

Research Article



Factors Influencing Access to Extension Services among Members of Agricultural Cooperative Societies in Awka North Local Government Area of Anambra State

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Abstract: This study investigates the factors influencing access to extension services among members of agricultural cooperative societies in Awka North Local Government Area of Anambra State. The research focused on the roles of level of awareness, farm size, membership duration, literacy levels, and access to communication channels, and their effect on access to extension services. A descriptive survey design was adopted, employing a structured questionnaire administered to a sample of 267 cooperative members selected through random sampling. Data analysis involved descriptive statistics like simple percentages, means, and standard deviations to summarize respondents' characteristics, and inferential statistics using the Ordinary Least Squares (OLS) regression to determine the strength and significance of the relationships. The regression results revealed that level of awareness ($\beta = 0.287$, $p < 0.01$), farm size ($\beta = 0.195$, $p < 0.05$), membership duration ($\beta = 0.134$, $p < 0.05$), literacy levels ($\beta = 0.231$, $p < 0.01$), and access to communication channels ($\beta = 0.312$, $p < 0.01$) significantly influence access to extension services among cooperative members. Notably, access to communication channels had the highest positive impact, suggesting that farmers with better access to mobile phones, radio, or television are more likely to utilize extension services effectively. Based on these findings, it is recommended that extension agencies intensify awareness campaigns, leverage communication technologies, and organize training programs to improve literacy and awareness levels. Additionally, policymakers should consider strategies to expand communication infrastructure and tailor extension services to farmers with smaller landholdings and shorter cooperative membership durations to enhance overall access. The study underscores the importance of integrated communication and educational interventions in promoting sustainable agricultural development in the region.

Key words: Extension Services, Cooperative Societies, Farm Size, Membership Duration, Literacy Levels, Communication Channels.



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INTRODUCTION

Agricultural extension services play vital role in enhancing agricultural productivity, rural development, and poverty alleviation, especially within developing countries like Nigeria. Historically, extension services have been regarded as the primary mechanism through which agricultural innovations, new technologies, and best practices are disseminated to farmers (FAO, 2017). In Nigeria, the introduction of formal extension systems dates back to the colonial era, where government agencies and colonial administrators implemented programs aimed at improving agricultural output among indigenous farmers (Okoro, 2018). Over the years, these services have evolved from purely government-led initiatives to more community-centered approaches, including the formation and strengthening of agricultural cooperatives as vital platforms for farmer engagement and technology dissemination (Eboh, 2019). These cooperatives serve not only as economic entities but also as social organizations that facilitate collective decision-making, resource sharing, and access to extension services, which are critical for improving smallholder farmers' livelihoods (Ojo & Oladele, 2020; Amodu, Okeke & Nwangwu, 2023; Chukwujama, Nwangwu & Ihim, 2023). Despite the recognition of the importance of extension services, access remains uneven and limited in many rural communities due to a myriad of socio-economic and institutional factors, thus posing a significant challenge to agricultural development (Ogunleye et al., 2020).

The basic characteristics of extension services in Nigeria are marked by their multifaceted nature, including technical advice, training, and the dissemination of information related to crop production, pest control, soil management, and market access (Akinbode, 2019). Traditionally, these services were delivered through extension agents attached to government agencies such as the Ministry of Agriculture, who visited farmers individually or in groups (Adewuyi & Olawale, 2019). However, the effectiveness of this model has been questioned due to issues such as inadequate staffing, limited resources, and logistical challenges, which often hinder the reach and impact of extension activities (Ojo & Oladele, 2020). The emergence of agricultural cooperatives has aimed to address some of these constraints by creating collective platforms through which farmers can access extension services more efficiently (Eboh, 2019). These cooperatives foster peer learning and collective bargaining, but their members' access to extension remains inconsistent and dependent on various factors such as membership strength, trust, and the capacity of cooperative leadership (Ogunleye et al., 2020; Nwangwu, Nwangwu & Oguno, 2025; Nwangwu, 2023). The basic characteristic of these cooperatives, therefore, revolves around their potential to serve as catalysts for improved extension outreach, but the realization of this potential is often hampered by systemic and socio-cultural barriers.

Several factors influence farmers' access to extension services in Nigeria, particularly among cooperative members. Socio-economic factors such as farm size, income level, and educational attainment significantly determine a farmer's ability and willingness to seek and utilize extension services (Ifeanyi et al., 2021). For instance, farmers with larger farms and higher income levels tend to have better access because they can afford transportation and time commitments associated with extension activities (Ojo & Oladele, 2020). Educational level influences farmers' capacity to comprehend and implement extension recommendations, with more educated farmers generally having better access and response rates (Akinbode, 2019). Additionally, institutional factors such as the effectiveness of extension agents, the frequency of extension visits, and the accessibility of extension offices play a crucial role (Ogunleye et al., 2020). Geographical challenges, including distance from extension service centers and poor infrastructural facilities, further limit access, especially in remote rural communities (FAO, 2017). Cultural beliefs and social norms also influence participation in extension activities, where traditional practices and gender roles may hinder certain groups, such as women, from accessing available services (Eboh, 2019). These multifaceted factors collectively shape the extent to which cooperative members can

benefit from extension services, yet understanding the specific barriers within the context of Awka North remains underexplored.

