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Socioeconomic Factors Influencing Access to Agricultural Extension Services among Rice Farmers in Gaya Local Government Area, Kano State, Nigeria

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Abstract
The research determines the socioeconomic factors influencing access to agricultural extension services among rice farmers in Gaya Local Government Area, Kano State, Nigeria. A multi-stage sampling procedure was used to select 153 rice farmers, and primary data were collected through structured questionnaires. Percentage, mean, bar chart and Logit regression were used for data analysis. The findings showed that (77.1%) have no access to agricultural extension services and (22.9%) sourced information on rice production from extension agent. Factors that influenced access to agricultural extension services among rice farmers were marital status (β = 0.5694), household size (β = 0.3400), farming experience (β = 0.6156) and extension visits (β = 0.4114) at (p < 0.01). Major problems included poor quality of extension services (46.0%), high cost of extension services (43.0%), and lack of knowledge (33.0%). The study recommended that governmental and non-governmental organisations should invest in regular training and capacity building for the extension agents and update their knowledge to have a good relationship with the rice farmers. The rice farmers' association should gather funds and collaborate with the government and private extension services for subsidised agricultural extension services by qualified and professional extension specialists.

Keywords: Agricultural extension services, Rice production, Gaya Local Government Area

Introduction

In developing countries, agricultural extension is a vital element of the agricultural sector with primary mandate of knowledge and information transfer by research institutes in order expands agricultural productivity, efficiency, and profitability (Yadav et al., 2023). The extent of development of agriculture will be mostly examined by the capability of farmers and their organisations to act to the ecological variations. According to Muksin & Ansyah (2025), “facilitators are expected to play essential roles in agricultural extension”. The formal organization is mandated with assistance and guidance on adoption of innovation with aims of enhancing farmers abilities, skills and knowledge through agricultural extension. Muksin & Ansyah (2025), believed that “the inclusion of

farmers in farmer groups is very vital on account of farmer groups are institutions that have a role in assisting farmers' demand in the situation of dynamics, roles, and efforts to facilitate responses to environmental change". The essence of farmers groups is to enhanced their skills in farming and create association for accessing credits, farm inputs, and recommended technologies (Adesiji et al., 2024 and Wijayanto et al., 2024). However, farmer clusters and agricultural extension are two very vital organizations. Muksin, & Ansyah (2025), reported that "farmers' efforts to receiving agricultural extension will bring about in the framework of farmers' happiness with the extension services carried out by facilitators".

According to Muksin & Ansyah (2025), "extension activities in farming growth play as a link that connects the technologies passed by farmers with agricultural facts and technology that is continuously developing to achieve the demands of these farmers". The farmers groups were formed and allowed to act in a way to satisfied their needs that is the activities of agricultural extension activities (Muksin, & Ansyah, 2025). It thus has tasks in the ability to recognise communal needs, enhance improved technologies, and ensure suitable market response (Muksin, & Ansyah, 2025). Counselling has a planned role for the revolution of the location. The problem of current public agricultural service in Nigeria includes untimely and insufficient funding, very poor rapport of research–extension–farmer–input linkage system, a top-down supply-driven extension method, and unfortunate training of women, youth and weak groups (Osandu et al., 2015). The extension agent-to-farmer ratio in the State remains far above the recommended standard, leading to poor information movement, post-harvest losses and eventually household food variability. Based on this, the research was conducted to determine the socioeconomic factors influencing access to agricultural extension services among rice farmers in Gaya Local Government Area, Kano State, Nigeria.

The major objective of this research was to determine the socioeconomic factors influencing access to agricultural extension services among rice farmers in Gaya Local Government Area, Kano State, Nigeria. The precise objectives of this research were to: describe the socioeconomic characteristics of rice farmers in the study area; determine factors influencing agricultural extension services among rice farmers; and identify problems associated with agricultural extension services among rice farmers in the study area. This study is significant for policymakers in the Ministry of Agriculture and Non-Governmental Organisations in the State. It also provides experiential evidence on how extension services influence the access of extension services among rice farmers and serve as a reference material for similar study.

