

**SOCIOECONOMIC FACTORS INFLUENCING ADOPTION OF ORGANIC FARMING METHODS
IN ISOKO NORTH LOCAL GOVERNMENT AREA DELTA STATE, NIGERIA**

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Abstract

This study examined the socioeconomic factors influencing the adoption of organic farming methods in Isoko North Local Government Area (LGA), Delta State, Nigeria. Using a multistage sampling technique, 112 respondents from fourteen villages were surveyed, and primary data were collected via structured questionnaires. Descriptive statistics and logistic regression analysis were employed for data analysis. Results revealed that higher education levels ($B = 0.399$, $p = 0.043$), larger farm sizes ($B = 0.529$, $p = 0.008$), and access to extension services ($B = 0.266$, $p = 0.010$) significantly influenced organic farming adoption. Farmers displayed positive perceptions towards organic agriculture, acknowledging its environmental sustainability ($\bar{X} = 3.5$), economic benefits ($\bar{X} = 3.8$), and contributions to human health ($\bar{X} = 3.6$). However, challenges such as limited access to organic markets ($\bar{X} = 2.9$), inadequate training ($\bar{X} = 3.8$), and financial constraints ($\bar{X} = 3.8$) hindered adoption. Addressing these challenges necessitates collaborative efforts to promote awareness, provide technical support, and advocate for supportive policies.

Keywords: Organic farming, Socioeconomic factors, Adoption, Isoko North, Logistic regression

INTRODUCTION

Organic agriculture has emerged globally as an alternative farming system that uses ecologically-based practices to sustain yields while minimizing damage to the environment (Meena, Biswas & Sharma, 2020; Reganold & Wachter, 2016). Core characteristics of organic farming include avoidance of synthetic chemical inputs, incorporation of cover crops and composts to enhance soil health, greater crop rotations to disrupt pest cycles, and integration of natural forms of nutrient and pest management (National Organic Standards Board, 1995). Many studies have shown these techniques can conserve biodiversity, improve soil water retention, reduce erosion, decrease pollution from agricultural runoff, and boost farmers' incomes through premiums gained by certified organic status (Crowder & Reganold, 2015; Meena et al., 2020).

In the Niger Delta region, decades of extensive oil industry pollution have significantly damaged regional soils and water resources essential for agriculture (Ordinioha & Brisibe, 2013). This continues to threaten rural livelihoods and food security. Transition to organic farming potentially offers dual benefits of boosting and stabilizing farm yields while supporting ecological restoration. However, adoption of organic techniques remains very minimal in Delta State specifically (<1%)

similar to national trends (Willer & Lernoud, 2020). Several socioeconomic factors have been shown to constrain uptake of organic techniques. These include financial barriers like access to credit and stable organic markets (Amoah et al., 2022; Guta, 2020), lack of technical knowledge and government extension support (Chukwuone & Agwu, 2017; McCarthy, Lipper & Branca, 2017), limitations on operational scale due to land tenure restrictions (Chinwe & Chidiebere, 2019), and availability of family or hired labour to offset higher management requirements (Eze, 2020; Langat et al., 2016; Ikenga et al, 2023).

A growing body of research has investigated socioeconomic barriers influencing adoption of organic farming practices across Africa (AdeOluwa, 2021; Amos, 2018; Guta, 2020; Okeke-Agulu, 2015; Okoro & Nwaneri, 2021; Yusuf et al, 2022; Chukwuone & Agwu, 2017; Eze, 2020). However, most studies focusing on Nigeria have emphasized States in the southwest and north central regions. The distinct social, institutional and agro ecological characteristics of Delta State within the Niger River Delta present a gap in understanding organic adoption constraints and opportunities. For example, previous research found farmers operating on degraded soils were more inclined to adopt practices perceived to conserve soil health (Amos,

2018). But the interactions of widespread oil pollution, flooding, salinization and other disturbances in Delta State with willingness to transition to organic methods has received little attention.

