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Socio-economic Determinants of Utilisation of Improved Poultry Management Practices among Commercial Poultry Farmers in Obio-Akpor LGA, Rivers State, Nigeria

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Abstract

The study examined the socio-economic determinants of utilisation of improved poultry management practices among commercial poultry farmers in Obio-Akpor Local Government Area, Rivers State, Nigeria. A total of 96 respondents were selected using two-stage sampling procedure. Ordinary Least Squares (OLS) regression were used for data analysis. Results showed high awareness of improved poultry management practices, particularly vaccination of birds against diseases (93.8%), biosecurity measures (91.7%), and provision of clean water (95.8%). The most utilised practices were the use of probiotics in poultry feed ($\bar{x}$ = 2.85), temperature control systems ($\bar{x}$ = 2.82), and lighting control systems ($\bar{x}$ = 2.79). The socio-economic factors influencing utilisation of improved poultry management practices were age (β = 0.025) and farming experience (β = 0.096), while flock size (β = -0.097) negatively influenced utilisation. Major constraints identified were the high cost of poultry feed ($\bar{x}$ = 2.95), the high cost of vaccination programmes ($\bar{x}$ = 2.07), and difficulty accessing markets ($\bar{x}$ = 2.07). Despite high awareness of improved poultry management practices, utilisation remained low due to financial and market-related constraints. Rivers State Ministry of Agriculture should strengthen extension services and subsidise poultry inputs, while financial institutions should provide affordable credit to poultry farmers.

Keywords: *Improved management practices, Commercial poultry farmers, challenges to utilisation*

Introduction

Poultry production is one of the most dynamic livestock enterprises in Nigeria, contributing significantly to food security, income generation, and employment. The growing demand for animal protein has increased the need for efficient and sustainable poultry management systems (Osei-Akoto, et al, 2026). Improved poultry management practices, such as proper housing, biosecurity, vaccination, balanced feeding, waste management, and environmental control, are essential for enhancing productivity, reducing mortality, and improving profitability (Abafogi et al., 2022; George & George, 2023). Evidence shows that adoption of improved practices positively influences farmers' income and livelihoods (Taku et al., 2025), while efficient management remains a key driver of profitability in commercial poultry production (Mukaila et al., 2023). Furthermore, sustainable management practices help mitigate environmental and public health risks associated with intensive poultry farming (Gržinić et al., 2023). However, the utilisation of improved poultry management practices is not uniform among farmers and is largely influenced by socio-economic factors such as education, farming experience, access to credit, extension contact, farm size, and income level (Ekokogbe et al., 2025; Bannor et al., 2023). Nnadi et al. (2025) affirmed that socio-economic characteristics significantly determine the adoption of good agricultural practices in broiler production. Constraints, including high feed costs, limited financial resources, and weak institutional support, further limit effective utilisation (Ochalibe et al., 2022; Ogbemo & Egun, 2026).

In Obio-Akpor Local Government Area of Rivers State, poultry farming represents an important livelihood activity due to its proximity to major urban markets. Studies have shown that poultry production in the area contributes meaningfully to household income (Owhonda et al., 2021; Amadi-Robert et al., 2024) and is generally profitable within the state (Aroyehun, 2024). Nevertheless, access to farm credit seem to be limited among poultry farmers in the area (Elum & Obiajunwa, 2022), potentially constraining investment in improved management practices. Although studies such as Nnadi et al. (2025), Vihi et al. (2025), and Ihunwo et al. (2025) examined the adoption of poultry technologies in other locations, and existing studies in Obio-Akpor focused on production, credit perception, and livelihood issues, there is limited empirical evidence specifically on the socio-economic determinants of utilisation of improved poultry management practices among commercial poultry farmers in Obio-Akpor.

This gap is significant because inadequate utilisation of improved practices may result in low productivity, high mortality rates, reduced profitability, and increased vulnerability to disease outbreaks and market shocks. Understanding these determinants is therefore essential for designing effective policy and extension interventions to improve poultry productivity and sustainability. Against this background, this study examines the socio-economic determinants influencing the utilisation of improved poultry management practices among commercial poultry farmers in Obio-Akpor Local Government Area, Rivers State, with a focus on describing farmers' socio-economic characteristics, assessing their level of awareness and utilisation of improved practices,

identifying the socio-economic factors influencing utilisation, and examining the challenges faced in adopting these practices.

