implement a business plan. Limited guidance from the FTC and hands-on support from frontline workers also contributed to the problem. In addition, stakeholders name an inadequate monitoring and control system at all levels as another major problem (Suleym,2021).

2.7.4 Inadequate incentives to motivate and retain DAs

Ethiopia has the highest ratio of DA to number of farmers in the world : MoANR, 2017). The government has trained around 83,000 DAs specializing in plant sciences, animal sciences and natural resource management (NRM). However, recent assessments by the MoANR indicate that there are now more than 56,000 qualified DAs working for the FTC. This suggests that a number of DA graduates are not interested in working in agriculture or that there is a high turnover of DAs graduates, due to job dissatisfaction. The main factors appear to be poor working conditions (inadequate housing, inadequate offices, limited means of transport, etc.). insufficient incentives and an unattractive career path with large disparities between regions, high workload and lack of a clear leadership line.

2.7.5 Limited knowledge and skill of DAs

DAs have limited knowledge and skills to properly perform their duties and responsibilities. Gaps in DAs' knowledge and skills often hinder them from providing quality extension services. Key gaps and limitations include communication and facilitation skills, participatory approaches and analysis of rural issues, development and commercialization of business plans and value chains, conflict management, data analysis and reporting. Most DAs lack the technical knowledge and skills to provide hands-on training and advisory services when needed. In addition, DAs lack the FTC leadership and managerial skills to effectively mobilize and allocate resources with active community participation to (Fisseha ,2009), .

2.7.6 Theory-bias in the training of farmers

In most cases, training for farmers in FTC is primarily crop-focused with a strong emphasis on theoretical concepts, although there have been recent changes in both scope and range of services. There is also a lack of necessary teaching materials in training, which are often one-sided, poorly organized, and not season-based and agro-ecology oriented. In addition, no

training impact assessments are conducted to identify the changes made and to take corrective action in cases where the changes are unsatisfactory.

2.7.7 Inadequate incentives for model farmers

The Extension System utilizes relatively better-equipped model farmers and early adopters to test and disseminate improved technologies and best practices both at the FTC and on their own farms. However, it is believed that these farmers can improve the scale of extension by helping other resource-poor and innovation-resistant farmers. However, model farmers complain that they are not paid for the time and energy they put into helping other farmers. In addition, there is also a lack of clear guidance on identifying and encouraging the use of model makers to test innovations and share their knowledge and expertise with other farmers. As a result, there is an inconsistent and unpredictable reward mechanism. to (Fisseha ,2009),

2.7.8 Budget constraints.

Hailu (2014) various efforts, funded by the government, donors and NGOs, aim to improve both the training centers` programs and their ability to generate their own income. Their ability to do so depends heavily on the abilities of the management committee and the extension agents. However, shortage of funds is a serious problem negatively impacting the activities of farmer training centers.

Widespread illiteracy among farmers, and limited funding and staff skills, constrain the centers` ability to deliver training and other services. The centers try to complement their training courses with practice-oriented activities such as demonstration sites, field days and exhibitions. However, FTCs struggle financially on every day basis due to lack of per diem for staff and shortage of money to provide facilities for training (e.g., training manuals). Also, affecting the operation of FTCs is rapid turnover of extension agents resulting from poor incentive packages. Development agents are frequently transferred from one place to another while others leave the service to work with NGOs or private companies (seyoum ,2013).

Administrative and political interference by local officials, for example, by ordering the staff to call farmers for meetings to disseminate political indoctrination is a serious concern among DAs. Tired of such events, the farmers often decline invitations to other types of agricultural extension-oriented meeting. Such duties also cut the time that staff has to support the farmers. The local administration should use other channels to reach its political constituents.

Links between the training centers and other service providers (notably cooperatives, private enterprises and research agencies, larger-scale farmers) and actors such as commercial farms, still require improvement. The management committees can also coordinate better with the

innovative farmers who are involved in farmer-to-farmer extension, to understand agricultural extension in an integrated manner.

2.8 Agricultural extension services in Ethiopia: An empirical review

In the Ethiopian context, various local studies have also been carried out in the field of agricultural advisory services in farmer training centers in different fields. For example, Fissha (2009) examined the problems and prospects of farmer training centers The Case of Adaa Woreda East Shewa Oromia Region. The study focused on the current status of the FTC, identified opportunities and limitations of the FTC, and inquired about farmers' views on the mandatory roles of the FTC in Adaa woreda. The results showed that the organizational and operational status of the FTC was poor. Woreda has tremendous opportunity and potential for FTC development. Respondents said that low community participation, high dropout rates and non-extension work load, lack of budget, lack of training materials and high expectations of farmer benefits as the main obstacles. Therefore, the woreda should take into account the sociocultural, institutional, economic and general constraints that hinder the establishment of farmer training centers.

Furthermore, Merihun and Endries (2015) analyzed farmer training centers through integrated innovation capacity development and technology transfer in Damot Gale District Woliata Zone. The results show that none of the farmer training centers were damaged or out of service. However, looking at the internal facilities, most villages lack housing for development agents, electricity and television to the extent required. In addition, there are no suitable teaching materials, no technology, no workshop, no field equipment and no electricity. The observed villages have neither a market nor a clinic. Similarly, Abera (2021) assessed the determinants of farmers' participation in continuing education at an agricultural education center in Ethiopia. The result showed that education, land size, contact DAs, access to a road, property, and livestock status within a household positively influenced families' decision to participate, while distance from the FTC negatively influenced families' decision to participate. . FTC-based training on corn, green bean and coffee productivity has shown positive results.

Tsegamariam (2021) studied the impact of training at a farmer training center on key crop productivity and household well-being in the case of the Gurage Zone of southern Ethiopia. The result shows that the frequencies of advisory contacts and the farmers’ trust in the advisory services have a significant impact on the crop productivity of trained and untrained

farmers. Trained farmers were found to have higher net income per area than a counterfactual scenario of untrained farmers; and that consumption expenditure per adult increases for trained farmers compared to the counterfactual scenario for untrained farmers. A major limitation was the problem with the fence. The study recommended that modular training courses in farmer education centers can be seen as a key path that contributes to improving agricultural production and the well-being of the rural community.

Looking at the studies which have been undertaken so far, only a few of them provide insight into Farmer Training Center-related issues. Hence, to the best of the researcher knowledge, no research has been done to examine the perception and experience of farmers` with farmer training center-based agricultural extension services in Ethiopia context in general and in conventional in Antsokia Gemza woreda in particular, thus there are knowledge and research gaps. Based on the aforementioned arguments, it was for this reason why the researcher had been motivated to do or conduct a study on the topic

2.9 Theoretical framework for the study

The theoretical framework that guided the study is built on the concepts, theories and facts provided in the preceding literature review sections on perception and experience of farmers` on farmer training center based agricultural extension services. The framework is used to examine issues related to perceptions and experiences farmers had about farmer training centers (FTCs) and how the extension services provided. For this study, only two theories are discussed and presented below.

2.9.1 Extension theory

Extensional science evolved from rural sociology and over time has become increasingly associated with social psychology and communication cited in Olayemi (2021; Roling, (1988). Traditionally, it has been assumed that all farmers will eventually see the benefits of new innovations and will therefore adopt them. Therefore, opinions and measures of innovation success were based on the level at which the innovation was introduced. Another goal was to increase adoption rates by communicating information about the innovation through farmers' social networks. This structured and formal process of actively communicating such information is called extension and is essentially a process of voluntary behavior change through communication. The purpose of the extension is to define how information about a new innovation is communicated to a specific population (e.g. farmers)

for adoption. The challenge of the extension is therefore to design a suitable communication channel.

Over time, the term extension has also been used in the field of agricultural extension to encompass all areas such as extension, guidance, technology transfer, research, training, marketing, industrial development, learning, change, communication, education, attitude change and information gathering. And outreach, development, facilitation, or self-help activities undertaken to bring about positive change on farms and in agriculture Fulton et al., (2003). Traditional extension models have been widely accepted but failed to adequately explain farmer adoption behavior.

2.9.2 The Unified Theory of Acceptance and Use of Technology

The Unified Theory of Acceptance and Use of Technology (TAUT) was developed by Venkatesh et al. (2003).This has four key factors in the intention to use information technology; these are (1) performance expectancy, (2) effort expectancy, (3) social influence, and (4) facilitating conditions. They all have implications and have been formulated theoretically in the TAUT formulation, whose main purpose is to determine user acceptance and behavior related to the use of technology. These four constructs are defined as follows:

Performance expectancy: The degree to which the user expects that acceptance and usage of the system will help him attain higher yields in agricultural produce Venkatesh et al.(2003). Interestingly, this new construction has five source constructs from the other theories (Technology Accepted Model and Social Cognitive Theory) and models: perceived usefulness, extrinsic motivation (theory/model), relative advantage (theory/model), and outcome expectations (theory/model) Venkatesh et al., (2003) Long, (2005).

Effort expectancy: The degree of ease connected with the acceptance and usage of the system.

Social influence: The extent to which an individual perceives that important others believe that he or she should use the new system Venkatesh et al.(2003)

Facilitating conditions: The age and experience of an individual influence the usage of a system. Basically, the moderators of this model are voluntaries, and experience Samaradiwakara and Gunawardena, (2014).

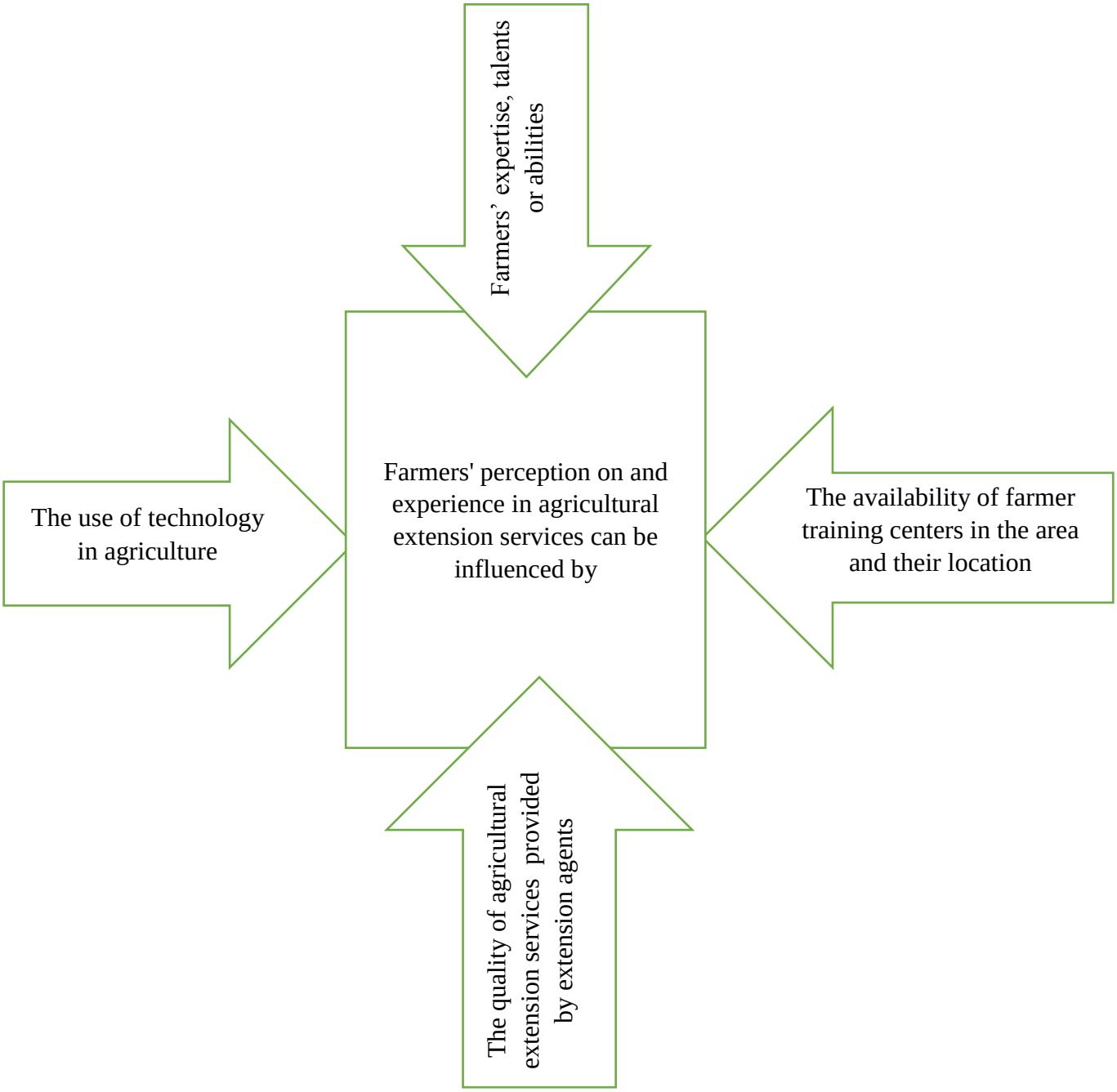
The TAUT also provides a refined view of how the determinants of intention and behavior change over time, however, most of the relationships in the model are moderated Venkatesh

et al., (2003) Kriponant, (2007). This study uses key elements of the extension theory and TAUT as both have been useful theoretical tools to understand agricultural extension services in an integrated manner.

