Proceedings of the Annual Conference of the Agricultural Extension Society of Nigeria
Number: Thirty-First Annual Conference
Theme: Strengthening the Agricultural Extension Innovation Systems for Greater Development Impacts
Date: 12th to 15th April 2026
Venue: Michael Okpara University of Agriculture, Umudike, Abia State, Nigeria
ISSN: 1595 – 1421.
Website: https://info@ajol.org,
Email: agricultural.extension.nigeria@gmail.com; editorinchief@aesonnigeria.org

Women Farmers' Satisfaction with Extension Services and Empowerment in Jos South Local Government Area, Plateau State, Nigeria

https://dx.doi.org/10.4314/jae.v31i1.10S

Mbube, Baridanu Hope[1*], Adebo, Monisola Omolara[2], and Odekunmi, Seyi Adeloba[3]
[1,2,3] Department of Agricultural Extension and Management, Federal College of Land Resources Technology, Kuru- Jos, Plateau State, Nigeria
*Correspondence and presenting author: hopembube@gmail.com, +2347031566602; [2]monisola.adebo@fecolart.edu.ng, +2348168569094; [3]odekunmiseyi5@gmail.com, +2348139657424

Abstract

This study assessed women farmers' satisfaction with agricultural extension services and perceived influence of extension services on women farmers' empowerment in Jos South LGA, Plateau State, Nigeria. A survey design was adopted. The population comprised 885 registered women farmers from PADP records, from which 180 were selected using proportionate stratified sampling. Data were collected using a structured questionnaire and interview schedules and analysed using means and Pearson correlation at p≤0.05. Results showed that women farmers agreed that they were comfortable discussing issues with agents ($\bar{x}$ = 3.80) and found information useful ($\bar{x}$ = 3.55), but disagreed on regular contact ($\bar{x}$ = 2.08) and service quality ($\bar{x}$ = 2.44). For empowerment, the grand mean was 2.74, indicating neutral influence. Respondents disagreed on increased income control ($\bar{x}$ = 2.29), networking ($\bar{x}$ = 2.29), and overall empowerment ($\bar{x}$ = 2.21). Pearson correlation revealed no significant relationship between satisfaction with quality of extension services and empowerment indicators. However, service relevance correlated positively with decision-making (r = .306), income control (r = .291), and confidence (r = .280). Extension services met basic information needs but failed to enhance women's empowerment due to poor quality and irregular contact. Gender-responsive programmes and regular contact with extension agents are recommended.

Keywords: Extension services; women farmers; empowerment.

Introduction

The agricultural sector is vital to Nigeria's economy and rural livelihoods, with women constituting a substantial proportion of the agricultural labour force. In Jos South LGA of Plateau State, women are actively involved in farming operations such as planting, weeding, harvesting, processing, and marketing of agricultural produce (Onuwa, 2021; Zitta & Jatau, 2022; Napbut et al., 2024). Beyond production, they contribute to household nutrition, preservation of indigenous knowledge, and maintenance of biodiversity through sustainable farming practices (Gwandure & Lukhele-Olorunju, 2022; Bhandari, 2025). Their extensive participation makes them central to achieving food security and promoting rural development. However, empirical evidence shows that farmers' participation in agricultural extension services significantly contributes

to crop production, with a coefficient of 0.61 (Shangshon et al., 2023). This underscores the need for effective extension delivery to women farmers in Jos South LGA.

Despite their significant contributions, women farmers face numerous structural and socio-economic constraints that limit their agency and overall empowerment. These challenges include restricted access to land, limited credit facilities, inadequate agricultural inputs, and poor access to extension services (Viashima & Daniel, 2025; Helen et al., 2025; Nyberg et al., 2025). Challa (2025) reported that only 5% of female farmers globally benefit from extension services, despite women comprising nearly 43% of the agricultural labour force in developing countries. Such barriers reduce their ability to make informed decisions, adopt improved practices, and fully participate in agricultural development processes. Addressing these constraints is therefore essential for enhancing women farmers' empowerment.