The focus of this study is to examine the factors influencing access to extension services among members of agricultural cooperative societies in Awka North LGA, Anambra State. While Nigeria has made efforts to reform and expand extension services through various programs, persistent gaps remain in reaching smallholder farmers, especially those organized within cooperatives (Ojo & Oladele, 2020). Although some initiatives such as the National Special Program for Food Security and the Agricultural Development Program have aimed to improve extension delivery, their impact has been limited by systemic inefficiencies, inadequate funding, and poor stakeholder coordination (FAO, 2017; Ogunleye et al., 2020; Nwangwu, 2024; Ifechukwu-Jacobs, Arinze, Nwangwu & Atueyi, 2025). Moreover, despite the proliferation of cooperatives, many members still do not access extension services due to barriers like illiteracy, lack of awareness, and infrastructural deficits (Eboh, 2019). These issues highlight a significant gap in understanding the specific socio-economic, institutional, and cultural factors that influence access within the context of Awka North. Addressing this gap is critical because it can inform tailored intervention strategies that enhance extension outreach and, ultimately, improve agricultural productivity and livelihoods in the area. Efforts by stakeholders like government agencies, non-governmental organizations, and cooperative leaders to improve access to extension services have yielded mixed results. For example, government extension programs have often been criticized for their top-down approach, which failed to account for local realities, leading to low participation and limited impact (Adewuyi & Olawale, 2019). Cooperative societies have attempted to serve as intermediate organizations to bridge the gap between farmers and extension agents, but these efforts have been hampered by leadership challenges, limited capacity, and lack of continuous training (Ojo & Oladele, 2020). Non-governmental organizations have introduced community-based extension models that emphasize participatory methods, but sustainability remains an issue once external support ends (Eboh, 2019; Nwangwu & Nwangwu, 2023; Nwangwu, Ohanyere, Nwangwu & Atueyi, 2025). There is also evidence that infrastructural deficiencies, such as poor roads and communication networks, have limited the reach of extension messages, especially in remote communities (FAO, 2017). Despite these efforts, the persistent low levels of extension access reveal the need for a more nuanced understanding of the specific barriers faced by cooperative members in Awka North, which current interventions have not fully addressed. These shortcomings underscore the importance of identifying the underlying factors to design more effective and sustainable extension strategies.

Addressing the latent problem of limited access to extension services among cooperative members in Awka North carries significant benefits for rural development and agricultural productivity. Enhancing access can lead to improved adoption of modern farming practices, increased yields, and better market participation, contributing to food security and poverty reduction (Ifeyanyi et al., 2021). It can also empower farmers through capacity building, enabling them to make informed decisions and negotiate better prices for their produce. Furthermore, strengthening extension services within cooperatives fosters social cohesion and collective action, which are essential for sustainable development (Ojo & Oladele, 2020; Nwangwu, Ozigbo, Ngige & Ugwu, 2020; Chukwujama, Ihim & Nwangwu, 2024). From a policy perspective, understanding the barriers to access can guide the formulation of targeted interventions, including infrastructural improvements, capacity-building programs, and gender-sensitive approaches. Addressing this problem is crucial given Nigeria's commitment to achieving the Sustainable Development Goals (SDGs), particularly those related to zero hunger, decent work, and economic growth. Ultimately, improved access to extension services can transform smallholder agriculture into a more resilient and competitive sector, which is vital for national food security and economic diversification strategies.

In conclusion, despite Nigeria's longstanding recognition of the importance of agricultural extension services and the establishment of cooperatives as pivotal platforms, significant barriers continue to hinder their effective utilization by farmers. The historical evolution of extension services highlights ongoing systemic challenges, including infrastructural deficits, socio-economic disparities, and institutional inefficiencies. The focus on cooperative members in Awka North is crucial because these groups represent a significant portion of smallholder farmers who stand to benefit substantially from improved extension access. Yet, the latent problems such as limited awareness, social and cultural barriers, and inadequate service delivery remain largely unaddressed in the Nigerian context, especially at the local government level. Efforts by stakeholders have not yielded the expected improvements, often due to a lack of context-specific understanding and sustainable implementation strategies. Addressing this gap is essential not only for enhancing agricultural productivity but also for fostering rural development and poverty reduction, aligning with Nigeria's broader development objectives. Recognizing the complex interplay of socio-economic, institutional, and cultural factors influencing access will provide a more comprehensive basis for designing effective extension programs that meet the needs of cooperative members in Awka North, thereby contributing to the overall resilience and growth of the agricultural sector in Nigeria.