2.10 Conceptual Frame Work

To achieve agricultural development in Ethiopia, extension services play crucial roles. One of the development strategies of the country`s extension service is establishing FTCs in each rural kebele around the country. The main responsibility of these centers is to create modern farmers with skills and knowledge using new improved agricultural technologies to enhance agricultural development. To achieve this goal, FTCs are expected perform effectively their duties and responsibilities by identifying the problems facing smallholder farmers.

This study investigates the perception of farmers related to the services and factors affecting the performance of FTCs in agricultural development through practical situations and field observations. Farmers' perceptions and experiences about FTCs are influenced by different factors including, but not limited to, location of FTC in relation to farmers residence, motivation to used technology, quality of extension services provided by FTCs, and farmers own indigenous knowledge to help them adopt new agricultural technologies. These issues are shown in Figure 1.



Finger 1 conceptual frame work

CHAPTER THREE

RESEARCH METHODOLOGY

This chapter describes the approaches and methods employed for data collection and analysis. The first section presents a description of the study area. Then, the details of the methodology to be used to conduct the overall study are discussed, such as the sampling procedure and techniques, the method and instrument used for collecting data pertaining to each of the specific objectives, and the method employed for data analysis and presentation.

3.1 Description of the Study Area

The study was conducted in Antsokia Gemza Woreda, which is one of the 27 woredas in North Showa Zone, in Amhara Regional State, and is located about 346 km from Addis Ababa, the capital city of Ethiopia, and 552 km from Bahr Dar, political and administrative center of Amhara Regional State, as well as 216 km from Debre Birhan Town, the center of North Shewa Zone, which is found in the north of the country. Antsokiyana Gemza is bordered on the south by Efratana Gidim, on the southwest by Menz Gera Midir, on the west by Geshe, and on the north and east by the Oromia Zone. The woreda is located between 10.35 N latitude and 39.83 E longitude. The administrative center is Mekoy.

The total land area of the woreda is 25,400 hectares, and out of these, 17,500 hectares of land were under cultivation in 11 rural kebeles and one woreda town. In the woreda, at each kebele, FTCs were constructed. None is fully functional according to MoARD measurements, but by considering the context, 4 are functional, and the rest 7 are semi-functional. The Woreda has the potential for crop, livestock, and natural resource production. The Woreda receives a mean annual rainfall varying from 900 to 1200 mm, and its altitude ranges between 1386 and 3619 m above sea level. The average annual temperature ranges from 10–22.5 c, and this shows that the study area can be classified under the Dega, Woina Dega, and Kola agro-climatic regions AGWAO (2018).

In general terms, the climate and location of the region, the amount of rain it receives annually, as well as the availability of underground and surface water in the lowlands, have made farmers benefit more from irrigation. For example, the lowlands have three harvests time per year. The types of crops and permanent vegetables produced in the district are sorghum, teff, corn, barley, peas, and beans, and fruits and vegetables such as onion, sweet potato, cabbage, tomato, banana, papaya, mango, orange, sugarcane are produced.

Although the district focuses on the production of crops and live stocks especially in the three kola Kebeles, a semi-pastoral society. It is also convenient for animals. Therefore, the district has done mixed farming activities. On the other hand, the district has better climate and water supply, but the arable land is so small that when young people lose the option of plowing, they migrate to the Middle East countries, especially Saudi Arabia, through illegally in search of a better life. This has made the district one of the first districts where many young people migrate from eastern Amhara. This incident indicates that the district is blessed by nature and has a lot of water options but not used totally and perfectly.

Based on the woreda plan department information, the total population of the woreda is estimated at 65,638 people: 33,475 males and 32,163 females. From this, the rural population is 41,909: 20,966 males and 20,943 females. There are 8684 households in the woreda AGWAO(2018).

The majority of the inhabitants were Orthodox Tewahdo Christians, with 74.35% reporting as their religion, while 23.83% of the population were Muslim and 1.81% Protistans. The two largest ethnic groups reported in Antsokiyana Gemza were Amharas (97.63%) and Oromos (2.25%); all other ethnic groups made up 0.12% of the population. Amharic is widely spoken as a first language by 97.59% of the population followed by Affan Oromo language, 2.31% AGWAO(2018)

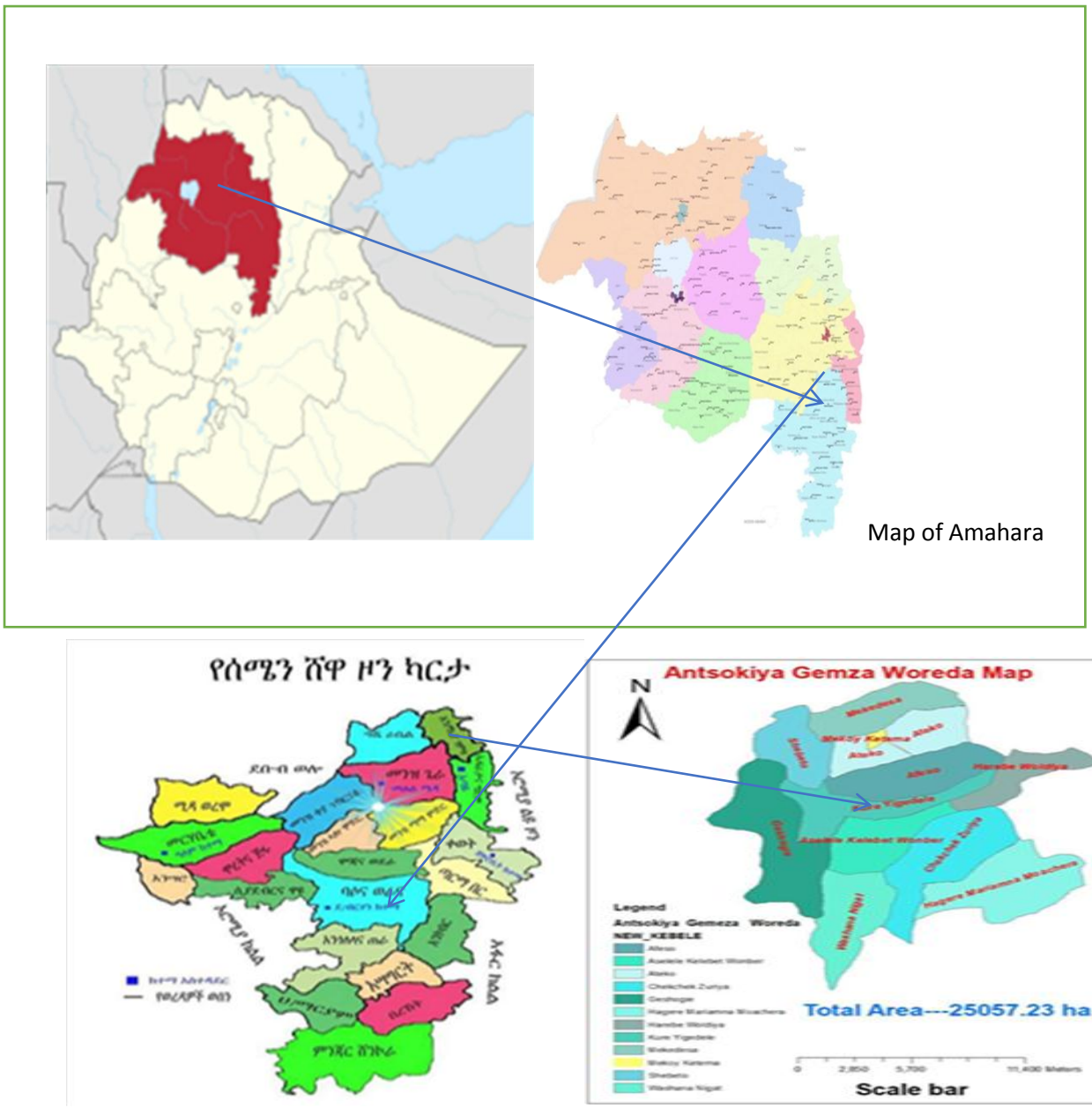


Figure 2. Location map of the study areas.

Source: GIS software

3.2 Research Design and Approach

To achieve its objective, the study adopted a descriptive survey research design. Because the intention of the study was to assess the existing situation of FTCs and describe the opinions of the participants, this design is concerned with conditions, opinions that are held, processes that are going on, and trends that are developing (Best and Kahn ,2003).

In this study, the researcher also employed mixed research approaches, which were appropriate for the study, to gain a deeper understanding of the issues involved. With the mixed approaches to research, I incorporated methods of collecting or analyzing data from the quantitative and qualitative research approaches in a single research study(Johnson and on wuegbuzie, ,2004)..

Creswell and Clark (2011) comment that this approach enables a greater degree of understanding to be formulated than if a single approach were adopted for specific studies. Furthermore, they also put forward a collection of core characteristics that highlight key elements within mixed-methods research. They stated that researchers collect and analyze both qualitative and quantitative data in a sequential and/or simultaneous and rigorous manner that integrates the two forms of data.

Therefore, both qualitative and quantitative research approaches were employed that used a combination of primary sources (questionnaire, interview, and focus group discussion) as the data collection tools. Hence, the quantitative data that was collected through a closed-ended questionnaire was analyzed quantitatively in terms of frequency and percent, whereas the qualitative data that was collected through interviews, observation, and focus group discussions was analyzed qualitatively in terms of narration.

3.2.1 Target Population

The service users (farmers) and service providers (extension workers) of Antsokia Gmza Woreda populations were the target population of the study, with both of them selected through multistage and simple random sampling techniques from the four kebeles and woreda agricultural offices as a sample. In the case of qualitative interviews, the informants were selected purposively.

- **Inclusion criteria:**

  The participants selected by multistage and simple random sampling techniques were household-headed farmers, kebele agents, and woreda agricultural office experts and office heads, found in selected kebeles and woreda offices in Antsokiya Gemza woreda.

- **Exclusion criteria:**

  Not all of these farmers, kebele agents, and office experts were included in the sample found in Antsokiya Gemza Woreda. The reason why they excluded was a shortage of time and budget, and because the population was huge, it was difficult to manage in the study. Therefore, the researcher used multistage and simple random sampling techniques to avoid the problem; hence, they were excluded.

3.3.2 Sample size and sampling techniques

For this study, a multi-stage sampling procedure was employed to select the samples. According Levine, (2014). multistage sampling is a sampling method that divides the population into groups for conducting research. To manage the large population, significant clusters of the selected people are split into sub-groups at various stages to make it simpler for primary data collection. Multistage sampling is flexible, cost effective and easy to implement. You can use as many stages as you need to reduce the sample to a workable size, with no restrictions on how you divide the groupsFirstly, Antsokia Gemza Woreda was selected purposively from 22 rural woredas found in North Showa Zone; the reason to select this woreda was that there had been no study conducted so far in this area and the researcher knew every aspect of the woreda. Secondly, discussions with woreda agriculture experts stratified all 11 FTCs established in the woreda into two categories, i.e., functional and semi-functional, based on their status. There were five functional and six semi-functional FTCs. From these, the researcher selected purposively 2 FTCs from functional and 2 FTCs from semi-functional.Consequently, together with the DAs, farmer respondents were selected from the lists of trained and untrained farmers (those who have taken either modular or short-term training and those who have not) from the selected FTCs.

Finally, based on the household numbers, trained and untrained respondents were selected by using a probability proportional to the simple random sampling method. In all 11 kebeles, there were 8684 house-hold heads (6037 male and 2647 female).Among these, four (4) kebeles were selected randomly, and in the selected four kebeles, there were a total of 2875 households (2160 male and 715 female). From 2875 households, 1,560 were trained and 860

were untrained, and the respondents included both females and males.Yamane's (1967) formula was used to calculate the sample size for proportion. A 92% confidence level and a percussion score of 8% are assumed.

$$n = \frac{N}{1 + N(e^2)}$$

Where :

n= sample size required

N = number of people in the population

e = allowable error (%)

$$n = \frac{2875}{1 + 2875(0.08^2)}$$

$$n = \underline{148}$$

Based on the above formula, 148 farmer participants (trained and untrained farmers) were selected from each sampled kebele using the above sampling technique. Used supporter respondents for specific area of the research those are DAS.

In addition, the researcher used other respondents to collect data through different methods. Accordingly, six (6) key informants (4 kebele agriculture office heads, 1 woreda extension department, and 1 woreda office head) were selected using purposive technique for the purpose of interview.

