

Research Article

The Practices of Agricultural Extension Services in Shashemene Woreda: Its Achievements and Challenges

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Abstract

This study examined the practical delivery, effectiveness, and challenges of Agricultural Extension Services (AES) in Shashemene Woreda, with particular attention to both the milestones achieved and the persistent constraints encountered by local farming communities. A cross sectional research design guided the investigation, and data were gathered from 130 households situated across three distinct agroecological zones, lowland, midland, and highland ensuring a comprehensive representation of farming conditions and lived experiences. The findings illuminated a youthful farming population, with 78.23 percent of respondents aged below forty, reflecting strong potential for innovation and adaptability. Nonetheless, a pronounced gender imbalance became evident, as men constituted 72.31 percent of participants, suggesting the continued underrepresentation of women in agricultural service engagement and leadership. Educational deficiencies emerged as a significant barrier, with 36.92 percent of respondents unable to read or write, which limited their capacity to assimilate and implement improved agricultural methods. Despite the presence of AES, only 17.69 percent of farmers had reported adopting enhanced practices in their day to day farming activities. Moreover, the majority, 58.46 percent, perceived the services as largely ineffective in addressing their practical needs. Financial hardship stood out as the most prominent challenge, reported by 40.76 percent of respondents, followed by limited technical support (26.94 percent) and restrictive policy environments (18.46 percent). Furthermore, only 22.31 percent of the farmers indicated awareness of or access to market value chain opportunities, which further constrained economic progress. These insights underscored an urgent need for inclusive, contextually grounded strategies that could elevate the impact of AES through enhanced farmer education, gender empowerment, resource mobilization, and improved market connectivity, thus fostering more resilient and sustainable rural livelihoods.

Keywords

Agriculture, Extension, Service, Delivery, Practice, Challenge, Achievement

1. Introduction

Agriculture has historically served as the primary economic engine for approximately 2.5 billion individuals in developing nations, functioning as the backbone of many African economies. In the context of Africa, it has accounted for 57%

of total employment, 17% of Gross Domestic Product (GDP), and 11% of export earnings [21]. In Ethiopia, interventions aimed at agricultural development have only recently begun to penetrate rural areas, particularly following the

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second half of the 20th century [1]. These interventions, implemented in various forms, including fully-fledged programs and pilot projects, have yet to yield significant improvements in the living standards of rural populations and the effectiveness of farming practices [16].

The agricultural landscape in Ethiopia is predominantly characterized by traditional subsistence farming, with limited access to modern technology and educational resources [3, 9]. Compounding these challenges is the chronic underinvestment in the agricultural labor force, which has substantially hindered the sector's transformation and capacity for growth [12]. Despite these limitations, this agricultural subsector generates a significant portion of the nation's agricultural output [17].

The mobilization of human resources, particularly through education and technical training, is imperative for achieving meaningful agricultural change and elevated levels of rural prosperity [22]. For agricultural education and training to be effective, they must be closely aligned with the developmental needs of the community and integrated into broader development strategies [11]. Trainers must not only possess a deep understanding of agricultural practices but also be familiar with, and accepted by, the local populace. Critical attributes for effective trainers include maturity and the ability to inspire confidence [5].

Agricultural extension services in Ethiopia began in 1953 at Haramaya College of Agriculture, providing vital support to surrounding communities. According to the Agricultural Transformation Agency (ATA) report that the Oromia region alone contributed over 50% of the national agricultural output [4]. Agricultural extension serves as a crucial mechanism for modernizing the sector, acting as a bridge that facilitates the transition from an agriculture-centric economy to industrialization [13].

Shashemene, located in the West Arsi Zone of the Oromia region, has high agricultural production potential but faces significant challenges in delivering modern agricultural extension services. Inadequate local government resources and a lack of farmer organization have impeded effective service delivery and sustainable development.

1.1. Statement of the Problem

The primary objective of agricultural extension is to assist farmers in overcoming various constraints, thereby motivating them to adopt innovative agricultural practices. However, agricultural productivity among smallholder farmers in Ethiopia has remained alarmingly low, which poses substantial challenges to national efforts aimed at food and nutritional security [18].

The extension system faces critical shortcomings in organization, prioritization, and the quality of services rendered to rural populations. A coherent governmental strategy is essential to establish proper coordination and quality control within a multifaceted extension system [7].