While past studies have quantified on-farm costs and modelled potential yield impacts from organic transitions (Okoro & Nwaneri, 2021; Yusuf et al., 2022), little farm-level economic data specific to Delta State conditions is available. The higher labour requirements typical of organic systems may also pose unique constraints in Delta State which relies more on family than external hired labour according to Eze (2020). Research grounded in the Delta State context is required to reveal locally-relevant conversion costs, benefits and barriers. Despite the increasing interest in organic farming, empirical research focusing on the socioeconomic determinants of organic farming adoption in Delta State remains limited. This study seeks to address this gap by exploring the multifaceted influences that shape farmers' decisions to adopt organic farming methods in the region. By examining the socioeconomic dynamics at play, policymakers, agricultural extension services, and stakeholders can develop targeted interventions and support mechanisms to facilitate the transition towards more sustainable agricultural practices in Delta State.

Through a comprehensive analysis of socioeconomic factors, this research aims to contribute to the existing body of knowledge on organic farming adoption while providing practical insights for enhancing agricultural sustainability and rural development in Delta State, Nigeria. Therefore, the specific objectives of the study are to;

- i. identify the key socioeconomic variables influencing farmers' decisions to adopt organic farming methods in Delta State, Nigeria;
- ii. assess the perceptions and attitudes of farmers towards organic agriculture and its potential socioeconomic benefits in the study area; and
- iii. investigate the barriers and challenges faced by farmers in adopting organic farming practices in the study area.

METHODOLOGY

Study Area

The study was conducted in Isoko North Local Government Area (LGA), Delta State, Nigeria. Isoko North LGA has an estimated land area of 463 km² and a population of 183,657 (NPC, 2006). It is bounded to the South West by Isoko South LGA, to the West by Ughelli North LGA, to the North by Ndokwa West LGA and to the East by Ndokwa East LGA, all in Delta State. Isoko North encompasses diverse agricultural features, including arable and

non-arable land, and is home to a population engaged in various agricultural activities. Isoko North experiences a tropical climate, characterized by distinct wet and dry seasons typical of the region. The area encounters high temperatures and abundant rainfall during the wet season, providing favourable conditions for agriculture. Its geography includes plains, rivers, and fertile soil, fostering diverse agricultural practices. Agriculture plays a pivotal role in its economy, serving as a major source of livelihood for the local population (Ebewore & Emaziye, 2016; Ikenga *et al.*, 2023).

A multistage sampling technique was used to select the representative sample. Seven (7) wards in the LGA which include Oyede, Ofagbe, Ellu, Otor-Igho, Owhelogbo, Emevor, and Ozoro were randomly selected. Two villages were randomly selected from each of the selected wards, making a total of fourteen villages; then, eight (8) farming households were selected from the villages through random sampling technique to arrive at a total of one hundred and twelve (112) respondents used for the study.

The primary data for the study were collected using structured questionnaire. The objectives of this study were realised through the use of descriptive statistics such as frequency, percentage and mean. In order to identify the key socioeconomic variables influencing farmers' decisions to adopt organic farming methods in the study area, the logistics regression model was used. The decision to use this model is justified on the ground that the dependent variable is a dummy variable (dichotomous). The binary logistics model is stated as:

$$\ln\left(\frac{P_i}{1-P_i}\right) = \beta_0 + \beta_1X_1 + \beta_2X_2 + \beta_3X_3 + \beta_4X_4 + \beta_5X_5 + \beta_6X_6 + \beta_7X_7 + e_i \dots \dots \dots (1)$$

Where;

P_i = is the indicator for use of organic farming (P_i = Yes; $1 - P_i$ = No).

β_0 = Intercept

$\beta_1 - \beta_8$ = Regression Coefficients, of the independent variables

X_1 = Age of respondent (years)

X_2 = Gender (1= male, 0 = female)

X_3 = Educational level (1 = no formal education, 2 = primary, 3 = secondary, 4 = tertiary)

X_4 = Household size (Persons)

X_5 = Farm size (Hectares)

X_6 = Access to extension services (1 = Yes, 0 = No)

X_7 = Membership of farmers cooperatives (1 = Yes, 0 = No)

e_i = error term.