Agricultural extension services are widely recognised as a key mechanism for improving farmers' knowledge, skills, and access to innovations. Adebayo and Worth (2022) emphasised extension services as key channels for agricultural information delivery. Systematic reviews show that extension contributes to women's empowerment through capacity building, informed decision-making, and leveraging various forms of capital (Siaw et al., 2024). Extension involves the dissemination of information, training, and advisory support to enhance farming practices and livelihoods (Barman et al., 2023). When effectively delivered, extension services can empower women farmers by strengthening their decision-making capacity, improving access to agricultural information and resources, and enhancing their economic and social status.

However, evidence suggests that extension services in many parts of Nigeria remain inadequately tailored to the specific needs of women farmers, often resulting in limited impact (Mapiye & Dzama, 2024; Chekene & Shehu, 2025). Tajudeen et al. (2025) found that extension services often improve access to information but do not automatically translate into empowerment outcomes among women farmers due to socio-cultural and institutional constraints. Issues such as gender bias, low accessibility, and poor responsiveness of extension agents continue to hinder the effectiveness of these services. Empirical evidence from North-Eastern Nigeria shows extension workers have low information dissemination skills when dealing with women farmers, with an overall mean skill score of only 2.25 (Umar et al., 2021). This creates a critical gap in understanding the extent to which extension service delivery influences women farmers' empowerment, particularly at the local level.

It is against this backdrop that this study assessed the influence of agricultural extension services on women farmers' empowerment in Jos South Local Government Area of Plateau State, Nigeria. The study seeks to provide empirical insights into the effectiveness of extension services and identify areas for improvement in promoting gender-sensitive agricultural development.
The study:

1. assessed women farmers' satisfaction with agricultural extension services in Jos South LGA; and
2. examined the perceived influence of extension services on women farmers' empowerment.

Hypothesis

H_0: There is no significant relationship between women farmers' satisfaction with extension services and their empowerment in Jos South LGA.

Methodology

This survey was conducted in Jos South Local Government Area of Plateau State, Nigeria. Jos South lies between latitude 9°45′N and 9°55′N and longitude 8°45′E and 9°00′E. The LGA covers approximately 510 km² and shares boundaries with Jos North, Bassa, and Riyom LGAs. Agriculture is the mainstay of the economy, with crop production and livestock rearing as dominant occupations. The area has a temperate climate with mean annual rainfall of 1,460 mm and mean temperature of 22°C, which supports year-round farm activities. The population of the study comprised 885 registered women farmers in Jos South LGA as documented by the Local Fadama Desk Office under the Plateau Agricultural Development Programme in 2024. These farmers were distributed across five districts: Zawan (125), Vwang (230), Kuru (215), Gyel (95), and Du (220). A sample size of 180 respondents was drawn, representing approximately 20% of the population. This sample size is considered adequate for descriptive survey research according to Gay and Airasian (2003), who suggested that 10–20% of a population is sufficient when the population is large and homogeneous. A proportionate stratified random sampling technique was employed, with the sample for each district determined using proportionate allocation calculated as:

$$ni = \frac{Ni}{N} \times n$$

Where:

ni = sample size for district i,

Ni = population of district i,

N = total population, and

n = total sample size of 180.

The distribution of the population and sample across districts is presented in Table 1. Respondents were then selected from each district using simple random sampling through balloting without replacement. Each registered name was written on a slip, folded, placed in a container, thoroughly mixed, and drawn until the required sample for that district was obtained.

Table 1: Sample size distribution

District	Women farmers Population	Sample Size
Zawan	125	25
Vwang	230	47
Kuru	215	44
Gyel	95	19
Du	220	45
Total	**885**	**180**

Source: Field survey, 2025

Data were collected using a structured questionnaire complemented with an interview schedule to accommodate respondents with low literacy levels. Satisfaction with extension services and perceived influence on empowerment were measured on a 5-point Likert scale ranging from 5 = Strongly Agree to 1 = Strongly Disagree.