Table 1: Distribution of sampling unit and sample respondents from to Kebeles (household head)

No	Total population	Sample size		
		M	**F**	**Total**
1	Farmers	82	55	137
2	Kebele agriculture office heads	4	-	4
3	Woreda office head	1	-	1
4	Woreda extension department	1	-	1
5	FGD members	**12**	**15**	**27**
Total		**100**	**70**	**171**

3.4. Sources, Methods, and Instruments of Data Collection

The study used primary data collection tools. The primary data are collected fresh and for the first time, and thus are original in character. The researcher would have to decide which sort of data he/she would be using (and thus collecting) for his/her study, and accordingly, he/she will have to select one or the other method of data collection (Kothari, 2004). In this study, both qualitative and quantitative methods of data collection were employed to collect appropriate data. Data was collected through quantitative (a questionnaire) and qualitative methods (key informant interviews, observation, and focus group discussions); the details are as follows.

3.4.1. Quantitative data collection instrument

Questionnaire: A questionnaire was used as the main data gathering tool for this study.

The questionnaire is viewed as a primary research tool for researchers to gather data from a target audience. Questionnaires allow the collection of both subjective and objective data from a large sample of the study population in order to obtain results that are statistically significant, especially when resources are limited. It is a good tool for the protection of the privacy of the participants (Abawi, 2017).

Accordingly, data was collected using a self-administered survey questionnaire, distributed to 160 respondents 148 farmers but only 137 returned it. Hence, a combination of both closed-ended (the majority of the question items with pre-coded responses) and some open-ended

questionnaire items (so as to enable the participant to freely express their feelings without any restriction) were prepared and included. This allowed researchers to collect data that was quantitative and qualitative in nature, depending on their needs. In the study, a survey questionnaire was important for the analysis of FTC-based extension services, current status, and the contribution of FTCs to development.

The questionnaire items were developed by reviewing relevant literature from previous studies and were constructed and administered in Amharic, since my respondents' local language is Amharic, and in English for analysis purposes. During data collection, due attention was given to the respondent's educational level; the researcher and enumerators made clarifications and gave orientation to the respondent who had the ability to read and write on what they had to do, and followed up when they answered all the questions. The researcher and enumerator, on the other hand, used semi-structured interviews to collect relevant data from those who could not read or write. In the study, the survey questionnaire will have an important role in analyzing FTC-based extension service, current status, and the contribution of FTCs to development.

3.4.2. Qualitative data collection instrument

In this study, key informant interviews, observation, and focus group discussions were used to collect the qualitative data and triangulate the data collected through the questionnaire.

Key Informant Interview

Among the important sources of data collection methods, key informant interviews were used in the study for triangulation purposes. Key informants are people who know a lot, at least about their domain, and are willing to share their knowledge with the researcher. The informants talk with the researcher for relatively longer hours about an issue Bernard, 2006).

For the purpose of this study, a key informant interview was used to examine the perceptions and experiences of farmers about FTCs, their current status, and the contribution of FTCs in the area. People who had more information about the problem from sample kebeles and woreda offices participated. Accordingly, a personal (face-to-face) interview was conducted with six key informants in total (4 from the kebele agriculture office head, 1 from the woreda extension department, and 1 from the woreda office head) and was used as a source of information. For this purpose, the unstructured interview was used because it allowed the researcher to go beyond systematically prepared questions about the farmers and FTC's institutions

Focus Group Discussion (FGD)

According to Peter and Zumanna (2017), a focus group discussion (FGD) is a qualitative research method and data collection technique in which a selected group of people discusses a given topic or issue in depth, facilitated by a professional, external moderator. This method serves to solicit participants' attitudes and perceptions, knowledge and experiences, and practices, as shared in the course of interaction with different people. The technique is based upon the assumption that the group processes activated during FGD help to identify and clarify shared knowledge among groups and communities, which would otherwise be difficult to obtain with a series of individual interviews. Yet, this method does not presume that A) all the knowledge is shared equally among the studied group or that B) in each community there is a common, underlying, homogeneous knowledge. Rather, FGD allows the investigator to solicit both the participants' shared narrative as well as their differences in terms of experiences, opinions, and worldviews during such 'open' discussion rounds.

In this study, the researcher used four groups, meaning one from each sampled kebele, to get more information and understand people's perceptions and knowledge about the problem. The groups had 6–8 members that included both male and female discussants selected purposively from the sample farmers.

Field Observation

Field observation was conducted throughout the whole process of the research in order to ensure the validity of the information. Under the observation method, the information is sought by way of the investigator's direct observation without asking the respondent. This method is the most commonly used technique for collecting primary data. The main advantage of this method is that subjective bias is eliminated and the information obtained under this method relates to what is currently happening Kothari (2004). Therefore, field observation also played a crucial part in enriching and triangulating the information gathered through the foregoing data collection methods, particularly the questionnaire and key informant interview, since it helped to understand the perception and experience of farmers about FTCs and helped to catch the situation on the ground. In this regard, photographs and notes were taken during observation as the investigator conducted frequent field observations by using the check lists.

3.5 Methods of data analysis and presentation

The study used both quantitative and qualitative methods of data analysis. The data that was collected through a closed-ended questionnaire from the sample respondents was entered into the SPSS version 20 software program and analyzed by descriptive statistics (frequency and simple percentage) to describe the perception and experience of farmers towards FTCs, their current status, and the contribution of FTCs to development. On the other hand, the qualitative data that was collected via open-ended questionnaire, from the key informant interview, observation, and focus group discussion, was combined and synthesized in a meaningful pattern and analyzed qualitatively in narration, using appropriate words corresponding to the research questions. The data was translated from Amharic into English and also transcribed for analysis purposes. The transcribed data was carefully read, examined, verified, and edited several times. After the translation was finished, every piece of data related to the research questions was coded to generate issues and ideas from the participants. The quantitative data was presented in the form of tables, and at the end, the findings of the study were summarized, and a conclusion and recommendation were forwarded accordingly.

3.6. Ethical consideration

To give priority to the respondents' welfare, major ethical considerations were made while conducting the study and the researcher obtained this support from Addis Ababa University's Sociology Department. Then, all the target population the woreda agricultural office head and experts, kebele extension agents, and farmers were informed about the investigation, and consent was obtained. Accordingly, the following ethical considerations were performed sequentially: First, the researcher made the objectives of the study clear to all respondents and participants in the language they understood. Second, all respondents were informed about all the possible suffering they may experience during the process of data collection procedures. Lastly, informed consent was obtained from all respondents and participants.

CHAPTER FOUR

ANALYSIS, INTERPRETATION AND PRESENTATION OF DATA

This chapter presents the analysis, interpretation and presentation of data collected through different data collection instruments. The data that was collected through close-ended questionnaire from the respondents was analyzed using descriptive statistics (frequency and simple percentage). On the other-hand, the qualitative data that was collected via open-ended questions, key informant interviews, observations, and FGDs, was - analyzed qualitatively in narration and thematic manner. A total of 148 questionnaires were administered to the respondents. Out of which, 137 questionnaires Farmers=137 were properly filled. Hence, the analysis used data collected from 137 respondents.

4.1 Background of characteristics of the respondents

In this section, sampled respondents' background characteristics are presented and described. These include sex, age, educational level, marital status, family size and size of land holding. Tables 2, 3 and 4 provide information on these features of respondents.

Table 2: Demographic characteristics of the respondent farmers (sex and age) of (N=137)

No	Characteristics	Category	No	%
1	Sex	Male	82	59.9
		Female	55	40.1
		Total	137	100
2	Age	below 30 years	3	2.2
		31-35	28	20.4
		36-40	77	56.2
		41 and above	29	21.2

Source: Questionnaire Survey, 2022

In order to provide a clear picture about the respondents who were involved in the study, the sex distribution and age are presented in Table 2 above. Considering sex, 82(59. 9%) of the respondents were males; whereas 55(40.1%) were females. The age groups were categorized into four; the first below 30 years, the second 31-35 years, the third age group 36-40 and the fourth was 41 years and above. Therefore, out of 137 farmer respondents who participated in the study, 28(20.4%) of them were aged 31-35 years, while 77 (56.2%) of them were aged 36-40 years. The rest, 29 (21. 2%) of the respondents were aged forty-one and above. *Age is one of the household characteristics important to describe farmers and can either generate or erode confidence in new technology and learning new things, that is, with more experience or confidence a farmer can become more or less risk-adverse (cited in Lucia Take, 2010). .*

Table 3: Demographic data (Educational level and marital status) of the Sampled Farmer respondents

No	Characteristics	Responses	Male		Female		Total	
			F	%	F	%	F	%
1	Level of Education	a) Able to Read & write	37	45.1	43	78.2	80	58.4
		b) Primary (1-4)	34	41.5	12	21.9	46	33.6
		c) Primary (5-8)	9	11	-	-	9	6.6
		d) Secondary (9-12)	2	2.4	-	-	2	1.5
		Total	**82**		**55**		**137**	**100**
2	Marital status	a) Single	11	13.4	4	7.3	15	10.9
		b) Married	66	80.5	50	90.9	116	84.7
		c) Divorce	4	4.9	1	1.8	5	3.6
		d) Widowed	1	1.2	-	-	1	0.7
		Total	**82**	**59.9**	**55**	**40.1**	**137**	**100**

Source: Questionnaire Survey, 2022

As shown in Table 3, out of 137 sampled farmer respondents, 80(58.4%) of them were able to read and write. Whereas, some 46(33.6%) and 9(6.6%) of the respondents have completed primary school (1-4 and 5-8, respectively).

More specifically, the educational level showed that 45.1% of male and 78.2% of female farmer respondents were able to read and write. The figure for female farmers is found to be large due to the reason most of female farmer attended informal /adult education than formal; However, 41.5% of male and 21.9% of female farmer respondents had primary school (1-4) education. It should be noted that illiteracy is not reported among the respondents.

From the data, one can conclude that male farmers were relatively more educated (had primary education) than female farmers, the reason that female education background is low than male is the participation of female students in elementary education influenced by difference factors like, perception of parents and communities education for female child is low they focus on their son, female children get marriage early age and there is high rate of female student dropout from school are some factors in the study area. Taking into account their relative proportion to the total sample households. Increased education is presumed to enhance farmers' ability to use agriculture related information in a better way. Education increases farmers' ability to obtain and effectively use agriculture related information, the ability to participate in agricultural activities and the ability for effective use of technologies (cited in Luchia Takle, 2010). Regarding marital status, 116 respondents (84.7%) were reported to have been married at the time of the data collection. Of these, about 80.5% and 90.9% of them were male and female respondents, respectively. On the other-hand, 15 (10.9%) of them (i.e. 13.4% of males and 15% of females) were single. This shows that the men were more likely to be single than men.

Table 4: Respondents by landholding size

Land is a resource of wealth and basis of everything for farmers`. Their lifestyle and every activity are based on their lands. So having enough land indicates the life of the farmers is good.

Landholding (in timad)	Frequency	Percentage
1 and less	33	24.1
1.5-3	17	12.4
3.5 – 4	80	58.4
4.5 and above	7	5.1

Source: Questionnaire Survey, 2022

In Table 4, the majority of the farmer respondents (58.4%) reported that they have 3.5 to 4 timed of land. Land is a primary source of livelihood for rural households. That is true the farmers has larger the farm land, that crate opportunity to use different technological packages. And they enhance their productivity (Luchia , 2010).

But when we look at the land holdings in this woreda, it is very small and not enough to undertake a profitable farm activity. The reason is that the woreda has shortage of arable lands, so the arable land is not proportional to the number of farmers, and most people own less than one hectare of land, especially young people. They get lands from their family as a gift and use it. However, although we use only their main landholdings as an input for this study, but the farmers use additional lands for their activities by using land rent system.

4.2 Current status of the FTCs

4.2.1 State of demonstration fields

An important aspect of FTCs is the availability and location of demonstration fields/plots. In this regard, the respondents (both farmers and development agents) were asked about availability and accessibility of demonstration fields in the woreda. It would appear that both groups are in agreement in their views on the lack of demonstration plots in the nearby FTCs

Table 5: Respondents' views regarding demonstration fields (N=137)

No	Demonstration Field	Categories	Respondents
			%
1	Enough demonstration plots	Yes	18.2
		No	81.8
2	Distance from home	Not accessible	62.0
		Reasonably accessible	26.3
		easily accessible	11.7
3	Distance from FTC	Less than a km	-
		1-2 km	10.9
		3-4 km	27
		More than five km	62
4	Location influences participation	Very much	70.8
		much	16.8
		little	12.4
		Not at all	-

Source: Questionnaire Survey, 2022

As presented in Table 5, 81.8% of farmers reported that there were not enough demonstration plots for farmers` to undertake practical training near FTCs in each kebele in the study area. 62.0% of farmers rated distance of FTCs from home as far away and not easily accessible; 26.3% of farmers rated as it is reasonably near but not easily accessible; and only 13.8% of the respondents rated as it is near and easily accessible. About 60.5% of the respondents agreed that the average distance between home and FTCs is more than 5 km. about, 70.7% of them believed that FTCs location to where the farmers live would have an impact on their participation in trainings organized by FTCs. Thus, from this data it is evident that farmers are more likely to participate in training programs if the FTCs are located nearby home.This was confirmed by the woreda agricultural office head:

"In the woreda, the functional kebeles had one (1) hectare demonstration land (semi-functional has 0.5hectare lands). Although the FTC committee is stronger than the kebele administration in helping the FTC, they are not capable enough to properly fulfill all the required facilities*".*

Most of the farmers who participated in FGDs also indicated that there was shortage of demonstration fields in most sampled kebeles. Besides, the conditions of the majority of the FTCs were not in working order, mostly facing shortage of plots of land for setting up demonstration fields and also lack of budget to run day to day activities.

