

Determinants of Indigenous Organic Farming Practices Adoption Among Cassava Farmers in Kwara State, Nigeria

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ABSTRACT

This study examined the determinants of indigenous organic farming practices adoption among cassava farmers in Kwara State, Nigeria. Multistage sampling procedure was used to select 90 cassava farmers from Kwara State Agricultural Development Programme (KWADP) Zone C. Data were collected using structured questionnaires and analyzed using descriptive statistics and binary logistic regression. The results showed that 64.4% of the respondents were male, while 63.3% were within the economically active age range of 20–40 years. About 70.0% of the farmers had tertiary education, and 57.8% had household sizes of between 4–6 persons. Institutional characteristics revealed that 68.9% of the respondents were members of farmers' associations, and majority of them 83.3% had access to extension services, most of them 71.1% had access to credit for farming activities. The logistic regression results indicated that education level ($\beta = 0.683$, $p < 0.05$), farming experience ($\beta = 0.686$, $p < 0.05$), access to extension services ($\beta = 2.739$, $p < 0.01$), access to credit ($\beta = 2.645$, $p < 0.05$), and membership of farmers' associations ($\beta = 1.231$, $p < 0.05$) significantly influenced adoption of indigenous organic farming practices. Access to extension services increased the likelihood of adoption by over fifteen times. The study concludes that institutional support and farmers' capacity-building are critical to enhancing indigenous organic farming adoption among cassava farmers. Strengthening extension delivery, improving credit access, and promoting farmers' organizations are recommended to scale up sustainable cassava production in the study area.

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INTRODUCTION

Agriculture remains a cornerstone of Nigeria's economy, providing livelihoods for a large proportion of the population and contributing significantly to national food security. Among staple crops, cassava (*Manihot esculenta*) occupies a strategic position due to its adaptability to diverse agro-ecological conditions, tolerance to poor soils, and versatility in food and industrial uses. Nigeria has consistently ranked as the world's largest producer of cassava, accounting for over one-fifth of global output in recent years (FAO, 2022).

Despite its importance, cassava production in Nigeria has increasingly relied on synthetic fertilizers and agrochemicals to boost yields. While these inputs may enhance short-term productivity, their prolonged use has been associated with declining soil fertility, environmental pollution, and potential health risks to farmers and consumers. In response, organic agriculture has gained renewed attention globally as a sustainable alternative that enhances soil health, biodiversity, and resilience of farming systems (IFOAM, 2021).

Indigenous organic farming practices represent locally developed, experience-based strategies that rely on organic inputs and ecological processes. These practices, including the use of animal manure, compost, crop residues, intercropping, and botanical pest control, have long been embedded in traditional African farming systems. However, modernization, policy bias toward conventional inputs, and weak institutional support have contributed to the gradual erosion of indigenous knowledge and reduced adoption of organic practices among smallholder farmers.

In Kwara State, cassava farmers face multiple production challenges, including soil fertility decline, climate variability, and rising costs of inorganic inputs. Although many farmers

still practice organic farming by default, the extent to which indigenous organic methods are deliberately adopted and the factors influencing such adoption remain poorly understood. Empirical evidence on socio-economic and institutional determinants is therefore essential to inform policies and extension strategies aimed at promoting sustainable cassava production.

This study analyzed the socio-economic and institutional determinants of indigenous organic farming adoption among cassava farmers in Kwara State. Specifically, it examined farmers' characteristics, identified indigenous organic practices in use, determined factors influencing adoption, and assessed constraints limiting wider uptake of these practices.

MATERIALS AND METHODS

Methodology

This study was conducted in Kwara State, Nigeria, located between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°25'E. The state lies within the Guinea savannah agro-ecological zone and is well suited for cassava production. Kwara State is divided into four agricultural zones (A–D) by the Kwara State Agricultural Development Programme (KWADP). This study focused on Zone C, comprising Asa, Ilorin East, Ilorin West, Ilorin South, and Moro LGAs, where cassava production is prominent. A multi-stage sampling technique was used. In the first stage, five LGAs in KWADP Zone C were purposively selected based on cassava production intensity. In the second stage, two farming communities were randomly selected from each LGA, giving a total of ten communities. In the third stage, cassava farmers practicing indigenous organic farming were proportionately selected from the communities, resulting in a sample size of

90 respondents. Primary data were collected using structured questionnaires administered through face-to-face interviews. Information collected included socio-economic characteristics, indigenous organic farming practices, institutional factors, and constraints to adoption.