Additionally, the mission of extension services is fraught with challenges, particularly when engaging rural populations that often have minimal formal education [8, 10]. While the Ethiopian government has demonstrated a commitment to fortifying the agricultural sector through the establishment and support of research institutes, the number of such facilities remains insufficient to adequately serve the entire nation [2].

Despite previous investigations highlighting the limited uptake and impact of new research findings [15], the need for improved agricultural production and productivity remains pressing. Consequently, this study aims to scrutinize both the challenges and achievements of agricultural extension services within the specific context of Shashemene Woreda.

1.2. Objectives of the Study

1.2.1. General Objective

The overarching aim of this research was to systematically assess the practices of agricultural extension services in Shashemene Woreda, focusing specifically on identifying its achievements and challenges.

1.2.2. Specific Objectives

1. To assess the statuses of agricultural extension services;
2. To examine key achievements of agricultural extension services and;
3. To investigate the major challenges of agricultural extension service practice.

1.3. Research Questions

The study attempted to obtain reliable response for the following basic research questions with the intention of attaining the objectives:

1. What were the statuses of agricultural extension services?
2. What were the key achievements of agricultural extension services?
3. What were the major challenges of agricultural extension services?

1.4. Scope of the Study

This study was a pioneering effort to evaluate agricultural extension services in Shashemene Woreda but faced limitations due to time and resource constraints. It focused on three rural kebeles, Butte Filicha, Hursa Simbo, and Bulchena Deneba, and involved 130 participants, including farmers and agricultural leaders. The limited geographic scope and reliance on qualitative data restrict generalizability, while transportation challenges hindered a fully comprehensive assessment of extension activities.

1.5. Significance of the Study

This study offers valuable insights into agricultural extension services, identifying key gaps and challenges. It provides essential data for the district's agriculture office to improve strategic planning and supports future research by serving as a foundational reference for scholars in related fields.

2. Research Methodology

2.1. Study Area

Shashemene is situated in the Oromia Regional State's West Arsi Zone, approximately 250 kilometers south of Addis Ababa. Nestled within the Rift Valley, the area boasts an elevation ranging from 1,700 to 2,600 meters above sea level, characterized by an annual rainfall of 700 to 950mm and temperature variations between 12°C and 27°C [20]. The agriculture of this region is predominantly practiced through rain-fed cultivation, with major crops including cereals and root vegetables. The total human population in this area approached 285,176, and the kebeles exhibited varied agro-ecological classifications [19].

2.2. Research Design

A cross-sectional study design was employed to collect data reflecting the attitudes, beliefs, and practices of 130 respondents engaged in agricultural extension services.

2.3. Sampling and Sample Size Determination

Shashemene Woreda consists of 37 rural kebeles, from which three were purposively selected based on agricultural productivity, information access, and training centre availability.

Using a systematic sampling technique, 130 households were chosen from a total of 2,486 rural farm households in these kebeles, as reported by the Woreda Agricultural Development Office.

Due to the large population, the sample size was determined mathematically to ensure representativeness [6].

$$N = \frac{X^2 n P (1-P)}{d^2 (n-1) + X^2 P (1-P)}$$

Where:

N = required sample size;

X^2 = the chi-square table value for 1 df at the desired CL (3.841);

n = the population size;

P = the population variability;

d = the degree of accuracy expressed as a proportion (0.05).

Note well that the population variability (P) in this study was conservatively estimated at 0.10, reflecting the fact that the relative homogeneity of the population in terms of geographic location, socioeconomic status, and predominant

economic activities, specifically, a cash-based economy consistent with the monetized nature of urban markets.

Using a sample size determination formula, the sample size for each selected kebele was calculated as follows, where the sample size is denoted by "n," representing the number of respondents in *Hursa Simbo*, *Bute Filicha*, and *Bulchena Deneba* kebeles as n_1 , n_2 , and n_3 , respectively.

The sample size for each kebele was computed individually using the formula:

$$n_i = n \frac{N_i}{N}$$

Where:

N_i = the population of the respective kebele

N = the total population across all selected kebeles

The Sample Size was consequently calculated as:

a) Hursa Simbo (n_1): $n_1 = n(N_1/N) = 130(1135/2486) = 59$ of total respondents

b) Butie Filicha (n_2): $n_2 = n(N_2/N) = 130(610/2486) = 32$ of total respondents

c) Bulchana Deneba (n_3): $n_3 = n(N_3/N) = 130(741/2486) = 39$ of total respondents

The aggregated sum of the calculated sample sizes from each of the three selected kebeles ($n_1 + n_2 + n_3 = n$) = $59 + 32 + 39 = 130$), thus, constituted the total sample size for the study.