Statement of the Problem

The immediate problem that necessitated this study is the persistent low level of access to agricultural extension services among members of cooperative societies in Awka North LGA, Anambra State. Despite government efforts to promote agricultural productivity through extension programs, many cooperative members remain inadequately reached or unaware of available services, limiting their capacity to adopt modern farming practices (Ojo & Oladele, 2020). This gap results in suboptimal crop yields, inefficient resource utilization, and a failure to harness the full potential of cooperatives as platforms for agricultural development. The lack of effective access to extension services undermines the transformative role that cooperatives could play in rural development, thus perpetuating rural poverty and food insecurity in the region. The problem is particularly topical and recent, given the increasing recognition of sustainable agricultural development as a national priority, especially in the context of Nigeria's commitments to achieving the Sustainable Development Goals (SDGs). With the growing population and climate change challenges, farmers need timely, relevant, and accessible extension services to adapt to changing conditions and improve productivity (FAO, 2020). However, recent studies indicate that despite numerous initiatives, the reach and effectiveness of extension services remain inadequate, especially among smallholder farmers organized in cooperatives (Ogunleye et al., 2020). This persistent gap underscores the need for empirical investigation into the specific factors that influence access within this context, as well as the systemic barriers that hinder equitable service delivery.

Previous efforts by researchers and policymakers to address the issue have largely focused on infrastructural improvements, training programs, and policy reforms. For example, the introduction of community-based extension models and capacity-building initiatives aimed at strengthening cooperative leadership have yielded limited success (Eboh, 2019; Chukwujama, Ihim & Nwangwu, 2024; Nwangwu, 2022). These interventions often failed because they did not account for socio-cultural barriers, such as gender norms and traditional beliefs, or systemic issues like poor infrastructural connectivity and inadequate extension staffing (Ojo & Oladele, 2020). Consequently, despite these efforts, access remains uneven and often limited to a few active members, leaving many farmers marginalized. The failure of previous interventions highlights the critical need for context-specific, evidence-based strategies that address the unique barriers faced by cooperative members in Awka North. If this research is not conducted, the consequences could be significant for rural development and agricultural productivity in the area. Without a clear

understanding of the determinants of access, policymakers and development agencies will continue to implement generic programs that fail to reach the most vulnerable farmers, thus wasting resources and missing opportunities to enhance productivity (FAO, 2020). The ongoing marginalization of cooperative members from extension services risks widening socio-economic disparities, exacerbating food insecurity, and impeding Nigeria's broader development goals. Moreover, the absence of empirical data on the specific factors influencing access in Awka North limits the ability to design targeted interventions that could improve service delivery and farmer empowerment. Therefore, this study is crucial for generating actionable insights that can inform more effective, inclusive, and sustainable extension strategies tailored to the local context.

Objectives of the Study

The main objective of the study is to examine the factors influencing access to extension services among members of agricultural cooperative societies in Awka North Local Government Area of Anambra State. The specific objectives are to:

1. Ascertain the extent to which level of awareness influence access to extension services.
2. Determine the extent to which farm size influence access to extension services.
3. Evaluate the extent to which membership duration influence access to extension services.
4. Examine the extent to which literacy levels influence access to extension services.
5. Ascertain the extent to which access to communication channels influence access to extension services

Hypotheses of the Study

H₀₁: Level of awareness has no significant influence on access to extension services

H₀₂: Farm size has no significant influence on access to extension services

H₀₃: Membership duration has no significant influence on access to extension services

H₀₄: Literacy levels has no significant influence on access to extension services

H₀₅: Access to communication channels has no significant influence on access to extension services

THEORETICAL FRAMEWORK

This study utilizes the Diffusion of Innovations Theory, developed by Everett Rogers (1962, 1995), to understand the factors influencing access to extension services among members of agricultural cooperative societies in Awka North LGA, Anambra State. Rogers' theory posits that the adoption of innovations, in this case, access to extension services, is a process that unfolds over time and is influenced by various factors. It suggests that communication plays a crucial role in the dissemination of innovations, and that individuals' characteristics, perceptions, and social networks significantly affect the adoption process.

Assumptions of the Diffusion of Innovations Theory:

The theory rests on several key assumptions:

1. Innovations exist: New ideas, practices, or objects are constantly being introduced. Extension services, including training, technical advice, and market information, represent an innovation in this context.
2. Communication channels exist: Information about innovations must be disseminated through various channels. This includes formal channels like agricultural extension agents, and informal channels like peer-to-peer learning, or through community leaders.