Individual item scores were summed and divided by the number of items to obtain mean scores for each construct. Mean scores were interpreted as follows: ≥3.00 Agree/High, 2.50 - 2.99 Neutral/Moderate, and 1.00 - 2.49 Disagree/Low. The instrument was validated for face and content validity by three experts in agricultural extension and pre-tested for clarity among 20 women farmers in Jos North LGA. Cronbach's alpha coefficients were 0.84 for the satisfaction scale and 0.79 for the empowerment scale, indicating acceptable internal consistency. With assistance from trained enumerators, questionnaires were administered directly to respondents between January and February 2025. Ethical considerations were observed: informed consent was obtained verbally from all respondents before questionnaire administration, and confidentiality of responses was assured. Participation was voluntary, and respondents were free to withdraw at any point without penalty. Data were analysed using SPSS version 26. Descriptive statistics including frequencies, percentages, and means were used to summarise respondents' satisfaction and perceived empowerment. The hypothesis of no significant relationship between overall satisfaction and empowerment was tested using Pearson Product-Moment Correlation at $p \leq 0.05$.

Results and Discussion

Women Farmers' Satisfaction with Extension Services

Table 2 presents women farmers' satisfaction with extension services received. The results show that respondents agreed that they feel comfortable discussing their agricultural issues with extension agents ($\bar{x}$ = 3.80), indicating the existence of a cordial relationship and trust between farmers and extension personnel. Similarly, respondents agreed that extension agents provide useful agricultural information ($\bar{x}$ = 3.55), indicating that extension services are effective in disseminating knowledge. This supports Shangshon et al. (2023), who found that farmers' participation in extension services significantly contributed to crop production with a coefficient of 0.61. The finding is also consistent with Adebayo and Worth (2022), who emphasised the role of extension services as key channels for agricultural information delivery.

However, respondents disagreed that they have regular contact with extension agents who understand their specific needs ($\bar{x}$ = 2.08), indicating limited interaction and possible gaps in gender-sensitive extension delivery. They were also dissatisfied with the quality of extension services ($\bar{x}$ = 2.44), indicating concerns about effectiveness. This corroborates Umar et al. (2021), who reported low information dissemination skills of extension workers when dealing with women farmers in North Eastern Nigeria, with a mean score of only 2.25.

Furthermore, respondents were neutral regarding the responsiveness of extension agents to their queries ($\bar{x}$ = 2.61), access to services tailored to women farmers ($\bar{x}$ = 2.94), and the relevance of extension services to their agricultural needs ($\bar{x}$ = 2.82). These neutral responses imply uncertainty or moderate satisfaction, reflecting inconsistencies in service delivery. This observation aligns with Nyberg et al. (2025), who reported that women farmers often experience limited access to extension services compared to their male counterparts.

The grand mean score of 2.75 indicates an overall neutral level of satisfaction among women farmers. This suggests that while extension services provide useful

information and maintain good interpersonal relations, there are notable shortcomings in service quality, accessibility, responsiveness, and regular engagement. These gaps underscore the need for gender-responsive extension strategies to improve service delivery and better support women farmers, as recommended by Siaw et al. (2024), who emphasised extension's role in empowering women through capacity building.

Table 2. Women Farmers' Satisfaction with Extension Services Received n = 180

S/N	Satisfaction with extension services	Mean ($\bar{x}$)	Standard Deviation
1	Comfortable discussing agricultural issues with extension agents	3.80	1.18
2	Provision of useful information on agricultural practices by extension agents	3.55	1.06
3	Access to extension services catering to specific needs of women farmers	2.94	1.12
4	Relevance of extension services to agricultural needs	2.82	1.19
5	Satisfaction with quality of extension services received	2.44	1.01
6	Responsiveness of extension agents to queries and concerns	2.61	1.04
7	Regular contact with extension agents who understand needs of women farmers	2.08	1.28
	Grand Mean	**2.75**	**1.13**

Mean scores ≥ 3.00 = Agree; 2.50–2.99 = Neutral; 1.00–2.49 = Disagree
Source: Field survey, 2025.

