ASSESSMENT OF AGRICULTURAL INFORMATION SHARING ON IMPROVED CASSAVA PRODUCTION PRACTICES AMONG FARMERS IN BENUE STATE, NIGERIA

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ABSTRACT

A cross-sectional survey of 200 registered cassava farmers in Benue State, Nigeria, was conducted to assess the influence of agricultural information sharing on the adoption of improved production practices. A structured questionnaire instrument was used for collecting primary data which were analysed using descriptive and inferential statistics. The most prevalent cassava varieties were Sunshine (98.0%), Obasanjo II (98.0%), Game Changer (97.5%), and TME 419 (70.5%). Informal interpersonal channels such as friends, relatives, neighbours (86.0%) and cooperative societies (50.5%), were the main sources of information, while extension workers and electronic media contributed 4.0% and below. Key information shared among farmers included fertilizer use (94.5%), new farming techniques (85.0%), disease and pest management (58.5%), and storage methods (57.5%). Factor analysis identified three major categories of constraints: socio-economic/cultural factors (low education, low income), administrative issues (limited inclusion in technology development, poor timing and language of broadcasts), and infrastructural/environmental barriers (inadequate input access and roads). Logistic regression showed that socio-economic variables, such as age (B = 0.026, p = 0.115) and education (B = –0.059, p = 0.099), were non-significant predictors of information sharing (Nagelkerke R² = 0.072, χ² = 11.130, p = 0.133). Peer-driven, informal information networks, supported by cooperative societies, was pivotal for diffusion and adoption of innovations. The study highlights a gap in formal extension and media delivery, recommending policies that strengthen both institutional capacity and community-led information networks to improve cassava productivity and rural livelihoods.

KEYWORDS Cassava, Agricultural information, Information sharing, Farmers, Benue State, Extension services.

INTRODUCTION

Cassava (*Manihot esculenta*) plays a central role in Nigeria's agricultural and food systems. It serves as both a staple food and an industrial raw material for producing flour, starch, ethanol, and livestock feed. Benue State, often called the "Food Basket of the Nation," contributes significantly to Nigeria's cassava output. Despite its prominence, cassava production faces persistent challenges such as low yields, limited access to improved varieties, and inadequate dissemination of agricultural innovations (Chia et al., 2021). Most smallholder farmers still rely on traditional farming practices due to weak extension support and lack of modern agricultural information systems.

The effective flow of agricultural information is essential for technology adoption, farm management decisions, and income improvement. Information sharing helps bridge the gap between research institutions and farmers by ensuring timely access to innovations in land preparation, pest management, fertilizer use, and post-harvest handling. In Benue State, where cassava farming dominates, enhancing access to agricultural information is critical to achieving sustainable food production and rural livelihoods.

This study therefore investigates the role of agricultural information sharing on improved cassava production practices among farmers in Benue State. It explores the sources, types, and constraints of information dissemination, providing insights into how communication systems can be strengthened to promote innovation and productivity.

OBJECTIVES OF THE STUDY

The broad objective of the study was to assess agricultural information sharing on improved cassava production practices among farmers in Benue State, Nigeria. The specific objectives were to:

1. Identify the common varieties of cassava grown by farmers in the study area.
2. Determine the types of agricultural information shared among cassava farmers.
3. Identify the sources of information on improved cassava production.
4. Examine the constraints to information sharing among cassava farmers.

MATERIALS AND METHODS

The study adopted a community survey design to gather data from cassava farmers across Benue State. A multi-stage sampling technique was employed. The state was stratified into three agricultural zones (A, B, and C). Two local government areas were randomly selected from each zone, followed by random selection of two rural communities per LGA. Using proportional allocation, 200 cassava farmers were chosen from a population of 4,005 registered farmers (BNARDA, 2020).

Primary data were collected through structured questionnaires and interviews. Section A covered socio-economic characteristics, Section B identified cassava varieties, Section C explored information types, Section D focused on information sources, and Section E identified major constraints. Data were analyzed using descriptive statistics (frequency, mean, and percentage), multiple regression analysis to determine effects of socio-economic variables, and factor analysis to group major constraints.