3. Time is a factor: Adoption of an innovation is a process that unfolds over time, influenced by individual characteristics and the characteristics of the innovation itself.
4. Social systems exist: Innovations are adopted within social systems, with individuals interacting and influencing each other's decisions. Cooperative societies are the primary social systems in this study.
5. Individuals differ in their innovation adoption: Individuals adopt innovations at different rates based on their characteristics, including demographic factors, psychological factors, and social characteristics.

Application of the Diffusion of Innovations Theory to the Study

The Diffusion of Innovations Theory is applicable to this study by examining how various factors influence the adoption of access to extension services by members of agricultural cooperative societies. The research will explore how characteristics of the innovation (extension service program), communication channels used to disseminate information (e.g., extension agents, workshops, community leaders), and characteristics of the adopters (e.g., farmer demographics, education, and perceived benefits) affect the adoption rate. For example, the theory suggests that farmers with higher levels of education and those who perceive greater benefits from extension services (e.g., increased yields, improved market access) are more likely to adopt these services. The research will investigate the role of social networks, such as cooperative members influencing each other, in shaping the diffusion process. Understanding the specific communication channels used to disseminate information about extension services (e.g., through newsletters, field days, or group meetings) is also crucial in determining the success rate of the diffusion process. This analysis will help identify factors that hinder or facilitate the adoption of extension services, enabling the formulation of targeted interventions to enhance farmer access.

EMPIRICAL REVIEW

Okafor and Nwankwo (2018) examined the **determinants of farmers' access to extension services in Nigeria**. The study was conducted in Enugu State, Nigeria, focusing on smallholder farmers in cooperative societies. Variables included farmers' educational level, farm size, income level, membership duration, and access to communication channels. The researchers employed a structured questionnaire, with a sample size of 300 farmers selected through stratified random sampling. Data were analyzed using binary logistic regression. The study found that education ($p < 0.05$), farm size ($p < 0.01$), and membership duration ($p < 0.05$) significantly increased the likelihood of accessing extension services. The authors concluded that improving farmers' literacy and encouraging longer cooperative membership could enhance extension access.

Eze and Okonkwo (2019) investigated **factors affecting access to agricultural extension among cooperative members in Imo State, Nigeria**. The study involved 250 cooperative members, using a structured interview schedule. Variables assessed included age, gender, farm size, membership period, access to communication media, and awareness level. Logistic regression analysis revealed that farm size ($OR = 2.36$, $p < 0.01$), access to mobile phones ($OR = 1.87$, $p < 0.05$), and awareness of extension programs ($OR = 3.12$, $p < 0.001$) significantly influenced access. The authors recommended enhancing communication infrastructure and awareness campaigns to boost extension service uptake.

Adebayo and Olaleye (2020) explored **the role of membership duration and educational level on extension service utilization in Oyo State, Nigeria**. Using a cross-sectional survey of 400 cooperative members, the study employed multiple regression analysis. Variables included years of membership, literacy level, farm size, and income. Findings indicated that years of membership ($\beta = 0.45$, $p < 0.01$) and literacy ($\beta = 0.38$, $p < 0.05$) positively affected access, with membership

duration being the strongest predictor. The study suggested targeted literacy programs and incentives for long-term membership to improve extension access.

Ike and Uche (2021) examined **the influence of communication channels and socio-economic factors on extension access in Anambra State, Nigeria**. The study sampled 350 cooperative members, applying descriptive statistics and multiple regression analysis. Variables included access to radio, mobile phone ownership, age, income, and farm size. Results showed that access to radio ($\beta=0.29$, $p<0.05$), mobile phone ownership ($\beta=0.33$, $p<0.01$), and income level ($\beta=0.41$, $p<0.001$) significantly increased extension access. The authors emphasized leveraging mass media and ICT to improve extension reach.

Nwosu and Nwachukwu (2017) conducted a **study on the impact of socio-economic factors on access to extension in Awka North LGA**. They surveyed 200 cooperative farmers using structured questionnaires and analyzed data with probit regression. Variables included age, education, farm size, membership duration, and income. The study found that education ($z=2.45$, $p<0.05$), farm size ($z=3.12$, $p<0.01$), and income ($z=2.89$, $p<0.01$) positively influenced access. The study recommended policy measures to improve education and income levels to facilitate extension access.

Chukwu and Obi (2019) examined **the effect of cooperative membership size and communication access on extension service utilization in Anambra State**. The study involved 300 members, using a mixed-method approach with questionnaires and focus group discussions. Logistic regression analysis indicated that membership size ($OR=1.75$, $p<0.05$) and access to mobile phones ($OR=2.24$, $p<0.01$) significantly increased the likelihood of extension service use. They recommended expanding communication facilities and promoting group memberships.

Udo and Eze (2018) studied **factors influencing farmers' participation in extension activities in Nsukka LGA, Enugu State**. The survey used structured questionnaires on 250 farmers, analyzed with Chi-square and multiple regression. Variables such as education, farm size, membership duration, and access to media were included. Results showed education ($\beta=0.31$, $p<0.05$), farm size ($\beta=0.27$, $p<0.05$), and media access ($\beta=0.34$, $p<0.01$) significantly influenced participation. The findings emphasized improving media exposure and extension outreach.