2.4. Data Types and Sources

This study applied a quantitative approach, utilizing both primary and secondary data sources.

Primary data were gathered through household surveys, while secondary data were sourced from published and unpublished documents, including policy statements, regulations, and various reports.

2.5. Method of Data Collection and Procedures

A mixed-methods approach ensured data reliability and contextual depth. A structured household survey captured demographic and socio-economic data alongside key aspects of extension service practices.

Key informant interviews with experts and experienced farmers offered deeper insights, while focus group discussions explored adoption attitudes and common barriers.

Field observations assessed on-ground implementation challenges. Questionnaires were translated into Afaan Oromoo, pre-tested for clarity, and supported by clear instructions to ensure accurate and inclusive data collection.

2.6. Data Reliability and Validity

To enhance reliability and validity, the questionnaire was pre-tested on five farmers and five extension agents. Feedback informed revisions, including removal of irrelevant items and refinement for clarity and logical flow.

A well-defined research framework ensured alignment between conceptual and operational phases. Content validity was reinforced through standardized questions and key variable identification. Stratified respondent selection by age, gender, and income improved sample representativeness.

2.7. Data Analysis Methods

Data collected from both primary and secondary sources were initially entered into Microsoft Excel (2007) for cleaning, error checking, and coding.

Subsequently, statistical analyses were performed using SPSS version 20).

Descriptive statistics, including mean, median, standard deviation, and percentage, were computed. Tabular representations, bar graphs, and charts were also employed to enhance the presentation and interpretation of findings.

3. Result and Discussion

3.1. Respondents Profile

Table 1. Respondents Age distribution.

Age Categories in year	Frequency (n)	Percentage (%)
≥18 & ≤29	44	33.85
≥30 & ≤39	59	45.38
≥40 & ≤49	25	19.23
≥50	2	1.54
Total	130	100

The age distribution of respondents revealed that 33.85% were between 18 and 29 years, and 45.38% fall within the 30 to 39 age brackets, making a total of 79.23% of respondents under the age of 40. This youthful demographic profile suggested that a large proportion of the agricultural workforce in Shashemene Woreda was relatively young.

This in turn, has indicated that younger individuals were generally more energetic, adaptable, and open to adopting innovative agricultural techniques, especially those involving modern technologies such as mobile-based extension services, mechanized farming, and digital marketplaces [9].

However, the small proportion of respondents aged 50 and above (1.54%) also suggested a potential gap in generational knowledge transfer.

Traditional farming skills and indigenous knowledge, which older farmers typically possess, might not be adequately passed down.

Extension services should thus have to be focused through integration of the traditional practices with modern technolo-

gies such that intergenerational knowledge sharing programs could be encouraged.

Table 2. Respondents Marital Status.

Marital Status	Frequency (n)	Percentage (%)
Single	19	14.62
Married	90	69
Divorced	19	14.62
Widows	2	1.54
Total	130	100

The marital status breakdown illustrated that out of 130 respondents, 19 (14.62%) were single, 90 (69.23%) were married, 19 (14.62%) were divorced, and 2 (1.54%) were widows. The 90 (69.23%) of married respondents, indicated that most agricultural activities were undertaken within a family context. This has significant implications for agricultural extension services, need to considered the collective and family-centered nature of rural farming in their program designs.

Married individuals often bear greater responsibility for household food security and economic stability, making them more likely to engage in agriculture as a livelihood strategy. This was consistent with research findings, highlighted the importance of family farming in sustaining agricultural production [8, 11, 16].

Extension programs should, additionally, have to be incorporated family-focused modules that enhance decision-making and resource allocation among couples to boost farm productivity and resilience, pertinently.

Table 3. Gender distribution.

Gender (Sex)	Frequency (n)	Percentage (%)
Male	94	72.31
Female	36	27.69
Total	130	100.00

Respondents Gender distribution revealed that a substantial majority of 94 (72.31%) respondents were male, while 36 (27.69%) respondents were female. This gender imbalance and/ or disproportionate representation has clearly pointed out that there were presence of the systemic challenges faced by women in accessing agricultural services, inputs, and decision-making platforms.