Influence of Extension Services on Women's Empowerment

The results in Table 3 show the perceived influence of extension services on women's empowerment dimensions. Women farmers were neutral about the influence on their ability to make decisions about agricultural activities ($\bar{x}$ = 2.86), confidence in managing agricultural activities ($\bar{x}$ = 2.80), and participation in decision-making processes related to agricultural production ($\bar{x}$= 2.88).

However, they disagreed that access to extension services has increased their control over agricultural income ($\bar{x}$ = 2.29), that extension services have contributed to their overall empowerment as women farmers ($\bar{x}$ = 2.21), and that extension services have connected them with other women farmers for support and networking ($\bar{x}$ = 2.29).

The grand mean of 2.74 indicates that, overall, women farmers were neutral about the influence of extension services on their empowerment. The findings suggest that extension services have not effectively empowered women farmers, possibly due to limited access, gender biases, cultural barriers, inadequate training, resource constraints, and poor service quality. This finding supports Umar et al. (2021), who reported low information dissemination skills among extension workers dealing with women farmers, with a mean score of 2.25. It also aligns with Siaw et al. (2024), who emphasised that extension services must be gender-responsive and tailored to women's needs to achieve empowerment outcomes.

Furthermore, Challa (2025) reported that only 5% of female farmers globally benefit from extension services. Despite women comprising nearly 43% of the agricultural labour force in developing countries, structural and cultural barriers persist, limiting their access to critical training, technology, and resources

.

Table 3: Perceived Influence of Extension Services on Women's Empowerment n=180

	Influence of extension services on women's empowerment	Mean ($\bar{x}$)	Standard Deviation
1.	Improvement in ability to make decisions about agricultural activities	2.86	1.04
2.	Increase in control over agricultural income.	2.29	0.97
3.	Enhancement of confidence in managing agricultural activities	2.80	0.06
4.	Improvement in participation in decision-making processes related to agricultural production.	2.88	1.02
5.	Contribution to overall empowerment as a woman farmer	2.21	0.94
6.	Connection with other women farmers for support and networking	2.29	0.98
	Grand mean	**2.74**	**1.00**

Mean scores ≥ 3.00 = Agree; 2.50–2.99 = Neutral; 1.00–2.49 = Disagree
Source: Field survey, 2025.

Relationship between Women Farmers' Satisfaction with Extension Services and Their Empowerment Status

The correlation analysis presented in Table 4 examines the relationship between women farmers' satisfaction with extension services and their empowerment status in the study area. The results reveal that satisfaction with quality of extension services has no statistically significant relationship with any of the empowerment indicators. Specifically, satisfaction with quality of services showed no significant correlation with improvement in decision-making ability (r = .011), increase in control over income (r = .118), enhancement of confidence (r = .136), improvement in participation in decision-making (r = -.003), and connection with other women farmers for support and networking (r = .009). This indicates that general satisfaction with extension services does not necessarily translate into measurable empowerment outcomes among women farmers. This finding is consistent with previous studies, which reported that extension services often improve access to information but do not automatically translate into empowerment outcomes, particularly among women farmers due to socio-cultural and institutional constraints (Tajudeen et al., 2025). Siaw et al. (2024) further emphasised that agricultural extension services can only empower women farmers when they provide capacity building and address gender-specific needs, rather than generic information delivery.

