



**SCHOOL OF GRADUATE STUDIES ASSESSING FARMERS'  
PERCEPTION ON AGRICULTURAL EXTENSION SERVICE DELIVERY  
IN THE CASE OF ABESHGE WEREDA, ETHIOPIA**

**MA THESES**

**WENDMAGEGN TARIKU**

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**Wolkite University**  
**College of Social Sciences and Humanities,**  
**Department of Governance and Development Studies**



**Assessing farmers' perception on agricultural extension service  
delivery in the case of Abeshge Wereda, Ethiopia**

**By:**  
**Wendmagegn Tariku**

**A thesis submitted to the Department of Governance and Development  
Studies, Wolkita University, in partial fulfillment of the requirements for the  
degree of Master of Arts in Development Studies.**

**Major advisor: Tamiru Berafe (Asst. Pro.)**

**Co-advisor: Mr. Girma Senbetie**

**April 2025**

**Wolkite, Ethiopia**

## DECLARATION

I, Wendmagegn Tariku Kassa, a student of the Master of Arts in Development Studies (MA) program in the Department of Governance and Development Studies, College of Social Sciences and Humanities (CSSH), Wolkite University (WKU), hereby declare that the thesis entitled “Assessing Farmers’ Perception on Agricultural Extension Service Delivery” is my original research work.

This thesis is submitted in partial fulfillment of the requirements for the award of a Master of Arts (MA) degree in the Department of Governance and Development Studies, CSSH, under the guidance and supervision of my principal advisor, Tamiru Berafu (Assistant Professor) and co-adviser, Mr. Girma Senbetie, CSSH, and WKU.

Candidate:

Wendmagegn Tariku

ID No.: SSGR/022/14

Signature:

---

Date:

---

## **ADVISORS' APPROVAL SHEET**

whereby certify that we have read and evaluated the thesis entitled “Assessing Farmers’ Perception on Agricultural Extension Service Delivery” prepared by Wendmagegn Tariku under our guidance. We recommend that the thesis be accepted as fulfilling the requirements for the award of a Master of Arts (MA) degree in Development Studies.

Principal Advisor:

Name: Tamiru Berafu (Asst. Prof)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Co-Advisor:

Name: Mr. Girma Senbetie

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

## EXAMINERS' APPROVAL SHEET

As members of the Board of Examiners for the Master of Arts (MA) Thesis Open Defense Examination, we certify that we have read and evaluated the thesis prepared by Wendmagegn Tariku and have examined the candidate. We hereby recommend that the thesis be accepted as fulfilling the requirements for the award of a Master of Arts (MA) degree in Development Studies.

External Examiner:

Name: Bisrat Gebru (Asst. Prof)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Internal Examiner:

Name: D/r. Zelalem Dendir (PhD)

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Internal Examiner:

Name: \_\_\_\_\_

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Chairman:

Name: Mr . Mechale Tamirat

Signature: \_\_\_\_\_

Date: \_\_\_\_\_

Final Approval and Acceptance of the Thesis:

The final approval and acceptance of the thesis are contingent upon the submission of its final copy to the Council of Postgraduate Studies (CPGS) through the candidate's Department or School Graduate Committee (DGC or SGC).

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## **ACRONYMS AND ABBREVIATIONS**

AAS: Agricultural Advisory Services

ABE: Adult Basic Education

ADLI: Agricultural Development Led Industrialization

ADPLAC: Agricultural Development Partners Linkage Advisory Council

AES: Agricultural Extension Service

AEO: Agricultural Extension Officers

AGTS: Agricultural Technologies

AIS: Agricultural Information System

ATA: Agricultural Transformation Agency

DA: Development Agency

ECLFLA: Extension Carousel of Learning and the Facilitated Learning Agenda

FTC: Farmer Training Center

GDP: Gross Domestic Product

MoANR: Ministry of Agriculture and Natural Resources

MoA: Ministry of Agriculture

PADETES: Participatory Demonstration and Training Extension Service

SCALA: Scaling-Up Assessment

SSA: Sub-Saharan Africa

SSI: Semi-Structured Interview

## ABSTRACT

This study examines smallholder farmers' perceptions of agricultural extension services in Abeshga Woreda, Ethiopia, focusing on efficacy, challenges, and demographic barriers. The research assesses how extension services influence farmers' engagement with agricultural innovations and identifies systemic gaps in service delivery. Employing a convergent parallel design methods, data was collected through structured questionnaires administered to randomly selected farmers across four kebeles (Gareba, Tachgnaw Gareba, Bido, and Fita Jeju), supplemented by qualitative insights. Descriptive statistics and Chi-square analysis were used to evaluate correlations between perceptions and crop productivity outcomes.

Findings indicate that a significant proportion of farmers rated extension services as moderately satisfactory, with many acknowledging strengths such as timely information dissemination and technical support. However, a notable segment expressed dissatisfaction due to delays, resource shortages, and limited customization of services to their specific needs. Gender disparities were evident, with male farmers dominating participation, reflecting women's restricted access to resources and decision-making roles. An aging farming population and youth migration further threaten agricultural sustainability in the region. Educational barriers, including low literacy rates and limited formal schooling, hinder the adoption of modern practices, affecting pest control, crop management, and market strategies.

To enhance the impact of extension services, the study recommends participatory extension models that involve farmers in co-designing solutions, gender-responsive programs to empower women through improved resource access, intergenerational knowledge transfer to bridge gaps between elders and youth, and literacy-adapted training using visual and verbal tools. Addressing these challenges could improve service effectiveness, boost agricultural productivity, and strengthen food security in Abeshga Woreda.

### Key words

- *Perception, Small-Scale Farmers, Household, Agricultural Extension, Extension Services, and Adoption*



# CHAPTER ONE

## 1. INTRODUCTION

### 1.1. Background of the Study

Smallholder farmers in developing countries often face significant challenges in adopting modern agricultural technologies, despite their potential to enhance productivity and livelihoods. In Ethiopia, the Ministry of Agriculture and Natural Resources (MoANR) plays a pivotal role in disseminating agricultural technologies and providing technical, advisory, and regulatory support to farmers (MoA, 2010; Belay, 2003). The ministry is responsible for delivering training on agronomic practices, facilitating the transfer of technologies, and acting as a bridge between farmers and technology developers, such as seed companies and research institutions. However, despite these efforts, the adoption of modern agricultural technologies among smallholder farmers remains low due to a combination of financial constraints, limited access to information, inadequate credit facilities, ineffective dissemination methods, and exclusion from the technology development process (Sanchez, 2015). Agriculture is the backbone of Ethiopia's economy, contributing significantly to the country's GDP and employing a large portion of the population. Innovation in agriculture is widely recognized as a critical driver of economic growth and development. Government agencies and agricultural stakeholders have consistently promoted the use of fertilizers, improved seeds, and pesticides to boost productivity and ensure food security (Pingali, 2012). However, the success of these initiatives largely depends on the effectiveness of agricultural extension services, which are tasked with providing timely information, training, and support to farmers.

Sustainable agricultural growth hinges on the ability of extension agents to deliver relevant and practical knowledge to farmers. Effective training in specific crops and modern farming practices is essential for enabling farmers to adopt improved techniques and increase yields. This is particularly important for smallholder farmers, who account for over 75% of total agricultural output in many developing countries (Sarris et al., 2006; Greenberg & Jones, 2015). Despite their critical role, extension services in Ethiopia often fall short of meeting farmers' needs due to limited resources, insufficient staffing, and inadequate follow-up support.

In Ethiopia, three primary factors influence farmers' perceptions and decisions regarding technology adoption: socio-economic challenges, insufficient access to timely information, and the inherent attributes of the technologies themselves, such as complexity, cost, and perceived benefits (Chi & Yamada, 2002; Akudugu et al., 2012; Abdullah & Samah, 2013). These barriers highlight the need for a more farmer-centered approach to agricultural extension services, one that addresses the specific needs and constraints of small-holder farmers.

Agricultural extension services remain a vital mechanism for reaching rural farmers and disseminating new technologies. Exploring innovative ways to deliver agricultural information and support is essential for improving yields, enhancing food security, and reducing rural poverty. Extension agents play a crucial role in this process by providing timely and accurate information, facilitating access to resources, and fostering a collaborative relationship between farmers and technology developers. Against this backdrop, this study was conducted in Abeshga Woreda, located in the Gurage Zone, to evaluate smallholder farmers' perceptions of agricultural extension services and their role in technology adoption. Abeshga Woreda was selected for this research due to its high concentration of small-scale farmers and the significant increase in technology dissemination efforts over the past two decades. The study aims to assess the socio-economic challenges impacting technology adoption, identify the support needed to encourage adoption, and explore farmers' views on the effectiveness of extension agents in introducing and promoting new technologies.

## **1.2. Statement of the problem**

Agriculture is a cornerstone of Ethiopia's economy, contributing significantly to the country's GDP and employing a large proportion of the population. However, the sector faces numerous challenges that hinder its potential for growth and development. These challenges include issues related to the quality of agricultural inputs, limited access to reliable market information, insufficient credit facilities, inadequate dissemination of agricultural knowledge, and ineffective extension services (Abate, 2008; Dercon et al., 2009). In recent years, the increasing complexity of agriculture due to shifting climatic conditions has further exacerbated these challenges,

making it imperative for farmers to access timely, reliable, and pertinent knowledge and skills to adopt best practices and modern technologies for crop production (Otsuka & Kijima, 2010; Simtowe et al., 2016).

Agricultural extension services are designed to bridge this gap by providing farmers with the necessary information, training, and support to adopt improved practices and technologies. These services are critical for enhancing agricultural productivity, increasing incomes, and alleviating poverty among smallholder farmers (Spielman et al., 2011). However, the adoption of agricultural innovations is not merely a technical process; it is deeply influenced by human dynamics, including farmers' attitudes, perceptions, and socio-economic conditions (Otsuka, 2017; Davis et al., 2012). Despite the existence of extension organizations tasked with technology transfer and knowledge dissemination, the adoption rates of improved agricultural practices among smallholder farmers in Ethiopia remain disappointingly low (Asfaw, Kassie, et al., 2012; Abebe et al., 2020).

Farmers' decisions to adopt or reject agricultural technologies are influenced by two primary layers: their attitudes toward new practices, technologies, the socio-economic and institutional barriers they face. Studies have shown that farmers' perceptions and attitudes play a pivotal role in shaping their adoption decisions (Sieber et al., 1999; Negatu & Parikh, 2015; Feder et al., 1985). While social sciences provide insights into human behaviors and choices that influence technology use, there is still a lack of understanding about the specific factors that drive or hinder technological adoption in smallholder farming communities. For instance, prior research in Ethiopia has emphasized systemic barriers such as input access and policy frameworks (Spielman et al., 2011; Mekonnen et al., 2018 ) but under-explored localized socio-cultural dynamics, such as gender roles, intergenerational knowledge transfer, and literacy barriers. This knowledge gap is particularly evident in rural areas like Abeshga Woreda, where smallholder farmers constitute most of the agricultural workforce.

Despite efforts by both public and private entities to promote agricultural innovations, the adoption of these technologies has not significantly increased among smallholder farmers in Abeshga Woreda, Ethiopia. Issues related to the efficiency and effectiveness of extension service delivery have been raised, with many farmers citing irregular contact with extension agents,

inadequate technical support, and a lack of tailored solutions as major barriers to adoption (Asfaw, Kassie, et al., 2012; Birhanu, 2019 ). Furthermore, empirical research on smallholder farmers' perceptions of technology adoption has been limited, with most studies focusing on policy, governance, and technological aspects rather than the human and socio-economic dimensions of adoption (Tambo & Wünscher, 2017; Kassie et al., 2015). For example, studies in neighboring regions (e.g., Teshome et al., 2021 ) highlight the role of participatory approaches in improving extension outcomes, yet such strategies remain under-tested in the context of Abeshga's aging farming population and gender disparities.

This study seeks to address this gap by exploring the factors that influence smallholder farmers' decisions to adopt or reject agricultural technologies in Abeshga Woreda, Gurage Zone. Specifically, it aims to examine farmers' perceptions of extension services, identify the barriers to technology adoption, and propose effective strategies for improving the delivery of extension information to a larger number of farmers. By building on earlier work by Otsuka (2017) on human dynamics and Asfaw et al. (2012) on systemic barriers, this research uniquely integrates socio-cultural, demographic, and institutional lenses to analyze adoption challenges in a localized context. By focusing on the localized context of Abeshga Woreda, this research aims to contribute to a deeper understanding of the socio-economic and institutional factors that shape farmers' adoption decisions and to provide actionable recommendations for enhancing the effectiveness of agricultural extension services in Ethiopia.

### **1.3. Objective of the study**

#### **1.3.1. General objective**

The primary aim of this study is to assess the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone.

#### **1.3.2. Specific objectives**

This research aimed to achieve the following specific objectives:

- To determine the influence of farmers' socio-economic characteristics (age, gender, education level, farming experience) on their adoption of agricultural technologies.

- To evaluate farmers' perceptions of extension agents' service delivery in terms of accessibility, communication effectiveness, and information relevance.
- To analyze the relationship between farmers' perceptions of extension services and the contribution of extension agents to improved crop productivity.