RESULTS AND DISCUSSION

Socioeconomic characteristics of the respondents

Gender: The result in Table 1 showed that 69.6% of respondents were male, while 30.4% were female. This distribution mirrors entrenched gender dynamics within Nigerian agricultural communities, where men traditionally hold sway over decision-making processes and resource allocation in farming. Various studies, such as Adesina and Zinnah (1993) as well as Ikenga *et al.* (2024) underscore the disparities in agricultural decision-making, with men typically enjoying greater access to land, resources, and information compared to

women. Gender roles and societal expectations further constrain women's involvement in farming activities and their capacity to adopt innovative farming methods. To promote the uptake of organic farming practices, it is imperative to tackle gender-specific barriers and advocate for gender equity in resource access, training opportunities, and decision-making authority among agricultural stakeholders in the region. Additional research, like that conducted by Ezedinma *et al.* (2019), emphasizes the importance of tailored interventions to empower women in agriculture, which can bolster the adoption of sustainable farming practices and contribute to broader socioeconomic development in rural areas.

Table 1: Socioeconomic characteristics of the respondents

Variable	Frequency	Percent	Mean
Gender			
Male	78	69.6	
Female	34	30.4	
Age (years)			
18 – 30	24	21.4	42 years
31 – 45	48	42.9	
46 – 60	28	25.0	
61 and above	12	10.7	
Marital status			
Single	14	12.5	
Married	86	76.8	
Divorced	6	5.4	
Separated	4	3.6	
Widowed	2	1.8	
Household size (persons)			
Below 5	18	16.1	9 persons
6 – 10	60	53.6	
Above 10	34	30.4	
Educational level			
No formal	8	7.1	
Primary	18	16.1	
Secondary	56	50.0	
Tertiary	30	26.8	
Farming experience (years)			
Less than 5	20	17.9	11 years
6 – 10	36	32.1	
11 – 15	30	26.8	
Above 15	26	23.2	
Farm size (Acres)			
Below 0.5	10	8.9	1.4 acres
0.5 – 1.0	24	21.4	
1.1 – 1.5	26	23.2	
1.51 – 2.0	28	25.0	
Above 2.0	24	21.4	
Access to extension services			
Yes	68	60.7	
No	44	39.3	
Use of organic farming			
Yes	76	67.9	
No	36	32.1	

Age: According to the findings, the largest cohort falls within the 31 to 45 age range, constituting 42.9% of the respondents, followed by individuals aged 18 to 30, accounting for 21.4%. Those aged 46 to 60 represent 25.0% of the respondents, while individuals aged 61 and above constitute the smallest proportion at 10.7%. The mean age of the respondents is reported as 42 years. This distribution suggests that individuals in their prime working years, particularly within the 31 to 45 age group, are more prominently engaged or inclined to adopt organic farming methods in the region. This observation aligns with research indicating that younger individuals are generally more open to adopting innovative agricultural practices (Tiwarei & Adhiguru, 2019; Ikenga *et al.*, 2023).

Marital status: The result showed that majority of respondents are married, constituting 76.8% of the total, while singles represent 12.5%. Divorced individuals account for 5.4%, separated individuals make up 3.6%, and widowed individuals represent 1.8% of the respondents. The high percentage of married individuals suggests that they may have more stability and support in adopting organic farming methods compared to singles or individuals who are divorced, separated, or widowed. Marriage often implies shared responsibilities, including financial resources and decision-making processes, which may facilitate the adoption of new agricultural practices (Solanke & Fatoye, 2018; Ikenga *et al.*, 2024).

Household size: The findings reveal that the majority of respondents have household sizes ranging from 6 to 10 persons, accounting for 53.6% of the total, with a mean household size of 9 persons. Household sizes below 5 constitute 16.1% of the respondents, while those above 10 make up 30.4%. The prevalence of medium-sized households suggests that there may be greater labour availability and resource pooling, which could facilitate the adoption of organic farming practices (Akinbode & Ajayi, 2017). Larger households may possess more labour resources to engage in organic farming activities, while smaller households may face challenges in meeting the labour demands associated with sustainable agricultural practices.

Educational level: The findings indicate that the majority of respondents have completed secondary education, accounting for 50.0% of the total, followed by individuals with tertiary education at 26.8%. Respondents with primary education constitute 16.1%, while those with no formal education represent 7.1% of the sample. The predominance of individuals with at least a secondary education level suggests that education may play a significant role in the adoption of organic farming methods (Omotilewa *et al.*, 2019). Higher

levels of education may provide individuals with the knowledge and skills necessary to understand the benefits of organic farming and implement sustainable agricultural practices effectively.