Furthermore, the filed observation result showed that among 11 FTCs found in the district, all of them do not meet the national standards' evaluation system, i.e. looking the FTCs in relation to infrastructures, types of training and all types of agricultural activities included duration of training. But the district used its own standard to classify FTCs as functional and semi-functional. Only 5 of them were found to be in a functional and 6 were semi-functional status with their activities but in terms of demonstration sites only one FTC has 1 hectare which are working perfectly supported by good collaboration between farmers and experts. Overall, it was observed that all demonstration sites had less than 1 hector. The reason is due to lack of land in the studies kebeles, unable to get land from individual farmers through compensation system.

4.2.2 Availability of infrastructure and facilities in FTCs

In terms of infrastructure and facilities at the FTCs, the location and suitability of the physical environment where FTCs are located and availability of infrastructures and training materials within the FTCs` are important indicators of the conditions of the FTCs in the study kebeles. In order for the training to be more effective and useful for the trainees, the availability of adequate materials and suitability of the physical environment are vital. These issues are examined using statements which are assessed using a rating scale of "poor "through "excellent "as shown below

Table 6: Suitability of physical environment to trainees and availability of adequate of training facilities and materials (Farmers=137)

No	Types of facilities sufficient for effective functioning of FTC	1	2	3	4	5	Mean	SD	Decision
		%	%	%	%	%			
1	Suitability of the training environment	40.9	38	19	2	-	1.82	0.812	Discomfort
2	Adequacy and quality of training facilities	40.9	37.2	19.7	2.2	-	1.83	0.818	Inadequate
3	Availability training materials	15.3	19.3	18.3	30.7	16.1	3.12	1.325	Available
4	Seats for trainees are well organized	25.5	16.8	8	34.3	15.5	2.97	1.47	Organized
5	Adoptability and affordability of technologies and farm inputs	21.9	19.7	8	22.6	27.7	3.14	1.55	Affordable
6	Reference material and teaching module	13.3	22.1	21.9	29.9	12.4	3.05	1.24	Available

Key:1 = Poor 2 = Fair, 3 = Good, 4 = Very good, 5 = Excellent

Decision Weighted Average = 2.65

Source: Questionnaire Survey, 2022

As shown in Table 6, the decision indicted that majority of the respondents agreed by affordability, ability of reference materials and highly organized In another hands some of the respondents indicated the training center is crate discomfort lack adequate training facilities. According to MoARD (2009)mentioned that about organization of the center training capacity, facility full fill the center are the major one

Key informant interviews conducted with the kebele agriculture office and the district agricultural extension office is in agreement with the above survey data: All the FTCs had road contact to district center and the maximum distance from the district center is 30 k/m, other is less than 30. But based on the district situation, 5 FTCs are better and other 6 are good. On the contrary, when we evaluate the FTC based on its goal and standard, although it started work in 1996 EC, it is not functional and there is no change."

According to who is 28 age degree holders who is kebele agricultural office head said:

"Infrastructure and budget shortage are the main problem for each FTC. There is no sufficient infrastructure, except road and the building; epically, internal material like electric, audio, video and chair. Budget is also another constraint, as there no any budget source (from district or region or national level) for FTCs. They use their own internal budget (get their own budget mostly from a few demonstrations cites by planting different plants and sell). Any stakeholders have not given any attention in terms of budget, infrastructures and also there is not interconnection between educational sector to work on professional development and to give adult education; and health sector about healthy life and also other sector like police."

Observation of the FTCs showed that only a few FTCs have infrastructure and some have less infrastructure (lack quality in construction). Most of the FTCs are not comfortable and attractive to organize and undertake training activities for farmers.

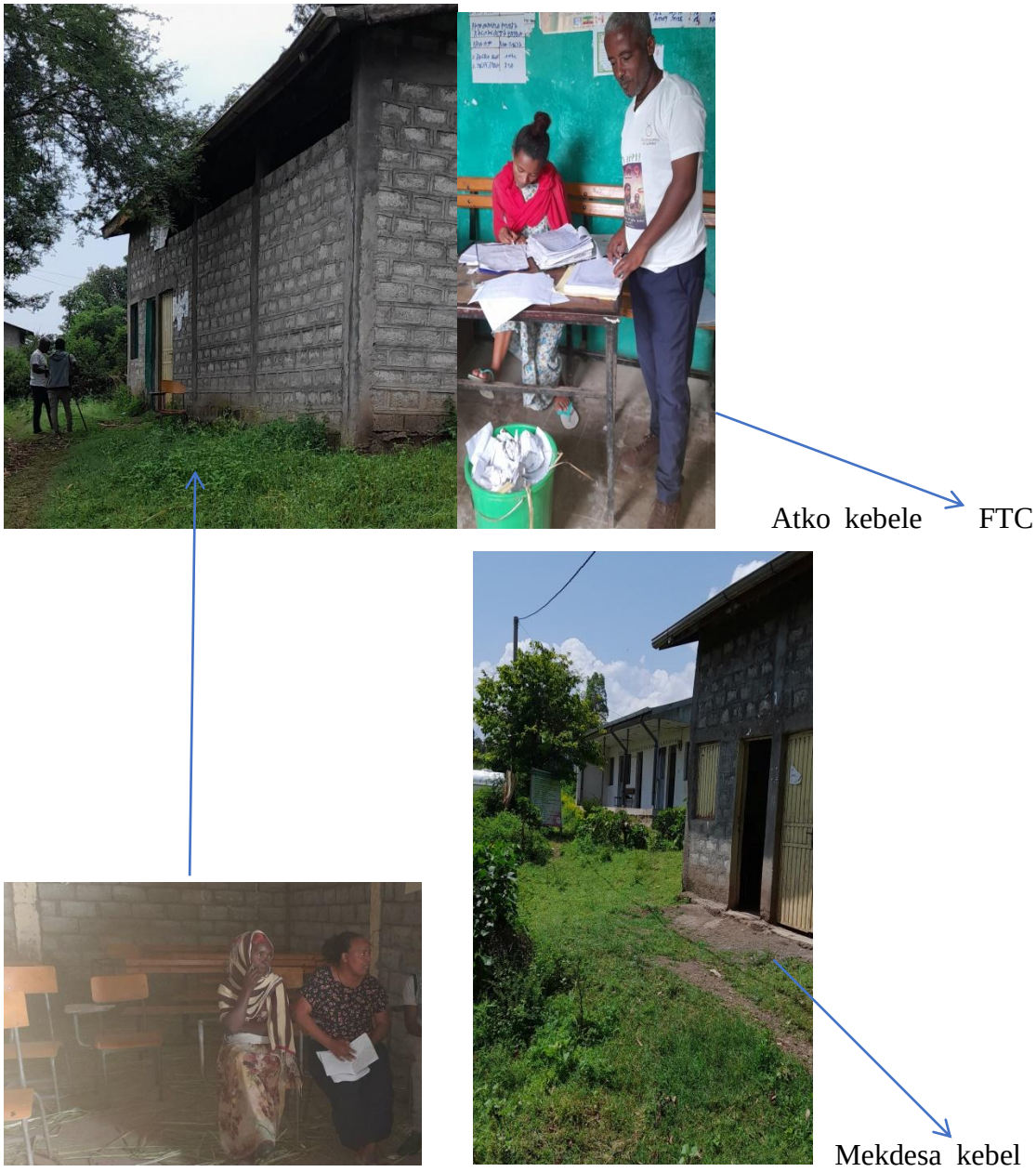


Figure 3. FTCs found in the kebele's

Source: Questionnaire Survey, 2022

In terms of availability of staff, a 35-year-old woreda extension expert said:

"There is full of human resources based on all departments: natural resource, plant science, animal science, irrigation expert, and animal veterinary. However, most of DAs are at diploma level. To improve experts' profession, there is not long-term professional development training given for DAs`, but give short term or 3-4 days training is held in related to new technology."

Overall, a comfortable physical environment has not been created for FTC to conduct training and there is lack of adequate training facilities and materials at FTCs level. Most of the FTC did not meet the relevant criteria as explained by Swanson *et al.*, (1998), in which training materials, venue or place for trainings and adequacy and quality of training facilities are identified as essential for farmers` training activity, once the training contents are identified. It is also good to use a variety of training materials and methods throughout a training to maintain the interest of the trainees. In line of this Seyoum (2013) reported that the responses elicited from DAs and Woreda extension team helped the researcher to capture that lack of facilities, and teaching materials forced DAs to focus on theoretical training. Furthermore, most training was based on resources that were found near FTC, such as nursery sites.

4.2.3 FTC training implementation process

4.2.3.1 Selection criteria for farmer trainees

One of the selection criteria used by FTCs to train farmers is to consider an appropriate representation of different participants like woman, youth, adults, and so on. Besides, the training become can effective in terms of positively impacting the trainees if it is based on their interest, knowledge

Table 7: Farmers' responses regarding trainees' selection criteria

No	Selection criteria		Respondents (n=137)
			%
1	Is there a clear criterion?	Yes	39.4
		No	60.6
2	selection criteria	blood relationship	5.1
		Educational status	8.1
		Being a model	14.5
		Political influence	18.2
		Based on farmers 'needs	3.6
		Based on wealth	2.1
		Not well-known	48.1

Source: Questionnaire Survey, 2022

It is noted that the main criteria used to select the trainee farmers should be according to the guideline of FTCs training manual, which educational background, gender, initiative, age ,include different economic and regional status (MoARD 2009)

As shown in Table 9, 60.6% of farmer respondents confirmed that there is no clear criterion for selecting farmers for training; through, 18.2% farmer respondents indicated that the selection is often based on political influence and being model farmers. This indicated; not clearly the selected; that identified in the manual In this regard, Hailu (2014) supported this findings that the selection criteria is focus on out of the manual especially personal and political relationships

4.2.3.2 Training needs assessment process

Training of farmers in the areas of agricultural technology adoption can become effective if attention is given to the needs of the trainees. The aim of the training is to improve and enhance knowledge, skills, and practices of farmers. In order to deliver effective training for farmers, it is necessary to understand the training needs of the farming community. Training Needs Assessment is the method of determining whether the training need in the farmers or

to know what training is required to fill the gap. So in this table we see what look like their experience and practice about training need assessment at study area.

Table 8: The response of farmers on the practice of training needs assessment process at the FTCs level in the study area (N= 137)

No	Items	Yes	No
		%	%
1	Needs are assessed, identified and consulted	32.1	67.9
2	Consultation is made on need, knowledge and interest	14.6	83.9
3	Presence of regular training at FTC level	44.5	55.5
4	Have you ever taken any training at the FTCs?	66.4	33.6

Source: Questionnaire Survey, 2022

As depicted in Table 10, respondents were asked to indicate the process of training needs assessment and presence of training program at the FTCs in the study area. The majority of farmers (68%) indicated activities related to training need assessment are not often done at the FTC level as part of the process of selection of farmer trainees

About 83.9% of farmer respondents responded that consultation was not made on need, knowledge and interest of farmers. Similarly, 55.5% of farmer respondents indicated that there was no regular training for the farmers at the FTCs level. On the other-hand, respondents confirmed that 66.4% of farmer ever taken training at the FTCs level in the area. In line of this Seyoum (2013)and Suleymen (2021) reported that before the held the training held there is not the process of need assessment. This indicates that extension plan is made top-down without any information gathered from farmers, as such, the plan may not meet the demand of farmers, and farmers just implement the plan.