#### **1.4. Research questions**

This research addresses the following specific questions:

- Which socio-economic factors influence farmers' decisions to adopt agricultural technologies?
- What are farmers' perceptions of the effectiveness of extension agents in delivering agricultural services
- How do farmers' perceptions of extension services relate to the role of extension agents in supporting smallholder crop production productivity

#### **1.3. Scope of the study**

This study focuses on assessing the perceptions of smallholder farmers regarding agricultural extension services in Abeshga Woreda, located in the Gurage Zone of Ethiopia. The scope encompasses an analysis of the socio-economic characteristics of farmers, their adoption of agricultural technologies, and their views on the effectiveness of extension service delivery. The study is geographically limited to Abeshga Woreda, the wereda characterized by smallholder farming systems that rely heavily on agricultural extension services for improved productivity. The research examines key variables such as age, gender, education level, farming experience, and access to resources, which are critical in understanding farmers' decision-making processes and their engagement with extension services.

The study also explores the role of extension agents in bridging the gap between agricultural research and practical application. It investigates how farmers' perceptions of extension services influence their adoption of modern technologies and practices, ultimately impacting crop productivity. By focusing on these aspects, the study provides insights into the challenges and opportunities for improving agricultural extension services in the wereda.

The findings of this study are expected to contribute to the broader discourse on agricultural development by highlighting the importance of tailored extension approaches that address the unique needs of smallholder farmers. The study's scope is further enriched by its use of a mixed-methods research design, which combines quantitative and qualitative data to provide a comprehensive understanding of the issues at hand.

This research is particularly relevant in the context of Ethiopia's agricultural transformation agenda, which emphasizes the role of extension services in enhancing food security and rural livelihoods (Ministry of Agriculture, 2020). By focusing on Abeshga Woreda, the study offers localized insights that can inform strategy and practice at the woreda level.

#### **1.4. Limitations of the study**

This study primarily focused on assessing farmers' perceptions of agricultural extension services on adoption decisions in Abeshga Woreda, located in the Gurage Zone of Ethiopia. While the research provides valuable insights, it encountered several limitations that may affect the generalization ability and depth of the findings. One of the primary challenges was ensuring that respondents completed the questionnaire without frustration. Many farmers, particularly those with limited literacy, found it difficult to understand and respond to certain questions. To address this, the researcher provided additional explanations and assistance, but this may have introduced some bias in the responses. Another significant limitation was the difficulty in scheduling interviews. The study coincided with the rainy season, a critical period for farming activities in the region. During this time, farmers were heavily occupied with planting and other agricultural tasks, making it challenging to allocate time for interviews. To mitigate this, the researcher collaborated with local agricultural experts to organize interviews during evenings or other less busy times. Despite these efforts, the timing of the study may have limited the number of participants and the depth of their responses.

Additionally, the study's focus on a single woreda (Abeshga) limits its generalized ability to other regions with different socio-economic and agricultural contexts. While the findings provide valuable insights into the specific challenges and opportunities in Abeshga Woreda, they may not fully represent the experiences of farmers in other parts of Ethiopia or similar developing

countries. Despite these limitations, the study successfully collected meaningful data by leveraging the support of local agricultural experts and raising awareness about the study's potential benefits for the community. These efforts ensured that the research remained relevant and accessible to the target population.

### **1.5. Significance of the study**

This study holds significant importance for various stakeholders in the wereda, including strategy developers, agricultural extension practitioners, researchers, and smallholder farmers. By examining the perceptions of smallholder farmers regarding agricultural extension services in Abeshga Woreda, the research provides critical insights into the factors influencing technology adoption and productivity enhancement. For the wereda Extension officer, the findings offer evidence-based recommendations for improving the design and implementation of agricultural extension programs. The study highlights the need for tailored approaches that address the unique socio-economic characteristics and needs of smallholder farmers. This aligns with Ethiopia's broader agricultural transformation agenda, which emphasizes the role of extension services in achieving food security and rural development (Ministry of Agriculture, 2020). For agricultural extension practitioners, the study underscores the importance of effective communication, accessibility, and relevance in service delivery. By understanding farmers' perceptions, extension agents can better tailor their approaches to meet the specific needs of their target audience, thereby enhancing the adoption of modern agricultural technologies and practices (Anderson & Feder, 2007).

For researchers, the study contributes to the growing body of literature on agricultural extension services and technology adoption in Ethiopia. It provides a localized perspective that can inform future research and interventions aimed at improving agricultural productivity and livelihoods. For smallholder farmers, the study raises awareness about the potential benefits of engaging with extension services and adopting modern technologies. By highlighting the challenges and opportunities in the current system, the research empowers farmers to advocate for more effective and inclusive extension services. Overall, this study serves as a valuable resource for advancing agricultural development in Ethiopia and similar contexts. It bridges the gap between research and practice by providing actionable insights that can inform the wereda Extension

Officer, improve service delivery, and ultimately enhance the productivity and livelihoods of smallholder farmers (Rogers, 2003).

## **1.6. Organization of the research**

This research is systematically organized into five chapters, each designed to provide a comprehensive understanding of the study's objectives, methodology, findings, and implications. The structure ensures clarity and coherence, guiding the reader through the research process and its outcomes. The first chapter introduces the research by providing background context, statements of the problem, and rationale for the study. It outlines the general and specific objectives, research questions, and the significance of the study. The chapter also defines the scope and limitations of the research, setting the stage for the subsequent chapters. The second chapter deals with reviews of existing literature and theoretical frameworks relevant to the study. It explores key concepts such as agricultural extension services, technology adoption, and smallholder farmers' perceptions. The chapter identifies gaps in the literature and establishes the theoretical foundation for the research. Synthesizing previous studies provides a context for understanding the current research problem and its relevance.

The third chapter also details the research design, methodology, and procedures used to collect and analyze data. It includes a description of the study area (Abeshga Woreda), the sampling techniques, data collection methods (e.g., surveys, interviews), and the tools used for analysis. The chapter also discusses ethical considerations and the steps taken to ensure the validity and reliability of the findings. The fourth chapter presents the analysis and discussion of the study, organized in alignment with the research objectives and questions. It provides a detailed analysis of the data, using both quantitative and qualitative methods to interpret the results. The chapter highlights key trends, patterns, and insights, offering a clear understanding of farmers' perceptions and their impact on technology adoption and productivity.

Finally, the last chapter discusses the conclusion and recommendations. This chapter synthesizes the findings, discussing their implications in relation to the research objectives and existing literature. It draws conclusions based on the analysis and provides actionable recommendations for wereda Extension officer, extension practitioners, and other stakeholders. The chapter also

identifies areas for future research, contributing to the ongoing discourse on agricultural development and extension services. This structured approach ensures that the research is methodologically sound, logically organized, and accessible to a wide audience. By following this framework, the study provides valuable insights into the challenges and opportunities for improving agricultural extension services and enhancing smallholder farmers' productivity.

## **1.7. Operational definitions of key terms**

The following are definitions of key operational terms utilized in this research. These definitions are based on universally accepted scientific and academic sources to ensure clarity and precision.

### **1. Perception**

Perception is the cognitive process of organizing, identifying, and interpreting sensory information to understand and represent the environment or presented information. It involves the processing of signals by the nervous system, resulting from physical or chemical stimuli (Goldstein, 2019).

### **2. Small-Scale Farmers**

Small-scale farmers, also known as smallholder farmers, are individuals or households engaged in farming on relatively small plots of land, typically less than two hectares. They often have limited access to resources such as land, capital, and technology, and primarily rely on family labor for subsistence farming (World Bank, 2020).

### **3. Extension**

Extension is a systematic process of collaborating with farmers and rural communities to provide them with relevant agricultural knowledge, skills, and technologies. The goal is to improve farm productivity, competitiveness, and sustainability (Anderson & Feder, 2007).

### **4. Agricultural Extension**

Agricultural extension is a community-centric educational practice aimed at addressing local agricultural challenges. It involves the transfer of knowledge, skills, and technologies to farmers to enhance productivity and sustainability. It integrates educational methods, advisory services, and facilitation under existing economic policies and infrastructure (Rivera & Qamar, 2003).

## **5. Adoption**

Adoption refers to the decision-making process by which individuals or groups accept and implement new technologies, practices, or ideas. In agriculture, adoption involves farmers integrating new methods, tools, or crops into their existing farming systems (Rogers, 2003).

## CHAPTER TWO

### 2. LITERATURE REVIEW

This chapter provides an in-depth review of existing literature relevant to the study's objectives. It explores key themes such as smallholder farmers' perceptions, socio-economic factors influencing technology adoption, the effectiveness of extension agents, and the role of extension services in enhancing agricultural productivity. The review is structured to align with the study's objectives and provides a theoretical and empirical foundation for the research.

#### 2.1. Agricultural Extension Models in Developing Countries

In the literature, agricultural extension plays an important role in the dissemination of information and training among farmers in the adoption of new agricultural practices (Ntshangase et al., 2018). Agricultural extension education is integral in the dissemination of essential information and training capable of transforming the slow agricultural growth in developing countries to a dependable, sustainable the sector (Doss et al., 2003; Suvedi et al., 2017b). In particular, the adoption of new farming techniques and promoting their use by farmers is critical in improving agricultural output and harnessing overall farm efficiency. Channels of communicating agricultural innovations to farmers are a necessary determinant in the spread and adoption of those practices in developing countries, where the adoption of new agricultural practices and technologies remains low (Doss et al., 2003). The literature suggests that the agricultural yields among smallholder farmers have not positively responded to public and private agricultural extension interventions (Ferroni & Castle, 2011). In order to evaluate the role of agricultural extension in adoption of new technologies, it is important to understand how different models of extension services are structured. Three models remain dominant in the delivery of agricultural extension in developing countries (Ponniiah et al, 2008a ).

The first model captures smallholder farmers, who rely on public extension services. These smallholder farmers grow staple food and minor cash crops according to the size of their land. These farmers also rely on subsidized services, available to smallholder farmers engaged in

growing staple foods and minor cash crops across various agro-ecological zones. In this model, farmers receive basic inputs, such as seeds and fertilizer from the public extension services.

The inputs and services under this model are provided at no charge. In a second model of extension service, farmers share the cost of any extension services that they receive either from public or private sources. The effectiveness of this model is measured by farmers' willingness and ability to share the cost of any extension service they receive (Ponniah et al., 2008b). The implementation and delivery of service can run into potential problems if farmers are pressured into investing in technologies that are unproven, and that they may consider to be risky. However, a major benefit of this model is its farmer ownership, often demonstrated by a commitment to bear some of the costs. This model may be difficult to implement because of the broad variability in farmers' needs and availability of resources. Finally, a third model involves fully commercialized agriculture comprised of private sector services, featuring private companies and cooperatives, and quasi- public organizations who work mainly with specific commodities such as tea, coffee, and sugar (GOK, 2014). The latter model is uncommon among smallholder farmers due to the large scale nature of production that is incomparable with small scale farming. Under the latter model, the producer often deals with private sector companies or service providers engaged in the production and distribution of seeds, fertilizers, and pesticides. This model is suitable for large scale producers with varied sources of financing and who can afford various technologies and services, mostly from private service providers (Mwangi & Kariuki, 2015). Implementing the foregoing models of extension depends on other actors in agricultural extension education who provide complementary roles in disseminating agricultural information. The actors across the three private and public extension models provide services ranging from delivery of inputs, agricultural marketing, insurance, education, and other services. Understanding the variability in farming systems is an integral factor for determining the corresponding services needed in order to develop an effective agricultural extension model. In addition, the various stakeholders may interactively play different, complex, and complementary roles in support of the farmers' needs.

## 2.2. Smallholder farmers' perceptions of agricultural extension services

Smallholder farmers' perceptions are a critical determinant of the success or failure of agricultural extension programs. Perception, in this context, refers to the way farmers interpret and assign meaning to information, ideas, and experiences related to agricultural extension services, based on their pre-existing beliefs, knowledge, values, and socio-economic context (Rogers, 2003). These perceptions can significantly influence farmers' willingness to engage with extension agents, adopt recommended technologies, and ultimately improve their agricultural practices and productivity (Leeuwis & van den Ban, 2004).

Studies have consistently shown that farmers' perceptions of extension services are multifaceted and influenced by a range of factors. One key factor is the relevance of the information provided by extension agents. Farmers are more likely to value extension services when the information is tailored to their specific needs, circumstances, and farming systems (Neuchâtel Group, 2007). Information that is perceived as irrelevant or too general is likely to be ignored or dismissed.

Another important factor is the credibility of extension agents. Farmers are more likely to trust and follow the advice of extension agents whom they perceive as knowledgeable, experienced, and trustworthy (Pretty & Smith, 2004). Factors that can enhance credibility include having strong technical skills, demonstrating a genuine commitment to farmers' well-being, and maintaining consistent and reliable communication. The accessibility of services, the clarity of information, and perceived benefits must also be present (Neuchâtel Group, 2007).

In Ethiopia, agricultural extension services play a central role in the government's efforts to promote food security and rural development (Spielman et al., 2011). The Ethiopian agricultural extension system is largely based on a top-down, technology-transfer model, where extension agents disseminate information and technologies developed by research institutions to smallholder farmers (Davis et al., 2010). While this model has achieved some successes, it has also been criticized for its lack of farmer participation, its focus on promoting standardized technologies, and its failure to address the diverse needs and constraints of smallholder farmers (Spielman et al., 2011). Thus, with a clearer and more open, accessible and transparent approach, the farming community may be more receptive.

Understanding farmers' perceptions of agricultural extension services is therefore essential for designing more effective and inclusive extension programs in Ethiopia. By identifying the factors

that shape farmers' perceptions, policymakers and practitioners can develop strategies to enhance the relevance, credibility, and accessibility of extension services, thereby increasing their adoption and impact (Leeuwis & van den Ban, 2004).