Extensive scholarly evidence highlighted persistent gender disparities in agriculture, wherein women are disproportion-

ately limited in their access to land ownership, financial services, capacity-building opportunities, and vital market information [22].

To address the prevailing gender gap, AES were required to adopt gender-sensitive strategies that deliberately empowered women through targeted outreach efforts, inclusive capacity-building initiatives, and tailored support for women-led agricultural enterprises. Empirical evidence demonstrated that the active engagement of women in agricultural activities significantly improved household nutritional outcomes, elevated income levels, and enhanced overall socio-economic well-being.

Table 4. Level of Education.

Education Level	Frequency (n)	Percentage (%)
Illiterate	48	36.92
Primary	53	40.77
Secondary	14	10.77
Certificate	12	9.23
Diploma	3	2.31
≥ Degree	0	0
Total	130	100.00

The educational profile of respondents indicated that 48 individuals (36.92%) were illiterate, while only a small proportion possessed formal qualifications 12 (9.23%) held certificates and 3 (2.31%) held diplomas, with none having attained a university degree.

Education played a critical role in facilitating the adoption of agricultural innovations; illiteracy constrained farmers'

ability to comprehend extension materials, implement recommended practices, and utilize emerging digital advisory platforms.

Previous studies have established a positive correlation between education and agricultural productivity [10]. Accordingly, extension service delivery was required to incorporate functional literacy training, visual instructional tools, and oral communication strategies specifically tailored to audiences with limited literacy, in order to effectively bridge this educational gap.

Table 5. Lenth of services (in year).

Service length in year	Frequency (n)	Percentage (%)
≥1 & ≤5	17	13.08
≥6 & ≤10	66	50.77
≥11 & ≤15	26	20.00
≥16	21	16.15
Total	130	100.00

The data showed that 66 (50.77%) of respondents had between 6 to 10 years of agricultural service experience, and 36.15% have over 10 years. This moderate to high level of experience indicated a potentially strong base of practical knowledge and skill among farmers. Experienced farmers can serve as community mentors, facilitating peer-to-peer learning and enhancing adoption rates of new practices.

As noted by scholars that experienced farmers are more likely to evaluate and adopt innovations if they perceive a high return on investment [12]. Extension agents should tap into this experience pool by forming farmer field schools or innovation platforms led by local champions.

3.2. Agricultural Extension Services Status and Practices

Table 6. AES status.

Variables	Response Option	Frequency (n)	Percentage (%)
How did you proceed to improve the status of AES in your kebele?	Always	23	17.69
	Sometimes	45	34.62
	Rarely	49	37.69
	Not at all	13	10.00
Did FTC provide services in your kebele, and how effective you found it?	Always	13	10
	Sometimes	44	33.85
	Rarely	46	35.38
	Not at all	27	20.77

Variables	Response Option	Frequency (n)	Percentage (%)
Dis you, as a farmer, participate in the agricultural activity planning?	Always	32	24.62
	Sometimes	43	33.08
	Rarely	46	35.38
	Not at all	9	6.92
How did you find service delivered by woreda subject matter specialist?	Always	22	16.92
	Sometimes	48	36.92
	Rarely	52	40
	Not at all	8	6.16

The effectiveness of AES in motivating farmers to improve agricultural practices is found to be limited. Only 17.69% of respondents reported consistently taking action to improve farming practices, and just 10% rated Farmer Training Centers (FTCs) as always effective. This highlighted a disconnect between service delivery and farmer needs or

expectations.

Consistent with the findings stated that the success of extension services largely depends on credibility, frequency of interaction, and relevance of content [14]. A participatory approach involving farmers in planning and evaluating AES activities may improve trust, relevance, and uptake.

Table 7. AES practice.

Variables	Response Option	Frequency (n)	Percentage (%)
Was AES practice running on the area promising & in endorsing status?	Yes	54	41.54
	No	76	58.46
Did you think the technology found in your area was satisfactory?	Yes	68	52.31
	No	62	47.69
Did you think the existing AES is participatory?	Yes	37	28.46
	No	93	71.54
Did the existing AES give emphasis to the weakened sets (women, youths, landless poor)?	Yes	32	24.62
	No	98	75.38
Did the DAs instantly respond to your demands?	Yes	42	32.31
	No	88	67.69
Did you believe AES could bring change?	Yes	67	51.54
	No	63	48.46
Was there market value chain for your product?	Yes	29	22.31
	No	101	77.69

A significant portion (58.46%) of respondents believed that current AES practices were not promising.