Farming experience: The study showed that the largest proportion of respondents have farming experience ranging from 6 to 10 years, accounting for 32.1% of the total. Those with farming experience of 11 to 15 years represent 26.8%, while those with less than 5 years or above 15 years of experience constitute 17.9% and 23.2% respectively. The mean farming experience reported is 11 years. This distribution suggests that individuals with moderate levels of farming experience are more prevalent in the area, which may indicate a balance between traditional knowledge and openness to adopting new farming methods such as organic practices (Adeleke & Adesina, 2020). Farmers with longer experience might have established practices that they are reluctant to change (Ikenga *et al.*, 2023), while those with less experience may be more open to experimenting with new approaches. Understanding the role of farming experience in the adoption of organic farming methods can inform extension services and policy interventions aimed at promoting sustainable agriculture in the study Area.

Farm size: The result from the study indicate that the largest proportion of respondents have farm sizes ranging from 1.1 to 1.5 acres, accounting for 23.2% of the total. Those with farm sizes between 1.51 and 2.0 acres represent 25.0%, while those with farm sizes below 0.5 acres, between 0.5 and 1.0 acres, and above 2.0 acres constitute 8.9%, 21.4%, and 21.4% respectively. The mean farm size reported is 1.4 acres. This distribution suggests that a considerable number of respondents have small to medium-sized farms, which may influence their ability to adopt organic farming methods. Smaller farms may face challenges in implementing organic practices due to limited resources and economies of scale, while larger farms might have more resources but could encounter difficulties in transitioning from conventional to organic methods (Adewuyi *et al.*, 2018).

Access to extension services: The study showed that 60.7% of the respondents have access to extension services, while 39.3% do not. Access to extension services is crucial for disseminating information, providing technical support, and facilitating the adoption of new agricultural practices, including organic farming methods (Mafimisebi *et al.*, 2018). Farmers who have access to extension services are more likely to receive training, demonstrations, and access to inputs and resources necessary for organic farming. Conversely, those without access to extension services may face barriers such as limited

knowledge, inadequate technical support, and difficulties in accessing organic inputs (Mafimisebi *et al.*, 2018).

Use of organic farming methods: The findings indicate that 67.9% of respondents reported using organic farming methods, while 32.1% indicated that they do not. This suggests a significant level of adoption of organic farming practices among farmers in the region. The high percentage of farmers using organic methods may be attributed to various factors such as growing environmental awareness, concerns about the health impacts of chemical inputs, and potential economic benefits associated with organic produce (Omotilewa *et al.*, 2019). Additionally, government initiatives, extension services, and support from non-governmental organizations may have played a role in promoting the adoption of organic farming methods in Isoko North Local Government Area.

The prevalence of organic farming among respondents further underscores the importance of this study to explore the factors driving adoption and to identify strategies for scaling up organic agriculture in the study area.

Socioeconomic variables influencing farmers' decisions to adopt organic farming in the study area

Table 2 presents the results of a logistic regression analysis examining the socioeconomic variables influencing farmers' decisions to adopt organic farming methods in Isoko North Local Government Area, Delta State, Nigeria. The variables include age, gender, educational level, household size, farm size, access to extension services, and membership of farmers' cooperatives. The results indicate that educational level, farm size, and access to extension services significantly influence farmers' decisions to adopt organic farming methods in the study area.