RESULTS AND DISCUSSION

The results revealed that the majority of respondents (59.5%) were male, indicating male dominance in cassava production. The mean age of 40 years suggests that most farmers were within productive age. About 77% of respondents attained at least secondary education, implying high literacy levels that facilitate better understanding of agricultural information.
The average farm size was 2.9 hectares, confirming that most respondents were smallholder farmers. Only 29.5% had contact with extension agents within the previous year, showing weak institutional communication. Farmers' cooperatives were underutilized, with only 44% of respondents belonging to such groups, limiting collective information sharing.

Figure 1 highlights Sunshine, Obasanjo II, Game Changer, and TME 419 as the most commonly grown cassava varieties, reflecting preference for improved, high-yielding cultivars. These findings align with previous studies (Kimenye & McEwan, 2014; Egbule et al., 2012) emphasizing widespread adoption of IITA-released varieties in Nigeria. Figure 2 shows that friends, relatives, and neighbors constituted the most significant source of information on improved cassava production, accounting for 86.0% of responses. This was followed by cooperative societies at 50.5%, while agricultural extension workers contributed only 4.0%. This heavy reliance on informal networks underscores their pivotal role in disseminating agricultural knowledge among smallholder cassava farmers in Benue State. These findings align with Ternenge et al. (2019), who.
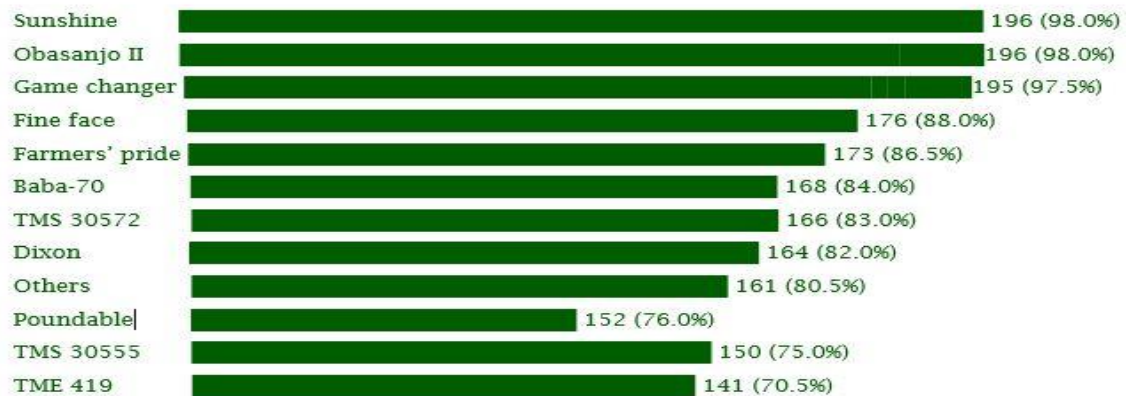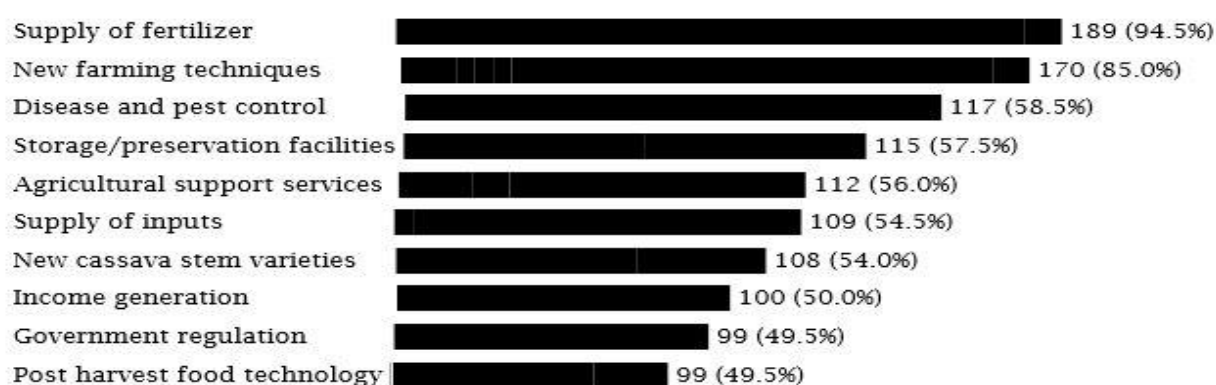
Figure 1: Common Varieties of Cassava Grown by Farmers.
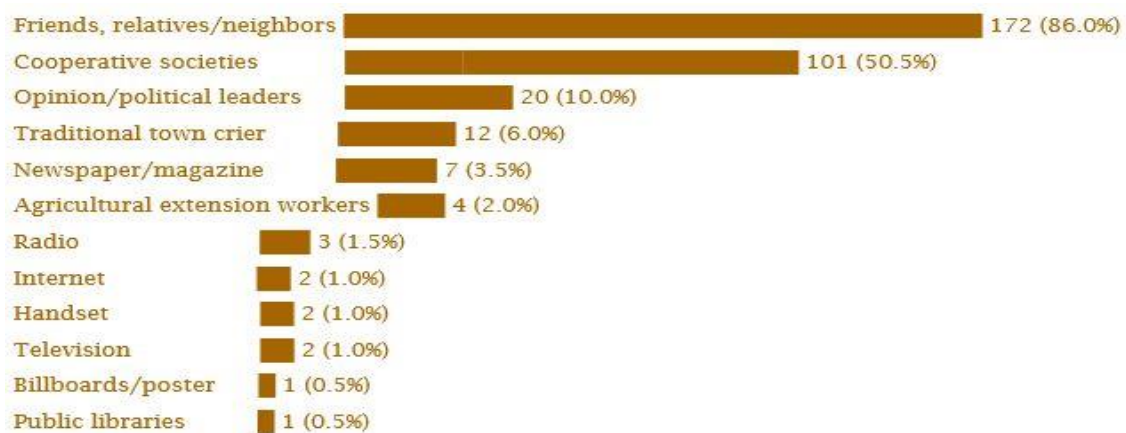
Figure 2: Sources of Information on Improved Cassava Production Among Farmers.