Theoretical Framework

This study was grounded by the Human Capital Theory (HCT). This theory believed that the communities and individuals obtain economic advantages through investment in people (Shiferaw et al., 2014). In this study of agricultural extension services, HCT implies that enhancing farmers abilities, knowledge and skills by capacity building increases their rice yield and income. Therefore, human capital particularly education on improved rice production technologies is anticipated to gives higher rice yields and better income for the rice farmers in Gaya Local Government Area. Likewise, differences in the socioeconomic characteristics of farmers like access to land and other

resources, educational level, income/wealth status may touch the farmers capabilities to benefits these human capitals. Alene & Manyong (2007) and Brave-Ureta et al. (2007), believed that treating these gaps assist in good understanding of human capital development among smallholders farming situation.

Methodology

Study Area

The research was carried out in Gaya Local Government Area of Kano State, Nigeria. Gaya Local Government lies approximately 11 ° 52' North of the latitude and longitude 9 ^{o} '0' 4'' east. It occupies a total land area of about 613 km^2 and a projected population of 254,888 people in 2026 based on growth rate of 3.2%. The Local Government Area (LGA) shares a boundary with Jigawa State to the North, to the West boundary with Ajingi and Albasu Local Government Areas to the East. It also shares a boundary with Wudil LGA to the south. The major livelihood of the people in LGA is agriculture; the crops cultivated were watermelon, rice, sorghum and cucumbers.

Sampling Procedures

A multi-stage sampling procedure was used for this study. At the first stage, Gaya LGA was purposively selected because of the high production of rice. The second stage involves the random sampling of seven (7) communities from different wards in Gaya LGA, due to their high production of rice. The communities selected were Niima, Kademi, Harunawa, Ishifawa, Gamoji, Kazurawa and Balan communities. At the third stage, 60% of farmers were proportionately sampling from a total of 225 rice farmers from seven (7) selected communities. This gives 153 rice farmers that were sampled for this study. Primary data was collected through the use of a structured questionnaire.

Data Analysis

The analytical techniques used include descriptive and inferential statistics. Mean, frequency distribution and percentage were used to achieve objectives (i), (ii), and (iv).

Logit regression model was used to achieve objective (iii), which is to determine factors influencing access to agricultural extension services among rice farmers. The dependent variable is the access to agricultural extension services and which is binary variable of the access to agricultural extension services among rice farmers and otherwise.

$$Yi = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + e \quad \text{.....} \quad (2)$$

Where:

Yi = Agricultural extension services among rice farmer (1 = access and 0 = otherwise)

X_1 = Age of rice farmer (years);

X_2 = Sex of rice farmer (1 = male, 0 = Female);

X_3 = Educational level (years);

X_4 = Marital status (1 = married, 0 = otherwise;

X_5 = Household size (number of persons);

X_6 = Farming experience (years);

X_7 = Extension visits (number of visits);

β_0 = is the intercept; and

e = is the exponential constant.

Results and Discussion

Socioeconomic Characteristics of Rice Farmers

Table 1 sex showed that majority (69%) of rice farmers were male, while only (31%) were female rice farmers in the study area. This shows the prevailing sex dynamics in Northern Nigeria, where men are the primary landholders and decision-makers in agriculture (Yusuf et al., 2020). This is due to the extension services were majorly target toward male farmers, this disparity can influence the effectiveness of extension services, particularly in increasing productivity among women-led households.

The education level indicates that about (23%) of rice farmers had non-formal education in the study area. About 42% of rice farmers were married, a status that typically relates with higher households and higher food demand among household. Reading ability is a vital factor that develops farmers' understanding of extension messages, record-keeping, and ability to device new practices efficiently (Ajayi et al., 2020). Educated farmers are better positioned to grasp the aids of improved rice varieties, pest control measures, and post-harvest handling practises, all of which contribute to food availability and income generation.