Table 2: Socioeconomic variables influencing farmers' decisions to adopt organic farming in the study area

Variable	B	S.E.	Wald	df	Sig.	Exp(B)
Age	-0.001	0.022	0.001	1	0.974	1.001
Gender	0.474	0.476	0.992	1	0.319	0.623
Educational level	0.399**	0.197	4.092	1	0.043	0.671
Household size	2.094	1.45	2.086	1	0.149	8.121
Farm size	0.529***	0.199	7.097	1	0.008	0.589
Access to extension services	0.266**	0.103	6.69	1	0.010	1.305
Membership of farmers cooperatives	-0.241	0.562	0.183	1	0.669	1.272
Constant	-0.483	0.218	4.88	1	0.027	0.617
Model Summary						
-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square	R Chi-square	df	Sig.	
163.351	0.493	0.542	29.305***	7	0.004	

Where *** and ** are significant at 1% and 5% respectively

Educational Level: The study underscores the significant influence of educational attainment on farmers' decisions to adopt organic farming methods (B = 0.399, p = 0.043, Exp(B) = 0.671). Farmers with higher levels of education exhibit a greater propensity to adopt organic practices. This relationship can be attributed to several factors. Firstly, higher education levels equip farmers with the knowledge and skills necessary to understand the principles, benefits, and techniques associated with organic farming (Adewuyi *et al.*, 2018). Additionally, educated farmers are more likely to access and comprehend agricultural information disseminated through extension services, research institutions, and educational programs, enabling them to make informed decisions regarding

sustainable agricultural practices (Adeleke & Adesina, 2020). Moreover, educated farmers may possess greater adaptability and problem-solving capabilities, allowing them to overcome challenges and adopt innovative farming methods such as organic agriculture. Overall, investing in agricultural education and training programs can play a pivotal role in promoting the adoption of organic farming methods among farmers in the study area.

Farm Size: The study showed that farm size significantly influences farmers' decisions to adopt organic farming methods (B = 0.529, p = 0.008, Exp(B) = 0.589). Farmers with larger land holdings are more inclined to adopt organic methods.

According to Adewuyi *et al.* (2018), this finding can be attributed to several factors. Firstly, larger farms may have the advantage of economies of scale, allowing them to allocate resources more efficiently towards implementing sustainable practices such as organic farming. Additionally, larger farms often have greater financial capacity and access to technology, enabling them to invest in organic inputs, equipment, and infrastructure required for organic production. Moreover, larger farms may face increased pressure to adopt sustainable practices due to environmental regulations, market demands for organic products, and concerns about long-term land productivity. Thus, the significant influence of farm size underscores the importance of considering the scale of agricultural operations in promoting the adoption of organic farming methods in the study area.

Access to Extension Services: This emerged as a significant predictor of organic farming adoption ($B = 0.266$, $p = 0.010$, $\text{Exp}(B) = 1.305$). Extension services play a pivotal role in disseminating knowledge, providing technical support, and facilitating the adoption of sustainable agricultural practices, including organic farming methods. Through extension services, farmers gain access to information on organic farming techniques, soil fertility management, pest and disease control, and market opportunities for organic produce (Mafimisebi *et al.*, 2018). Extension agents offer on-site demonstrations, training workshops, and advisory services, enabling farmers to acquire the necessary skills and confidence to transition to organic agriculture. Additionally, extension services bridge the gap between research institutions and farmers, facilitating the transfer of research findings and innovations in organic farming. Farmers who have access to extension services are thus empowered to make informed decisions about adopting organic practices and are better equipped

to address challenges associated with the transition process, such as changes in farming practices and market demands (Solanke & Fatoye, 2018). Enhancing access to extension services through outreach programs, mobile advisory services, and farmer field schools can therefore significantly contribute to promoting the adoption of organic farming methods in the study area.

Based on the overall model summary, the -2 Log likelihood value indicates a strong fit of the model to the data, while the Cox & Snell R Square and Nagelkerke R Square values suggest that approximately 49.3% to 54.2% of the variance in organic farming adoption is explained by the socioeconomic variables included in the model. The Chi-square test for overall significance reveals that the model as a whole significantly predicts the adoption of organic farming methods among farmers (Chi-square = 29.305, $p < 0.01$).

Perceptions and attitudes of farmers towards organic agriculture and its potential socioeconomic benefits

The result in Table 3 provides an overview of the perceptions and attitudes of farmers towards organic agriculture and its potential socioeconomic benefits in Isoko North LGA, Delta State, Nigeria. The findings reflect a generally positive outlook among farmers regarding organic farming practices, indicating a strong inclination towards sustainable agricultural methods in the region. Farmers express a belief in the environmental sustainability of organic farming ($\bar{X} = 3.5$) and its ability to improve soil fertility and structure ($\bar{X} = 3.7$), while reducing reliance on chemical inputs ($\bar{X} = 3.1$). This reflects an awareness of the environmental benefits associated with organic agriculture, aligning with global trends towards more sustainable farming practices (Obembe *et al.*, 2020).