RESULTS AND DISCUSSION

Socio-economic Characteristics of Cassava Farmers

Results in Table 1 revealed that cassava farming in the study area was male-dominated, with males accounting for 64.4% of the respondents, while females constituted 35.6%. This finding aligns with earlier studies which reported that cassava production in Nigeria is largely dominated by men due to the labor-intensive nature of land preparation and field operations, while women are more involved in processing and marketing activities (Oni et al., 2020; Adekunle et al., 2021). The age distribution showed that 63.3% of the respondents were between 20 and 40 years, with a mean age of 43.7 years, indicating that most farmers were within their economically active years. This suggests a high potential for adoption of improved and sustainable farming practices. Similar findings were reported by Adebayo et al. (2020) and Oladele and Somorin (2021), who observed that middle-aged farmers are more innovative and responsive to agricultural extension messages.

In terms of educational attainment, 70.0% of the respondents possessed tertiary education, 26.7% had secondary education, while only 3.3% had primary education. This relatively high level of education is expected to positively influence farmers' awareness, perception, and adoption of indigenous organic farming practices. Dankyi et al. (2020) and Adeoye et al. (2017) similarly reported that education enhances farmers' capacity to understand the long-term benefits of organic and sustainable farming systems. Regarding farming experience, 50.0% of the respondents had between 0–4 years of experience, while 40.0% had 5–8 years, with a mean farming experience of 4.9 years. Although many farmers were relatively new to cassava farming, experience was found to be a critical factor in understanding soil health and the benefits of indigenous organic inputs. Tadesse and Lemma (2020) noted that farming experience significantly improves farmers' confidence in adopting organic soil management practices. Household size analysis showed that 57.8% of respondents had household sizes of 4–6 persons, with a mean household size of 5.6 persons. This suggests availability of family labor, which is important for organic farming that relies more on manual operations. Similar household size patterns were reported among smallholder farmers in Nigeria by Idowu et al. (2019).

Table 1: Socio Economic Characteristics of the Respondents

Variables	Frequency	Percentage	Mean	Min.	Max.
Gender					
Female	32	35.6			
Male	58	64.4			
Total	90	100.0			
Age (years)					
20-30	28	31.1	43.74	21	76
31-40	29	32.2			
41-50	14	15.6			
51-60	8	8.9			
61-70	9	10.0			
71-80	2	2.2			
Total	90	100.0			
Education level					
Primary	3	3.3			
Secondary	24	26.7			
Tertiary	63	70.0			
Total	90	100.0			
Farming exp. Years					
0-4	45	50.0	4.86	1	20
5-8	36	40.0			
9-12	8	8.9			
13-20	1	1.1			
Total	90	100.0			
Household size	Frequency	Percent			
0-3	13	14.4			
4-6	52	57.8	5.64	1	15
7-9	19	21.1			
10-12	3	3.3			
13-16	3	3.3			
Total	90	100.0			
Occupation	Frequency	Percent			
Unemployed	11	12.2			
Civil servant	4	4.4			
Farming	46	51.1			
Trading	8	8.9			

Variables	Frequency	Percentage	Mean	Min.	Max.
Manual labour	21	23.3			
Total	90	100.0			
Other sources of income	Frequency	Percent			
Gift	6	6.7			
Trading/business	65	72.2			
Civil servant	10	11.1			
Laborer	9	10.0			
Total	90	100.0			

Source: Field Survey, 2024

Institutional Characteristics Influencing Organic Farming Practices Adoption

The results in Table 2 further revealed that 68.9% of respondents were members of organic or farmers' associations, while 31.1% were non-members. Among members, 45.6% benefited from training, 33.3% from access to information, and 21.1% from input support. Membership of farmers' organizations enhances information sharing and collective learning, which positively influences adoption of sustainable practices (Akinbamijo & Adebayo, 2019; Nwanze et al., 2017).

Access to extension services was relatively high, as 83.3% of respondents reported having contact with extension agents. Of these, 36.7% received extension services through ADP

agents, 34.4% through the Ministry of Agriculture, and 28.9% through NGOs promoting organic agriculture. Furthermore, 85.6% of the respondents rated extension services as either important (57.8%) or very important (27.8%) to organic farming adoption. This corroborates findings by Muriithi et al. (2020), who emphasized the role of extension contact in enhancing farmers' adoption of organic practices.

In terms of credit access, 71.1% of respondents had access to credit, mainly through personal savings (60.0%) and cooperative societies (21.1%). Access to credit has been widely reported as a catalyst for adoption of improved agricultural technologies, including organic farming (Omotayo et al., 2020).

