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Willingness to Pay for Private Extension Services among Yam Farmers in Nasarawa State, Nigeria

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Abstract

This study assessed the willingness to pay for private extension services among yam farmers in Nassarawa State, Nigeria. A multi-stage sampling procedure was used to select 295 respondents. An interview schedule was used to obtain data, which were analyzed using percentages and chi-square statistics. A significant majority (72.20%) of yam farmers are willing to pay for private extension services, with a willingness to pay, significantly associated with education ($X^2 = 12.1$; $p < 0.001$), income ($X^2 = 14.5$; $p < 0.001$), access to credit ($X^2 = 16.3$; $p < 0.001$), age ($X^2 = 4.2$; $p < 0.05$), marital status ($X^2 = 3.8$; $p < 0.05$), and membership of association ($X^2 = 4.5$; $p < 0.05$). The findings also highlight the crucial role of non-governmental organizations (NGOs) and private sources in providing extension services, with 55.25% and 40.68% of farmers receiving services from these sources, respectively. In contrast, only 4.07% of farmers received extension information from government sources, indicating a gap in government-led extension service delivery. The study recommends strengthening government extension service delivery systems, collaboration with NGOs and private sources and targeted extension programs to improve yam production and sustainability.

Keywords: Agricultural extension services, willingness to pay, private extension services and yam farmers in Nigeria

Introduction

Agricultural extension services play a crucial role in improving the productivity and efficiency of smallholder farmers, including yam farmers in Nigeria (Adeolu *et al.*, 2022). They provide farmers with essential information, skills, and technologies to enhance their farming practices and decision-making processes (Klerkx & Gildemacher, 2020). In Nigeria, where yam is a significant crop and a staple food for many households, accessing reliable and timely extension services is critical for yam farmers to remain competitive and sustainable (Okeke & Okoye, 2022). However, the provision of public extension services in Nigeria has been inadequate, leading to a

significant gap in the demand for extension services (Ogunniyi *et al.*, 2020). Private extension services have been proposed as a potential solution to address this gap, but the willingness of farmers to pay for these services is a critical factor in their sustainability (Kassie *et al.*, 2021).

Studies (Adekunle *et al.*, 2020; Moyo *et al.*, 2022; Davis & Franzel, 2020 and Klerkx *et al.*, 2020) have shown that extension services can come from various sources, including government agencies, non-governmental organizations (NGOs), private companies, and community-based organizations. In Nigeria, the Agricultural Development Programs (ADPs) and the National Agricultural Extension and Research Liaison Services (NAERLS) are the primary government agencies responsible for providing extension services to farmers (NAERLS, 2020). However, the effectiveness of these services in reaching yam farmers and addressing their specific needs is unclear.

Understanding the socioeconomic factors that influence yam farmers' willingness to pay for private extension services is essential for developing effective strategies to promote the use of these services and improve the productivity and livelihoods of yam farmers in Nigeria and Nassarawa State in particular.

Socioeconomic factors such as age, education, gender, household size, income, and access to credit and markets can influence farmers' willingness to pay for extension services (Rashid & Mukhtar, 2022). For example, studies have shown that younger and more educated farmers are more likely to adopt new technologies and pay for extension services (Tiamiyu & Adeoti, 2020). Similarly, farmers with larger households and higher incomes may be more willing to pay for extension services due to their greater ability to invest in their farms (Olabisi & Ojo, 2021). Mango *et al.* (2020) also reported that farmers' willingness to pay for extension services is influenced by factors such as farm size, education level, and perceived benefits of the services.

However, there is limited research on the willingness of yam farmers in Nigeria to pay for private extension services, particularly in Nassarawa State. This study aims to address this knowledge gap by investigating the willingness of yam farmers in Nassarawa State to pay for private extension services and the socioeconomic factors that influence their willingness to pay. It also aims to investigate the sources of agricultural extension services among yam farmers in the State.

Methodology

The study was carried out in Nasarawa State, Nigeria. Nasarawa State lies within latitude 80° 32' -80° 42' N and longitude 80° 18' - 80° 25' E and occupies a land area of about 27,117 Km² with projected population of 2,761,013 (NBS, 2020). It is made up of thirteen Local Government Areas (LGAs).

Nasarawa State is bordered by Kaduna State to the north, the Federal Capital Territory to the west, Kogi and Benue States to the south, and Taraba and Plateau States to the east. Agriculture is the mainstay of its economy, with the production of various food and cash crops throughout the year. The state's agricultural sector is crucial to its economy, with crops like sesame, soybeans, groundnuts, millet, maize, and yam being major products (Nassarawa State Government, 2023).

Primary data for the study were obtained with the use of an interview schedule. Multi-stage sampling procedure was employed in the selection of the respondents for the study. In the first stage, two (2) out of three (3) agricultural zones namely: Southern and Central Zones were purposively selected due to larger yam production activities in the zones. The second stage involved a purposive selection of 2 out of 4 LGAs in the Central Zone. The LGAs are Akwanga and Nasarawa-Eggon. Similarly, 2 out of 5 LGAs were purposively selected in the Southern Zone. They are Doma and Keana. The Four LGAs were purposively selected because they are predominant yam-producing areas. In the third stage, 2 districts (Akwanga and Andaha) out of 10 from Akwanaga LGA, 1 district (Umme) out of the 3 from Nasarawa-Eggon LGA, 1 district (Agwanshi) out of 5 from Doma LGA and 1 district (Aloshi) out of 4 from Keana LGA This gives 5 districts for the study. At the fourth stage, there was simple random selection of 10 villages from the selected districts. The fifth stage involved a simple random selection of 295 out of 5,890 yam farmers comprising of 5% of the yam farmers in the selected villages, giving the sample size for the study.