Table 3: Perceptions and attitudes of farmers towards organic agriculture and its potential socioeconomic benefits

Perceptions and attitudes of farmers towards organic agriculture and its potential socioeconomic benefits	Mean	Standard deviation
Organic farming practices are environmentally sustainable	3.5	0.678
Organic agriculture can improve soil fertility and structure	3.7	0.722
Organic farming methods reduce dependence on chemical inputs	3.1	0.563
Organic produce fetches higher prices in the market	3.8	0.812
Adopting organic farming can lead to better human health	3.6	0.695
Organic agriculture promotes biodiversity conservation	3.9	0.747
Organic farming enhances the quality of food products	3.8	0.778
Organic farming is economically viable for smallholder farmers	3.3	0.634
Government policies should support the expansion of organic agriculture	3.5	0.669
Consumers are willing to pay a premium for organic products	3.7	0.722
Organic farming can contribute to poverty alleviation in rural areas	3.2	0.584
Access to organic markets is a challenge for farmers in Delta State	2.9	0.712
Training and education on organic farming methods are essential for farmers	3.8	0.672

Moreover, farmers perceive organic produce as having higher market value (\bar{X} = 3.8) and contributing to better human health (\bar{X} = 3.6), indicating an understanding of the potential economic and health-related advantages of organic farming. The recognition of organic agriculture's role in promoting biodiversity conservation (\bar{X} = 3.9) and enhancing food product quality (\bar{X} = 3.8) underscores the multifaceted benefits associated with sustainable farming practices.

However, despite the positive attitudes towards organic farming, challenges such as limited access to organic markets (\bar{X} = 2.9) and the need for training and education on organic farming methods (\bar{X} = 3.8) are acknowledged by farmers. These findings highlight the importance of addressing infrastructure and knowledge gaps to support the widespread adoption of organic farming in the region (Babajide *et al.*, 2019). Additionally, the perception that organic farming is economically viable for smallholder farmers (\bar{X} = 3.3) emphasizes the potential of organic agriculture to contribute to rural livelihoods and poverty alleviation.

The overall findings suggest that while farmers in Isoko North Local Government Area recognize the benefits of organic farming, there is a need for supportive policies, infrastructure development, and capacity building initiatives to fully harness the socioeconomic potential of organic agriculture in the region.

Barriers and challenges faced by farmers in adopting organic farming practices

Table 4 presents the barriers and challenges faced by farmers in Isoko North LGA, Delta State, Nigeria, regarding the adoption of organic farming practices. The findings reveal several key challenges hindering

the widespread adoption of organic farming methods in the study area. Farmers identified limited access to organic farming knowledge and information (\bar{X} = 3.6) as a significant barrier, highlighting the importance of enhancing extension services and knowledge dissemination efforts to promote awareness and understanding of organic practices (Ajala *et al.*, 2020). Lack of financial support for transitioning to organic methods (\bar{X} = 3.8) and insufficient training on organic farming techniques (\bar{X} = 3.4) also emerged as notable challenges, underscoring the need for targeted financial assistance and capacity-building programs to facilitate the transition to organic agriculture (Akande *et al.*, 2019).

Additionally, farmers cited limited availability of organic inputs and resources (\bar{X} = 3.7) and inadequate government policies supporting organic practices (\bar{X} = 3.8) as significant barriers. Addressing these issues requires interventions aimed at improving access to organic inputs, promoting research and development in organic agriculture, and advocating for supportive policies at the local and national levels (Omotilewa *et al.*, 2020). Challenges in managing pests and diseases without synthetic inputs (\bar{X} = 3.9) and cultural resistance to changing traditional farming practices (\bar{X} = 3.5) further underscore the complexities associated with transitioning to organic farming methods in the study area. Moreover, limited access to certification and accreditation for organic products (\bar{X} = 3.7) poses additional hurdles for farmers seeking to market their organic produce effectively.