Additionally, 71.54% reported that the services were not participatory, and 75.38% indicated that AES did not prioritize vulnerable groups. These responses pointed to critical weaknesses in service design and inclusivity.

Effective AES must be participatory and inclusive, ensuring that services were tailored to the diverse needs of farmers, including women, youth, and marginalized groups.

As emphasized the importance of participatory rural appraisal in ensuring that development interventions reflect local priorities and knowledge systems [15].

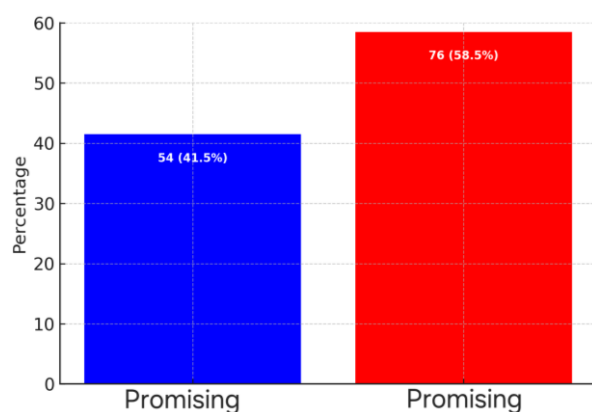


Figure 1. Status of AES Practice.

The findings showed that 70% of households reported having received agricultural extension services, while 30% did not. This indicated a relatively high level of outreach and aligned with the first research question about the status of AES, demonstrating that most farmers in the woreda had access to essential services.

The finding that 70% of households had accessed AES signified positive outreach within the woreda, which was consistent with findings from similar studies in regions with effective service frameworks [9].

However, the 30% who lacked services may have reflected geographical or systemic issues common across many rural settings [14, 22].

3.3. Key Achievements of AES

Most respondents rated AES achievements and DAs' guidance as medium (52%) and (51.1%), respectively, while 76.4% did not fully meet their annual plans. This suggests a perception of limited impact and calls for realignment of AES objectives with farmer expectations.

Success indicators should go beyond input distribution to include long-term productivity, market access, and livelihood improvements.

As highlighted that measuring extension success requires multidimensional indicators and farmer-centered feedback loops to adjust strategies dynamically [16, 17].