Methodology

The study was conducted in Obio-Akpor Local Government Area of Rivers State, Nigeria. Obio-Akpor is located between latitude 4°45′N and 4°60′N and longitude 6°50′E and 8°00′E. The Local Government Area covers a land mass of about 260 km² and has a projected population of over 650,000 people. The area experiences a tropical rainforest climate characterised by high rainfall, high humidity, and average temperatures between 25°C and 32°C. The vegetation is predominantly mangrove and freshwater swamp forest. Major agricultural activities in the area include poultry farming, fish farming, crop production, piggery, and vegetable cultivation.

The population for the study comprised commercial poultry farmers in Obio-Akpor Local Government Area. For the purpose of this study, commercial poultry farmers were defined as farmers engaged in poultry production primarily for income generation with relatively large flock sizes. A two-stage sampling procedure was used for the study. First, eight communities (Choba, Elelenwo, Woji, Rumumasi, Rumudara, Rumueme, Nkpolu, and Emuoha axis) were purposively selected from the 65 communities in Obio-Akpor Local Government Area based on the high concentration of commercial poultry enterprises identified during preliminary field reconnaissance. Second, twelve commercial poultry farmers with relatively high flock sizes were purposively selected from each of the selected communities, giving a total sample size of 96 respondents. The purposive selection of 12 commercial poultry farmers were based on the number of birds owned by the poultry farmers. Information on the number of birds reared by each farmer was provided by the extension agent in charge of the community.

Primary data were collected using a structured questionnaire administered electronically through the Open Data Kit (ODK) platform to enhance accuracy and minimise data entry errors. Socio-economic variables, namely age, gender, marital status, education, farming experience, flock size, source of income, and extension contact, were measured using appropriate categorical and continuous scales and summarised using frequencies, percentages, and mean values. Awareness of improved poultry management practices was operationalised as a dichotomous response (aware = 1, not aware = 0). Utilisation was measured using a four-point Likert-type scale (usually utilised = 4, sometimes utilised = 3, rarely utilised = 2, not utilised = 1). A midpoint of 2.5 was gotten based on the weights assigned implying that improved poultry management practices with mean scores of 2.5 and above were utilised while those with mean scores of less than 2.5 were not utilised. Challenges were measured using a four-point agreement scale (Fully supported = 4, Sometimes = 3, Not in support = 2, Maybe sometimes = 1). A midpoint of 2.5 was gotten based on the weights assigned, implying that statements with mean score of 2.5 and above were seen as key challenges while those with mean scores of less than 2.5 are not key challenges.

Percentages and mean scores were used to address objectives on socio-economic characteristics, awareness, utilisation level, and challenges. Ordinary Least Squares (OLS) regression was employed to determine the socio-economic factors influencing the utilisation of improved poultry management practices.

Four functional forms (linear, exponential, semi-log, and double-log) were estimated, and the lead equation was selected based on the highest coefficient of determination (R^2), significance of the F-statistic, and consistency with a priori expectations. The explicit form of the linear model is specified as:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \varepsilon \quad (1)$$

The implicit form is:

$$Y = f(X_1, X_2, X_3, X_4, X_5, X_6, X_7, X_8) + \varepsilon \quad (2)$$

Where:

Y = Utilisation index of improved poultry management practices
X_1 = Age (years)
X_2 = Gender (dummy: male = 1, female = 0)
X_3= Marital status
X_4 = Farming experience (years)
X_5 = Educational level
X_6 = Number of birds (flock size)
X_7 = Access to extension services (yes = 1, no = 0)
X_8 = Source of income/enterprise characteristics (where applicable)
β_0 = Constant
$\beta_1 - \beta_8$ = Regression coefficients
ε = Error term

Results and Discussion

Characteristics of Commercial Poultry Farmers

Table 1 shows the socio-economic profile of commercial poultry farmers. Most farmers were male (61.5%). This reflects gendered patterns in commercial poultry farming, where men often control resources and market-oriented operations. The predominance of male poultry farmers aligns with findings by Owhonda et al. (2021) and Faborode (2022). The farmers were relatively young, with a mean age of 32 years, while the 31–40 years category had the highest proportion (32.3%). This implies that most farmers were within the active and productive age group capable of managing poultry enterprises effectively. The finding agrees with Amadi-Robert et al. (2024), who noted that younger farmers are more willing to adopt innovations. The majority of the respondents were married (78.1%), suggesting that family support may contribute to sustaining poultry enterprises. This corroborates Nnadi et al. (2025), who observed that married farmers often benefit from family labour in agricultural production. Educational attainment was relatively high, with secondary education accounting for the highest proportion (40.6%), followed by tertiary education (28.1%). This implies that the farmers possessed formal education that could improve understanding and utilisation of