### **2.3. Attitudes and Perceptions of Farmers on Agricultural Technology Adoption**

The decision-making process for adoption of technology involves both extrinsic and intrinsic factors that influence acceptance of new technologies and practices. The current literature on the role of knowledge, attitudes, and perceptions in the adoption of agricultural technologies tends to focus on the extrinsic characteristics, such as economic considerations (Meijer et al., 2015). However, intrinsic factors may be equally, if not more important, in their influence over adoption of agricultural and agro forestry innovations in smallholder communities in sub-Saharan Africa. Recent research has shown that a combination of extrinsic and intrinsic characteristics can provide a more holistic understanding of farmers' views of technology adoption (Meijer et al., 2015).

The attitude of farmers towards new technologies may be the foundational construct in understanding farmer's adoption of new agricultural practices. Attitude is a central, intrinsic construct in social psychology that has been widely applied in the understanding of human behavior (Edison & Geissler, 2003; Fishbein & Ajzen, 1975). As a concept, attitudes serve to evaluate whether an object or practice is favorable or unfavorable. In short, it has been defined as an index of the strength of how much a person likes or dislikes an idea, a concept or views towards others (Ajzen & Fishbein, 1980). Formation of attitudes is shaped by what an individual perceives as true or false (Willock et al., 2008b). Attitudes serve as influences on the behavior of an individual and are informed by behaviors and values. In agriculture, the decision-making process that an individual farmer undergoes allows the evaluation and formation of favorable or unfavorable beliefs about an agricultural practice, including new technologies. According to foundational theories on attitudes, it may not always be possible to measure the process of belief formation, but attitudes can be observed through the choices individuals make (Fishbein & Ajzen, 1975). The configuration of attitude formation may be influenced by any given number of social or physical environmental variables.

In agricultural production, smallholder farmers have been found to act similarly towards an agricultural innovation as to any other technologies in their evaluation of the utility of the technology (Edison & Geissler, 2003). Socio-demographic factors, such as age, gender, income or level of education have been suggested to be leading determinants of the agricultural technology adoption in the literature (Nyanga, 2012a). Specifically with regard to the role of gender in technology adoption among African women, some studies have concluded that gender roles within households cannot be clearly summarized (Doss, 2001). Even if the female labor share in crop production is high, no clear pattern of adoption of agricultural technologies has been established for women comparatively to men (Palacios-Lopez et al., 2017).

In practice, individual smallholder farmers have been found to behave differently based on their production needs or household circumstances. One study exploring attitudes towards using precision agriculture technology found that a confident attitude had a positive effect on technology adoption. Specifically, attitudes of confidence towards using precision agriculture technologies, the perceptions of net benefits, and farm size positively influenced the intention to adopt agricultural precision technologies (Adrian et al., 2005). These studies suggest that economic benefit may not be the primary reason that producers opt to adopt precision agricultural technologies. However, the findings do not conclude that these findings are generalizable across all technologies.

There is a wealth of studies on the perceptions of smallholder farmers towards agricultural innovations (Ntshangase et al., 2018); however, farmer experiences vary across different parts of developing countries. Employing a cross-sectional study design, Ntshangase et al. (2018) explored the factors influencing the adoption of no-till conservation agriculture (CA) and explored farmers' perceptions of that technology. Findings from that study suggested that farmers' positive perceptions were positively correlated with higher maize yields.

When farmers' uncertainty towards adopting a new technology is due to lack of information or adequate training, access to extension services can influence a change of perceptions for a farmer toward their agricultural practices (Morton et al., 2017). However, this argument is contingent upon the operating socio-cultural environment that shapes the general belief system in a specific social context.

In cases where uncertainty is caused by insufficient information, access to more information has not been found sufficient to address claims of uncertainty when socio-cultural norms are a factor

in contesting the introduction of new practices. In such a circumstance, Morton et al. (2019) recommended that scientific information linked to local values and trusted agricultural networks would be more locally accepted. To lessen user resistance to new information, the communicated message must embrace local values and customs in its design. A recent study found that extension service was a determinant in the promotion of no-till conservation practices among farmers (Ntshangase, Muriyowa and Sibanda, 2018). So, in effect, the practices employed by regular extension services may be more effective in reaching farmers when they engage social networks by attending to local attitudes and values. Regional studies are critical in understanding local populations, for attitudes and perceptions towards new practices are not constant but vary across socio-cultural contexts and practices.

## 2.4. Socio-economic characteristics and technology adoption

The adoption of agricultural technologies by smallholder farmers is not solely determined by their perceptions of extension services; it is also significantly influenced by their socio-economic characteristics. These characteristics, which encompass a range of factors such as age, gender, education level, land size, access to credit, and household composition, can create both opportunities and constraints for technology adoption (Feder et al., 1985). Therefore, creating programs that are aware of challenges in each socio-economic group will help ensure that the results are effective.

**Age:** The relationship between age and technology adoption is complex and can vary depending on the context. Some studies have found that younger farmers are more likely to adopt new technologies due to their greater openness to innovation and their longer time horizon for realizing the benefits (Doss, 2006). However, other studies have shown that older farmers, with their accumulated experience and wealth, may be better able to afford the costs and risks associated with adopting new technologies (Feder et al., 1985).

• **Gender:** Gender plays a significant role in technology adoption, with women farmers often facing greater barriers than men. Women farmers may have limited access to land, credit, information, and other resources, which can hinder their ability to adopt new technologies (Doss, 2006). Furthermore, cultural norms and social expectations may restrict women's participation in agricultural decision-making, limiting their agency in technology adoption processes (Meinzen-Dick et al., 2011).

- **Education Level:** Education level is consistently found to be a positive predictor of technology adoption (Feder et al., 1985). More educated farmers are generally better able to understand new information, assess the risks and benefits of new technologies, and access credit and other resources needed for adoption.

- **Land Size:** Land size is often positively associated with technology adoption, as farmers with larger landholdings are better able to afford the costs and risks associated with adopting new technologies (Feder et al., 1985). However, this relationship may not always hold true, as farmers with smaller landholdings may be more motivated to adopt technologies that increase productivity per unit of land (Pattanayak et al., 2003).

- **Access to Credit:** Access to credit is essential for many smallholder farmers to adopt new technologies, as it allows them to finance the purchase of inputs, equipment, and other resources (Feder et al., 1985). However, many smallholder farmers, particularly in developing countries, lack access to formal credit markets and must rely on informal sources of financing, which may be expensive and unreliable.

- **Household composition:** The number of members can affect the total income of a household and its members. Depending on these members, there may be a need for that household to participate in extension services.

Addressing these factors requires a deeper understanding of the socio-economic dynamics at play and the development of targeted interventions to support vulnerable groups. For instance, providing access to affordable credit and inputs, as well as tailored training programs, can enhance farmers' capacity to adopt and benefit from new technologies (Mekonnen et al., 2018).

## **2.5. Farmers' perceptions and the role of extension agents in enhancing productivity**

The connection between farmers' perceptions and the role of extension agents in enhancing productivity is a critical area of study. Farmers who perceive extension services as valuable and relevant are more likely to adopt recommended practices, leading to improved productivity and livelihoods (Rogers, 2003) Conversely, negative perceptions can result in low adoption rates and

limited impact on agricultural outcomes. For example, a study by Anderson and Feder (2007) found that farmers in India who perceived extension services as accessible and relevant were more likely to adopt improved seeds and fertilizers, leading to higher yields and incomes. Similarly, a study by Birner et al. (2009) found that farmers in Sub-Saharan Africa who had positive interactions with extension agents were more likely to adopt conservation agriculture practices.

In the context of Ethiopia, the effectiveness of extension agents in enhancing productivity depends on their ability to build trust, provide tailored advice, and address the specific challenges faced by smallholder farmers. For instance, providing training on climate-smart agricultural practices and facilitating access to markets can enhance farmers' productivity and resilience (Mekonnen et al., 2018).

## **2.6. Diffusion of Agricultural Information**

The delivery of extension training and education requires a diverse set of networked actors and multiple pathways from which farmers learn about new technologies. These pathways include experiential learning, social learning from face-to-face interaction, and technical learning from outreach materials provided by more formal institutions (Lubell et al., 2011, 2014). Access to agricultural information includes both formal and informal sources of knowledge that farmers integrate into their farm practices based on individual needs. Among smallholder farmers, farmer- to-farmer interaction is one of the main learning channels through which new and existing agricultural information and knowledge can be shared across social systems. Agricultural extension could leverage these social networks under the right conditions.

To take advantage of the networked infrastructure of knowledge systems, agricultural extension services need to be modified to establish that the novel technology is suitable for local agricultural systems (Lubell et al., 2014). This may require customizing proposed technologies with local farming practices to make them more acceptable and relevant to local farming needs. For example, farmers in eastern Zambia revealed that while they had positive attitudes towards minimum tillage as a conservation technology, local resources did not allow them to continue using minimal tillage, eventually resulting in farmers dropping that practice altogether (Grabowski et al., 2016). These findings support the idea that to sustain the adoption of a particular technology, the new practices must be integrated to local resources. Other studies have

demonstrated that if the application of technology involves a series of complicated stages and processes, it can be a barrier to adoption among potential adopters (Ronner et al., 2018). In other studies, failure to involve key stakeholders in agriculture has resulted in the underperformance of the agricultural sector. For instance, a study on gender perceptions and adoption of push-pull technologies in eastern Africa found that 98.6% of women perceive technology to be more important than men (Murage et al., 2015). Yet another study identified that women often failed to access extension resources, even though they represented a crucial resource in agriculture (Murage et al., 2015). These studies demonstrate that extension services could benefit from the exploration of local factors that influence farmer engagement, as well as exploring the underutilized resources for adoption of technology. Several studies have looked into the use of outreach as an avenue of reaching farmers in need of extension services.

Findings from those studies concluded that the understanding of local dynamics and customs as essential for effectively sharing information about local farming practices (Bandiera & Rasul, 2006b; Cavanagh et al., 2017b; Ramirez, 2013b; Suvedi et al., 2017b). These studies suggested that adopting effective new agricultural extension approaches may be contingent on extending, not eliminating traditional and regionally specific agricultural knowledge, customs and practices.

## **2.7. Theoretical framework**

The theoretical framework of this study is anchored in Rogers' Innovation Diffusion Theory (IDT), which provides a robust foundation for understanding how new ideas, technologies, and practices are adopted and disseminated within a community. Rogers (2003) defines diffusion as the process by which an innovation is communicated through certain channels over time among members of a social system. This theory has been widely applied across disciplines, including agriculture, to explain the adoption of innovative technologies and practices.

The framework is particularly relevant to this study as it seeks to evaluate smallholder farmers' perceptions of agricultural extension services and their influence on technology adoption and productivity enhancement in Abeshga Woreda. The theory identifies four key elements that influence the diffusion process:

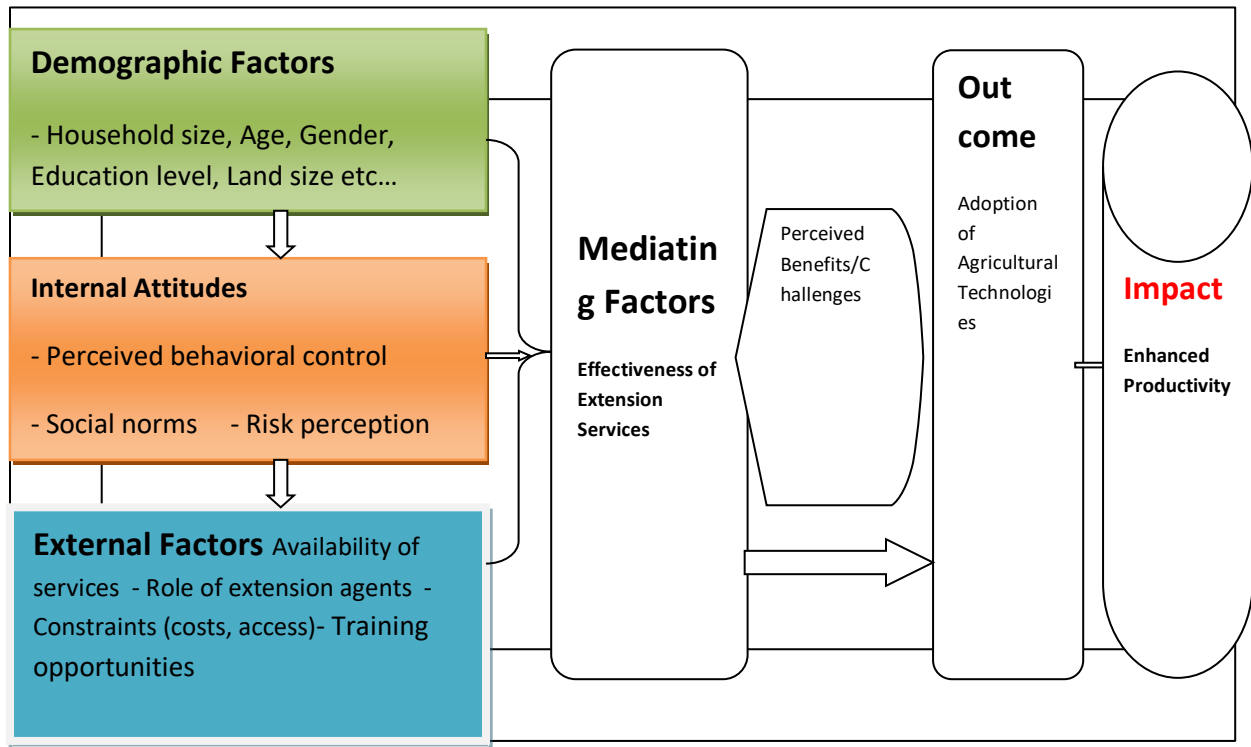
- **The Innovation:** This refers to the new technology, practice, or idea being introduced. In this study, the innovation includes modern agricultural technologies and practices promoted through extension services.