4.2.3.3 Types of training given by FTCs

The trainer should agree on the objectives and the outcome of the training . It is a useful technique for the trainer to refer to the course objectives at key times in the course to ensure that the trainees recognize how the training is progressing towards achieving the objectives. When participants know what is expected of them and know the what input add with their previous knowledge (Luchia, 2015)

Table 9: The response of farmers on types of training they taken at FTCs (N=137)

No	Types of trainings given Categorical	Yes	No
		%	%
I	**Crop production technologies**		
1	Preparation/application of compost and manure	59.9	40.1
2	Use of inorganic fertilizer	50.6	50.4
3	Use of improved seed	21.1	78.8
4	Proper cropping calendar and fruit husbandry	11.7	88.8
5	Timely weed and pest management	30.7	69.3
6	Irrigation and water management	21.9	78.1
7	Tillage practices	18.2	81.1
8	Row planting	55.5	44.5
II	**Livestock production technologies**		
9	Cattle, sheep and goat fattening	15.3	84.7
10	Livestock housing	19	81
11	Dairy and poultry production	16.8	83.2
12	Beef production	15.3	84.7
13	Modern beehive	13	86.9
14	Stall feeding/zero grazing	19	81.9
III	**Natural Resources management**		
15	Soil and water conservation practices	21.2	78.8
16	Forest management practices	11.7	88.3
17	Improved stove use	29.9	70.1
IV	**Other social issues**		
18	Use of Credit	21.9	78.1

Source: Questionnaire Survey, 2022

As presented in Table 9 above, respondents` were asked to rate their level of agreement on the types of trainings offered at FTCs in their locality in the study area. Hence, the first category of training was related to crop production technologies. In line with this, about 59.9 % of farmer respondents agreed that the types of the training provided were focused on preparation and application of compost and manure. Similarly, 55.5% of farmers rated on row planting. In other hand majority of the respondents rate ‘’no’’ in relation to preparation of crop production

In relation to livestock production technology majority of the respondents answered ‘’no’’ cattle, sheep and goat fattening 84.7%, beef production 84.7%, modern beehive 86.9%. and in the same way on natural resource management . soil and water conservation practices 78.8%,forest management practices 88.3%, improved stove use 70.1% also rated ‘’no’’ this indicated that FTC based training do not give attention for livestock and natural resource in other words those are not full fill all the packages. HAILU (2014) reported that FTCs are focus on agronomy parts of the training than they used their efforts to include all other packages’. This indicates that the training delivery was not well performed and mainly focused on agronomy parts

One of the key informants interviewed stated: “*When we see the training system, sill now, the required efforts are not exerted to give module based, long and middle term training (like conference mode) at FTCs level”.*

Regarding FTCs, an expert working in the woreda agriculture extension department said:

> “The FTC implementation status has difference from kebele to kebele. Most FTCs focus on plant science work and implement from other departments. Only a few trainings are conducted at selected kebele level, focusing on plant science production, like new seed promotion. The only action performed well was considered as experience shearing between model farmers to farmers and from model kebele to other kebeles. Most farmers were beneficial with this practice, as they gained more knowledge from model farmer than FTC”.

Farmers who participated in FGDs argued that there is no standardized/modular training program, though, short-term and conference-style trainings are sometimes offered by FTCs. Some informants stressed that it is good to work on female farmers and young farmers, as they are underrepresented in most agricultural extension activities by DA's. These groups are likely to have different needs because of their situation in the community. A research

indicated that it is important to incorporate farming practices that address the pressing problems/needs of farmers` and indigenous knowledge to the training was very important for the achievement of the relevance of trainings to ensuring new knowledge, experiences, concepts and skills of farmers. (Kolawle 2011).

4.2.4 Training content and mode of delivery

Among the things that should be considered and done in order to give any training are content and mode of delivery. Content of the training is one of the important aspect to be considered in the process of human resource development. Training content should connect with training needs of the farmers. Training plan or curriculum and training programs should correspond with the content of the training. Duration, proportion, seasons, techniques and styles of the training are very important training methodological aspects that can affect the effectiveness of modular training.

Table 10: Respondents responses on the training content and mode of delivery at FTCs level in the study area

No	Items	Categories	Respondents (n=137)
			%
1	Training methods used	Class room lecture	35
		Group discussion	18.2
		Training and visiting demonstration fields/model farmer	40.9
		Farmer to farmer experience sharing	54.7
		Is more theoretical	22.6
		Balanced theory and practice	13.9
2	Preferred mode of delivery	With interval	78.1
		Continuous	21.9

Source: Questionnaire Survey, 2022

As shown in Table 10, concerning the main training methods used by trainers, about 54.7% of farmers indicated that farmer-to-farmer experience sharing was used as major methodology; followed by training and visiting demonstration fields/model farmers (44.9%) and classroom lectures (35.3%) and 78.1% respondents choose interval mode of training time.

Generally, the data showed that most of the training was theoretical (lecture) with limited experience in field demonstration type of training. This finding is in agreement with Adebaby et al., (2017) , HAILU (2014), in which, they explained that the most challenging issues in FTCs based training were methods of training focus on mostly on classroom lecture but to help and develop farmers skill it should support by demonstration.

Regarding content of issues covered during training, relevance is a concern with the degree to which the rationale, objectives and expected impact of a training activity are achieved or remain pertinent, valid and significant with regard to long-range objectives or identified priority needs and concerns (Bekelech, 2014).

Table11: Responses of farmers on the relevance of FTC training on contents and timing issues at Antsokia Woreda context (N=137)

No	Item	Yes	No
		%	%
I	**Relevance of training content and activities/process**		
1	Relevant & based on farmers' needs	40.9	59.1
2	Harmonization of content for farm operations	33.6	66.4
3	Incorporates indigenous farming knowledge and practices	48.9	51.1
4	The training process considers FTC training and adult learning principles	40.1	59.9
5	The trainees are actively participating in training	37.2	62.8
6	The facilitators' ability is good	31.3	68.6
7	Regular follow up and evaluation system	28.5	71.5
8	Satisfaction with the training provided at FTC	33.6	66.4
II	**Period, duration & schedule or timeliness of training**		
9	The time is Sufficient	32.8	67.2
10	The time or season/ schedule is convenient	35	65

Source: Questionnaire Survey, 2022

As shown in Table 11, the study participants were asked about their views on the relevance of FTC-based training content in terms of some attributes, the process of training and training period (duration and schedule) in the study area.

About 71.5% of farmers revealed that the learning experience was not reflected and rooted in the local context and indigenous knowledge, the training process was not considered FTC training and adult learning principles, regarding the duration of training time 67.2% farmers confirmed that sufficient time was not given for the training and the training time or season/schedule was not suitable for the trainees 65% of farmers at the FTCs in the study area.

Moreover, the interview data supported that the duration of training system is short (not more than 3-15 days). But farmers appeared to be less concerned about the short duration of the training programs since valuable information is shared and disseminated in such a short training time. Data collected from focus group discussion (conducted with trained and untrained farmers) further indicated that: ``*Even if the training is short, we gain new knowledge to improve our lifestyle and improve our productivity. The appropriateness of the training that is given in FTCs is more acceptable if we attend, and we can change productivity.*`

Farmers would appreciate if the training is aligned with their everyday farming activities so that the training can be relevant to their needs. In this regard, the study of CTA working document suggested that the aim of farmers training is to involve rural people in the development activities through a continuous process of learning week after week. When the training is imparted on daily life related critical activities, it should be continuous and completely well-connected to the activities which undertaken for the farmers beneficiaries.

4.3 Farmers perceptions about FTC-based agricultural extension services

Examining the perceptions and opinions of farmers towards the extension service delivery system provided by FTCs was one of the main objectives of the study. For farmers` understanding or attitude towards FTC-based extension services, Likert scale types of questions were developed and posed to the respondents.

Table 12: Farmers` perceptions on the effectiveness of FTC-based agricultural extension services (n=137)

No	Items	1	2	3	4	5	MEAN	SD	Decision
		%	%	%	%	%			
1	Knows about the targeted activities and aims of FTC	14.7	4.4	28.8	47.8.	4.4	2.36	0.940	High perception
2	FTC is reaching all the intended groups	29.9	38.9	29.9	1.5	-	2.02	0.812	Low perception
3	There is adequacy services, visits and advisory support	40.9	38.0	19.	2.2	-	1.82	0.812	Low perception
4	The services are demand-driven	7.3	19	28.5	38.7	6.6	2.78	1.046	High perception
5	Lot of information obtained from FTC	10.9	19	23.5	39.4	5.1	2.67	1.063	High perception
6	Use fullness information obtained information	29.9	38.7	29.9	1.5	-	2.02	1.022	Low perception
7	acting based on practical knowledge obtained from FTC	6.6	35	13.9	31.4	13.1	3.09	1.205	High perception
8	Willingness to participate in extension activities	14.6	4.4	48.2	28.5	4.4	2.35	0.937	High perception
9	DAs teach farmers useful technologies	9.5	20.8	22.6	39.4	8	2.78	1.122	High perception
10	DAs are motivated to serve farmers	40.9	37,2	19.7	2.2	-	1.83	0.818	Low perception
11	DAs make daily trips to their assigned FTC	18.2	7.3	37.2	35.8	1.5	2.37	0.916	High perception
12	DAs are willing to learn from farmers	43.8	28.5	16.8	10.9	-	1.94	1.024	Low percptti on

Key: 5=Strongly Agree, 4=Agree, 3=Undecided or Neutral, 2=Disagree, 1=Strongly Disagree

Decision- weighted Average = 2.13

Source: Questionnaire Survey, 2022

As shown in Table 12, the data analysis about farmer perceptions and experiences on FTC-based agricultural extension services the decision indicated that majority of the respondents have high perceptions on knows about the targeted activities and aims of FTC, the services are demand-driven ,lot of information obtained from FTC, acting based on practical knowledge obtained from FTC, willingness to participate in extension activities , DAs teach farmers useful technologies, DAs make daily trips to their assigned FTC, this help for any decision making to do an efforts for changing farmers perception and identified the major gaps.in other hand some respondents have low perceptions and experiences on FTC is reaching all the intended groups, there is adequacy services, visits and advisory support ,use fullness information obtained information, DAs are motivated to serve farmers ,DAs are willing to learn from farmers.

The DAs perceived their role to be doing what they are told to do by their bosses instead of serving the community needs. Key informant interviews held with woreda agriculture office head and extension department office head indicate that farmers have gradually become receptive of the FTC-based agricultural extension services. The woreda agriculture office head said the following regarding farmers opens to improved farming methods:

> ``When we evaluate perception and knowledge of farmers, there is a change from the past. In the last three and four years ago, many farmers were challenged to internalize and implement new information and new technology, like the best teff seed, but now most of the farmers changed their perception and accept any new technology without any challenge and obligation easily in 2014 E.C. Now, they are interested to know new technology and to gain knowledge and practice from model farmers, because they believe that is the way to change their lives standard. Hence, the district promotes new irrigated wheat seed, so the farmer accepted and sawed on their land. ``

The 35-year-old agriculture extension office head described the support provided by extension workers as follows:

> ``In the annual and monthly activities plan of the office one is support a farmer and kebele extension agents ; regularly once a month with subject specialist (SMS) in groupings;. So district experts are providing support for farmers throughout a month and in the case; any urgent issues, they try to address it through weekly meetings. Based on this, at kebele and district level that prepare practice exchange program by district offices``regular deal``

Concerning FTCs reaching and being understood by the intended farmers, most of the FGD participants confirmed that they are aware of FTCs objectives which is to provide farmers with information and knowledge on improved farming practices. However, the participation of female farmers in each FTC-lead extension services has been limited, though attention is being given to training women in food nutrition. Some women feel that extension services have improved their productivity and income and focusing on nutrition. Others feel excluded from extension services due to social and cultural norms, or difficulties like domestic responsibilities make it difficult for them to leave their homes and communities to attend extension programs, limited access to land, credit, and other resources needed to participate in agricultural extension services. Few are unaware of extension services or are skeptical of their benefits.

4.4 FTC`s contribution to improve farmers` welfare

Agricultural extension service plays a great role with in the farmers` life. It contributes to make extension services clear for the development of the skill and knowledge of farmers to adopt new and improved technologies like seed varieties and animal breeds, implements, chemicals, and practices. So, adoption of improved agricultural technologies uses to increase food security and reduced poverty .FTC-based agricultural extension services have roles by increasing farmers` livelihoods. FTCs are the main center to transfer and disseminate new technology and information.

.

Table13: Responses of farmers' assessment of the relevance of FTCs in terms of the improvement of farmers' welfare by using of improved agricultural extension services in the study area (N=137)

No	types of contribution	1	2	3	4	5	Mean	SD	Decision
		%	%	%	%	%			
1	Acquired useful skills from agricultural extension	11.7	62.8	17.6	2.2	5.8	2.21	1.008	High contribution
2	Benefitted from the FTC-based agricultural extension services	12.4	23.4	4.3	53.7	7.3	2.23	0.977	High contribution
3	Farming practice is changed due to training	8.8	57.7	8.1	21.2	4.4	2.15	1.013	Low contribution
4	Increasing agricultural productivity	7.3	37.9	21.2	25.5	8.0	2.14	0.956	Low contribution
5	Improvement in interpersonal communication skills	5.1	19.0	45.9	16.8	13.1	2.21	1.01	High contribution
6	Enhancement of technology & assessment, adoption and use of skills	5.8	19.7	10.9	51.1	12.4	2.12	0.908	Low contribution
7	Enhancement on voluntary basis for natural resource management	11.7	52.5	26.6	21.2	8.8	2.1	0.987	Low contribution
8	Harvest loss reduction and quality production improvement	10.2	53.2	22.6	7.2	6.6	2.35	0.936	High contribution
9	Improved household income and enhanced saving habits	49.6	27.7	15.3	3.6	3.6	2.17	0.827	Low contribution

Key: 5=Strongly Agree, 4=Agree, 3=Undecided or Neutral, 2=Disagree, 1=Strongly Disagree

Decision- weighted Average = 2.19(2.2)

Source: Questionnaire Survey, 2022

As shown in Table 13, about the contribution of FTCs in terms of improving welfare by using of improved agricultural extension services in the study area. The decision indicated that majority of the respondents are agreed FTC has low contribution on life improvements or enhance way of life. This helped as identified the gap the reason why the center do not achivie its goal and indicate to find solve the problem . in the other hand some respondents agreed FTC has highly contributed to change their life.Furthermore, most FGDs stated that they tell their change through FTCs extension service, from model farmers and extension experts. The achievements of the FTCs are depended on transfer new technology and improve productivity, especially crop development and fruit. And now, the farmers have better understand about the use of technology.