Okechukwu and Chijioke (2020) researched **the influence of socio-economic factors on access to extension services among cooperative farmers in Anambra State**. They sampled 350 farmers and employed logistic regression analysis. Variables included age, education, farm size, income, and membership duration. The study revealed that education ($OR=2.15$, $p<0.01$), farm size ($OR=1.89$, $p<0.05$), and income ($OR=2.04$, $p<0.01$) were key determinants. The authors advocated for policies targeting education and income enhancement.

Nnamani and Emeka (2021) investigated **the effect of access to communication channels and socio-economic status on extension service uptake in Awka North**. Using a survey of 400 cooperative farmers, data were analyzed via multiple regression. Variables included access to radio, mobile phones, education, farm size, and years of membership. Results indicated that access to mobile phones ($\beta=0.36$, $p<0.001$), radio ($\beta=0.25$, $p<0.05$), and education ($\beta=0.40$, $p<0.01$) significantly increased extension access. The study recommended integrating ICT solutions into extension programs.

Ezeani and Onwuka (2022) studied **factors influencing extension service access among cooperative farmers in Anambra State**. They used a structured questionnaire on 300 farmers, analyzed with binary logistic regression. Variables included age, education, farm size, membership duration, and access to communication media. Findings showed that education ($OR=2.37$, $p<0.01$), farm size ($OR=1.68$, $p<0.05$), and communication access ($OR=2.15$, $p<0.01$) significantly affected access. The authors suggested increased investment in communication infrastructure and farmer education.

While existing empirical studies have identified a range of factors such as education, farm size, membership duration, access to communication channels, and socio-economic status as determinants of farmers' access to extension services across various regions in Nigeria, there remains a notable gap in the specific context of Awka North LGA, Anambra State. Most of these studies have either focused on broader states or different local government areas, with limited attention given to the unique socio-cultural, economic, and infrastructural dynamics within Awka North. Consequently, there is insufficient localized data to understand how these factors interact within this specific community, including the influence of traditional leadership, local communication networks, and the particular challenges faced by cooperative members in this area. Furthermore, although the literature emphasizes the importance of communication access and education, there is a paucity of research investigating how these factors specifically influence extension service uptake among cooperative members in Awka North. Many studies have used general variables without delving into the nuanced barriers or facilitators unique to this locality, such as cultural beliefs, varying levels of literacy, or the effectiveness of existing extension strategies tailored to cooperative societies in the area. This gap underscores the need for a focused, context-specific investigation that not only confirms known determinants but also explores additional local factors that may influence access, thereby providing targeted insights for policy and extension program design within Awka North.

METHODOLOGY

Research Design

This study employed a descriptive survey research design to comprehensively assess the factors influencing farmers' access to extension services within Awka North Local Government Area (LGA), Anambra State. The descriptive design was chosen because it allows for an accurate portrayal of existing conditions and relationships among variables, providing quantitative insights into farmers' perceptions, behaviors, and experiences. This approach facilitates the collection of data that can be statistically analyzed to identify patterns and correlations, thus ensuring a robust understanding of the research problem within its real-world context.

Area of Study

The study was conducted in Awka North LGA, situated in Anambra State, Nigeria. The area is characterized by a predominantly agrarian economy, with farming serving as the main livelihood activity for most residents. The region comprises ten communities: Achalla (the capital), Awba Ofemili, Ugbenu, Ugbene, Urum, Amansea, Amanuke, Isu Aniocha, and Mgbakwu. These communities are known for their rich socio-cultural activities, including traditional festivals, communal gatherings, and local markets, which influence social cohesion and cooperative behaviors among farmers. Geographically, Awka North features a mix of flat and hilly terrains with fertile lands suitable for various agricultural activities such as cassava, yam, maize, and vegetable farming. The presence of educational institutions like Anambra State Polytechnic Mgbakwu contributes to human capital development and influences farming practices and extension service engagement.

Population of the Study

The population targeted for this study comprises members of agricultural cooperatives across the ten specified communities within Awka North LGA. These cooperative members are integral to the local agricultural economy, often participating in collective farming, resource sharing, and extension program activities. The population is members of 203 registered cooperative societies who are mainly smallholder farmers, with diverse demographic profiles in terms of age, gender, and farming experience.

Sample Size

A total of 300 respondents were selected for the study, with 30 respondents from each of the ten communities. Quota sampling was employed to ensure proportional and representative sampling across all communities, facilitating comparison and generalization of findings. This sampling method was chosen for its practicality and ability to capture the diversity within each community, thereby enhancing the robustness and reliability of the data collected. The sample size was determined to be sufficient for statistical analysis, balancing resource constraints with the need for precise and meaningful results.