reported that peer-to-peer exchanges through family and neighbors were the primary channels for addressing information needs on crop management and inputs among cassava farmers in Okpokwu Local Government Area. Concordantly, the significant role of cooperative societies in this study corroborates the findings of Alufohai, et al. (2018), who demonstrated that cooperative societies in Edo State substantially influence cassava product pricing and support the value chain through collective resource pooling through information sharing. However, the low utilization of formal sources such as agricultural extension workers (4.0%) and media outlets, including newspapers (3.5%), radio (1.5%), and television (1.0%) found in this study, highlights a severe communication disconnect in the agricultural information system. This contrasts with the evidence from Osuji et al. (2025) identifying effective agricultural extension services as significantly enhance smallholder farmers' adaptive capacity and welfare in Ebonyi State through targeted dissemination of sustainable practices.

The main types of agricultural information shared among farmers, as shown in Figure 3, include fertilizer supply and application (94.5%), new farming techniques (85.0%), disease and pest control strategies (58.5%), and storage or preservation facilities (57.5%). This pattern underscores farmers' strong emphasis on access to essential inputs, innovative production methods, and risk mitigation measures. These findings are consistent with Ternenge et al. (2019), who observed that cassava farmers in Okpokwu LGA prioritized information on input use and improved agronomic practices to enhance productivity. Similarly, Osuji et al. (2025) reported that targeted dissemination of agricultural innovations and pest management practices through extension services significantly improved farmers' adaptiveness in Ebonyi State. Furthermore, Alufohai et al. (2018) noted that cooperative societies often serve as key conduits for sharing market-related and input information, thereby fostering collective learning and resilience among smallholder farmers.