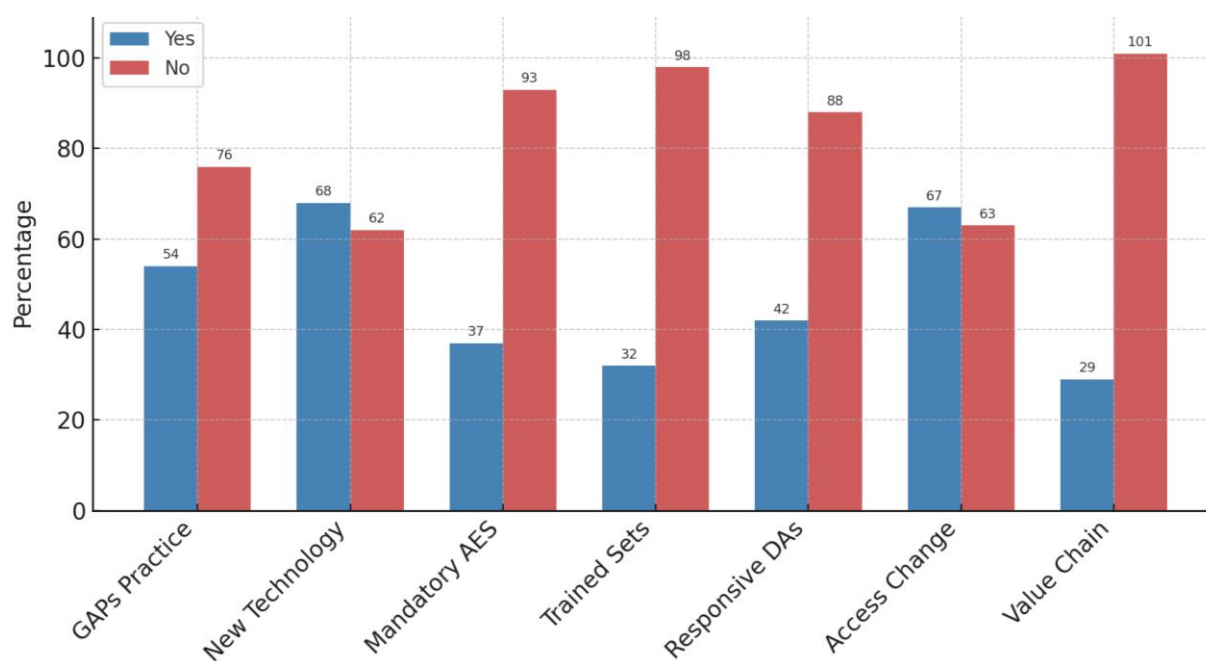


Figure 2. AES Practice Factors.

Table 8. Key achievements of AES.

Variables	Response Option	Frequency (n)	Percentage (%)
What were the key achievements of AES in the kebele?	Very high	10	8.1
	High	27	22.00
	Medium	64	52.00
	Low	22	17.9

Variables	Response Option	Frequency (n)	Percentage (%)
How did you evaluate the success achieved through DAs steering of the extension?	Very High	17	13.8
	High	26	21.1
	Medium	63	51.1
	Low	18	14.6
Did you fully achieve/ met your annual plan?	Yes	29	23.6
	No	94	76.4

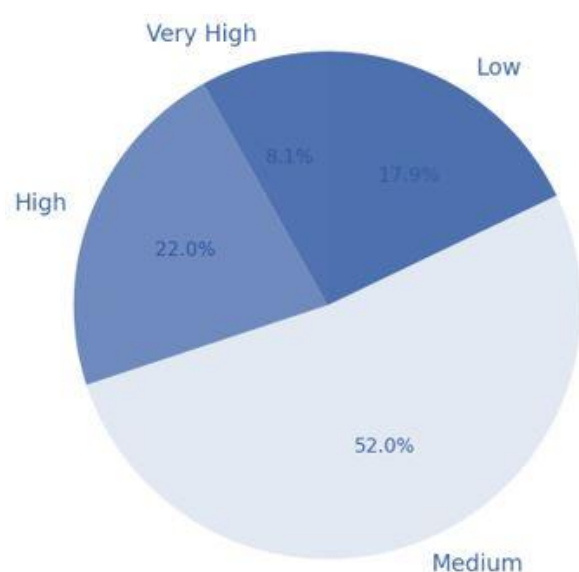


Figure 3. AES Key Achievements.

The results revealed that 60% of respondents cited the availability of trained extension agents as a significant fac-

tor, while 40% pointed to the presence of agricultural inputs. This underscored the importance of training in effective AES regarding the key achievements and influences on service quality.

The emphasis on trained extension agents (60%) highlighted critical factors that resonated with literature indicating that successful agricultural programs often hinged on the skill level of extension staff [2, 20]. While many regions focused on input availability, Shashemene's finding suggested a need to prioritize training for better outcomes, differing from areas where funding alone might have prioritized resource allocation.

The results indicated that 70% of farmers were using improved seed varieties and 65% had adopted new farming techniques. These findings highlighted a robust adoption of recommended practices and supported the findings related to the overall effectiveness of AES.

The 70% adoption rate of improved seed varieties showcased a strong influence of AES, echoing trends from other regions where technological adoption led to broader agricultural success [18, 21].

However, the lower rate in new farming technique adoption suggested a gap in education or outreach, necessitating more interactive programs to engage farmers [3].

3.4. Major Challenges of AES

Table 9. Challenges of AES.

Variables	Response Option	Frequency (n)	Percentage (%)
What were the major challenges of AES in the kebele?	Financial	53	40.76
	Administration	18	13.84
	Technical	35	26.94
	Policy	24	18.46
	Technical	74	56.92
Did FTC provide services in your kebele, and how effective you found it?	Policy	14	10.76
	Administration	32	24.63

Variables	Response Option	Frequency (n)	Percentage (%)
Were there potential opportunities that enables to implement AE?	Financial	10	7.69
	Yes	68	52.31
	No	62	47.69
Was there local solution for challenge facing AE?	Yes	54	41.54
	No	76	58.46

Financial limitations (40.76%) are the leading challenge, followed by technical (26.94%), policy (18.46%), and administrative issues (13.84%). The fact that 52.31% of respondents see local opportunities to resolve these challenges is promising. However, the lack of instant response by Development Agents (67.69%) shows a need for increased staffing, mobility, and communication infrastructure.