The identified barriers and challenges highlight the multifaceted nature of promoting organic farming in Isoko North LGA. Addressing these challenges requires coordinated efforts from government agencies, agricultural extension services, research institutions, and non-governmental organizations to create an enabling environment for the adoption and expansion of organic agriculture in the region.

Table 4: Barriers and challenges faced by farmers in adopting organic farming practices in the study area

Barriers and challenges faced by farmers in adopting organic farming practices	Mean	Standard deviation
Limited access to organic farming knowledge and information	3.6	0.789
Lack of financial support for transitioning to organic methods	3.8	0.643
Insufficient training on organic farming techniques	3.4	0.912
Limited availability of organic inputs and resources	3.7	0.734
Perception of higher labour requirements in organic farming	3.9	0.561
Inadequate government policies supporting organic practices	3.8	0.682
Challenges in managing pests and diseases without synthetic inputs	3.9	0.625
Cultural resistance to change traditional farming practices	3.5	0.764
Limited access to certification and accreditation for organic products	3.7	0.716

CONCLUSION AND RECOMMENDATIONS

The study revealed that while a moderate level of organic agriculture implementation exists, there remains significant scope for scaling up adoption to enable more farmers to reap the sustainability benefits of organic techniques. Several socioeconomic variables including education level, farm size and extension access are significant predictors of farmers' decisions to take up organic methods. However, myriad constraints around knowledge gaps, financial limitations, input availability and cultural attitudes continue to hamper more widespread adoption. Over 50% of the variance in organic farming adoption can be linked to the socioeconomic factors analysed. This highlights the need for holistic interventions like educational campaigns, microfinance schemes, participatory innovation platforms and advocacy efforts that ease barriers and create an enabling environment for farmers to transition to organic agriculture. The oil-impacted Niger Delta context demands urgent efforts tailored specifically to the region's distinct social and environmental realities to unlock the promise of organic farming for enhancing productivity, food security and ecological restoration.

Based on the findings of the study the following recommendations can be made to promote the adoption of sustainable agricultural practices:

- i. Government agencies at the local, state, and national levels play a crucial role in promoting organic farming. They should develop and implement policies that support organic agriculture, including incentives for farmers transitioning to organic methods, subsidies for organic inputs, and certification programs. Additionally, governments can invest in infrastructure development, such as organic markets and processing facilities, to support the organic value chain.
- ii. Extension services should prioritize training and capacity-building programs on organic farming techniques, pest and disease management, soil fertility improvement, and organic certification processes. Extension agents can organize workshops, field demonstrations, and farmer exchange visits to disseminate knowledge and best practices in organic agriculture.
- iii. Research institutions should conduct studies on locally adapted organic farming practices, develop organic input technologies, and provide evidence-based recommendations to farmers. Collaborative research projects involving farmers, scientists, and extension agents can facilitate the co-creation of knowledge and innovation in organic farming.
- iv. Non-Governmental Organizations (NGOs) can complement government efforts by providing technical assistance, organizing farmer

cooperatives, and facilitating access to markets for organic produce. They can also advocate for policies that promote organic agriculture, raise awareness about the environmental and health benefits of organic farming, and support community-based initiatives for sustainable agriculture.

- v. Farmers' cooperatives and associations play a vital role in organizing farmers, aggregating produce, and accessing markets. They can collaborate with government agencies, NGOs, and research institutions to promote organic farming, share resources and knowledge, and negotiate better prices for organic products.
- vi. Educational institutions, including agricultural colleges and universities, should incorporate organic farming principles and practices into their curricula. They can offer training programs, certificate courses, and academic research opportunities focused on organic agriculture, agro ecology, and sustainable food systems.
- vii. Financial institutions can provide access to credit facilities, microloans, and investment schemes tailored to support organic farming initiatives. They can develop innovative financing mechanisms, such as revolving funds and farmer cooperatives, to address the financial constraints faced by smallholder farmers transitioning to organic agriculture.
- viii. Community leaders and traditional authorities play a significant role in mobilizing community support for organic farming initiatives. They can raise awareness about the benefits of organic agriculture, promote traditional knowledge and agro-ecological practices, and facilitate community-led initiatives for sustainable land management and food security.

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