Supply of fertilizer	189 (94.5%)
New farming techniques	170 (85.0%)
Disease and pest control	117 (58.5%)
Storage/preservation facilities	115 (57.5%)
Agricultural support services	112 (56.0%)
Supply of inputs	109 (54.5%)
New cassava stem varieties	108 (54.0%)
Income generation	100 (50.0%)
Government regulation	99 (49.5%)
Post harvest food technology	99 (49.5%)

Figure 2: Types of Agricultural Information Shared Among Farmers.

Table 1 highlights three major categories of constraints hindering the effective sharing of agricultural information among cassava farmers in Benue State using factorial analysis by Varimax method with Kaiser normalization. These included socio-economic and cultural constraints, administrative constraints, and infrastructural and environmental constraints. Under socio-economic and cultural constraints (Factor 1), the main challenges were low education levels (0.362), low income (0.589), inadequate extension services (0.392), poor problem diagnosis (–0.317), and negative attitudes of extension workers (0.388). These factors collectively limit farmers' access to and understanding of vital agricultural information due to poverty and weak extension–farmer linkages (Ternenge et al., 2019; Osuji et al., 2025). Administrative constraints (Factor 2) included limited farmer involvement in technology development (0.544), lack of agricultural programs in Benue dialects (0.402), and

the airing of such programs at inconvenient hours (0.412). These reflect weak institutional structures and ineffective communication systems that reduce message reach and relevance (Alufohai et al., 2018; Osuji et al., 2025). Lastly, infrastructural and environmental constraints (Factor 3) encompassed poor supportive services such as inadequate input supply, credit, markets, and rural road networks (0.321), along with general lack of access roads (0.399). Such infrastructural gaps restrict the physical flow of information and the ability of farmers to utilize available knowledge effectively (Osuji et al., 2025).

Table1: Summary of Constraints to Information Sharing among Cassava Farmers in Benue

Constraint Category	Major Variables (Loadings)	Description / Implication	Supporting Studies
Factor 1: Socio-economic and Cultural Constraints	- Low level of education (0.362) - Low income of farmers (0.589) - Inadequate extension services (0.392) - Improper diagnosis of farmers' problems (–0.317) - Poor attitudes of extension workers (0.388)	Farmers' limited education, low income, and weak extension-farmer interaction restrict access to and utilization of agricultural information.	Ternenge et al. (2019); Osuji et al. (2025)
Factor 2: Administrative Constraints	- Limited involvement in technology development (0.544) - Information not broadcasted in Benue dialect (0.402) - Airing of agricultural programs at odd hours (0.412)	Poor participatory communication, limited localization of media content, and timing issues weaken information dissemination.	Alufohai et al. (2018); Osuji et al. (2025)
Factor 3: Infrastructural and Environmental Constraints	- Poor supportive services (inputs, credit, market, roads) (0.321) - Inadequate access roads (0.399)	Weak rural infrastructure and poor market access hinder information flow and agricultural productivity.	Osuji et al. (2025)

Logistic regression analysis examined the influence of selected socio-economic characteristics on agricultural information sharing among the farmers. As presented in Table 2, the Cox and Snell R^2 value (0.054) and Nagelkerke R^2 (0.072) indicate that the model explained between 5.4% and 7.2% of the variance in information sharing behaviour among

farmers, underscoring the limited explanatory power of socio-economic variables alone. The overall model fit, as shown by the Chi-square value (11.130, p = 0.133), was not statistically significant, suggesting that other non-socioeconomic factors, which may include institutional support, communication infrastructure, and extension quality, plays more crucial roles in determining farmers' information-sharing behaviour, consistent with broader evidence on the dominance of structural barriers in rural knowledge diffusion (). Consequently, none of the variables showed a statistically significant relationship (p > 0.05) with information sharing, indicating that these socio-economic factors, taken individually, did not strongly predict farmers' likelihood of sharing agricultural information. This contrasts with studies on information *access*, where factors like education and association membership often emerge as significant predictors among Nigerian farmers. Among the predictors, age (B = 0.026, p = 0.115) and association membership (B = 0.256, p = 0.170) had positive coefficients, suggesting that older farmers and those belonging to associations were slightly more likely to share agricultural information, though these effects were not significant.