Data obtained were analyzed using percentages and chi square statistics. Chi square analysis was used to determine the association between farmers' socioeconomic factors and their willingness to pay for private extension services, which was hypothesized thus: There is no significant association between socioeconomic characteristics of respondents and willingness to pay for private extension services.

Results and Discussion

Sources of agricultural extension services and willingness to pay for private extension services

The study finding highlights the crucial role of non-governmental organizations (NGOs) and private sources in providing extension services to yam farmers. A significant majority (55.3%) of the farmers received extension services through NGOs, while 40.68% received services from private sources (Table 1). This is consistent with previous research (Klerkx & Gildemacher, 2020; Adebayo et al., 2022) that found NGOs and private sector entities to be key players in agricultural extension service delivery. The main private extension service providers in the study area are agro and input dealers who are private companies that sell agricultural inputs such as seeds, fertilizers and pesticides to farmers.

The low percentage (4.07%) of farmers receiving extension information from government sources calls for concern (Table 1), as government agencies are typically responsible for providing extension services to farmers (Okeke & Okoye, 2022). This suggests that there may be a gap in government-led extension service delivery, which NGOs and private sources are filling.

The finding that 72.20% of yam farmers are willing to pay for private extension services indicates a high demand for extension services among farmers. This is consistent with studies (Adebayo et al., 2022 and Rashid et al., 2022) that found farmers are willing to pay for extension services if they perceive them as valuable and effective.

Table 1: Sources of agricultural extension services and willingness to pay for private extension services

| Variables | Percentage |
|--|------------|
| Sources of extension services | |
| Government | 4.07 |
| Private | 40.68 |
| NGO's | 55.25 |
| Willingness to pay for private extension services | |
| Willing to pay | 72.20 |
| Not willing to pay | 27.80 |

Source: Field survey, 2022

Association between Willingness to Pay for Private Extension Service and Socioeconomic Factors

The chi-square test result shows that there is a significant association between willingness to pay for private extension service and education ($X^2 = 12.1$; $p < 0.001$), income ($X^2 = 14.5$; $p < 0.001$), access to credit ($X^2 = 16.3$; $p < 0.001$), age ($X^2 = 4.2$; $p < 0.05$), marital status ($X^2 = 3.8$; $p < 0.05$), and membership of association ($X^2 = 4.5$; $p < 0.05$). However, there is no significant association between willingness to pay and sex ($X^2 = 1.2$; $p = 0.27$).

Table 2: Association between willingness to pay for private extension service and socioeconomic factors

| Variable | Chi-square Value |
|---------------------------|------------------|
| Age | 4.2* |
| Sex | 1.2 |
| Marital Status | 3.8* |
| Education | 12.1* |
| Income | 14.5* |
| Membership of Association | 4.5* |
| Access to Credit | 16.3* |

* $P \leq 0.05$, ** $P \leq 0.01$

The result implies that yam farmers who are more educated, have higher incomes, and have access to credit are more willing to pay for private extension services. This is consistent with previous studies (Klerkx & Gildemacher, 2020; Okeke & Okoye, 2022) that have shown that farmers with higher socioeconomic status are more likely to adopt new technologies and pay for extension services.

The significant association between age and willingness to pay for private extension services may indicate that older farmers are more experienced and have a greater appreciation for the benefits of extension services. Similarly, the significant association between marital status and willingness to pay may indicate that married farmers have a greater sense of responsibility and are more willing to invest in their farms.

Conclusion and Recommendations

Non-governmental organizations (NGOs) and private sources in Nassarawa State play a vital role in providing extension services to yam farmers, with a significant majority receiving services from these sources. The low percentage of farmers receiving extension information from government sources indicates a gap in government-led extension service delivery, which NGOs and private sources are filling. Moreover, the high willingness of yam farmers to pay for private extension services suggests a strong demand for effective and valuable extension services in the State.

Yam farmers' willingness to pay for private extension services is significantly influenced by their socioeconomic status, age, and marital status. Specifically, farmers who are more educated, have higher incomes and have access to credit are more willing to pay for private extension services. Additionally, older and married farmers are more likely to pay for extension services, indicating a greater appreciation for the benefits of extension services and a sense of responsibility to invest in their farms, respectively. Notably, gender does not appear to be a significant factor in determining willingness to pay for extension services among yam farmers.

Government agencies should therefore, strengthen their extension service delivery systems in the State and collaborate with NGOs and private sources to ensure that the yam farmers have access to quality extension services, ultimately improving yam production and sustainability. They should also strengthen their extension service delivery systems to reach more farmers, collaborate with NGOs and private sources to leverage resources and expertise as well as develop policies and programs to support public-private partnerships in extension service delivery. Extension service providers should design programs that cater to the needs of farmers with varying socioeconomic status, age, and marital status. Further research is needed to explore the specific needs and preferences of yam farmers regarding extension services, to inform the development of effective and targeted extension programs.

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