However, when individual dimensions of extension service delivery are considered, several significant relationships emerge. The relevance of extension services shows a positive and significant relationship with improvement in decision-making ability (r = 0.306), increase in control over income (r = 0.291), enhancement of confidence (r =

.280), improvement in participation in decision-making (r = 0.218), and connection with other women farmers for support and networking (r = .160). Regular contact with extension agents is positively and significantly related to improvement in decision-making ability (r = 0.255) and enhancement of confidence (r = 0.157). Umar et al. (2021) reported similar challenges, finding low information dissemination skills among extension workers dealing with women farmers in North Eastern Nigeria, with a mean skill score of only 2.25, which may explain the weak contact and limited empowerment observed. Comfort discussing issues with agents correlates with all empowerment indicators: improvement in decision-making ability (r = 0.189), increase in control over income (r = 0.285), enhancement of confidence (r = 0.296), improvement in participation in decision-making (r = 0.257), and connection with other women farmers (r = 0.199). These findings imply that while specific components of extension service delivery contribute to empowerment, overall satisfaction as a composite measure may not adequately capture these effects. The simplified correlation table highlights that relevance of extension services and comfort discussing issues with agents are the two service dimensions most consistently linked to empowerment outcomes.

Based on the findings, the null hypothesis (H_0), which states that there is no significant relationship between women farmers' overall satisfaction with extension services and their empowerment status, was accepted. Although certain service delivery components, such as relevance of extension services, regular contact with extension agents, and comfort discussing issues with agents, show significant positive relationships with empowerment indicators, the aggregate measure of satisfaction with quality of services does not exhibit a significant influence on empowerment outcomes among women farmers in Jos South LGA.

This suggests that women farmers may report satisfaction with extension services based on factors such as interpersonal relations or general access to information, rather than actual improvements in their socio-economic empowerment. It also suggests that current extension services address immediate agricultural needs but fail to enhance deeper empowerment aspects such as income control, decision-making, and social participation. Therefore, extension strategies should focus on relevant content, frequent contact, and participatory communication rather than generic satisfaction metrics.

Table 4: Significant correlations between Women Farmers' Satisfaction with Extension Services and Empowerment Indicators (n = 180)

Satisfaction with extension services	Improved decision-making ability	Increased control over income	Enhanced confidence	Improved participation in decision-making	Networking with other women farmers
Regular contact with extension agents	.255**	0.140	0.157*	0.141	0.069
Relevance of extension services	0.306**	0.291**	0.280**	0.218**	0.160*
Comfort discussing issues with agents	0.189*	0.285**	0.296**	0.257**	0.199**
Provision of useful information	-0.002	0.164*	0.160*	0.234**	0.170*
Access to services for women farmers	0.216**	0.107	0.113	0.146	0.045
Responsiveness of extension agents	0.083	0.069	0.082	0.134	0.050
Satisfaction with quality of services	0.011	0.118	0.136	-0.003	0.009

*p < 0.05, **p < 0.01; Only significant correlations are shown.
Source: Field survey, 2025.

Conclusion and Recommendations

Extension services in the study area are informative but not transformative. While they meet basic agricultural information needs, they fall short in promoting substantial empowerment among women farmers. This disconnect highlights the need for a shift from general service delivery to more targeted, inclusive, and empowerment-focused extension approaches that directly address the socio-cultural and institutional barriers limiting women's agency.

Extension providers should implement gender-responsive programmes addressing women's resource constraints. Agencies should increase field visits and provide follow-up support to improve agent-farmer interaction. Women farmers should participate in cooperatives and apply extension knowledge to strengthen decision-making and empowerment.

References

Adebayo, J. A., & Worth, S. H. (2022). Women as extension advisors. *Research in Globalisation*, *5*, 100100. https://doi.org/10.1016/j.resglo.2022.100100

Barman, B., Sruthi, C. O., Kisku, U., & Lepcha, C. Y. (2023). *Modern age developmental strategies and issues in agricultural extension.* In Advances in agricultural extension (Vol. 1). Elite Publishing House.