Land ownership showed that 41% acquired land through purchase, while 17% inherited land. Secure land tenure also boosts participation in government and NGO-led extension programmes, which are often requisites for input subsidies and technical training (World Bank, 2019).

Table 1: Socioeconomic Characteristics of Rice Farmers

Variable	Percentage n = 153
Sex	
Male	69.0
Female	31.0
Education	
Non-formal	22.0
Primary	29.0
Secondary	20.0
Tertiary	29.0
Marital Status	
Married	42.0
Divorced	31.0
Widow/Widower	26.0
Land Ownership	
Inheritance	17.0
Purchased	41.0
Combined	42.0

Source: Field Survey, 2025.

The analysis on age in Table 2 revealed that the minimum and maximum ages of rice farmers were 20 and 70 years, respectively, with an average age of 47 years, indicating a relatively youthful farming population. Younger farmers are more likely to embrace extension recommendations and adopt modern technologies that enhance food production and security (Ojo et al., 2021). On the contrary, older farmers may rely more on traditional knowledge, which can limit the uptake of new techniques unless supported through consistent and tailored extension services. Household size varied considerably, with an average of 14 people, with a minimum and maximum of 1 and 25 members of the household. Large households may offer abundant labour but can also experience higher food consumption burdens, making food security more challenging to maintain. Ibrahim & Garba (2021) note that without proper extension support on resource management and improved production methods, large households are at greater risk of food insecurity. Rice farmers had an average farming experience of 11 years, a minimum of 1 year and a maximum of 16 years. Experience influences the ability to make informed production decisions. Experienced farmers are often better able to evaluate and adopt extension advice, particularly when it is participatory and contextualised (Lawal *et al.*, 2019). Such farmers are likely to understand the long-term benefits of food security strategies such as diversification, improved inputs, and sustainable practices.

In terms of income, the average income was ₦168,410 annually. Higher income allows better access to fertilisers, quality seeds, irrigation services, and other inputs promoted through extension programmes. Olaniyi et al. (2020) emphasise that income is directly related to a household's food purchasing power and capacity to implement recommendations that improve food security. The average farm size was 1.34 hectares, reflecting smallholder dominance.

Table 2: Continuous Variables of Rice Farmers

Variable	Minimum	Maximum	Mean
Age (Years)	20	70	47
Household Size (Number)	1	25	14
Farming Experience (Years)	1	16	11
Annual Income from Rice production (₦)	50,000	200,000	168,410
Farm Size (ha)	0.5	2.5	1.34

Source: Field Survey, 2025.

Access to Agricultural Extension Services Among Rice Farmers

Table 3, reveals that most of the rice farmers (77.1%) have no access to agricultural extension services in the study area. This agricultural extension services develop the abilities, skills and knowledge of the farmers on rice output. The findings are contrary to the results of Abdullahi et al. (2026) and Abdulmumini et al. (2025), that reported maize farmers have access to different extension services. However, the result is similar to the result of Aminu et al. (2025), who revealed that agricultural extension services do not reached majority of the sampled farmers. The sources of information on rice production were family and friends (35.9%), extension agent (22.9%), radio (21.6%) and social media (19.6%) in the study area.

Table 3: Access to Agricultural Extension Services Among Rice Farmers

Access to Agricultural extension services	Percentage n = 153
Access	22.9
No Access	77.1
Sources of Information on Rice Production	
Extension Agent	22.9
Family and Friends	35.9
Social media	19.6
Radio	21.6

Source: Field Survey, 2025.

Factors Influencing Access to Agricultural Extension Services Among Rice Farmers

A Logit regression analysis was used to determine factors influencing access to agricultural extension services among rice farmers. The log likelihood ratio is 225.31 and it signify the value that maximises the combined densities in the estimated model. The prob > chi^2 was 0.0000 and significant at 1% level. The possibility of finding this chi – square statistic indicated the influence of the predictor variables on the stated alpha level. This suggests that at least one of the regression numbers in the model is not equal to zero. The important chi – square value of 51.45 % showed that the descriptive variables equally influence the access to agricultural extension services among rice

farmers (Table 4). The factors that significantly influenced access to agricultural extension services among rice farmers were marital status, household size, farming experience and extension visits.