Table 7: Logistic Regression Results for Socio-Economic Factors Influencing Agricultural Information Sharing.

Variable	B (Coefficient)	S.E.	Wald	df	p-value	Exp(B) (Odds Ratio)
Age	0.026	0.016	2.58	1	0.115	1.026
Education Level	-0.059	0.036	2.71	1	0.099	0.943
Household Size	-0.033	0.034	0.97	1	0.327	0.967
Association Membership	0.256	0.186	1.90	1	0.170	1.292
Constant	-0.512	0.456	1.26	1	0.261	0.599

Model Summary: Cox & Snell R^2 = 0.054; Nagelkerke R^2 = 0.072; χ^2 = 11.130 (df = 4, p = 0.133); -2 Log Likelihood = 246.789; Correct Classification = 72.5% (n = 200). Note: Dependent variable: Information Sharing (1 = Shares, 0 = Does Not Share).

Conversely, education level (B = –0.059, p = 0.099) and household size (B = –0.033, p = 0.327) had negative coefficients, implying a marginal decrease in information sharing likelihood with increasing education and household size, this pattern may reflect opportunity costs in time allocation for highly educated or larger households.

The study's findings on agricultural information sharing and adoption of improved cassava production practices among Benue State farmers strongly align with Everett M. Rogers'

Diffusion of Innovations (DOI) theory, which describes innovation spread through stages of knowledge, persuasion, decision, implementation, and confirmation, influenced by communication channels and social contexts (Rogers, 2003). In Benue, most farmers receive and exchange information via informal interpersonal channels, including friends, relatives, and neighbors (86.0%) as well as cooperative societies (50.5%). According to Rogers, these homophilous networks are crucial during the persuasion stage, as individuals are more likely to trust, try, and validate new ideas coming from peers who share similar backgrounds or circumstances (Rogers, 2003; PennState Extension, 2024). The high adoption rates of improved varieties such as 'Sunshine' and 'Obasanjo II' (98.0%) and the prevalence of shared, practical innovations like fertilizer application (94.5%) or new farming techniques (85.0%) exemplify Rogers' argument that observability and trialability within trusted peer groups enhance adoption rates, while reducing perceived complexity and risk.

In contrast, this study found that formal channels, such as extension workers (4.0%) and radio (1.5%), play only a marginal role. This dynamic points to a bottleneck at the knowledge stage of DOI, where mass media ordinarily raises initial awareness, but infrastructural deficiencies and a lack of effective change agents have hampered their reach in Benue. Rogers noted that adoption is maximized when mass media fosters early awareness, followed by interpersonal networks that help individuals evaluate and implement the innovation; the near-absence of this first step in Benue highlights a key systemic barrier (Rogers, 2003).

The study's regression results, where socio-economic variables such as age and education did not significantly predict source selection ($p > 0.05$), further illustrate the DOI framework: it is not static individual traits that drive adoption, but rather external factors such as communication quality and network structure (Rogers, 2003). The low explained variance (Nagelkerke $R^2 = 0.072$) supports this interpretation, suggesting that improvements in extension outreach and network facilitation would have a larger impact than targeting demographic subgroups. Ultimately, the peer-driven persuasion process observed in Benue matches the pathway to broad-based adoption depicted by the DOI's S-curve. To accelerate this progression, the study suggests leveraging opinion leaders within cooperatives and incorporating ICT tools and vernacular media as hybrid strategies; these would enhance innovation compatibility and facilitate movement through confirmation and sustained adoption phases, reinforcing Roger's emphasis on integrated, sequential diffusion channels (Rogers, 2003; PennState Extension, 2024).

CONCLUSION

This study concludes that agricultural information sharing significantly influences cassava productivity and innovation adoption in Benue State. Informal sources such as radio and peer interactions dominate, while formal extension services remain insufficient. Strengthening institutional capacity, expanding ICT use (radio, mobile platforms, and farmer networks), and promoting cooperative-based training will enhance information dissemination. Future efforts should focus on integrating local-language communication and ensuring consistent government support to extension agencies.

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