- **Communication Channels:** These are the means through which information about the innovation is disseminated. In the context of this study, communication channels include extension agents, farmer field schools, and community-based organizations.
- **Time:** The diffusion process occurs over time, and the rate of adoption varies among individuals. Rogers (2003) identifies five stages of the adoption process:
  - **Knowledge:** Farmers become aware of the innovation.
  - **Persuasion:** Farmers form an attitude (positive or negative) toward innovation.
  - **Decision:** Farmers decide to adopt or reject the innovation.
  - **Implementation:** Farmers put the innovation into practice.
  - **Confirmation:** Farmers evaluate the outcomes and decide whether to continue using the innovation.
- **Social System:** This refers to the community or group within which the innovation is being introduced. In this study, the social system includes smallholder farmers in Abeshga Woreda, their socio-economic characteristics, and the local agricultural context.

## 2.8. Conceptual framework

The conceptual framework for this study is designed to illustrate the relationship between the dependent and independent variables, as well as the factors influencing smallholder farmers' perceptions of agricultural extension services and their adoption of technologies. The framework is grounded in Rogers' Innovation Diffusion Theory (Rogers, 2003) and incorporates socio-economic, attitudinal, and external factors that shape farmers' decision-making processes. The framework illustrates how demographic factors, internal attitudes, and external factors collectively influence farmers' perceptions and decisions regarding technology adoption. The arrows in the framework (Figure 1) depict the flow of influence, showing how these factors interact to shape the outcome. For example, positive perceptions of extension services and favorable socio-economic conditions are likely to enhance technology adoption, while constraints such as high costs or lack of resources may hinder it.

Figure 1 . Conceptual Framework of the study



Source: Adapted from Rogers (2003) and Anderson & Feder (2007)

## CHAPTER THREE

### 3. METHODOLOGY OF THE STUDY

#### 3.1. Descriptions of the study area

This study focuses on Abeshga Woreda; it is in the Gurage Zone of the Central Ethiopian Region, approximately 152 km west of Addis Ababa. The woreda is administratively divided into 26 rural kebeles and 4 urban kebeles. The administrative town, Wolkite, serves as the central hub for governance and service delivery. The woreda is predominantly rural, with agriculture serving as the primary livelihood for 93% of the population (Leta et al., 2017a). The area is characterized by a mixed crop-livestock farming system, with smallholder farmers cultivating crops such as Teff, Enset, maize, sorghum, chickpeas, and peppers. Livestock production also contributes significantly to the local economy.

Despite the potential for agricultural development, smallholder farmers in Abeshga Woreda face numerous challenges, including limited access to modern technologies, inadequate extension services, and resource constraints. These challenges hinder their ability to adopt innovative practices and improve productivity. Understanding farmers' perceptions of extension services is therefore critical for designing effective interventions that address their needs and enhance agricultural outcomes.

Figure 2 . Study Area



Source; Gurage zone plan office

### **3.2. Research designs**

The research design serves as the blueprint or framework for data collection, measurement, and analysis, ensuring that the study effectively addresses its research questions (Sekaran&Bougie, 2016, p. 95). In this study, a mixed-methods research design was employed to evaluate the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone. Creswell and Plano Clark (2018, p. 121) identify three core mixed methods designs: descriptive survey design, explanatory sequential design, and exploratory sequential design. For this study, a convergent design was selected due to its ability to collect, analyze, and interpret both quantitative and qualitative data simultaneously. This research design allows for the integration of results during the interpretation phase, enabling the identification of areas of convergence, divergence, contradictions, or relationships between the datasets (Creswell, 2009; Creswell & Plano Clark, 2018, p. 118).

The convergent design was chosen because it provides a comprehensive understanding of the research problem by combining the strengths of both quantitative and qualitative data. Quantitative data, collected through structured surveys, offers statistical insights into farmers' perceptions, while qualitative data, gathered through focus group discussions (FGDs) and key informant interviews (KIIs), provides deeper contextual understanding and nuanced perspectives. By triangulating these datasets, the study aims to validate findings, enhance the reliability of results, and offer a holistic view of the challenges and opportunities in agricultural extension service delivery in Abeshga Woreda.

### **3.3. Research Approaches**

To evaluate the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone, a mixed research approach was employed. This approach combines both quantitative and qualitative methods to provide a comprehensive understanding of the research problem. According to Creswell and Plano Clark (2018), a mixed-methods approach is particularly effective for addressing complex social phenomena, as it allows researchers to triangulate data from multiple sources, enhancing the validity and reliability of findings. The key elements of this approach include:

### **3.4. Data Sources**

To evaluate the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone, the study relied on primary data. This source was carefully selected to ensure a comprehensive understanding of the research problem and to provide actionable insights into improving extension service delivery.

#### **3.4.1. Primary Data Sources**

##### ***3.4.1.1. Smallholder farmers:***

The primary data source for this study was smallholder farmers in Abeshga Woreda. Farmers were selected as the main respondents because they are the direct beneficiaries of agricultural extension services. Their perceptions, experiences, and feedback are critical for assessing the effectiveness of these services.

#### **3.4.2. Secondary Data Sources**

##### ***3.4.2.1. Extension Agents and Local Agricultural Officers:***

Extension agents and local agricultural officers were included as key informants to provide expert perspectives on the challenges and opportunities in service delivery. Data was collected through:

### **3.5. The population of the study**

The population for this study comprises smallholder farmers and agricultural extension officers in Abeshga Woreda, located in the Gurage Zone. Smallholder farmers were selected as the primary population because they are the direct beneficiaries of agricultural extension services and play a critical role in the implementation of these services. Their livelihoods are predominantly based on crop and livestock production, making them key stakeholders in the agricultural development process. Agricultural extension officers were also included in the study population as they are responsible for delivering extension services and supporting farmers in adopting improved agricultural practices.

#### **3.5.1 Characteristics of the Study Population**

##### ***3.5.1.1. Smallholder farmers:***

The small-holder farmers in Abeshga Woreda are primarily engaged in mixed farming systems, combining crop production (e.g., maize, Teff, and Enset) with livestock rearing (e.g., cattle, sheep, and goats). These farmers typically operate on small plots of land, often less than two hectares, and face challenges such as limited access to inputs, credit, and modern farming technologies. Their perceptions of agricultural extension services are critical for understanding the effectiveness of these programs and identifying areas for improvement.

#### **3.5.1.2. Agricultural Extension Officers:**

Agricultural extension officers in the study area are employed by the government to provide technical support, training, and advisory services to farmers. Their role includes disseminating information on improved farming practices, facilitating access to inputs, and promoting sustainable agricultural practices. Including extension officers in the study population allows for a comprehensive evaluation of the challenges and opportunities in service delivery from both the provider and recipient perspectives.

#### **3.5.2. Sampling Frame**

The sampling frame for this study includes 2,535 households residing in four selected kebeles within Abeshga Woreda, located in the Gurage Zone (Abeshge wereda plan and economic office, 2016), as well as 12 agricultural extension officers operating in the same area. The kebeles were chosen based on their representation of the diverse agricultural practices, socio-economic conditions, and geographical characteristics of the woreda. This sampling frame ensures that the study captures a wide range of perspectives and experiences related to the implementation of agricultural extension services.

#### **3.5.3. Sampling Techniques**

To evaluate the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone, a convergent mixed-methods research design was employed. This design integrates both qualitative and quantitative data collection and analysis, requiring a combination of probability and non-probability sampling techniques to ensure a representative and contextually relevant sample. The sampling process was conducted in multiple stages to capture diverse perspectives and experiences effectively.

## Multistage Sampling Approach

1. **First Stage: Site Selection Using Purposive Sampling:** The study sites were selected using purposive sampling, a non-probability sampling method that allows researchers to choose specific locations based on predefined criteria (Schutt, 2008). Abeshga Woreda was selected due to its agricultural potential and proximity to Wolkite University, which facilitated access to the study area. Within Abeshga Woreda, two clusters, Laygnaw Gareba and FitaJejuwere purposefully selected from a total of seven resource centers. These clusters were chosen because of limited prior research on agricultural extension services in these areas and their accessibility for in-depth observation and data collection.

2. **Second Stage: Kebele Selection Using Purposive Sampling** Kebeles, the smallest administrative units in Ethiopia, were selected as the next level of sampling. Out of nine kebeles in the purposively selected clusters, four were chosen based on their representation of diverse agricultural practices, socio-economic conditions, and access to extension services. This approach ensured that the study captured variations in farming systems and service delivery across different communities.

3. **Third Stage: Farmer Selection Using Simple Random Sampling** Within each selected kebele, simple random sampling was employed to select smallholder farmers for participation in the study kebele, after assigned a unique number to each household the selection process used lottery Method (Write down each household number on a slip of paper, mix them thoroughly, and draw out 96 slips without replacement). This probability sampling technique ensures that every farmer in the sampling frame has an equal chance of being selected, thereby minimizing bias and enhancing the representativeness of the sample (Torrance, 2012). A total of 96 smallholder farmers were selected to participate in structured surveys, ensuring a statistically significant sample size for quantitative analysis.

4. **Fourth Stage: Focus Group Discussion Participants Using Purposive Sampling** For qualitative data collection, participants for focus group discussions (FGDs) were drawn

purposively from the pool of selected farmers. This approach allowed the study to include farmers with diverse experiences and perspectives, ensuring rich and nuanced qualitative data. The purposive selection of FGD participants was guided by criteria such as gender, age, and farming experience to ensure inclusivity and representation.

#### 3.5.4. Sample size determination

To determine the sample size for a population of 2535 individuals with a 10% margin of error and a 90% confidence level, I used Yamane's (1967) simplified formula. This formula is widely used in social science research when the population size is known, when resources are limited, and a quick estimate is needed. And the researcher wants to estimate a population proportion with a specified level of confidence and margin of error, Yamane's formula provides a reasonable balance between statistical rigor and practicality (Bartlett, Kotrlik, & Higgins, 2001).

Formula:

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

Where:

- n = required sample size
- N = total population size (2535)
- e = adjusted margin of error (0.10, representing a 10% margin of error)

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

$$n = 2535 / (1 + 2535(0.10)^2)$$

$$n = 2535 / (1 + 2535 \times 0.01)$$

$$n = 2535 / (1 + 25.35)$$

$$n = 2535 / 26.35$$

$$n \approx 96.21$$

Therefore, based on Yamane's simplified formula, with the 90% confidence level and 10% margin of error, the required sample size is approximately 96. This is merely an approximate value, given the assumptions built into Yamane's Formula.

**Table 1. Distribution of sample households in the sample kebeles based on kebele**

Kebele	Total HH Number	Sample Size	Percentage
Jeju	880	33	34.4%
Fita	950	36	37.5%
LaygnawGareba	420	16	16.6%
TachgnawGareba	285	11	11.5%
Total	2535	96	100%

Source: Abeshge wereda plan office, 2024.

NB; Yamane's formula provides a simplified approach to calculating sample size, which is appropriate given the descriptive nature of this study and the limited resources available. While more complex formulas may offer slightly greater precision, Yamane's formula provides a reasonable balance between statistical rigor and practicality (Bartlett, Kotrlik, & Higgins, 2001).

Implications for the Study Context:

- **Representativeness:** The use of a proportional allocation method ensures that the sample is representative of the population of smallholder farmers across the four selected kebeles.
- **Statistical Power:** A sample size of 96 households provides sufficient statistical power to detect meaningful differences in perceptions and outcomes.
- **Feasibility:** The calculated sample size is feasible within the constraints of the available resources and time.

### 3.6. Data Collection Tools

### **3.6.1. Questionnaire**

the primary data collection tool for this study was a semi-structured questionnaire, designed to evaluate the perceptions of smallholder farmers regarding the implementation of agricultural extension services in Abeshga Woreda, located in the Gurage Zone. The questionnaire was developed to gather comprehensive information on two key areas: (1) the socio-demographic characteristics of farmers that influence their adoption of agricultural technologies, and (2) the role of agricultural extension services in enhancing crop production and farmers' perceptions of these services.

The questionnaire was structured to include both closed-ended and open-ended questions, allowing for the collection of quantitative data for statistical analysis and qualitative insights for deeper understanding. Closed-ended questions were designed to capture specific information, such as farmers' access to extension services, frequency of interactions with extension agents, and perceived effectiveness of these services. Open-ended questions provided farmers with the opportunity to share their experiences, challenges, and suggestions for improving delivery extension.

To ensure clarity and effective communication, the questionnaire was initially prepared in English and then translated into Amharic, the local language spoken by the majority of farmers in the study area. This translation was carefully reviewed by bilingual experts to ensure accuracy and cultural relevance.

### **3.6.2. Focus group discussions (FGDs)**

Focus group discussions (FGDs) were employed 32 small holder farmers, eight within each kebele, as a qualitative data collection tool to gain deeper insights into smallholder farmers' perceptions of agricultural technology adoption and the performance of extension services in Abeshga Woreda, located in the Gurage Zone. FGDs are particularly effective for exploring complex issues, as they facilitate social interaction among participants and encourage interpretative dialogue, allowing researchers to uncover nuanced perspectives that may not emerge through quantitative methods alone (Liamputtong, 2015).