Interview conducted with district agricultural office head reveals: ``life *even if in challenge and problem, there are also prospects, perception and knowledge change in farmers, especially on adoption of new teff and wheat seed and fruit like avocado, mango and dega apple in some kebeles life*``.

4.5 Factors affecting the implementation of FTC-based agricultural extension service

In Ethiopia agricultural extension system faces a number of serious challenges. Most of these challenges have preserving from year wards. Many studies have confirmed that the provision of agricultural services at FTCs level is affected by different factors. Those related to technical; policy; or organizational and institutional dimensions, insufficient involvement of stakeholders, communication gap, capacity problems, resource constraints, and shortage of supplies and farmers' perceptions.

Table 14: Respondents' responses about the major factors affecting the implementation of FTC-based agricultural extension service in the study area (N= 137)

No	Problems and Prospects of FTCs	1	2	3	4	5	Mean	SD	Decision
		%	%	%	%	%			
1	Lack of infrastructure, materials and equipment	5.1	13.9	16.7	46.2	19.0	2.16	0.82	Major factor
2	Low community participation	6.6	16.8	32.8	25.5	18.2	2.25	0.93	Major factor
3	High drop-out, delays and absenteeism of trainees	5.1	20.4	1.45	57.6	15.3	2.36	0.976	Major factor
4	Expecting some benefits to be trained by trainee farmers	7.3	28.5	33.6	24.8	5.8	2.17	0.827	Major factor
5	Farmers' inability to read and write	13.1	6.6	13.8	45.2	21.2	2.13	0.80	Major factor
6	Lack of support from stakeholders	4.4	16.8	5.1	51.1	22.6	2.17	0.827	Major factor
7	Lack of commitment from extension agents	6.6	16.1	6.5	57.6	13.1	2.17	0.827	Major factor
8	Lack of motivation from farmers to learn things	5.8	13.9	16.1	43.1	21.2	2.36	0.976	Major factor
9	Lack of awareness and knowledge on the economic importance of agricultural extension inputs	5.1	12.4	26.3	32.8	23.4	2.17	0.827	Major factor
10	Shortage of demonstration sites and unsuitability of land	7.3	14.5	6.5	51.8	19.7	2.17	0.827	Major factor

11	Long distance of FTCs from beneficial	9.5	25.5	7.2	47.4	10.2	2.13	0.80	Major factor
12	Lack of monitoring and evaluation system	10.2	23.4	38	21.9	6.6	2.35	0.93	Major factor
13	Lack of clear guidelines, curriculum and modules	9.5	21.2	21.2	37.2	10.9	2.16	0.82	Major factor
14	Economic constraints such budget	9.5	24.1	36.5	25.5	4.4	2.13	0.80	Major factor

Key: 5=Strongly Agree, 4=Agree, 3=Undecided or Neutral, 2=Disagree, 1=Strongly Disagree
Decision- weighted Average = 2.05

Source: Questionnaire Survey, 2022

In table 14 the result showed on factors affecting the implementation of FTC-based agricultural extension service in the study area. The decision indicated that all of the respondents agreed on all the above listed problems that lack of infrastructure, materials and equipment in the kebele, high drop-out, delays and absenteeism of trainees from FTC, farmers` inability to read and write, lack of support from kebele and woreda administration and lack of commitment on the parts of extension agents lack of awareness and knowledge on the economic importance of agricultural extension inputs, lack of clear guidelines, curriculum and modules, economic constraints such as lack of budget respectively were other minor factors are the major factors those affect the implementation the implementation of FTCs to provide best services. In line of this a study indicated that most of the FTCs had more constrain in related to budget, infrastructure, lack of motivation from both sides farmers and DAs in adequacy of teaching materials(Seyoum ,2013 and Suleym ,2021).

Qualitative results from focus group discussion (conducted with trained and untrained farmers) further indicated that there are many problems in most FTCs, such as low community participation and awareness on the benefit of FTC-based agricultural extension service and lack of support by key stakeholders (i.e., kebele administrative, FTCs` committee, farmers, woreda , zone, region and even the national level). All these concerned bodies were not working together for the achievement of the FTCs goal, to improve the extension service delivery and farmer's way of life in a local situation. On the other-hand, as

to the FGDs, only some of the experts from the Woreda agricultural department supported a few FTCs for not more than twice a year.

Moreover, the interview data revealed that lack of adequate operational budget (as the Woreda did not allocate for FTCs), inadequacy of standardized demonstration area/field, shortage of training materials (for practical demonstration) for FTCs, lack of more practical training and inadequate number of DA's in some kebeles are among the factors that hinders its operational performance. Poor commitment and turnover of extension agents, poor relations with the local community were also other challenges hampering the development of strong the implementation of FTC-based agricultural extension service in the study area.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

This final chapter of the thesis presents a summary, conclusion, and recommendations. The main objective of this study was to investigate farmers' perceptions and experiences about farmer training centers (FTCs) and the extension services provided in these centers, focusing on Antsokia Gemza Woreda. Below, the findings are summarized and conclusions are drawn based on the study's stated objective.

5.1 Summary

5.1.1 The current status of Farmer Training Centers

On this issue, the majority of study participants reported that there were no adequate demonstration areas or fields for practical training near FTCs in each kebele in the study area. Similarly, the majority of the respondents indicated that the location or distance of FTCs from farmers' homes was found to be far away and not easily accessible.

- The analysis further revealed that the demonstration fields (which are not adequate for each FTC) from the FTCs were far more than five kilometers on average, and this extent of the FTCs location (farness) influenced very much (highly) the participation level of farmers in training programs in the area.
- The majority of DA respondents indicated that the presence of clear reference material and teaching modules at FTC level was found to be very good or fairly adequate. On the other hand, the majority of the respondents (farmer and DA respondents) confirmed that the suitability of the training environment (the place where training is conducted), the adequacy and quality of training facilities for practical sessions (i.e., the availability of necessary training materials, visual aids, and field equipment; the availability of a blackboard, whiteboard, and information board); the presence of a comfortable training room and well-organized seats for trainees at the FTC; and the adoptability and affordability of technologies and farm inputs provided to the farmers are found to be in a fair condition, which is poor;
- Results from qualitative interviews also show that infrastructure and budget shortages are the main problems for each FTC, and that there is no interconnection between stakeholders and sectors to foster cooperation. It was also observed that most of the FTCs are not comfortable or attractive.

- DA respondents revealed that there is a trainee farmer selection criterion that is based on farmers' interest and model farmers, respectively. A few farmers further indicated that the selection process was based on model farmers and political elites or members. On the contrary, although the majority of DAs reported that there are selection criteria, the majority of farmer respondents confirmed that there are no clear and well-known farmer selection criteria used in the FTC context.
- Based on the analysis results, the respondents confirmed that farmers and DAs, respectively, had ever taken and given training at the FTC level in the area. On the other hand, the majority of farmers revealed that training needs were not assessed, identified, and consulted before training. In addition, the majority of the respondents responded that consultation was not made based on the needs, knowledge, and interests of farmers and that there was no regular training for the farmers at the FTC level.
- The study assessed the implications of the types of training offered at the FTC level in the study area. In this study, the types of trainings offered or that should be offered were categorized into four classes, such as crop production and livestock production technologies, natural resource management, and other social issues. In line with these, as shown in the analysis, the majority of the respondents indicated that the main trainings provided were more on the preparation and application of compost and manure, the use of inorganic fertilizer, and timely weed and pest management.
- On the other hand, although the majority of DA respondents indicated that training and/or service was provided to farmers in various areas, the majority of farmers disapproved of the presence of such practices (training) in the areas of use of improved seed, proper cropping calendar and fruit husbandry, irrigation water management (timing and scheduling), tillage practices, row planting, cattle, sheep, and goat fattening, dairy and poultry production, and modern beehives; and soil and water conservation and forest management practices at the FTC level. The majority of farmers and DAs further indicated that there was no service or training provided in the areas of livestock housing, beef production, stall feeding or zero grazing, use of an improved stove, use of family planning, or credit in the study area. Moreover, trained and untrained sample farmers (FGDs) revealed that there is no standardized or modular training held, but they sometimes get short-term or conference training, focusing on urgent programs.

- The study participants reported that farmer-to-farmer experience sharing was the main training delivery method used by trainers, followed by training and visiting demonstration fields with model farmers and classroom lectures. According to the respondents, the preferred style of training was conducted with intervals at the FTCs in the study area.
- Sample farmers confirmed that the relevance, farmers' needs, and indigenous farming knowledge-based harmony of the training contents and the facilitators' ability to coordinate the training programs were not practically visible, although DA respondents reported the presence of these ideas. Moreover, throughout the training process, the majority of them revealed that the extent of the learning experience in reflecting the local context and indigenous knowledge, consideration of FTC and adult learning principles, the active participation trainees, and the practice of conducting regular follow-up and evaluation systems were poorly practiced in almost all of the FTCs. The result further confirmed that the practice of giving sufficient time and making the training schedule favorable for the trainees was not given emphasis at the FTCs. Accordingly, farmers were not satisfied with the overall training program conducted at FTCs. Moreover, the qualitative data showed that the duration of the training system is short (not more than 3–15 days).

5.1.2 Farmers' Perceptions about FTC-based agricultural extension services

- Regarding this issue, the study participants indicated that the extension agents in the FTCs are willing to accept and learn from farmers and/or from the local community, which is a very good practice in the study area. Also, the majority of the respondents understood the purposes for which the FTCs are established; farmers' sources of information about the FTCs; and the motivation level of DAs to serve farmers and the local community at large by making daily trips to their assigned FTCs; to some extent, these were found to be in good condition or practiced moderately.
- On the other hand, study participants (farmers) indicated that the extent to which FTCs reached all the intended groups (farmers), the level of farmers' knowledge and understanding about the aim of FTC, their state of acting based on the knowledge they gained from FTC, the presence of adequate extension services, visits, and advisory support, and the provision of helpful information by extension agents were found to be poorly practiced. In the same vein, the majority of the respondents reported that providing information and reaching well in time

to meet the needs of farmers by extension agents; the technical capacity, experience, and practice of DAs in matters of farming practices and technologies; providing demand-driven services by the FTCs to the local situation; and the willingness of farmers to actively participate in extension activities were found to be fair but below expectations.

- Concerning the issue of FTC reaching and being understood by the intended participant groups, the qualitative data confirmed that most farmers have a negative perception of and are not satisfied with the FTC-based agricultural extension services provided, and it was observed that the participation of female farmers was low in the area.

5.1.3 Contributions of the FTC to farmers' welfare

- Even though the majority of study participants indicated that farmers had benefited from the FTC-based agricultural extension services (enhanced technology adoption and use), the study found that most farmers were not found to have acquired useful skills, changed their farming practices, or effectively increased agricultural extension and productivity in the study area. Furthermore, as indicated by the majority of the respondents, the contribution of FTC-based agricultural extension service in the areas of soil fertility management, collective action, voluntary natural resource management, loss reduction, quality production, improving household income, and saving habits was not practically observed as improving farmers' welfare.

  Furthermore, the qualitative data supported their claim that they learned about their change through the FTC's extension service from model farmers and extension experts.

5.1.4 Factors affecting FTCs' activities

Finally, study participants were asked to indicate the major factors affecting the implementation of FTC-based agricultural extension services in the study area. Accordingly, the result indicated that lack of infrastructure and materials/equipment, drop-out and delays of trainee farmers from FTC, lack of support from the kebeles and woredas, lack of commitment of extension agents, lack of motivation on the part of farmers to learn things, unsuitability of demonstration land for FTCs, and distance of FTCs from the residence were the major factors affecting the implementation of FTC-based agricultural extension service. Moreover, low community participation, a lack of awareness and knowledge on the importance of agricultural extension inputs, and economic and budgetary constraints were also factors affecting the implementation of the FTC-based agricultural extension program.

The result of the focus group discussion (conducted with trained and untrained farmers) further indicated that there are many problems in most FTCs, such as low community participation and awareness of the benefits of FTC-based agricultural extension service and a lack of support by key stakeholders (i.e., kebele administrative, FTCs' committee, farmers, the district/Wereda, zone, region, and even the national level). All these concerned bodies were not working together for the achievement of the FTC's goal: to improve extension service delivery and farmers way of life in a local situation. On the other hand, as to the FGDs, only some of the experts from the wereda agriculture department supported a few FTCs for no more than twice a year.

Moreover, the interview data revealed that lack of an adequate operational budget (as the Wereda did not allocate for FTCs), inadequacy of a standardized demonstration area or field, shortage of training materials (for practical demonstration) for FTCs, a lack of more practical training, and an inadequate number of DAs in some kebeles are among the factors that hinder its operational performance. Poor commitment and turnover of extension agents and poor relations with the local community were also other challenges hampering the development and implementation of a strong FTC-based agricultural extension service in the study area.