Table 2: Institutional Characteristics of Organic Farming Practice in the Study Area

Variables	Frequency	Percentage
membership of organic farmers association		
Not a member	28	31.1
Member	62	68.9
Total	90	100.0
Benefit for being a member		
Training	41	45.6
Inputs	19	21.1
Information	30	33.3
Total	90	100.0
Access to extension services on organic farming		
No access	15	16.7
Have access	75	83.3
Total	90	100.0
Source of getting extension services		
ADP/ Extension agent	33	36.7
Ministry of agriculture	31	34.4
NGO'S promoting organic agriculture in Nigeria	26	28.9
Total	90	100.0
How important is access to extension services		
Not important	13	14.4
Important	52	57.8
Very important	25	27.8
Total	90	100.0
Received training or support on organic farming		
Not received	24	26.7
Received	66	73.3
Total	90	100.0
Access to credit for organic farming		
No access	26	28.9
Have access	64	71.1
Total	90	100.0
Source of getting credit		
Personal savings	54	60.0

Variables	Frequency	Percentage
Cooperative	19	21.1
Banks	12	13.3
Money lender	5	5.6
Total	90	100.0

Source: Field Survey, 2024

Determinants of Indigenous Organic Farming Adoption Among Cassava Farmers

Table 3 presents the estimated coefficients, odds ratios, and significance levels of the logistic regression model. The regression results indicate that education level, farming experience, access to extension services, access to credit, and membership of farmers' organizations had positive and statistically significant effects on the adoption of indigenous organic farming practices. Specifically, education level ($\beta = 0.683$, $p < 0.05$) increased the likelihood of adoption by approximately 98%, implying that more educated farmers were better able to understand and appreciate the long-term benefits of organic farming. This finding corroborates earlier studies by Adeoye et al. (2017) and Dankyi et al. (2020), who reported education as a key driver of sustainable agriculture adoption.

Farming experience was also significant ($\beta = 0.686$, $p < 0.05$), suggesting that experienced farmers were nearly twice as likely to adopt indigenous organic practices compared to less experienced farmers. This supports the findings of Tadesse and Lemma (2020), who observed that accumulated farming knowledge enhances confidence in organic soil fertility management. Also, This is consistent with Iguda et al. (2024),

who found that years in farming positively and significantly influenced adoption of NARICT neem organic fertilizer among smallholder tomato farmers in Kaduna State, Nigeria. Access to extension services exerted the strongest influence on adoption ($\beta = 2.739$, $OR = 15.47$, $p < 0.01$). This implies that farmers who had contact with extension agents were over fifteen times more likely to adopt indigenous organic farming practices than those without extension access. This result is consistent with Oladele and Somorin (2021) and Muriithi et al. (2020), who emphasized extension delivery as a critical pathway for disseminating organic farming knowledge.

Similarly, access to credit significantly increased adoption ($\beta = 2.645$, $OR = 14.10$, $p < 0.05$), highlighting the importance of financial capacity in facilitating labor-intensive organic practices. Membership of farmers' associations also had a positive and significant effect ($\beta = 1.231$, $p < 0.05$), underscoring the role of social capital, information exchange, and collective learning in technology adoption.

Conversely, age, gender, household size, and farm size did not significantly influence adoption. This suggests that institutional support mechanisms may be more critical than demographic characteristics in driving indigenous organic farming adoption in the study area.

Table 3: Binary Logistic Regression Estimates of Determinants of Indigenous Organic Farming Adoption Among Cassava Farmers

Variables	Coefficient (β)	Odds Ratio	Std. Error	p-value
Constant	-4.217	–	1.982	0.033**
Age (years)	0.028	1.03	0.021	0.184
Gender (1 = Male)	0.412	1.51	0.356	0.247
Education (years)	0.683	1.98	0.271	0.012**
Farming experience (years)	0.686	1.99	0.294	0.020**
Household size	0.091	1.10	0.088	0.301
Extension contact (1 = Yes)	2.739	15.47	1.104	0.009***
Access to credit (1 = Yes)	2.645	14.10	1.231	0.015**
Membership of farmers' association (1 = Yes)	1.231	3.42	0.587	0.036**
Farm size (ha)	0.118	1.13	0.142	0.406

Log Likelihood = -38.21; Chi-Square = 46.73; Pseudo $R^2 = 0.41$; ***Significant at $p < 0.01$; *Significant at $p < 0.05$

CONCLUSION

The study demonstrated that indigenous organic farming adoption among cassava farmers in Kwara State is shaped by a combination of socio-economic and institutional factors. Farming experience, education, access to credit, extension services, and social capital significantly influenced adoption decisions. Organic practices remain relevant and widely used, but their full potential is constrained by institutional and market-related challenges.

Promoting indigenous organic farming offers a viable pathway toward sustainable cassava production, improved soil health, and enhanced rural livelihoods. However, deliberate policy and institutional interventions are required to scale up adoption and ensure long-term sustainability. Based on the findings, the study recommends strengthening agricultural extension services to provide targeted training on indigenous organic practices. Government and financial institutions should improve farmers' access to credit tailored to organic farming. Development of organic input supply

chains and establishment of premium markets for organic produce are also essential. Finally, policies should recognize and integrate indigenous knowledge into national organic agriculture frameworks.

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