### **3.6.3. Key Informant Interviews (KIIs)**

Semi-structured interviews were conducted with 12 extension agents and agricultural officers to gather their views on the implementation of extension programs, resource availability, and farmer engagement strategies.

## **3.7. Data Analysis**

- The data analysis for this study was conducted using a convergent mixed-methods research design, which integrates both qualitative and quantitative data to provide a comprehensive understanding of the research problem. The study employed purposive sampling and non-probability sampling methods to frame the research and collect data, ensuring that the sample was representative of the socio-economic and agricultural diversity of smallholder farmers in Abeshga Woreda, located in the Gurage Zone. The analysis aimed to address three key objectives: (1) To determine the influence of farmers' socio-economic characteristics (age, gender, education level, farming experience) on their adoption of agricultural technologies, (2) To evaluate farmers' perceptions of extension agents' service delivery, and (3) To analyze the relationship between farmers' perceptions of extension services and the contribution of extension agents to improved crop productivity.

### **3.7.1. Quantitative Data Analysis**

Quantitative data collected through structured surveys were analyzed using the Statistical Package for Social Sciences (SPSS) version 19.0. The analysis began with descriptive statistics, which summarized demographic data and the influence of agricultural extension services. Key variables, such as age, gender, education level, farm size, and access to extension services, were presented using frequencies, percentages, and tables. Additionally, a five-point Likert scale was used to measure farmers' perceptions of extension services, enabling the quantification of attitudes and opinions.

To investigate significant relationships between farmers' perceptions of extension services and their impact on crop production, chi-square analysis was employed. This statistical method was

particularly useful for identifying associations between categorical variables, such as farmers' satisfaction with extension services and their adoption of agricultural technologies.

### **3.7.2. Qualitative Data Analysis**

Qualitative data from interviews and focus group discussions (FGDs) were analyzed to complement the quantitative findings. The analysis began with the transcription of audio recordings from Amharic to English, ensuring accuracy and consistency. The exploratory data coding method was used to identify recurring themes and patterns in the data (Saldana, 2013). This process involved assigning codes to specific segments of the text, which were then grouped into broader categories aligned with the research objectives. The study adopted a deductive approach, using existing theories on technology adoption and extension services to guide the coding process. This approach ensured that the analysis was grounded in established knowledge while remaining open to emerging themes. The qualitative findings were triangulated with the survey results to identify consistency and contradictions, providing a deeper understanding of farmers' attitudes and perceptions

### **3.7.3. Integration of Quantitative and Qualitative Data**

The convergent mixed-methods design allowed for the integration of quantitative and qualitative data, enhancing the validity and reliability of the findings. Quantitative results provided a broad overview of trends and patterns, while qualitative insights offered context-specific explanations and nuanced perspectives. For example, while survey data might indicate a high level of satisfaction with extension services, FGDs could reveal underlying challenges, such as limited access to resources or inadequate training for extension agents.

## **3.8. Ethical Considerations**

The central ethical issue surrounding data collection through interviews is that participants should not be harmed or damaged in any way by the research. If a respondent becomes upset during an interview, the session should be immediately abandoned. Confidentiality should be offered to respondents when completing questionnaires and participating in interviews. Furthermore, respondents have the right not to answer individual questions or to terminate the

interview before its completion (Gray, 2006).

Thus, the researcher has protected the rights and well-being of participants in the research; and they were told that all information they are supposed to provide was kept secret and used only for research purposes. Moreover, the researcher communicated with the participants about what procedures are involved and their purpose; the relationship between the researcher and the participants; any discomfort or risk; answering questions with their consent; and the participants' right to withdraw consent at any time without prejudice.

## **CHAPTER FOUR**

### **4. RESULTS AND DISCUSSIONS**

#### **4.1. Introduction**

This chapter presents and analyzes the findings of the study, aligning with the stated specific objectives: (a) to investigate how socio-demographic characteristics influence agricultural technology adoption among smallholder farmers in Abeshga Woreda; (b) to explore farmers' views on the effectiveness of extension agents' service delivery; and (c) to clarify the connection between farmers' perceptions and the role of extension agents in enhancing the productivity of smallholder crop production. The analysis is organized to provide a clear and comprehensive understanding of the factors shaping technology adoption in the study area.

#### **4.2. Questionnaire return rate**

A total of 96 questionnaires were distributed to smallholder farmers in Abeshga Woreda, and 93 were successfully returned, yielding a response rate of 96%. According to Kothari (2003), a response rate of this magnitude is considered highly satisfactory and provides sufficient statistical power and reliability for drawing meaningful inferences from the data. This high response rate suggests a strong level of engagement and cooperation from the farming community, enhancing the validity and generalizability of the study findings.

#### **4.3. Socio-demographic characteristics of the respondents**

This section elaborates on the socio-demographic characteristics of the respondents, providing detailed insights into their age, gender, farming experience, and educational attainment. These characteristics play a crucial role in shaping farmers' perceptions, influencing their adoption decisions, and affecting their interactions with agricultural extension services.

### 4.3.1. Gender of the respondents

The survey results from Abeshga Woreda reveal a stark gender imbalance, with only 18.2% of interviewed farmers being female compared to 81.7% male. This finding corroborates the existing literature on gender disparities in developing nations, where women often face structural barriers limiting their agricultural productivity and economic empowerment (FAO, 2011

**Table 2: Gender Profile of Farmers**

Factors	Category	Frequency	Percentage
Gender Profile of Farmers	Male	76	81.7%
	Female	17	18.2%
	Total	93	100%

Source: author, 2025

This imbalance gender reflects deeply entrenched traditional and cultural norms that restrict female participation in agricultural activities (Senouga et al., 2020). As Kristjanson et al. (2017) suggest, this skewed representation can undermine the effectiveness of agricultural extension services by leading to the development and dissemination of technologies ill-suited to the specific needs and constraints of women farmers.

Qualitative insights from focus group discussions (FGDs) further illuminate the challenges faced by women. One female participant from Jeju Kebele poignantly stated, "We attend trainings but can't implement children and house hold duties come first." This statement underscores the compounded responsibilities of women, who often bear the primary burden of childcare and household duties, leading to time constraints, limited mobility, and higher rates of illiteracy (Quisumbing et al., 2015). This reality often overshadows their ability to translate knowledge gained from extension services into tangible improvements in agricultural practices.

The survey results and focus group insights, when considered in conjunction with the expertise of key informants like extension agents and agricultural experts, present a comprehensive picture of the challenges. As Saito & Weidemann (1990) and Doss (2018) highlight, the

underrepresentation of women in extension programs exacerbates existing inequalities and hinders the adoption of agricultural technologies that could improve their productivity and livelihoods.

#### 4.3.2. Age of the respondents

The age distribution of the farmers surveyed reveals a notable concentration among older age groups, with 35.5% aged 60 and above and 29.0% in the 51-60 age range. In contrast, only 4.3% of the respondents were under 30 years of age. This age profile suggests a potential generational gap in agricultural engagement, with a possible migration of younger, more productive individuals toward urban areas in pursuit of non-agricultural employment opportunities.

**Table 3: Age Profile of Farmers**

Factors	Category	Frequency	Percentage
Age Profile of Farmers	21 – 30	4	4.3%
	31 – 40	12	12.9%
	41 – 50	17	18.3%
	51 – 60	27	29%
	60 and above	33	35.5
	Total	93	100%

Source: author, 2025

The implications of an aging farming population are multifaceted, potentially impacting the rate of technological adoption and the overall sustainability of agricultural practices within the region. Older farmers may be more resistant to adopting new technologies due to factors such as a lack of formal education, limited access to information, or a preference for traditional farming methods (Feder et al., 1985). Conversely, they may possess valuable local knowledge and experience that could inform the adaptation and implementation of new technologies.

The age distribution of farmers is likely to influence technology adoption in AbeshgaWoreda. The predominance of older farmers may present challenges to the widespread adoption of agricultural technologies, as older farmers may be less receptive to new ideas and approaches

due to factors such as risk aversion, limited access to information, and a lack of formal education (Hanna & Hettiara-chchi, 2019). Moreover, the migration of younger individuals to urban areas may exacerbate the labor shortages in the agricultural sector, further hindering the adoption of labor-intensive technologies. This finding correlates with Van Rooyen&Njobe-Mbuli (1996).

### 4.3.3. Education level of respondents

The survey data from Abeshga Woreda highlights a critical constraint on technology adoption: the low educational attainment of its farming population. A significant 16.7% of the surveyed farmers reported never attending school, while a further 54.8% had only "some formal education." Only a small fraction, 26%, had completed primary school, and a negligible 1% had attained a high school education.

**Table 4: Education Profile of Farmers**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Education level of farmers	Did Not Attend	16	16.7%
	Some Formal Education	51	54.2%
	Primary School	25	26.0%
	High School	1	1.0%
	Total	93	100%

Source: author, 2025

These findings strongly suggest that a substantial segment of farmers in Abeshga Woreda may struggle with understanding and articulating complex agricultural concepts. The findings are also correlated with the literature on relationship between technology and education where, Education enhances ability in technology adoption and better understanding skills to be effective and sustainable (Feder, 1985).

The challenges of educational constraints of farmers are further justified by the focus group discussions. As one male farmer with "some formal education" shared in a focus group, "I don't

understand the fertilizer calculations, so I use what my neighbor uses." This direct quote powerfully illustrates the practical consequences of limited education: farmers rely on simplified heuristics or mimic the practices of others, potentially leading to suboptimal or even detrimental outcomes. Such dependence on neighbors or conventional means without proper scientific calculation may be damaging.

Confirming the implications derived from survey and focus group discussions, a key informant, a senior Extension agent, also highlighted that "complexity of fertilizer labels, crop diversification and its high cost" and training materials poses an issue to illiterate farmers. The lack of adequate understanding hinders adoption and sustainability, and as well farmers can't effort the high cost for complex calculation due to poverty.

The link between educational attainment and the adoption of technology is well established in the development economics literature. Farmers with lower levels of education are often less likely to adopt new technologies due to a lack of awareness, difficulty in understanding technical information, or a limited capacity to assess the potential risks and benefits associated with adopting new practices (Duflo et al., 2011). This is in alignment with (Haddad et al., 1995), farmers with limited education may face challenges accessing credit, farmers organization and navigating complex market system and benefit from agriculture technologies.

#### **4.3.4. Marital status of the respondents**

The survey data from Abeshga Woreda reveals that the vast majority of farmers interviewed are married (80.6%), reflecting the strong emphasis on marriage and family structures within the community. A smaller proportion of farmers are single (16.7%), divorced (1.0%), or widowed (1.0%).

**Table 5: Marital status of the respondents**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Marital Status	Married	75	80.6
	Single	16	16.7
	Divorced	1	1.0
	Widowed	1	1.0
	Total	93	100%

Source: author, 2025

The findings are correlated with the understanding of how farmers act and behave in socio cultural means where, the culture is deeply rooted in family life and agriculture as an economic means (Goody,1976). The data indicates a need to have good cultural and understanding of marital status to create development in means.

The high percentage of married farmers poses a risk behavior, focus group discussions highlighted concerns about new technology, and providing for large number of family sizes which cannot be taken into account and may result in lack of innovation. It was said by one farmer "I can't gamble with new seeds when feeding up to 7 family members". This statement reflects how risk aversion can take in action based on socio cultural aspect and what it means to experiment is high. As said by the participant feeding his family is more important than experimenting for means.

Corroborating with the information that has been gathered the expert opinion that the innovation of new farming techniques or technology adoption should be based on what the size of the families are and how it could improve the current means for them. It is very important for those who are single with no family to adopt new means than compared to those that need to feed their family. The marital status has a profound factor to the society for culture means and those that experiment may also go with their social group (Uphoff, 1992).

This idea from the study helps correlate with existing literature. On the one hand, married farmers may have access to family labor and financial resources (World Bank, 1989; Ellis, 1993), potentially facilitating technology adoption. However, they may also be more risk-averse

due to the responsibility of providing for their families (Rosenzweig & Stark, 1989; Benjamin, 1992). The single, divorced, and widowed farmers and their experiences with the community show that social economics plays a huge role. The lack of farmers in a group may have posed certain risk factors and that they can be limited to economic means for resources. The small sample size of single, divorced and widowed farmers show statistical factors is limited.

#### 4.3.5. Household size of the respondents

The survey results indicate a diverse range of household sizes among the farmers in Abeshga Woreda. A significant portion, 56.9%, reported having household sizes ranging from 5 to 10 members, while 31.2% had smaller households of 0 to 4 members. A smaller percentage, 10.4%, indicated larger households with 11 to 20 members.

**Table 6: Household Size Profile of Farmers**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
<b>Household Size</b>	0 – 4	30	31.2%
	5 - 10	53	56.9%
	11 - 20	10	10.4%
	Total	93	100%

Source: author, 2025

These findings are consistent with existing literature suggesting that household size is a crucial socio-economic factor influencing agricultural practices. As Benjamin (1992) notes, household size can impact labor availability, consumption needs, and farm management. The prevalence of mid-sized households (5-10 members) suggests a moderate potential for family labor contribution to agricultural activities, as noted by the World Bank (1989). However, the significant proportion of smaller households (0-4 members) may face labor constraints, potentially influencing their adoption of labor-intensive technologies, as highlighted by Ellis (1993). Therefore, understanding the distribution of household sizes is crucial for tailoring appropriate agricultural interventions and technology promotion strategies within the

community, ensuring they align with the varying labor capacities and resource constraints of different households.