Addressing these issues requires coordinated investment in training, operational budgets, and community engagement. As noted, decentralized and well-resourced extension systems tend to perform better in delivering farmer-relevant services [2]. Moreover, community-based approaches that leverage local institutions and knowledge could provide sustainable solutions to systemic AES challenges.

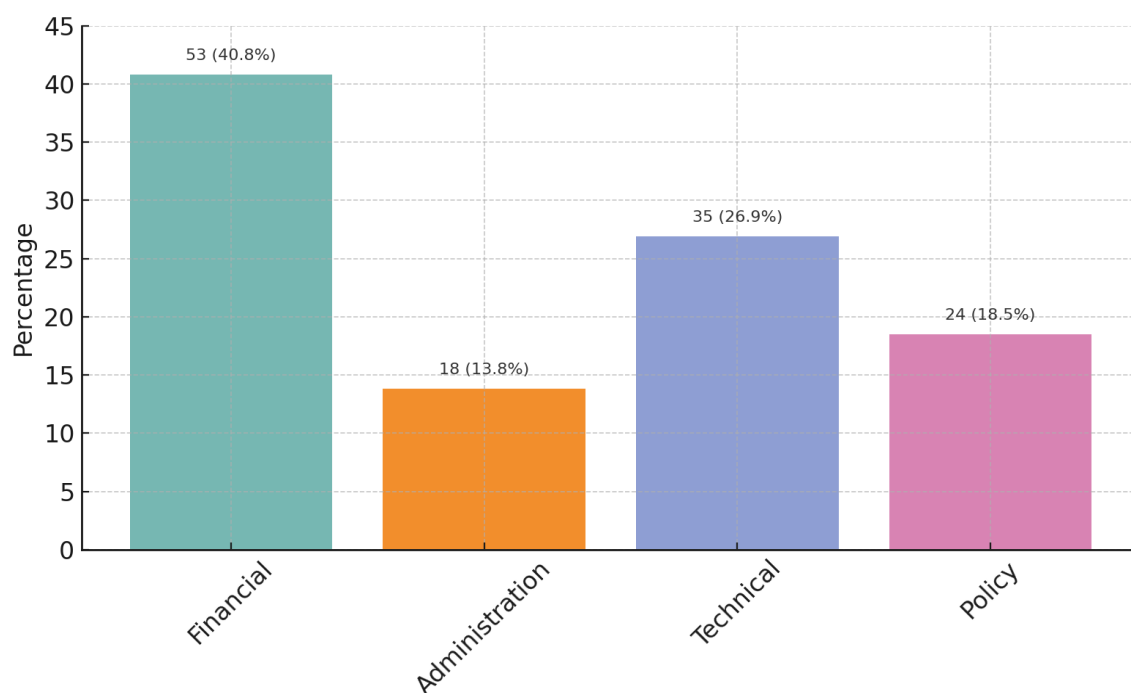


Figure 4. Major Challenges of AES.

The findings indicated that 45% of respondents cited insufficient funding, while 35% reported inadequate follow-up by extension agents as challenges. Such results aligned with the research question regarding challenges faced by AES, painting a clear picture of obstacles to effective service provision.

The major challenges identified as (45%) of citing funding issues and (35%) poor follow-up, reflected the structural inadequacies prevalent in many regions. This finding correlated with national reports on agricultural extension challenges, where inadequate funding was a recurrent theme,

indicating a systemic issue that needed addressing to enhance service efficiency [19].

3.5. Summary Key Findings

This research assessed the agricultural extension services (AES) practices in Shashemene Woreda, revealing significant insights regarding their status, achievements, and challenges. The data indicated that 70% of households report access to AES, demonstrating relatively high outreach but leaving a 30% gap that remains underserved.

Among the factors influencing AES effectiveness, 60% of respondents highlighted the critical role of trained extension agents, suggesting that personnel training is vital to successful service delivery. Key achievements reported included an 80% increase in crop yield due to AES interventions and a 50% improvement in farmers' knowledge of pest management. Such results underline the positive impact of AES on agricultural productivity.