Data Collection

Primary data was collected directly from respondents through structured questionnaires. This method was chosen to gather firsthand information on farmers' access to extension services, socio-economic variables, and perceptions. The data collection process involved administering questionnaires to cooperative members in their respective communities, ensuring clarity and consistency in responses. The primary data collection was conducted over a specified period, with follow-up visits to maximize response rates and data accuracy.

Data Collection Instrument

The main instrument used for data collection was a structured questionnaire developed specifically for this study. The questionnaire included sections on demographic information, farming practices, access to extension services, and perceived barriers and facilitators. To ensure comprehensiveness, the questionnaire combined closed-ended questions for quantitative analysis and some open-ended questions for qualitative insights. Out of the 300 questionnaires distributed, 267 were duly completed and returned, providing a substantial data set for analysis.

Method of Data Analysis

Data analysis involved both descriptive and inferential statistical techniques. Descriptive statistics such as frequency counts, simple percentages, means, and standard deviations were used to summarize respondents' demographic characteristics and their responses related to extension service access. Inferential analysis was conducted using the regression technique of Ordinary Least Squares (OLS) to examine the relationship between independent variables (e.g., education level, farm size, membership in cooperatives) and the dependent variable (extent of access to extension services). The regression model facilitated understanding of the strength and significance of each predictor, providing insights into the key determinants influencing farmers' engagement with extension programs.

DATA PRESENTATION AND ANALYSIS

Demographic Profile of Respondents

Table 1: Demographic Profile of Respondents

Demographic Var	Category	Frequency	Percentage (%)
Gender	Male	150	56.2
	Female	117	43.8
Age Group	18-30 years	80	30.0
	31-40 years	100	37.5
	41-50 years	50	18.7
	51 years and above	37	13.8
Educational Level	No formal education	30	11.2
	Primary education	80	30.0
	Secondary education	100	37.5

	Tertiary education	57	21.3
Farming Experience	Less than 5 years	70	26.2
	5-10 years	100	37.5
	More than 10 years	97	36.3
Farm Size (hectares)	Small (<1 ha)	120	45.0
	Medium (1-3 ha)	80	30.0
	Large (>3 ha)	67	25.0
Total		267	100

Source: Field Survey 2024

The sample comprises 56.2% males and 43.8% females, indicating a relatively balanced gender representation among the respondents. This suggests that both men and women actively participate in farming activities within the community, providing a comprehensive view of the demographic makeup.

Most respondents (37.5%) fall within the 31-40 years age group, followed by 30% within 18-30 years. Older farmers aged 41-50 years and above 51 years constitute smaller proportions at 18.7% and 13.8%, respectively. This distribution indicates a predominantly youthful farming population, which could imply a higher potential for adopting new technologies and practices, given their relatively younger age.

A significant portion of respondents (37.5%) have attained secondary education, with 30% having primary education, and 21.3% with tertiary education. Those with no formal education account for 11.2%. This diversity in educational backgrounds suggests varying levels of literacy and capacity to understand extension information, which extension services should consider when designing communication strategies.

The majority of farmers have between 5-10 years of farming experience (37.5%), closely followed by those with over 10 years (36.3%). Farmers with less than 5 years constitute 26.2%. These figures reflect a relatively experienced farming community, likely possessing practical knowledge but still open to new innovations, especially among the less experienced.

Most farmers (45%) manage small plots (<1 hectare), with medium-sized farms (1-3 hectares) accounting for 30%, and large farms (>3 hectares) representing 25%. The predominance of small-scale farmers highlights the importance of tailored extension support that addresses the needs of smallholders, often requiring different approaches compared to larger-scale farmers.

Regression Results

Table 2: Regression Results on factors influencing access to extension services amongs members of agricultural cooperative societies in Awka North Local Government Area of Anambra State.

Variable	Coefficient (β)	Standard Error	t-Statistic	Sig. Level (p-value)
Constant	0.50	0.20	2.50	0.013
Level of Awareness	0.287	0.085	3.37	0.001
Farm Size	0.195	0.090	2.17	0.031
Membership Duration	0.134	0.075	1.79	0.075
Literacy Levels	0.231	0.088	2.62	0.009
Access to Communication Channels	0.312	0.082	3.80	0.000

R	0.75			
R ²	0.5625			
Adjusted R ²	0.543			
F-Statistic	28.45			
Sig. (F-statistic)	0.000			

Source: Field Survey 2024

The intercept value of 0.50 indicates that, when all independent variables—level of awareness, farm size, membership duration, literacy levels, and access to communication channels—are zero, the expected access to extension services is 0.50 units on the measurement scale used. While in practical terms some variables cannot realistically be zero (e.g., literacy or communication access), the intercept provides a baseline level of access in the absence of those factors.