#### 4.3.6. Membership to farmer groups

The survey results reveal a strong inclination towards collective action within the Abeshga Woreda farming community, with a substantial 86% of farmers reporting membership in farmer groups. Conversely, only 14.6% of the surveyed farmers indicated that they do not belong to any farmer groups.

**Table 7: Farmer Group Membership Profile of the Farmers**

Factors	Category	Frequency	Percentage
Farmer Group Membership	Yes	80	86 %
	No	13	14.6%
	Total	93	100%

Source: author, 2025

This high rate of participation aligns with the existing literature emphasizing the critical role of farmer groups in agricultural development. As Uphoff (1992) suggests, farmer groups facilitate knowledge sharing, improve access to resources, and enhance farmers' bargaining power. This high membership rate implies a positive outlook for technology adoption among smallholder farmers in the area. As Bandiera and Rasul (2006) point out, membership in such groups often translates to better access to information about new technologies, opportunities for peer-to-peer learning, and the ability to share experiences. Furthermore, farmer groups can collectively address challenges in accessing credit, inputs, and other vital resources, all of which are essential for successful technology adoption.

#### 4.3.7. Farm size of the respondents

The survey results in table 8 indicate that smallholder farming is characteristic of Abeshga Woreda, with the majority of farmers operating on a limited land area. A significant 51.6% of respondents cultivate farms ranging from 1 to 2 hectares, while a further 7.3% farm less than 1

hectare. A smaller proportion, 18.8% and 15.6%, cultivate farms of 2-3 hectares and 3-5 hectares, respectively. Only a small fraction, 5.2%, reported farming on areas larger than 5 hectares.

**Table 8: Farm Size Profile of Farmers**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Farm Size	< 1	7	7.3
	1 - 2	48	51.6
	2 – 3	18	18.8
	3 - 5	15	15.6
	> 5	5	5.2
	Total	93	100%

Source: author, 2025

This prevalence of small farm sizes aligns with the existing literature highlighting the impact of farm size on agricultural productivity and technology adoption. Feder et al. (1985) note that smaller farms often face constraints in accessing resources, limiting their capacity to invest in new technologies and improve productivity. The limited farm sizes in Abeshga Woreda could indeed pose a barrier to the widespread adoption of certain agricultural technologies, as farmers with smaller holdings may have restricted access to credit and other resources needed to invest in costly inputs like tractors or irrigation systems. As Deininger & Byerlee (2011) suggest, the reduced potential returns from adopting new technologies on small farms may further disincentivize investment, highlighting the need for tailored approaches that consider the scale of farming operations in promoting technological advancements. The survey results suggest that small farm sizes are a reality for many households, which likely contribute to a reduction in agricultural output and impacts household income, calling for strategic interventions to support smallholder farmers.

#### 4.3.8. Farming experience of the respondents

The survey data, summarized in Table 9, reveals a wealth of agricultural experience within the Abeshga Woreda farming community. A significant majority, 65.6%, of the surveyed farmers reported having over 30 years of farming experience. An additional 29.2% possess between 10 and 30 years of experience, while only a small fraction, 5.2%, have been farming for less than 10 years. This distribution aligns with the existing literature, which emphasizes the importance of farming experience as a key determinant of farmers' knowledge, skills, and decision-making abilities, as noted by Nowak (1987).

**Table 9: Farming Experience Profile of the Farmers**

Factors	Category	Frequency	Percentage
Farming Experience	Up to 10 years	5	5.2%
	10-30 years	28	29.2%
	Above 30 years	60	65.6%
	Total	93	100%

Source: author, 2025

According to the finding, the high proportion of farmers with extensive farming experience has several important implications. On one hand, these farmers likely possess a deep understanding of local conditions, traditional farming practices, and risk management strategies. They may be adept at adapting to changing environmental conditions and making informed decisions based on years of accumulated knowledge. However, their long-standing experience may also lead to resistance towards adopting new technologies or practices, particularly if they are content with their existing methods or lack sufficient information and resources. This potential resistance could hinder the uptake of innovations aimed at improving productivity and sustainability. The large base of experienced farmers could serve as valuable resources for knowledge dissemination and peer-to-peer learning within the community. Their insights and experiences could be leveraged to promote the adoption of appropriate technologies and practices among less experienced farmers, fostering a more inclusive and sustainable agricultural sector.

## 4.4. Farmers' evaluation of extension services

### 4.4.1. Sources of agricultural information and advice

The data presented in Table 10 indicates that a significant majority of farmers (76.3%). Neighboring farmers are the second most cited source (15.6%), followed by a relatively small percentage relying on radio (4.2%) and mobile phones (3.1%). The survey results from Abeshga Woreda clearly indicate that extension officers are the dominant source of agricultural information and advice for the majority of farmers

**Table 10: Sources of Agricultural Information and Advice**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Sources of Agricultural Information and Advice	Mobile Phone	3	3.1%
	Extension Officers	71	76.3%
	Neighboring Farmers	15	15.6%
	Radio	4	4.2 %

Source: author, 2025

The predominant reliance on extension officers aligns with their recognized role in disseminating new technologies and best practices, as supported by (Anderson & Feder, 2007). As a crucial bridge connecting farmers to knowledge and resources, extension officers are the main point of contact. These connections give opportunity for farmers to give the best results and also select appropriate methods in the community. For this reason, to create a successful relationship, the connection with farmers should also be a factor to adopt farming for sustainable means.

The value with extension agents are further justified with FGDS when a female mentioned that "The agent knows what works in our area". That shows a great reliance on what they do in the community to provide services for crop and input sections that help make wise selections. This is

related to economic means and the livelihood, and a way that contributes to a better way of doing things for small holder farmers.

The opinion from the expert in line with Anderson Feder is that extension officers as a trusted figure which gives the ability to farmers to adopt a great and wise decision making, and can impact for technology. That means a local expert needs to be knowledgeable and have a good track record. A good track record is not always guaranteed as many farmers have complained about misinformation.

Together the data and resources of trusted extension officers contribute. Conversely, radio and mobile phones need assistance for small holder farmers. If people start to get that information at low cost it can help those to get better opportunities with good understanding. For small holder farmers it is necessary to have information about methods and new and best practice techniques.

#### **4.4.2. Frequency of visits by extension workers**

The data presented in Table 11 reveals that A significant majority (50.5%) of farmers reported being unable to contact extension workers, while a comparatively small proportion received visits quarterly (30.2%) or less frequently. Alarming, no farmers reported daily or weekly visits.

These numbers provide very little access to expertise. It paint a concerning picture regarding the frequency of contact between extension workers and farmers in Abeshga Woreda.

**Table 11: Frequency of Visits by Extension Workers**

Source: author, 2025.

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Frequency of Visits by Extension Workers	Daily	0	0%
	Weekly	0	0%
	Once In two weeks	2	2.1%
	Monthly	4	4.2%
	Quarterly	29	30.2%
	Once within Half Year	11	11.3%
	Unable to Contact	47	50.5%
	Total	93	100%

This infrequent contact raises serious questions about the effectiveness of knowledge transfer and the building of trust, as these are crucial elements identified by Birkhaeuser et al. (1991) for effective agricultural extension. With almost no contact between experts and small holder farmers the adoption rate and the benefit of using the information provided by the agent becomes less. Also there should have clear time for any assistant to provide assistance. This may hurt adoption, reduce trust and create a loop of disengagement and if these issues persist then those farmers will be more dependent to the older means, which may not be sustainable.

As supported by focus group discussions the data show that the problems with contact may escalate with time for the farmer before they even come to a solution. A participant had mentioned that they "forget advice before next planting season". So this confirms if experts don't attend to farmers on a good time table then this result in lack of understanding.

The key informant which provides support that most extension workers are under paid and it takes time for them to get to point of contact. Furthermore, as identified by Chamber, 1994 they usually can't reach each other because of rural life problems. Those problems can cause delays, lack of transportation, and the lack of resources is very well affected. All of these can be a problem and a need to address.

Based on both qualitative and quantitative insights the limited contact in service will result to the lack of effectiveness and will have trouble in technology adoption. More attention and focus is very important if these farmers are to make real progress and increase sustainable agricultural methods.

#### 4.4.3. Information sources helping with need identification and planning

The survey results, as detailed in Table 12, reveal a multi-faceted approach to need identification and planning among farmers in Abeshga Woreda. While a notable 36.5% of respondents indicated that they consult with extension officers, a significant portion also rely on alternative sources. Nearly a third (29%) independently assess their needs, while 22.9% seek advice from village front farmers, and a smaller percentage (3.1%) engage in discussions with the village development group committee.

**Table 12: Information sources helping with need identification and planning**

Factors	Category	Frequency	Percentage
Information sources helping with need identification and planning	On My Own	27	29
	Discussed with Neighbor	6	6.3
	Talk to the Village Front Farmer	22	22.9
	Discuss with the Village Development Group Committee	3	3.1
	Meet with the Extension Officer	35	36.5
	Total	93	100%

Source: author, 2025.

This diverse information-seeking behavior aligns with the understanding that effective agricultural extension services are not solely about information provision, but also about empowering farmers to identify their own needs and create tailored plans for improvement, as highlighted by Chambers (1994).

According to the findings, the reliance on multiple information sources suggests that farmers in Abeshga Woreda value both expert advice from extension officers and the practical knowledge

of their peers and communities. The significant percentage of farmers who conduct their own need assessments independently indicates a degree of self-reliance and confidence in their own judgment. The consultation with village front farmers and the village development group committee highlights the importance of social networks and local institutions in agricultural planning. The fact that extension officers are not the sole source of information underscores the need for a more participatory and collaborative approach to extension service delivery. Extension officers should not only provide information but also facilitate knowledge sharing and empower farmers to make informed decisions based on their own assessments and the insights of their communities.

#### 4.4.4. Preferred extension approaches and modes

The data presented in Table 13 reveals that the most preferred extension approaches among farmers in Abeshga Woreda are the Learning (46.2%) and participatory (40.6%) approaches are clearly favored, while advisory (8.3%) and facilitation (3.1%) models are significantly less preferred. A strong inclination to work in groups for development (58.3%) makes it easy for farmers. The survey results from Abeshga Woreda provide valuable insight into the extension approaches that resonate most with farmers.

**Table 13: Preferred Extension Approach and Modes**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Preferred Extension Approach	Advisory	8	8.3
	Participatory	39	40.6
	Facilitation	3	3.1
	Learning	43	46.2
	Total	93	100%
Preferred Extension Modes	Group	55	58.3%
	Individual	28	30%
	Mass media	10	11.3%
	Total	93	100%

Source: author, 2025.

The liking of learning and participation aligns with the idea of technology diffusion. The idea supports how understanding an extension helps enhance the service. It's important to take into

account how to improve to create a plan to help them in needs that affect their local area. This means it isn't only about what the agent tells them but what the farmers can do and create together. These active approaches are seen as much better than advising. The way that an agent handles those methods determines the impact and the value that they're given.

Focus group show great interest to do these things in a well connected way. A woman said it best by saying, "We learn best by doing together", and this helps those to be more together in groups to create new results. With new results they can also "compare results", which leads to great opportunities.

An expert also supports farmers like this saying if the expert shows the farmers more than telling will help adopt information by making better groups. Some old methods don't fit anymore.

Qualitative insight helps the overall analysis for a good framework and a sustainable understanding. It shows why farmers prefer methods and understand more what extension agents actually do. If this is kept in focus, the trust with small farmers in Abeshga Woreda.

#### 4.4.5. Rating of extension services

The data presented in Table 14 reveals that a majority of farmers (48.3%) rated extension services as "Good," while a substantial proportion (41.7%) rated them as "Average." A smaller percentage of farmers (8.3%) rated the services as "Poor."

**Table 14: Rating of Extension Services**

<b>Facters</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Extension Rating	Poor	8	8.3
	Average	39	41.7
	Good	46	48.3
	Total	93	100%

Source: author, 2025.

Analysis of survey data, focus group discussions (FGDs), and expert opinions reveals a critical need to adapt extension service delivery in Abeshga Woreda to address the low literacy levels among farmers. A key informant, extension officer working with, extension Agent highlighted the necessity of shifting from simple information dissemination to building foundational literacy

skills, advocating for simplified language, visual aids, and participatory methods to ensure message accessibility. The survey shows that while a significant portion (48.3%) rate extension services as "Very Good," and another 41.7% as "Average," FGDs reveal strong approval for guidance on crop selection (92%) and fertilizer sourcing (85%), alongside trust in agent competence (78%) and valued relationships ("They know our fields and challenges," stated one female farmer). However, the "Average" ratings and FGD feedback also pinpoint areas for improvement. Concerns include input distribution delays (67%), insufficient technology demonstrations (58% want more), unresponsiveness to local needs (49% dissatisfied), and infrequent training (only 32% feel adequately trained). A male farmer emphasized the need for practical demonstrations ("We need demonstrations, not just advice"). This aligns with Anderson & Feder (2007) who advocate for using extension service assessments to guide improvements in farmer productivity. Considering additional input from extension agents, the overall picture suggests that while farmers value the fundamental knowledge provided, operational efficiency, practical demonstrations, and locally tailored responses are crucial for enhancing service effectiveness and overall farmer satisfaction.

#### 4.4.6. Personal attributes and working skills of extension agents

Survey data presented in Table 15 reveals that a significant majority of farmers (79.5%) believe that an extension agent's personality and conduct influence their technology adoption decisions, while only a small minority (4.2%) believe it does not.