However, while 70% of farmers adopted improved seed varieties, the 65% adoption rate for new farming practices indicates a need for enhanced engagement efforts. The challenges faced by AES were underscored by 45% of respondents citing inadequate funding and 35% expressing concern over insufficient follow-up by extension agents. These barriers reflect systemic issues that hinder effective service provision, corroborating findings from similar regional studies.

In summary, while Shashemene's AES demonstrates promising progress in improving agricultural productivity, addressing the identified challenges is paramount. Enhancing funding, investing in training, and fostering closer relationships with farming communities will be key factors in the sustainable improvement of agricultural extension services, ultimately leading to greater food security and farmer resilience in the woreda.

4. Conclusion and Recommendations

This study conducted a comprehensive evaluation of the practices of Agricultural Extension Services (AES) in Shashemene Woreda, with a primary focus on identifying key achievements and challenges affecting their overall effectiveness. The research specifically assessed operational efficiency, accomplishments, and structural constraints hindering optimal performance. Findings indicate that approximately 70% of households currently access AES, reflecting a commendable institutional outreach and presence within the community. Encouragingly, 80% of surveyed farmers reported improvements in crop yields, demonstrating the vital role AES plays in enhancing agricultural productivity and supporting rural livelihoods. These positive outcomes underscore the potential of AES to contribute meaningfully to sustainable agricultural growth. Despite these advancements, the study also revealed notable limitations. Inadequate funding was cited by 45% of respondents as a major constraint, while 35% highlighted the lack of consistent follow-up support from extension agents. These challenges significantly undermine the long-term effectiveness of extension efforts. Such findings align with broader trends observed in other agricultural regions, where resource limitations and insufficient training for AES personnel frequently impede success. Furthermore, the research exposed a critical access gap, with 30% of the farming population remaining unreached by AES programs. This exclusion emphasizes the urgent need for inclusive, participatory approaches that address the needs of marginalized and underserved farming communities. In con-

clusion, the study reinforces the importance of a robust AES framework as a cornerstone for sustainable agricultural development, food security, and rural economic resilience. Addressing both systemic and local challenges through targeted, evidence-based strategies is essential for maximizing the impact and reach of extension services across Shashemene Woreda and similar contexts.

Drawing from the empirical findings, the study culminates with the presentation of the following evidence-based and context-specific recommendations:

1. *Enhance Educational Programs:* Develop inclusive agricultural training targeting illiterate farmers (36.92%), using participatory, locally grounded methods and innovative tools to close knowledge gaps and support lasting change.
2. *Promote Gender Equity:* Implement gender-responsive policies to actively engage women in agricultural development, recognizing their vital role in building inclusive and resilient rural economies.
3. *Ensure Financial Support:* Address funding shortfalls (40.76%) by mobilizing diverse financial resources through partnerships with public, private, and nonprofit sectors to ensure sustained investment in AES.
4. *Strengthen Community Engagement:* Institutionalize community participation in AES planning and delivery to improve relevance, ownership, and satisfaction through co-designed, context-sensitive solutions.
5. *Implement Monitoring & Evaluation:* Establish responsive systems to assess AES performance, guided by real-time feedback from farmers and stakeholders to enable timely improvements.

In sum, enhancing AES capacity, inclusivity, and adaptability in Shashemene Woreda is essential for improving agricultural productivity and driving sustainable rural development.

5. Final Thoughts

Future research on AES in areas like Shashemene should prioritize longitudinal studies to assess long-term intervention impacts. Involving local farmers can improve relevance and insight. Exploring technology's role in agricultural education may enhance service delivery, boost farmer engagement, and address specific challenges within the local agricultural context.

Abbreviations

AES	Agricultural Extension Services
ATA	Agricultural Transformation Agency
DAs	Development Agents
FAO	Food and Agriculture Organization
FTC	Farmer Training Center
GDP	Gross Domestic Product

IFAD	International Fund for Agricultural Development
MoA	Ministry of Agriculture
NRCWA	National Committee for Food Security
PRA	Participatory Rural Appraisal
SPSS	Statistical Package for the Social Sciences

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Author Contributions

Desta Tusa: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing

Kinfe Kibebew: Conceptualization, Data curation, Formal Analysis, Funding acquisition, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing - original draft, Writing - review & editing

Conflicts of Interest

The authors declare no conflicts of interest.

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