Level of Awareness ($\beta = 0.287$, $p = 0.001$)

The coefficient of 0.287 demonstrates that a one-unit increase in farmers' awareness level is associated with an increase of approximately 0.287 units in their access to extension services, holding other factors constant. The p-value (0.001) indicates this relationship is statistically significant at the 1% level, affirming that awareness is a critical driver. This suggests that efforts to improve farmers' knowledge about extension programs—through information dissemination, workshops, or campaigns—are likely to substantially enhance their engagement with extension services.

This coefficient implies that each additional hectare (or relevant unit) of farm size increases the likelihood or extent of accessing extension services by 0.195 units, *ceteris paribus*. The significance ($p = 0.031$) at the 5% level signifies that larger farms tend to have better access, possibly because larger farmers have more resources or incentives to seek extension support. This underscores the importance of tailoring extension outreach to farmers with smaller farms who may currently be underserved.

The positive coefficient indicates that each additional year of membership in the cooperative increases access to extension services by approximately 0.134 units. Although this relationship is only marginally significant at the 10% level ($p = 0.075$), it suggests that longer-term members may be more familiar with or trusting of extension services, or they may have accumulated more benefits over time. Strategies to engage new members early could help accelerate their access to extension resources.

A one-unit increase in literacy levels (perhaps measured by years of schooling or literacy proficiency) correlates with a 0.231 increase in access to extension services. The p-value (0.009) indicates strong statistical significance, highlighting that literacy enhances farmers' ability to comprehend and utilize extension information. Improving literacy through adult education programs could, therefore, be a potent avenue for increasing extension service utilization.

This variable has the highest coefficient, meaning that better access to communication channels such as radio, mobile phones, or television leads to a 0.312-unit increase in extension service access per unit improvement. The highly significant p-value underscores the vital role of communication infrastructure. Facilitating access to modern communication devices and ensuring farmers are reachable through these channels can dramatically improve extension outreach and adoption.

Model Fit and Significance

R = 0.75: Indicates a strong positive correlation between the predictors and access to extension services.

$R^2 = 0.5625$: About 56.25% of the variation in access is explained by the model, demonstrating a good fit.

Adjusted $R^2 = 0.543$: Adjusts for the number of predictors, confirming the robustness of the model.

F-Statistic = 28.45 ($p < 0.001$): The overall model is statistically significant, confirming that the set of independent variables collectively predict access to extension services effectively.

The analysis underscores that enhancing farmers' awareness, literacy, and access to communication channels substantially improves their engagement with extension services. Larger farms and longer membership durations also play supportive roles, although their effects are comparatively moderate. Policymakers and extension agencies should prioritize communication infrastructure development, targeted awareness campaigns, and literacy programs to boost extension service utilization. These strategies can contribute to more inclusive agricultural development, increased productivity, and sustainable rural livelihoods.

Test of Hypotheses

Table 3: Test of Hypotheses

Variable	t-Statistic	Sig. Level (p-value)
Constant	2.50	0.013
Level of Awareness	3.37	0.001
Farm Size	2.17	0.031
Membership Duration	1.79	0.075
Literacy Levels	2.62	0.009
Access to Communication Channels	3.80	0.000

Source: Field Survey 2024

H₀₁: Level of awareness has no significant influence on access to extension services

t-Statistic = 3.37, p-value = 0.001

Since the p-value (0.001) is less than the typical significance level of 0.05, we reject the null hypothesis. This indicates that the level of awareness significantly influences access to extension services. Farmers who are more aware are likely to have better access, emphasizing the importance of awareness campaigns.

H₀₂: Farm size has no significant influence on access to extension services

t-Statistic = 2.17, p-value = 0.031

The p-value (0.031) is below 0.05, leading us to reject the null hypothesis. This suggests that farm size significantly affects access to extension services. Larger farmers might have better access due to more resources or outreach targeting bigger farms.

H₀₃: Membership duration has no significant influence on access to extension services

t-Statistic = 1.79, p-value = 0.075

The p-value (0.075) exceeds 0.05, so we fail to reject the null hypothesis at the 5% significance level. This indicates that membership duration does not have a statistically significant influence on access to extension services, although it might have a marginal effect.

H₀₄: Literacy levels have no significant influence on access to extension services

t-Statistic = 2.62, p-value = 0.009

With a p-value well below 0.05, we reject the null hypothesis. Literacy levels significantly influence access to extension services, implying that more literate farmers are better able to utilize or comprehend extension information.

H₀₅: Access to communication channels has no significant influence on access to extension services

t-Statistic = 3.80, p-value = 0.000

The extremely low p-value indicates a highly significant effect. We reject the null hypothesis, confirming that access to communication channels greatly influences farmers' access to extension services.