Bhandari, J. (2025). Role of women in household food and nutrition security. In *Food and nutrition in community development.* Elite Publishing House.

Challa, L. N. (2025). Constraints faced by farm women in accessing and utilisation of digital extension services*. Gujarat Journal of Extension Education, 38*(1), 154–162. https://doi.org/10.56572/gjoee.2024.38.1.0026

Chekene, M. B., & Shehu, J. F. (2025). Practices and challenges of Nigeria's agricultural extension service delivery. *Journal of Renewable Agricultural Technology Research, 10*(1). https://doi.org/10.70382/sjratr.v10i1.018

Gay, L. R., & Airasian, P. W. (2003). Educational research: Competencies for analysis and applications (7th ed.). Pearson Education.

Gwandure, C., & Lukhele-Olorunju, P. (2022). Women's use of indigenous knowledge in Africa. *Social Sciences & Humanities Open*, *8*(1), 100741. https://doi.org/10.1016/j.ssaho.2023.100741

Helen, Y. S., Ishaya, D. L., & Memunatu, A. (2025). Women in agriculture: Overcoming barriers to accessing finance and market in Wamba Local Government Area, Nasarawa State. *International Journal of Strategic Research in Public Administration and Organisational Process, 5*(1). https://doi.org/10.48028/iiprds/ijsrpaop.v5.i1.15.

Mapiye, O., & Dzama, K. (2024). Strengthening research-extension-farmer-input linkage system for sustainable smallholder livestock farming in Africa: Progress and prospects. *Tropical Animal Health and Production*, *56*(8), 363. https://doi.org/10.1007/s11250-024-04210-9

Napbut, N. K., Boyi, R. B., & Atowoju, A. A. (2024). An appraisal of the contributions of women to the development of Jos, Plateau State, Nigeria, from 1999-2023. *Research Journal of Humanities and Cultural Studies, 10*(4), 54-63. https://doi.org/10.56201/rjhcs.v10.

Nyberg, Y., Mackay, H., Wilson, M., Samkunde, M., & Wetterlind, J. (2025). Supporting access and implementation of agricultural extension services for female smallholder farmers – a systematic review. *International Journal of Agricultural Sustainability*, *23*(1). https://doi.org/10.1080/14735903.2025.2505387

Onuwa, G. (2021). Women in agricultural production in Nigeria: Participation in Agricultural Services and Training Centre (ASTC) activities. GRIN Verlag. https://www.grin.com/document/1183696

Shangshon, B., Polthanee, A., Wongsamun, C., & Suriya, P. (2023, January 21). Impact of agricultural extension services on cereal production among rural farmers in Bhutan. Journal of Agricultural Extension, 27(1).

Siaw, S. Y., Man, N., Ramli, N. N., Yusuf, M. S. A., and Abdulmumini, U. (2024). The contribution of agricultural extension to empowerment of women for agricultural development. Journal of Agricultural Extension, 28(2): 1-15.

Tajudeen, A. A., Sule, M., & Ismail, Y. (2025). *Examining socio-cultural and institutional constraints to women's involvement in national agricultural governance in Nigeria.* Zenodo. https://doi.org/10.5281/zenodo.17592630

Umar, A., Man, N., Kamarulzaman, H., and Haris, N. B. M. (2021). Women farmers' perceptions of information dissemination skills among agricultural extension workers in North-Eastern Nigeria. Journal of Agricultural Extension, 25(*3): 60-68.*

Viashima, V. L., & Daniel, R. O. (2025). The characteristics and constraints of women in agricultural production in Dutsin-Ma, Local Government Area of Katsina State, Nigeria. *International Journal of Social Sciences and Management Research, 11*(6), 197–214. https://doi.org/10.56201/ijssmr

Zitta, S. W., & Jatau, S. (2022). *Role of women in agricultural activities in Mangu Halle, Plateau State, Nigeria. Agrosearch, 22*(1), 45-56.