The coefficient of marital status (β = 0.5694) was positive and significantly affected access to agricultural extension services at 1% level of significant. The positive sign indicates that being married increases the chances of access to agricultural extension services, and this means that access to agricultural extension services among married farmers is higher than that of unmarried farmers. This is on account of married farmers having the chance to share knowledge and perform roles and duties, which rises their chances of success. This is comparable to the findings of Masanja et al. (2023) and Midamba & Kizito (2020), “who revealed that access to extension services is increased among married farmers because of evidence sharing and help among family members.”

The coefficient of Household size (β = 0.3400) was positive and significantly affected access to agricultural extension services at 1% level of significant. This signifies that the greater the number of people in the household increases, than the more access to agricultural extension services as linked to rice farmers with a smaller household size in the study area. This could be because rice farmers with higher household sizes needs higher resources to ensure the basic needs of the family are met. This is contrary to the findings of Gashu & Beyene (2024), who showed that “the number of household members raised by one, the likelihood of getting extension services decreased by approximately 3%”.

The farming experience (β = 0.6156), the coefficient was positive and significantly affected access to agricultural extension services at 1% level of significant. This indicates that any rises in farming experience causes the rice farmers to gained more access to agricultural extension services. This occurs on account of the use of experience gained to correct the present farming through extension agents. This is consistent with the findings of Gashu & Beyene (2024), that farmers with higher farming experiences have more chances and access to extension services on account of understanding the benefits of adopting these technologies

The coefficient of extension visits (β = 0.4114) was positive and statistically important at 1% level of significant. This suggests that the higher the extension visits, the more access to agricultural extension services. This is aligned to the findings of Muhammad et al. (2024), who reported that “rice farmers are once times less likely to have a positive perception of the significant of agricultural extension services on rice yield, if they have only non-physical contact or both physical and non-physical contact, compared to those who have exclusively physical contact with extension agents”.

Table 4: Factors Influencing Agricultural Extension Services Among Rice Farmers

Agricultural Extension Services	Coefficient	SE	t-value
Age	- 0.0164	0.0112	- 1.47
Sex	0.5382	0.5626	0.96
Educational level	0.0947	0.0978	0.997
Marital status	0.5694***	0.1877	3.03
Household size	0.3400***	0.0983	3.46
Farming experience	0.6156***	0.1651	3.73
Extension visits	0.4114***	0.1188	3.46
Constant	- 0.1528	0.9515	- 0.16
Diagnostic variables			
Number of observations		153	
Log Likelihood		225.31	
LR Ch2 (7)		51.45	
Prob > Ch^2		0.00	

Source: Field Survey, 2025.

Problems Associated with Agricultural Extension Services among Rice Farmers

The statistics on figure III about 46% of the rice farmers reported poor quality of extension services as a primary problem. This indicates that the extension services provided were perceived as inadequate, ineffective, or not meeting farmers' expectations. Similar findings by Egbule et al. (2020) highlighted that low-quality extension reduces farmers' trust and willingness to adopt recommended technologies, negatively impacting agricultural productivity. High cost of extension services (43%) identified the high cost of accessing extension services as another barrier. More than two-thirds (71%) of farmers indicated a lack of relevant or timely agricultural information as a constraint. Over 30% of rice farmers reported a lack of knowledge as a barrier, highlighting that some farmers may not fully understand the benefits of extension services or how to engage with them. This gap may stem from low literacy levels or insufficient awareness campaigns. As noted by Bello-Bravo et al. (2020), enhancing farmers' understanding and awareness is critical to increasing uptake of extension services.

Cultural beliefs and customs affect extension access for 26% of rice farmers. This social dimension is a well-documented challenge in extension work, where integration of indigenous knowledge and respect for local customs improves acceptance (Chirwa & Matita, 2019). About one-third of farmers (16%) cited limited access to extension agents

as a constraint. Similar constraints have been noted by Ibrahim et al. (2020), who called for increased recruitment and better deployment of extension personnel.