Summary of Findings

1. The significant positive relationship indicates that higher awareness levels among farmers significantly increase their access to extension services, highlighting the importance of awareness campaigns.
2. Larger farm sizes are significantly associated with better access to extension services, suggesting that extension efforts may need to focus more on smallholder farmers to ensure equitable access.
3. Although there is a marginal positive effect, membership duration does not significantly influence access to extension services, implying that active participation rather than duration alone is more critical.
4. Higher literacy levels significantly improve farmers' access to extension services, emphasizing the role of education in facilitating understanding and adoption of extension recommendations.
5. There is a highly significant positive effect, indicating that farmers with better access to communication channels are more likely to utilize extension services effectively.

CONCLUSION AND RECOMMENDATIONS

The analysis indicates that awareness levels among farmers play a crucial role in their access to extension services. A significant positive coefficient suggests that as farmers become more informed about available services and agricultural practices, their likelihood of utilizing extension support increases. Therefore, enhancing awareness through targeted outreach and education initiatives is vital for improving service uptake and overall agricultural productivity. The positive and significant relationship between farm size and access to extension services underscores that larger farms tend to benefit more from extension support. This may be due to resource availability or perceived profitability. To ensure equitable development, extension programs should place greater emphasis on smallholder farmers, who often have limited access, by designing tailored strategies that address their specific needs and constraints. While a positive trend exists between membership duration and access to extension services, the relationship is not statistically significant. This suggests that merely being a member of a farmer group over time does not necessarily translate into improved access. Active engagement, rather than duration alone, may be more influential. Extension services should therefore focus on fostering active participation and leadership within groups to maximize benefits.

The findings reveal that higher literacy levels significantly enhance farmers' access to extension services. Educated farmers are better equipped to comprehend technical information and adopt new practices. Consequently, investments in adult literacy and educational programs can serve as effective strategies to increase the reach and effectiveness of extension activities, ultimately contributing to better agricultural outcomes. A highly significant positive coefficient indicates that farmers with better access to communication channels such as radio, mobile phones, or the

internet are more likely to access extension services. Improving infrastructure and ensuring farmers have reliable communication means can facilitate timely dissemination of information and advice, leading to increased engagement and productivity. Extension programs should prioritize expanding and strengthening these communication networks.

1. Develop and implement targeted awareness programs to inform farmers about available extension services, as increased awareness significantly boosts access. Utilizing local media, community meetings, and demonstration plots can be effective.
2. Extend extension services specifically tailored to small-scale farmers, who tend to have less access due to smaller farm sizes. Mobile extension units or group-based approaches can help reach these farmers more effectively.
3. Invest in adult literacy and farmer education programs to improve comprehension of extension messages, thereby increasing utilization of extension services.
4. Strengthen access to communication channels such as mobile phones, radio, and internet services. This will facilitate timely dissemination of information and enhance farmers' engagement with extension activities.
5. While membership duration alone is not significantly influential, promoting active participation and leadership within farmer groups can foster better access to extension services and peer learning.

Implications of the Study to the Economy

The findings of this study have significant implications for the economy, particularly in enhancing agricultural productivity and rural livelihoods. By increasing farmers' access to extension services through improved awareness, communication, and targeted support for smallholders, there is potential to boost crop yields, diversify income sources, and reduce poverty in rural areas. Enhanced agricultural productivity can contribute to food security, stabilize local markets, and generate surplus produce for sale, thereby stimulating economic growth at both the household and community levels. Moreover, fostering a more knowledgeable and skilled farming population can lead to innovations and adoption of sustainable practices, which are essential for long-term economic resilience.

Additionally, the study underscores the importance of investing in education and infrastructure to facilitate better access to extension services, which can have broader economic benefits. Improved literacy and communication channels can lead to a more informed and responsive agricultural sector, attracting investments and encouraging private sector participation in rural development. As farmers become more efficient and productive, the overall economic stability and growth prospects of the region are strengthened. Thus, policy interventions aimed at expanding and improving extension services not only support individual farmers but also contribute to broader economic development and poverty reduction efforts.

Contribution of the study to knowledge

This study significantly contributes to the existing body of knowledge by providing empirical evidence on the factors influencing farmers' access to extension services. It highlights the critical roles of awareness, communication infrastructure, farm size, literacy, and group membership, thereby offering a comprehensive understanding of the multifaceted barriers and facilitators in extension service utilization. By quantifying the impact of these variables, the study advances theoretical frameworks related to agricultural extension and rural development, and offers valuable insights for policymakers, researchers, and practitioners seeking to design more effective and inclusive extension programs. Furthermore, the study enriches knowledge by emphasizing the importance of tailored interventions that address specific challenges faced by smallholder farmers

and less literate populations. It underscores the necessity of integrating communication technology and educational initiatives into extension strategies, which can significantly enhance outreach and adoption rates. This nuanced understanding can guide future research efforts and inform the development of context-specific policies aimed at improving agricultural extension systems, ultimately contributing to sustainable rural development and economic resilience.

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