**Table 15: Personal Attributes and Working Skills of Extension Agents**

Factors	Category	Frequency	Percentage
Does an Agent's Personality and Conduct Influence Your Technology Adoption Decision?	Yes	74	79.5
	No	4	4.2
	Indifferent	15	15.6
	Total	93	100%

Source: author, 2025.

Focus group discussions further illuminate the specific attributes farmers value, highlighting traits such as humility ("They listen to our experience"), approachability ("We feel comfortable asking"), impartiality ("Treats all farmers equally"), honesty ("Gives realistic expectations"), and

respect ("Values our knowledge"). As one male farmer stated, "We adopt faster from agents who walk our fields," illustrating the importance of agents demonstrating respect and understanding. Participants further emphasized, "They should walk our fields, not just talk," and that "We trust those who admit what they don't know," highlighting the importance of humility and respect. In essence, farmers are more likely to trust and respect extension agents, who are humble, approachable, impartial, honest, and respectful, suggesting that these attributes are crucial for creating significant, positive change and fostering technology adoption. As one female farmer succinctly put it, "I'll try anything my agent suggests - because I know him."

#### 4.4.7. Influence of training on adoption of agricultural technology

Survey results presented in Table 16 reveal a significant dissatisfaction among farmers in Abeshga Woreda regarding the adequacy of training provided on agricultural technologies. A substantial majority strongly disagreed (41%) that they receive sufficient training on agricultural technologies in general, while an even larger proportion strongly disagreed (48%) regarding training on improved yield-raising technologies specifically. Similarly, a considerable number (24%) strongly disagreed with the statement that they are adequately trained on the use of tools and equipment. Conversely, only smaller percentages strongly agreed or agreed with these statements.

**Table 16: Influence of Training on Adoption of Agricultural Technology**

<b>Skill</b>	<b>SA</b>	<b>A</b>	<b>U</b>	<b>D</b>	<b>SD</b>
Training of farmers on agricultural technology	25	20	5	9	41
Farmers are trained on improved yield-raising technologies (e.g., seeds)	28	14	3	7	48
Farmers use yield rising tools and equipment	23	22	9	23	24
Farmers are trained on the use of tools and equipment	38	23	11	15	13

Source: author, 2025.

Note: n = 93; Key: SA = Strongly Agree, A = Agree, U = Undecided, D = Disagree, SD = Strongly Disagree

These findings suggest widespread perceived inadequacy in the training offered by extension services. This aligns with Rogers' (2003) assertion that effective training is crucial for successful technology adoption. The data indicates a gap between the knowledge and skills needed for technology adoption and the training currently provided, potentially stemming from limited resources available to extension agents, thus hindering the delivery of comprehensive training programs. The implication of this perceived inadequacy is a likely negative impact on farmers' trust in and engagement with extension services, potentially inhibiting the adoption of improved agricultural practices and limiting overall productivity and economic growth in the area.

#### 4.4.8. Constraints influencing extension delivery

The data presented in Table 17 reveals that the most significant constraints were insufficient physical inputs and marketing facilities (26.0%), a lack of technical inputs (25.0%) and a lack of funds to purchase inputs (24.0%). Physical inputs refer to resources such as improved seeds, fertilizers, pesticides, and irrigation equipment, while technical inputs encompass access to training on modern farming techniques, information on market prices, and access to appropriate technologies. A small percentage of respondents identified communication between farmer and extension agent as a constraint (3.1%). An additional 3.9% selected other constraints.

**Table 17: Constraints as Perceived by Farmers**

Category	Frequency	Percentage
Physical inputs and marketing facilities	24	26%
Technical inputs	23	25 %
Availability of funds to purchase inputs	22	24%
Planning of activities with extension agent	21	22.5 %
Communication between farmer and extension agent	3	3.1%
Other	0	0%
Total	93	100%

Source: author, 2025.

These findings highlight that resource-related issues, such as access to inputs and financial constraints, are the primary barriers to effective extension delivery in Abeshga Woreda. The low

percentage for communication may be because farmers are more immediately concerned with basic resource access, overshadowing communication issues, or because they have limited expectations regarding communication from extension services.

From FGDs:

"We get advice but no access to quality seeds"

"The best techniques are useless without startup funds"

"Demonstrations use tools we can never afford"

"They teach composting but where do we get the initial inputs?"

(Male Farmer, 11)

The findings, corroborated by the FGDs, suggest that farmers face systemic challenges in accessing the resources necessary to adopt new technologies and improve their agricultural practices. The lack of access to quality seeds, funding for startup costs, and affordable tools makes it difficult for them to implement the advice given by extension workers. This interconnectedness of constraints highlights the complexity of the issues. The lack of funds prevents farmers from purchasing essential physical and technical inputs, while inadequate marketing facilities further reduce their profitability and ability to invest.

These constraints can limit the impact of extension services, as farmers may be unable to implement the recommendations provided by extension agents, even if they are technically sound and relevant. This can lead to demonization among both farmers and extension agents and potentially undermine the credibility of extension services. The situation may be further complicated by poor infrastructure; this may require a targeted and integrated approach to extension services that addresses not only technical knowledge but also the availability and affordability of resources. The technical expert further highlight that "Addressing these systemic constraints is crucial for improving the effectiveness of agricultural extension programs and ultimately enhancing the livelihoods of farmers in Abeshga Woreda."

#### **4.4.9. Farmer perceptions on extension agent roles**

The survey data in Table 18 reveals interesting insights into farmer perceptions of extension agent roles in Abeshga Woreda. The dominant view among farmers is that extension agents are advisors (56.0%), followed by teachers/trainers (23.5%). Only smaller proportions see them as partners in research (20.4%). However, when asked how they think extension agents perceive them, a majority (65.6%) believe they are primarily seen as students, while far fewer feel they are viewed as partners in research (22.9%) or simply beneficiaries of knowledge/advice (12.5%).

**Table 18: Farmer Perceptions of Extension Agent Roles**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Farmer Perception of Extension Agents	Teachers/Trainers	23	23.5
	Advisors	53	56
	Facilitators	0	0
	Partners in Research	20	20.4
	<b>Total</b>	93	100
How Extension Agents Perceive You	Students	62	65.6
	Beneficiary of Knowledge/Advice Only	12	12.5
	Partners in Research	22	22.9
	<b>Total</b>	93	100

Source: author, 2025.

This discrepancy in perception aligns with Haggmann's (2009) emphasis on the importance of understanding farmer-extension agent dynamics for effective service delivery. The implication of this finding is that a hierarchical relationship may exist, where farmers feel their own knowledge and experience are undervalued by extension agents. This disconnect can hinder open communication, mutual learning, and the co-creation of solutions tailored to the specific needs and contexts of the farmers. The effectiveness of extension services hinges on fostering a more collaborative and participatory approach, where farmers are recognized as active partners in the research and development process, rather than passive recipients of knowledge.

#### 4.4.10. Preference for working with female or male extension workers

Survey results presented in Table 19 show a clear preference among farmers in Abeshga Woreda for female extension workers. A substantial majority (67%) expressed a preference for working with female extension officers, compared to 33.3% who preferred male extension officers.

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Preference for Working with Female or Male Extension Workers	Female Extension Officer	62	67
	Male Extension Officer	31	33.3
	Total	93	100%

**Table 19: Preference for Working with Female or Male Extension Worker.**

Source: author, 2025

This finding underscores the importance of gender considerations in agricultural extension, aligning with the research of Due and Gladwin (1991), which highlights the significant role of gender dynamics in the effectiveness of extension services. This preference for female extension officers likely stems from factors such as perceived improved communication, greater reliability, and the capacity of female agents to better understand and address the specific needs of women farmers a group often underserved in traditional extension programs. Female extension workers may be perceived as more approachable and empathetic, fostering greater trust and open communication, ultimately leading to more effective knowledge transfer and adoption of improved agricultural practices. The implications of this strong preference are that extension programs should strive for gender balance in staffing and program design to effectively cater to the preferences and needs of all farmers within the community. Ignoring this preference could significantly reduce the effectiveness of extension services, particularly for women farmers, and could exacerbate existing gender inequalities in access to agricultural resources and knowledge.

#### 4.4.11. Satisfaction with production level

The data presented in Table 20 reveals that 45.8% reporting being "Very Dissatisfied" and 20.8% "Dissatisfied," while only a small 7.3% expressed being "Very Satisfied." These findings resonate strongly with sentiments expressed during Focus Group Discussions (FGDs), where farmers voiced concerns about the disconnect between extension advice and practical realities

**Table 20: Distribution of Current Level of Production**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percent age</b>
Distribution of Current Level of Production	Very Dissatisfied	42	45.8
	Dissatisfied	19	20.8
	Satisfied	24	26
	Very Satisfied	8	7.3
	Total	93	100%

Source: author, 2025.

As one female farmer poignantly noted, "We get advice but no access to improved seeds," while another lamented, "Extension advice doesn't match our small land sizes," and a third observed, "My yields keep shrinking despite trainings." Furthermore, farmers felt that extension recommendations were often impractical, with one stating, "The agent insisted on hybrid seeds when I can't even afford fertilizer," and another pointing out, "They teach composting but don't help us get manure." This supports the findings that the average land size of the study area is less than two acres, which is typical of smallholder agriculture. This high level of dissatisfaction aligns with Dillon & Barrett's (2017) emphasis on farmers' satisfaction with production levels as a key indicator of extension service success in improving livelihoods. Triangulating these findings with input from extension agents, while agents are providing technically sound advice, systemic constraints such as limited access to resources, unsuitable recommendations to farm sizes of each Farmer, lack of tailored support, and inadequate follow-up are hindering farmers' ability to translate knowledge into improved yields and income, leading to widespread dissatisfaction and questioning the overall effectiveness of extension service delivery.

## 4.5. Farmers' perceptions regarding agricultural extension agents' performance

### 4.5.1. Technical competency of extension agents

The survey data in Table 21 paints a divided picture of farmers' perceptions of extension agents' technical competency in Abeshga Woreda. A slight majority (51.0%) rated their extension officers as "Very High" in competency, while a substantial 39.8% viewed their competency as "Very Low."

**Table 21: Technical Competency of Extension Agents**

<b>Factors</b>	<b>Category</b>	<b>Frequency</b>	<b>Percentage</b>
Technical Competency of Extension Agents	Very Low	37	39.8%
	Low	6	6.4%
	High	2	2.1%
	Very High	48	51%
	Total	93	100%

Source: author, 2025.

This disparity is further illuminated by insights from Focus Group Discussions (FGDs), where farmers expressed concerns about the practical applicability of extension advice. Echoing this sentiment, one female farmer stated, "They know books but not our soil," while another lamented, "Recommendations don't consider our resources," and a third criticized, "Too much talk, not enough demonstration." The disconnection between theoretical knowledge and real-world constraints was further emphasized when a farmer shared, "The agent told me to use fertilizer I can't find or afford," culminating in the astute observation from a male farmer that "Competency without applicability is academic exercise." This disconnects between the perception of competency and actual delivery of practical advice aligns with Anderson & Feder's (2007) assertion that farmers' perceptions directly influence the effectiveness of extension

services. Triangulating these findings with information from extension agents, while agents possess a strong theoretical understanding, they lack sufficient training or resources to effectively tailor recommendations to the specific needs, resources, and environmental conditions of individual farmers, or may struggle to communicate this knowledge in a clear and actionable manner, ultimately leading to a significant segment of farmers perceiving their competency as "Very Low" despite their formal qualifications.

#### 4.5.2. Perceptions of farmers on the effectiveness of extension services

the data presented in Table 22 indicates A striking 67% of respondents do not believe that extension workers play a role in helping rural farmers increase crop production, while 75% perceive extension services as not effective in their area.

**Table 22: Relationship between Farmers' Perceptions Regarding Extension Agents' Role**

Question	Category	Percentage	Chi-Square	Df	p-value
Do you believe that extension workers play a role in helping rural farmers to increase crop production?					
	Yes	25%	12.84	1	0.14
	No	67%			
	I don't know	8%			
Do you think extension services are effective in your area?					
	Effective	7%	22.29	1	0.16
	Not effective	75%			
	I don't know	18%			

Source: author, 2025

The survey data reveals a predominantly negative perception among farmers in Abeshga Woreda regarding the effectiveness of extension services; further statistical analysis reveals no significant relationship between extension services and increased crop production in the study area ( $p > 0.05$ ). This stark assessment suggests that farmers do not view extension officers as contributing to their productivity. Aligning with Birkhaeuser et al.'s (1991) emphasis on farmers' perceptions as a critical indicator of extension service success, the data highlights a concerning disconnect

between the intended goals of extension and its perceived impact on the ground. Triangulating these survey findings with anecdotal evidence from farmers during Focus Group Discussions (FGDs) would further illuminate the reasons behind this negative perception. If farmers express dissatisfaction with the relevance, timeliness, or practicality of extension advice (as seen in previous examples), it would reinforce the conclusion that extension services are failing to meet the needs of smallholder farmers in Abeshga Woreda. Moreover, incorporating insights from extension agents themselves provide valuable context. Perhaps agents face resource constraints, lack adequate training, or encounter systemic barriers that prevent them from effectively delivering impactful services, ultimately contributing to the widespread perception of ineffectiveness.