A smaller proportion (7%) pointed to poor road infrastructure as limiting extension access. Inadequate rural roads hinder extension agents' mobility and farmers' ability to reach extension centres, underscoring the link between infrastructure and agricultural service delivery (Abdulraheem & Muhammad, 2019). A minor percentage of rice farmers (3%) reported other unspecified constraints, indicating potential unique or localised issues not captured by the main categories.

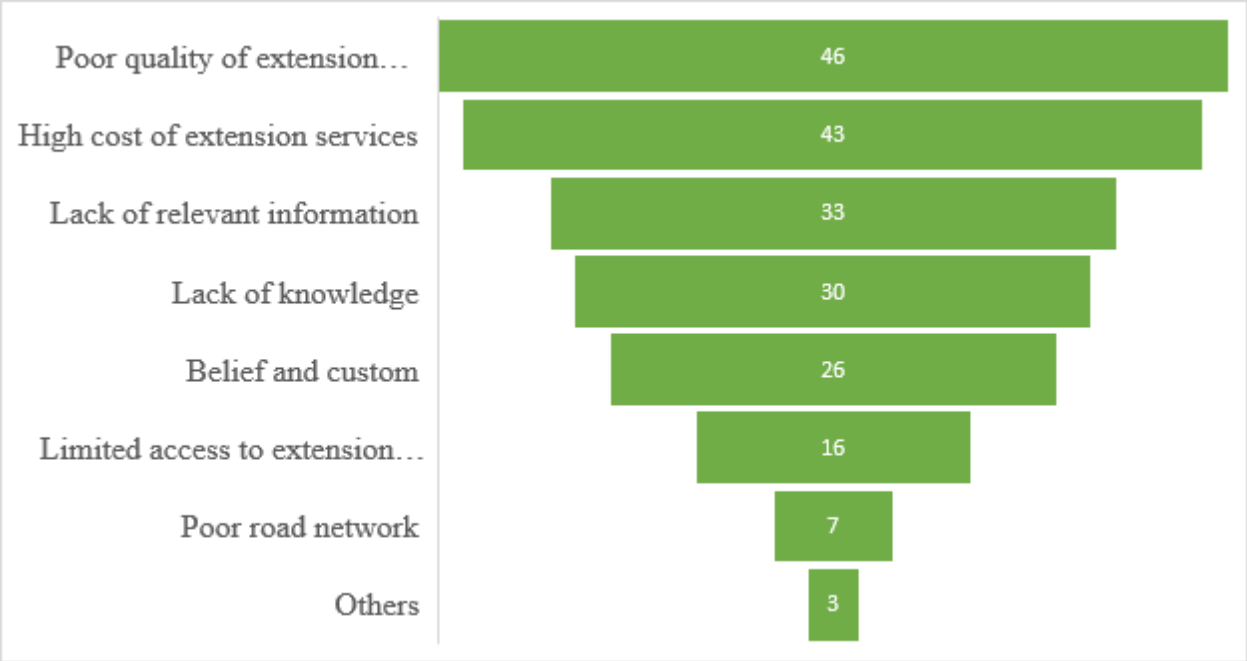

Figure I: Problems associated with Agricultural Extension Services Among Rice Farmers
Source: Field Survey, 2025.

Conclusion and Recommendations

This study concluded that agricultural extension services have an important role in enhancing rice production in the study area via the adoption of better production technologies. The factors that influenced agricultural extension services among rice farmers were extension services, household size, farming experience and marital status, and the major challenged by the rice farmers consist of poor quality of extension services, high cost of agricultural extension services and lack of knowledge. Based on the study findings, the study recommended that governmental and non-governmental organisations should invest in regular training and capacity building for the extension agents and update their knowledge to have a good relationship with the rice farmers in Gaya LGA. The rice farmers' association should gather funds and collaborate with the government and private extension services for subsidised agricultural extension services by qualified and professional extension specialists.

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