5.2 Conclusions

Based on the findings presented in the previous section, the following conclusions were drawn:

- The first specific objective was to assess the current status of FTCs in the study area. Based on the findings of the study, it can be concluded that most of the FTCs in the woreda have not provided adequate demonstration areas or fields for practical training, or basic training materials, equipment, and facilities; and almost all of the FTCs lack quality in their physical environments and also have poor comfortability for the teaching-learning process, and their problems are more severe. The result of the study further revealed that trainee farmers' selection processes are not clearly known by farmers, and they do not have rich information about the criteria used by extension agents at the FTC level. The study further indicated that the training program lacks preparation and readiness (there is no practice of training needs assessment, identification, and consultation before training, based on the knowledge gap and interest of farmers).

Concerning the present status of the implementation of the training process, only a few of the FTCs are providing limited extension services and short-term training (without giving

farmers sufficient time). However, the study found that there was no regular and modular training provided for the farmers at the FTC level, covering various areas of focus (such as crop production and livestock production technologies, natural resource management, and other social issues) in the case of most of the FTCs.

Based on the results, the study concluded that there was weakness in the choice of the most important and different types of training programs (both short-term and modular) and that the implementation process was not fruitful and sustainable at most of the FTCs. Hence, most of the FTCs were not able to put the government's program into practice.

•Second specific objective of the study was to examine farmers' perceptions and experiences about FTC-based agricultural extension services. The perception reflected by the farmers towards the mandatory agricultural extension services of FTCs and towards DAs was more or less similar (most of them had a good perception). Although this is the case and different FTC-based agricultural extension activities have been carried out in a few FTCs of the Woreda by the DAs, the study concluded that there were no adequate demand-driven extension services, continuous visits, advisory support, or provision of basic information by extension agents (DAs), and the practice of reaching all the intended group of farmers so as to enhance their knowledge and understanding of farming practices and technologies was poor at all.

- The third specific objective of the study was to see the contributions of FTC to the improvement of farmers' welfare by using improved agricultural extension services. The study therefore found that the majority of the FTC's beneficiaries (farmers) were not equipped with the required useful skills to change their farming practices, effectively increasing their productivity due to agricultural extension services in the study area. From this result, it is concluded that the majority of the FTCs do not reach all the expected improvements in agricultural extension services or their contribution to the improvement of farmers' welfare and are in the category of not achieving their goal.
- Finally, the study was intended to identify the major factors affecting the implementation of FTC-based agricultural extension services in the study area. Accordingly, the study found that lack of infrastructural facilities, lack of materials and equipment, lack of motivation on the part of farmers, inadequacy of more practical training, shortage of demonstration land, budget constraints, low community participation, lack of support from stakeholders, lack of commitment, an inadequate number and turnover of extension agents, and poor relations with

the local community were the major constraints hindering the implementation of an FTC-based agricultural extension program (in order of importance).

5.3. Recommendations

Based on the findings of the study, the following specific recommendations are forwarded:

- Awareness-building has to be done among farmers about the relevance and effectiveness of farmer training at FTCs in different aspects and the need to generate more information in order to enhance the knowledge, skill, and capability of farmers, which will help the farmers use new technology and ultimately increase productivity. More importantly, there is a need to provide a demand-driven extension service approach. In this way, farmers' satisfaction with the service and acceptance of the extension program can increase. Overall, the extension service should maintain farmers' satisfaction, as the sustainability of the program ultimately depends on the willingness of the farmers to continue participating in it, which is a reflection of their satisfaction.
- For the proper functioning and better accomplishment of FTCs, FTCs should be strengthened by providing adequate infrastructure, training facilities, and materials so as to make the physical environment comfortable at all FTC levels, at least through experience sharing from within, and at most through creating a suitable network with different institutions appropriate to each FTC's context in the study area.
- To increase the relevance of the FTC-based agricultural extension services and training, the extension agents should have to give more emphasis to the improvement of farmers' welfare and productivity by focusing on practice-based training rather than theoretical content, making use of indigenous knowledge, and sharing experience among FTCs throughout the study area. To reduce the existence of disparities and enhance and develop the attitude, the wereda have to strengthen the FTC-based agricultural extension services at all levels through the participation of all concerned stakeholders.
- Appropriate agricultural extension communication methods should be used, depending on their significance, to influence farmers' decisions and improve the effectiveness of the extension services. Targeted and multiple communication approaches, such as the integration of new technologies and participatory agricultural extension methods for all farmers,
- To make FTCs excellence and knowledge centers, it is better to start with a few model FTCs and expand the scope step by step, gradually, by evaluating their success to make the training effective.

- Finally, the woreda should also take into consideration the institutional, economic, and general constraints that hinder the implementation of farmer training centers.

5.3.1 Future research

Finally, it is recommended that a further study be conducted beyond the scope of this study in different aspects to generate more information and improve the relevance and effectiveness of farmer training at FTCs at the local, regional, and national level. Future studies should consider using longitudinal research, and the empirical monitoring mechanisms of proposed policies and the efficiency of pluralistic agricultural extension performance are equally important.

REFERENCES

Abera Alemu ,(2021). Determinants of Participation in Farmers Training Centre Based Extension Training in Ethiopia. Journal of Agricultural Extension 25(2):86-95

Adebabay Mengist,Mesfin Astatkie, and Sajja, N., (2008). Assessments on DAs capability in planning and delivering of training to farmers in FTC setting.

Alemayehu Abebe & Marta Hailemariam, (2018). Historical Evolution of Agricultural Extension Service Approach in Ethiopia Batu Fish and Other Aquatic Life Research Center, East Shewa, Batu, Ethiopia, Department of Rural Development and Agricultural Extension, Jimma University, Ethiopia

Andarge Zewde (2017.) Assessment Of Smallholder Farmers' Participation In Agricultural Extension Program: The Case Of Chencha Woreda, Gammo Gofa Zone, Snnprt University Of Gondar, Gondar, Ethiopia

Antsokia Gmeza Woreda Agricultural Office ,2(018GC/2010 EC,) district Geographic and other information by Natural Resource and Extension Department

Aromolaran A. Kazeem1 ela,, (2017) Attitudes of Farmers To Extension Trainings In Nigeria

Atrsaw Anteneh MihretieORCID Icon,Azanaw Abebe &Girmachew Siraw Misganaw ,(|2021) .Adoption of Tef (Eragrostis Tef) Production Technology Packages in Northwest Ethiopia , International Journal

Bekelech Tesfaye ,(2014.) The effectiveness of farmer training centers in the economic life of rural adults: the case of Oromia National Regional States of South West Shoa Zone Wonchi Woreda. MA Thesis, Addis Ababa University, Addis Ababa

Belay Kasa ,(2002). Constraints to agricultural extension work in Ethiopia: the insiders' view S. Afr. J. Agric. Ext./S. Afr. Tydskr. Landbouvoorl. Vol. 31

Bernard, R.,(2006). Research Methods in Anthropology: Qualitative and Quantitative Approaches 4th ed. Lanham, AltaMira press.

Best, J. W. & Kahn, J. V.,(2003). Research in Education. 9th Edition, Prentice-Hall of India Private Limited, New Delhi.

Birhanu Gebramedhin, Hoekstra D. and AzageTegegne, (2016.) Commercialization of Ethiopian agriculture: Extension Service from input supplier to knowledge broker and facilitator. IPMS of Ethiopian Farmers Project Working paper ILRI, Nairobi. 33pp

Cloete P. Bahta Y. T.; Marunga M.; Lombard W. A, (2019).Perception and understanding of agricultural extension: perspective of farmers and public agricultural extension in Taba Nchu. South African Journal of Agricultural Extension

Creswell, J. W., & Plano Clark, V. L.(2011). Designing and Conducting Mixed Methods Research (2nd ed.). London: Sage Publications Ltd.

Dawit Milkias1, *, Gemechu Beri2, (2020.) Assessing Farmer's Perception Towards Improved Quncho Teff Variety in Gindeberet District, West Showa Zone, Oromia Region Ethiopia, Journal of Plant Sciences

. Karim Abawi , (2017). Training in Sexual and Reproductive Health Research , Geneva Workshop

Edeh Samuel & Chukwuemeka ACMC, (2022). Advantages and disadvantages of technology in agriculture

Fanos Mekonnen ,(2015) .Livestock and Irrigation Value Chains for Ethiopian Smallholders (LIVES) Stimulating the use of farmer training centres in Oromia ,Written by Zewdie Adane, Gemeda Duguma, Abule Ebro and Amenti Chali.

FDRE (Federal Democratic Republic of Ethiopia), (2001.) Rural Development Policy, Strategy and Techniques. Ministry of press and information. Addis Ababa. Ethiopia.

Fisseha Teshome Mengistu (,2009). Problems and Prospects of Farmers Training Centers: The Case of Ada'a Woreda, East Shewa, Oromia Region, Ethiopia. M.Sc Thesis , Haramaya University

FAO (Food and Agriculture Organization of the United Nations). (2010). Ethiopia country brief. Retrieved from www.fao.org/countries/55528/en/eth/

Fulton, A., Fulton, D., Tabart, T., Ball, P., Champion, S., Weatherley, J Heinjus, D ,(2003.)Agricultural Extension, Learning and Change. A report for the Rural Industries Research and Development Corporation.

Gerba Leta Dufera , (2018).The Ethiopian Agricultural Extension System and Its Role as a Development Actor: Cases from Southwestern Ethiopia Wollega, Äthiopien Bonn

Gizaw Eshetu (2018) the Impacts of Farmers Training Centers In Enhancing The Liveli Hoods Of Rural Farmers; The Case Of Kutcha Wereda, Snnp Regional States

Hailu Amaje, (2014) . Problems And Effectiveness Of Farmers` Training Centers In Southern Ethiopia, The Case Of Arbegona Woreda, Sidama Zone

Haile Tamiru Urgessa,(2020.) Review on Importance of FTC in Adoption of New Farm Technology In Ethiopia Bule Hora University, College of Agricultural Science, Department of Agricultural Economics

Kolawole AE (,2013.) Coverage of indigenous knowledge system in extension services delivery in two regions of Nigeria and South Africa A content analysis. Life Science Journal 10(3):2573-2578

Kothari, C.R., (2004.) Research Methodology, Second Revised Edition. New age international (P) Lim., Publishers, New Delhi, India.

Kripanont N ,(2007). Using technology acceptance model of Internet usage by academics within Thai Business Schools. PhD thesis submitted to the Victoria University.

Levine, D. (2014). Even You Can Learn Statistics and Analytics: An Easy to Understand Guide to Statistics and Analytics 3rd Edition. Pearson FT Press

Long L,(2005). A Critical Review of Technology Acceptance Literature, Track: Management Information Systems,

Luchia Tekle, (2010). Analysis Of Relevance And Effectiveness Of FTC-Based Training: The Case Of Alamata Woreda, Southern Tigray, Ethiopia. Haramaya University

Luchia Tekle, (2015). Analysis of Positive Deviance Farmer Training Centers in Northern Ethiopia. American Journal of Rural Development, v

Mathewos Tega, & Elias Bojago(,2023.) "Farmer's Perceptions of Agroforestry Practices, Contributions to Rural Household Farm Income, and Their Determinants in Sodo Zuria District, Southern Ethiopia", International Journal of Forestry Research, vol. 2023, Article ID 5439171, 19 pages, 2023. https://doi.org/10.1155/2023/

Mesfin Fenta , (2017). Adoption Of Improved Chickpea Technologies In North Gondar Zone Of Ethiopia: The Case Of Gondar Zuria District Implications For Adoption Of Improved Agricultural In Ogun State Southwest Region , Journal Of Agricultural Sciences

Ministry of Agriculture and Natural Resources,(2017), Agricultural Extension Strategy of Ethiopia

Ministry Of Agriculture and Rural Development Agricultural Extension Department,(2009). Farmers' Training Centers Operational Manual /Guideline/

Merihun Fikru Meja and Endrias Geta ,(2015). Analyzing Farmers' Training Centers through Integrated Innovative Capacity Building and Technologies Transfer; A Case Study of Damot Gale District Woliata Zone Ethiopia. International Journal of Environmental Sciences; Vol. 6 No. 4 ISSN: 2277-1948

Olayemi Samson Sennuga, (2021). Agricultural Extension Theories and Practice in Sub-Saharan Africa: A Critical Review The Journal of Agricultural Science 1(1):20-028

Peter Van Eeuwijk and Zuzanna Angehrn, (2017). How to Conduct a Focus Group Discussion(FGD) Methodological Manual

R. Burke Johnson and Anthony J. Onwuegbuzie, (2004.) Mixed Methods Research: A Research Paradigm Whose Time Has Come

Robert M. Groves .(2004): Survey Errors and Survey Costs, ISBN 0-471-67851-1

Samaradiwakara GDM,& Gunawardena CG, (2014.) Comparison of Existing Technology Acceptance Theories and Models to Suggest a Well Improved Theory/Model, Int. Tech. Sci. J. 1(1), 21–36.