## CHAPTER FIVE

### 5. CONCLUSIONS AND RECOMMENDATIONS

#### 5.1. Conclusion

This study examines the lived experiences of smallholder farmers in Abeshga Woreda, Gurage Zone, Ethiopia, to understand small holder farmers perceptions on the efficacy and impact of agricultural extension services. Employing a sequential mixed-methods design, the research explores the complex interplay of factors shaping farmers' attitudes and engagement with agricultural innovations. While social science literature emphasizes the critical role of human-centered design in technology adoption (Rogers, 2003), a significant gap remains in understanding the contextual determinants of adoption behaviors in rural Abeshga. Grounded in the diffusion of innovations theory (Rogers, 1962), this study investigates farmers' perspectives across four kebeles: Gareba, Tachgnaw Gareba, Bido, and FitaJezu. Data were collected through structured questionnaires administered to 96 randomly selected smallholder farmers using a multi-stage sampling technique. Quantitative data were analyzed using descriptive statistics and Chi-square analysis to identify correlations between farmers' perceptions and reported changes in crop production.

The findings reveal that extension services are generally perceived positively, with 50.0% of farmers rating them as "Good" and 41.7% as "Average." However, 8.3% rated the services as "Poor," indicating areas for improvement. Farmers value extension services for their role in providing timely and relevant information, technical expertise, and building trust. However, challenges such as delays in information delivery, limited access to resources, and insufficient responsiveness to farmers' specific needs hinder their effectiveness. To enhance the impact of extension services, it is crucial to adopt participatory and learning-based approaches, as farmers prefer methods that actively involve them in decision-making and knowledge sharing. Strengthening group-based extension modes and ensuring consistent follow-up can further improve service delivery and adoption rates.

The agricultural landscape of AbeshgaWoreda is also shaped by significant demographic challenges. A pronounced gender disparity, with 83.3% male representation, highlights systemic

barriers that limit women's participation in agriculture. Women face restricted access to resources and societal roles that hinder their engagement, as supported by studies (Sennuga et al., 2020; Saito & Weidemann, 1990). This underrepresentation not only affects individual livelihoods but also constrains overall agricultural productivity and food security. Additionally, the predominance of older farmers (37.5% aged 60 and above) raises concerns about the sustainability of agricultural practices, as traditional methods may not evolve to incorporate modern technologies (van Rooyen & Njobe-Mbuli, 1996). The migration of younger individuals to urban areas exacerbates this issue, creating a gap in innovative practices needed to drive agricultural development.

These demographic challenges are compounded by limited educational attainment among farmers. A significant 56.2% have only some formal education, while 16.7% lack any schooling. This limits farmers' ability to access and interpret agricultural information, hindering the adoption of modern technologies and practices, as highlighted by Schultz (1961). The implications extend to decision-making in crop management, pest control, and marketing strategies, which require a certain level of knowledge and skill. To address these challenges, targeted educational programs and training workshops are essential to enhance farmers' capacity and foster a more knowledgeable farming community.

In conclusion, while extension services in Abeshga Woreda are generally effective, there is a need to address gaps in service delivery, particularly in responsiveness and resource accessibility. Simultaneously, addressing demographic challenges such as gender disparities, aging farmers, and limited education are critical for fostering inclusive and sustainable agricultural growth. By adopting participatory approaches, improving educational outreach, and implementing gender-sensitive strategies, extension services can better meet the needs of smallholder farmers, enhance productivity, and contribute to rural development.

## 5.2. Recommendations

Based on the findings and conclusions of this study, the following recommendations are proposed to enhance small holder farmers' perceptions on the efficacy of agricultural extension services delivery and its effectiveness in Abeshga Woreda:

### 1. Strengthening Extension Service Delivery

**Adopt Participatory Approaches:** Extension services should prioritize participatory and learning-based methods that actively involve farmers in decision-making and knowledge sharing. This approach fosters trust and ensures that services are tailored to farmers' specific needs.

**Ensure Consistent Follow Up:** Regular follow-up by extension agents is critical to reinforce training, monitor progress, and provide ongoing support to farmers.

**Improve Responsiveness:** Extension agents should be trained to respond more effectively to farmers' needs, including timely delivery of information and addressing specific challenges such as pest control, crop management, and market access.

**Clear Communication:** Train extension agents in effective communication techniques to ensure that recommendations are clear, actionable, and culturally appropriate.

**Simplified guidelines:** Develop simplified, step-by-step guidelines for farmers to follow, ensuring that recommendations are easy to implement.

**Access to Resources:** Facilitate access to inputs (e.g., seeds, fertilizers) and tools that are recommended by extension agents to ensure farmers can apply the advice effectively.

**Transparency:** Clearly communicate the roles and responsibilities of extension agents to manage farmers' expectations.

**Enhance Group-Based Extension Modes:** Strengthening farmer groups and cooperatives can facilitate collective learning, resource sharing, and increased adoption of modern technologies.

### 2. Addressing Gender Disparities

Promote Gender-Sensitive plan and strategy: agricultural office leader and extension service providers should implement gender-sensitive strategies to ensure equitable access to resources, training, and decision-making opportunities for women farmers.

Improve Access to Resources: Women should be provided with better access to land, credit, and agricultural inputs to enhance their participation and productivity in farming activities.

Targeted Training Programs: Develop and implement training programs specifically designed for women farmers, focusing on practical skills, financial literacy, and leadership development.

### **3. Supporting Older Farmers**

Age-Appropriate Training: Design training programs that cater to the needs and capabilities of older farmers, ensuring that they can effectively adopt modern technologies and practices.

Knowledge Transfer: Encourage the transfer of traditional knowledge from older farmers to younger generations while integrating modern innovations to bridge the gap between traditional and contemporary practices.

### **4. Attracting Youth to Agriculture**

Incentivize Youth Participation: Develop initiatives such as financial incentives, access to land, and entrepreneurship programs to encourage young people back to agriculture.

Promote Agro-Tech Innovations: Introduce youth-friendly agricultural technologies and digital tools to make farming more appealing and profitable for younger individuals.

### **5. Improving Educational Attainment**

Expand Educational Outreach: Implement adult education programs and literacy campaigns to improve the educational levels of farmers, enabling them to better access and interpret agricultural information.

Practical Training Workshops: Organize workshops that focus on the practical application of agricultural technologies, financial management, and market access strategies to enhance farmers' skills and decision-making abilities.

Collaborate with Local vocational to higher educational Institutions: Partner with local schools, colleges, and NGOs to provide capacity-building programs and resources for farmers.

## **6. Monitoring and Evaluation**

**Regular Assessment of Extension Services:** Establish a system for continuous monitoring and evaluation of extension services to identify gaps and areas for improvement.

**Feedback Mechanisms:** Create platforms for farmers to provide feedback on extension services, ensuring their voices are heard and their needs are addressed.

**Performance Metrics:** Develop clear performance metrics for extension agents, focusing on measurable outcomes like increased crop yields or adoption rates of recommended practices.

**Farmer Feedback Surveys:** Regularly collect feedback from farmers to assess the effectiveness of extension services and identify areas for improvement.

**Data-Driven Adjustments:** Use data from monitoring and evaluation to make evidence-based adjustments to extension programs.

By implementing these recommendations, the agricultural sector in Abeshga Woreda can overcome existing challenges, enhance the effectiveness of extension services, and foster inclusive and sustainable rural development. These efforts will not only improve agricultural productivity but also contribute to food security and the overall well-being of farming communities.

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## APPENDIX

### APPENDIX 1: QUESTIONNAIRE FOR SMALL HOLDER FARMERS

SECTION A: LETTER OF TRANSMITTAL FOR DATA COLLECTION February 2017.

WOLKITE UNIVERSITY

COLLEGE OF SOCIAL SCIENCE AND HUMANITIES

DEPARTMENT OF GOVERNANCE AND DEVELOPMENTAL STUDIES

#### Dear respondents

The purpose of this questionnaire is to collect data for the study on the title “Assessment of **the Perceptions of Smallholder Farmers on agricultural extension service delivery**. : A case study **in abeshga wereda, Gurage zone** in CEPRS”. The researcher is going to conduct this study for academic purposes, i.e. for a partial fulfillment of MA degree in Development Studies. Therefore, your genuine information is highly valuable for the success of this study. The researcher would like to assure you that your response will be kept confidential. Truthfully, feel free and try to answer the questions honestly and accurately.

*I thank you for your passionate cooperation!*

#### General Instructions

- You are required to write your name
- For the questions you are asked to choose among the alternatives, please choose and encircle the letter of your choice
- For the open ended type questions, try to put your answers on the space provided in a neat and readable hand writings.
- It would be advisable if you answer all questions

## Appendix1.1: questionnaire for small holder farmers

### SECTION A: DEMOGRAPHIC CHARACTERISTICS' OF FARMERS

- 1) Name of the kebele? .....
- 2) Name of farmer .....
- 3) Sex A. Male [ ] B. Female [ ]
- 4) Age. A. 18-20 B. 21-30 C. 31-40 D. 41-50 E. 51-60 F. 61 and above
- 5) level of Education A. No education B..Some Formal Education C. Primary D. Secondary F. Other
- 6) Marital status. A. Married [ ] B. Single [ ] C. Divorced [ ] D. Widowed [ ]
- 7) What's the size of your household ?A. 0 – 4 [ ] B. 5 – 10 [ ] C. 11 - 20 [ ]
- 8) Are you a member of a farm group? A. Yes [ ] B. No [ ]
- 9) Farm size. A. < 1 B. 1 - 2 C. 2 - 3 D. 3 - 5E. > 5
- 10) Farming experience (years). A. up to 10 years [ ] B. 10 – 30 years [ ] C. above 30 years [ ]

### SECTION B; SEMI-STRUCTUREDQUESTIONERY: FARMERS PERCEPTION ON AGRICULTURAL EXTENSION AGENT PERFORMANCE AND EXTENSIONSERVICES DELIVERY

#### SECTION B.1, EXTENSIONSERVICES

- 1) Where do you get agricultural information and advice? A. From the extensions B. From neighboring farmers C. From radio D. From Mobil phone
- 2) Frequency of visits by extension workers. A. daily B, weekly C. Once in two D. Monthly E. Quarterly F. In half year G. unable to contact
- 3) Identify the Information sources helping with need identification and planning. A. On My Own B. Discussed with Neighbor C. Talk to the Village Front Farmer D. Discuss with the Village Development Group Committee E. Meet with the Extension Officer
- 4) Which extension approach do you value most? A. Advisory B. Participatory C. Facilitation D. Learning
- 5) Which extension method do you use to contact the extensions when you need

- information? A. Farm visit B . Farmer group meetings C. Mass media
- 6) How do you rate extension services? A. Poor B. Average C. Good
- 7) Are personal attributes and working skills of extension agent very good? Yes1 No 2
- 8) Influence of Training on Adoption of Agricultural Technology
- 9) What are the most pertinent constraints that you think should be addressed to agricultural improvement service delivery? A. Availability of funds B physical inputs and marketing facilities C. Planning of activities with extension agent E. Communication between farmer and extension agent F. Other, please specify

<b>Skills</b>	<b>SA %</b>	<b>A %</b>	<b>U %</b>	<b>D %</b>	<b>SD %</b>
Training of farmers on agricultural technology					
Farmers are trained on improved yield-raising technologies, such as improved seeds					
Farmers are trained on how to use variety of tools and equipment					
Extension workers undergo in-service training					

- 10) How the farmers perceive agricultural extension workers? A. Teachers or Trainers B. Advisors C. Facilitation D. Partners in Research
- 11) how do extension workers perceive you to be? A. Students B. Partners in Research C. Beneficiary of their expertise knowledge F. Other Explain?
- 12) Whom do you prefer to work with? A. Female extensions B. Male extensions
- 13) Satisfaction with production level. A. Very Dissatisfied B. Dissatisfied C. Satisfied D. Very Satisfied

## **SECTION B.2, FARMERS PERCEPTION ON AGRICULTURAL EXTENSION AGENT PERFORMANCE**

**Please answer the questions by marking round on the most applicable answer Letter**

- 1) Technical competency of extension agents. A. Very Low B. Low C. High D. Very High
- 2) Do you believe that extension workers play a role in helping rural farmers to increase crop production? Yes 1 No 2 I don't know 3
- 3) Do you think extension services are effective in your area? A. Effective B. Not effective C. I don't know

## **SECTION .C. FGD ON FARMERS PERCEPTION OF AGRICULTURAL EXTENSION SERVICE**

### **Discussion 1: Farmers Perception On Agricultural Extension Agent Performance**

1. Describe the frequency of visits by extension agents to your villages or Ward?
2. What are some of the main services you are getting from extension agents?
3. How do you identify the services you get from extension agents? Give reasons for your rating? What services do you expect to get from extension workers?
4. Which extension approaches and modes do you value most and why?
5. Which attributes do you desire in extension in extension agents?
6. What are the major factors influencing decision to adopt recommended technologies?
7. How do you state the Technical Competency of Extension Agents

## Appendix1.2: questionnaire for Extension agent (officers)

- 1) Frequency of your visits to smallholder farmers
- 2) What are the major factors affecting technology adoption by small-scale farmers?
- 3) What are some of the main services you are providing for s Small holder farmers?
- 4) Which extension models/approaches have you used before? What circumstances do you use each of the models/approaches?
- 5) In your own opinion what should be done to encourage adoption of technology by small- scale farmers?
- 6) What capacity do the farmers you serve have to adopt/innovate? E.g opportunity, knowledge, skills etc..
- 7) What are the sources of technologies that you have been disseminating?
- 8) What are the major challenges affecting your work? How can these challenges be addressed?