Seyoum Esrael (2013). Performance of Farmers Training Centers in South Wollo Zone: with Special Reference to Kalu Woreda, Amhara Regional State

Suleyman Abdureman , & Nuradin Abdi ,(2020). A Seminar Title On the History and Evolution of Agricultural Extension in the Ethiopia Country

Suleymen Abdureman , (2021). relevance and effectiveness of farmer training centers (FTCs) based training in gurewa district, east Hararghe zone, Oromia region, Ethiopia. Haramaya University, Haramay.

Swanson, B.E., Bentz, R.P. and Sofranko, A.J. , (1997). Improving Agricultural Extension: A Reference Manual. FAO, Rome. Available via the Internet http://www.fao.org/docrep/w5830e/w5830e00.htm#Contents

The Intended Editorial , (2023). Farmer Skills: Definition and Examples

Tsegamariam Dula Sherka ,(2021). Impact of Farmers Training Centers Based Training on Major Crops Productivity and Households Welfare: the case of Gurage Zone, Central Ethiopia. Research Square. DOI: https://doi.org/10.21203/rs.3.rs-386059/v

Venkatesh V, Morris MG, Davis GB, Davis FD ,(2003). User acceptance of information technology: Toward a unified view. MIS Quarterly, 27, 425- 478.

Yamane, Taro, (1967). Statistics: An Introductory Analysis, 2nd Ed., New York: Harper and Row

APPENDICES

Appendix I

Addis Ababa University

School of Graduate Studies

Part One:- Questionnaire to be filled in by interviewing trained and untrained Farmers

Dear Respondents,

The purpose of this study is to generate the necessary information for the study entitled ***"Farmers' perceptions and experiences of farmer training center-based agricultural extension services in Antsokiya Gemza Woreda, North Shewa Zone, Amhara Regional State"***, which will be used to prepare a Thesis required for my MA degree. Therefore, your honest and genuine co-operation in responding to the questions is vital for the success of the study. So, you are kindly requested to spare your precious time to complete the questionnaire. Rest assured that your responses will not be used for other purposes rather than academic purpose. Also please take note of the following points before you start filling the questionnaires:

- ✓ You do not need to write your name on the questionnaire..
- ✓ Please do not leave questions unanswered.

Many thanks in advance for your cooperation!!

Section One: Personal and demographic information

1. Sex A. Male B. Female

2. Age _____ in years.

3. Level of Education a) Read and write b) Primary (1-4) c) Primary (5-8) d) Secondary (9-12) e) Certificate and above

4. Marital status----------

a) Single b) Married c) Divorce d) Widowed

5. Size of farm land (in *timad*) ----------

Section Two: General questions about the practices of FTC-based Agricultural Extension Service

2.1 Perceptions about FTCs based agricultural extension services

You are kindly requested to rate your level of agreement in relation to FTCs based agricultural extension services for each of the given items on a 5-point scale. Please indicate the extent to which you feel that the indicated statements applied by putting an "X " or a tick (√) in the appropriate block. **5 = Excellent, 4 = Very good, 3 = Good, 2 = Fair, 1 = Poor or not at all**

No	Items	5	4	3	2	1
1	Knowing about the targeted activities and aim of FTC					
2	FTC is reaching all the intended groups					
3	There is adequacy services, visits and advisory support					
4	The services are demand-driven					
5	Lot of information obtained from FTC					
6	Use fullness information obtained information					
7	acting based on practical knowledge obtained from FTC					
8	Willingness to participate in extension activities					
9	DAs teach farmers useful technologies					
10	DAs are motivated to serve farmers					
11	DAs make daily trips to their assigned FTC					
12	DAs are willing to learn from farmers					

2.2 The current status of Farmer Training Centers (FTCs) in the study area

2.2.1 The current nature of demonstration Field and location or distance of FTC

No	The nature of demonstration Field	Categories	Responses
1	Enough demonstration plots	Yes	
		No	
2	Distance from home	It is far away and not easily accessible	
		Is reasonably near but not easily accessible	
		Is near and easily accessible	
		Very far although accessible by transport	
3	Distance from FTC	Less than a km	
		1-2 km	
		3-4 km	
		More than five km	
4	Location influences participation	Very much	
		much	
		little	
		Not at all	

.

2.2.2 The comfort ability of FTC physical environment to trainees and Availability of infrastructure and facilities in FTCs

Use: 5 = Excellent, 4 = Very good, 3 = Good, 2 = Fair, 1 = Poor or not at all

No	Types of facilities sufficient for effective functioning of FTC	5	4	3	2	1
1	Suitability of the training environment					
2	Adequacy and quality of training facilities					
3	Availability training materials					
4	Seats for trainees are well organized					
5	Adoptability and affordability of technologies and farm inputs					
6	Reference material and teaching module					

2.3 FTC training implementation process (training approach, processes and methods/mode of delivery)

2.3**.1** Trainee farmers' selection process

No	Items		Response
1	Is there a clear criterion for selecting trainee farmers?	Yes	
		No	
2	Trainee selection criteria used	Blood relation based	
		Farmers educational based	
		Model farmers based	
		Political elites based	
		Farmers interest based	
		Wealth status based	

2.3.**2** Training needs assessment process and presence of training program at the FTCs

No	Items	Yes	No
1	Needs are assessed, identified and consulted		
2	Consultation is made on need, knowledge and interest		
3	Presence of regular training at FTC level		
4	Have you ever taken any training at the FTCs?		

2.3.3 Types of training offered at FTCs

If your response is "**yes**" for question No 4 above, what type of training is provided at FTCs level? Please rate your level of agreement by putting a tick (√) or 'X' mark in the appropriate block in the below table.

No	Items on type of trainings being offered	yes	no
I	**Crop production technologies**		
1	Preparation and application of compost and manure		
2	Use of inorganic fertilizer		
3	Use of improved seed		
4	Proper cropping calendar and fruit husbandry		
5	Timely weed and pest management		
6	Irrigation water management (timing and scheduling)		
7	Tillage practices		
8	Row planting		
II	**Livestock production technologies**		
9	Cattle, sheep and goat fattening		
10	Livestock housing		

11	Dairy and Poultry production		
12	Beef production		
13	Modern beehive		
14	Stall feeding/zero grazing		
III	**Natural Resources Management**		
15	Soil and water conservation practices		
16	Forest management practices		
17	Improved stove use		
IV	**Other social issues**		
18	Use of family planning		
19	Use of Credit		

2.3.4 FTC Training content and mode of delivery at FTCs

No	Items of delivery dimension	Categories	Responses
1	Training methods used	Class room lecture	
		Group discussion	
		Training and Visiting demonstration fields/model farmer	
		Practical or field practices	
		Farmer to farmer experience sharing	
		Is more theoretical	
		Balanced theory and practice	
		No other choice than theoretical teaching	
2	Preferred mode of delivery	With interval	
		Continuous	

2.3.5 FTC based training content relevance and Training period (duration, and schedule)

No	Item	Yes	No
I	**Relevance of training content and activities/process**		
1	T relevant & based on farmers' needs		
2	Harmonization of content for farm operations		
3	Incorporates indigenous farming knowledge and practices		
4	The training process considers FTC training and adult learning principles		
5	The trainees are actively participating in training		
6	The facilitators' ability is good		
7	Regular follow up and evaluation system		
8	Satisfaction with the training provided at FTC		
II	**Period, duration & schedule or timeliness of training**		
10	The time is Sufficient		
11	The time or season/ schedule is favorable		

2.4 The contributions of FTC to the improvement of farmers' welfare by using of improved agricultural extension services

Use:-5=Strongly Agree, 4=Agree, 3=Undecided or Neutral, 2=Disagree and 1=Strongly Disagree

No	Relevance of FTCs on participants livelihoods	5	4	3	2	1
1	Acquired useful skills from agricultural extension					
2	Benefitted from the FTC-based agricultural extension services					
3	Farming practice is changed due to training					

4	Increasing agricultural productivity					
5	Improvement in interpersonal communication skills					
6	Enhancement of technology & assessment, adoption and use of skills					
7	Enhancement on voluntary basis for natural resource management					
8	Harvest loss reduction and quality production improvement					
9	Improved household income and enhanced saving habits					

2.5 Major factors affecting the implementation of FTC-based agricultural extension service

Use 5=Strongly Agree, 4=Agree, 3=Undecided or Neutral, 2=Disagree and 1=Strongly Disagree)

No	Problems and Prospects of FTCs	5	4	3	2	1
1	Lack of infrastructure, materials and equipment in the kebele					
2	Low community participation in FTC programs					
3	High drop-out, delays and absenteeism of trainees from FTC					
4	Expecting some benefits to be trained by trainee farmers					
5	Farmers inability to read and write					
6	Lack of support from kebele and woreda administration					
7	Lack of commitment on the parts of extension agents					
8	Lack of motivation on the parts of farmers to learn things					
9	Lack of awareness and knowledge on the economic importance of					

	agricultural extension inputs					
10	Shortage of demonstration sites and unsuitability of land for FTCs					
11	Long distance of FTCs from DAs and farmers residence					
12	Lack of monitoring and evaluation system					
13	Lack of clear guidelines, curriculum and modules					
14	Economic constraint such as lack of budget					

15. Can you list some other factors that affected the proper implementation of FTC-based agricultural extension service in the area? ----------
---

THE END

THANK YOU FOR TAKING PART IN THE STUDY!

APPENDIX-II

Part Three: Interview guide for kebele agriculture extension office heads/experts

I. Location and conduciveness of FTCs

1. On average, how far (in km) are the FTCs from beneficiaries/farmers home?
2. In your opinion to what extent the location of FTCs would influence farmers' participation in training programs?
3. Is there sufficient land in the kebele to set up demonstration plots near the FTCs for all types of field trials?

II. Training process and methods used and the practice of FTC-based agricultural extension service

4. Who is selecting the farmer trainees? What are the criteria for trainees' selection?
5. Is there knowledge-gap assessment process and identification practice prior to training? How the farmers' training needs are assessed in your area?
6. To what extent are farmers involved in the identification of their training courses?
7. How do you express the preference perception of trainees/farmers to FTC-based training system?
8. As kebele agriculture extension office head/expert, what is your feeling about the duration of courses delivered at FTCs?
9. What methodologies were used during farmers' training? Were they more appropriate to teach farmers?
10. To what extent farmers who attended training contact DAs and experts for further support after training?
11. After how long farmers who have just been trained are visited at FTCs level?
12. Do you think adequate training facilities, necessary equipment and materials are available in each FTC? What are the problems related to training materials in FTC?
13. To what extent farmers adopt and use new agricultural technologies and modern inputs?
14. In your opinion, was the organization of the FTC participatory?

15. In your opinion, is the FTC reaching and being understood by the intended participant groups? If yes, what evidence do you have for this?
16. Do you think farmers perception and knowledge about the aim of FTCs is now correct and changed?
17. How would you describe the quality of the FTC's activities (training, Demonstrations, information, advice, scaling up shows, etc.)?
18. In your opinion, how would you sum up the overall extension delivery system, the relevance and appropriateness of FTC-based training?
19. From your experience and observation in your kebele, what are the major challenges of FTCs?

APPENDIX-III

Part Four:- Interview for guide for woreda agriculture office experts and office heads

1. What was your contribution to FTC establishment and activities so far?
2. How do you evaluate the farmers training system in FTC in the context of your wereda?
3. Is there any training provision for extension personnel's working in FTC?
4. How many farmers were benefited from the different services of the FTCs since its establishment?
5. Have the trainings been effective in producing the desired outcomes and impacts up on the farmers? If yes, please mention the outcomes and impacts of the training
6. How do you think the adaptability and affordability of training infrastructure, technologies and farm inputs provided to all the FTCs?
7. What are the major factors that affected the proper implementation of FTC-based agricultural extension service in the area? Do FTCs have adequate annual budget for their operation? Do you think the budget allocated to FTCs is enough to carry out the training program and other mandatory roles of FTCs?
8. If no, how the training program and other FTC activities are carried out?
9. Overall, what do you think about co-ordination of different organizations in the development and ongoing activities of FTCs?
10. Is there commitment and political willingness to make FTCs more operational in the side of administration at wereda level?
11. How do you evaluate institutional communications between FTCs and Woreda office?
12. Do you recognize and/or remunerate high levels of performance on the part of the extension field staff?

APPENDIX-IV

Part Five:- Checklist questions prepared for focus group discussions (FGD)

Name of FTC_____

Date of discussion_____

Discussion points:

1. Do you know the objective (purpose) of FTC establishment?

2. What benefits did you get so far from FTC extension delivery system since its establishment?

3. The current status of FTCs and major extension services were offered currently?

4. How did you see the provision of the training program in FTC?

5. How do you feel about the appropriateness and relevance/contributions of FTC-based training?

6. Are all the required infrastructure and facilities (Human, material and financial resources) fulfilled for FTCs?

7. In your opinion, what are the successes of the FTC extension delivery?

8. Types of s critical supports (technical, financial) offered by woreda and above level offices/institutions to your FTC level?

9. From your experience and observation, what are the critical gaps/problems for effective functioning of the FTC?

10. What would you suggest to make the training program and FTCs based agricultural extension services more effective in the future?