improved poultry management practices. The finding is consistent with Ajunwa et al. (2026) and Ifeanyi-Obi and Uloh (2025), who reported that education enhances technology adoption among farmers. Most respondents (72.9%) depended on poultry farming as their primary source of income, indicating the commercial nature of poultry production in the study area, as also reported by Enwa et al. (2025). Farmers had an average farming experience of six years, with 1–5 years being the most common category (31.3%), suggesting moderate practical experience in poultry management. This agrees with Vihi et al. (2025), who observed that farming experience improves utilisation of management practices. The average flock size was 1,517 birds, with most respondents (55.2%) keeping between 100 and 1,000 birds, indicating small- to medium-scale operations. The finding aligns with Nnadi et al. (2025). The study further revealed that 57.3% of the farmers had access to extension services, mainly through monthly visits (49.0%). This implies moderate extension contact that may enhance dissemination of improved poultry management practices, supporting Ekokogbe et al. (2025) and Uko et al. (2025).

Table 1: Characteristics of commercial poultry farmers

Variable	Percentage (n=96)	Mean	Standard Deviation
Farming experience (years)			
1–5	31.3	6.0	4.8
6–10	28.1		
11–15	20.8		
16–20	17.7		
>20	2.1		
Flock size (number of birds)			
100–1,000	55.2	1,517	1,204.6
1,001–2,000	13.5		
2,001–3,000	6.3		
>3,000	25.0		
Access to extension services			
Yes	57.3		
Frequency of extension visits			
Weekly	11.5		
Monthly	49.0		
Quarterly	31.3		
Yearly	8.3		

Source: Field survey, 2025.

Awareness of Improved Poultry Management Practices

Table 2 shows that the most widely known practices were the provision of clean water at all times (95.8%), vaccination of birds against diseases (93.8%), and biosecurity measures to prevent disease outbreaks (91.7%). This implies that farmers place strong

emphasis on disease prevention and flock survival, which are essential for maintaining productivity and reducing mortality in poultry enterprises. The high awareness of these practices agrees with the findings of Grace et al. (2024), Tessema et al. (2025), Pinto et al. (2023), and McClaughlin et al. (2024), who reported that poultry farmers commonly prioritise preventive health measures because of their direct influence on flock performance and profitability. In contrast, awareness was relatively low for the use of egg collection systems (46.9%), probiotics in poultry feed (52.1%), and nipple drinkers and feeders (57.3%). This suggests limited exposure to modern poultry technologies and management equipment, possibly due to inadequate extension coverage, cost limitations, or low technical training among farmers. The finding supports the reports by Owhonda et al. (2021) and Faborode (2022), who observed that awareness of modern poultry innovations is often lower among farmers with limited access to technical support and production resources. The implication is that although farmers are knowledgeable about basic health-related practices, gaps still exist in awareness of productivity-enhancing technologies, which may reduce operational efficiency and limit the full adoption of improved poultry management practices.

Table 2: Awareness of improved poultry management practices among commercial poultry farmers

Improved poultry management practice	Aware (%=96)
Vaccination of birds against diseases	93.8
Use of probiotics in poultry feed	52.1
Provision of adequate ventilation in poultry houses	88.5
Use of temperature control systems	62.5
Provision of adequate lighting in poultry houses	81.3
Use of nipple drinkers and feeders	57.3
Biosecurity measures to prevent disease outbreaks	91.7
Litter management to reduce disease risk	76.0
Provision of adequate space per bird	68.8
Breed selection for improved productivity	66.7
Health monitoring for early disease detection	64.6
Use of nutritional supplements	75.0
Provision of clean water at all times	95.8
Use of egg collection systems	46.9
Record-keeping for health and productivity	60.4

Source: Field Survey, 2025.

Utilisation of Improved Poultry Management Practices

The results in Table 3 show that the top three most utilised practices were temperature control systems (mean = 2.82), use of probiotics in feeds (mean = 2.85), and lighting control systems (mean = 2.79), indicating a moderate level of adoption of productivity-enhancing and environmental management practices among commercial poultry farmers. This implies that farmers are more inclined toward practices that offer immediate and observable improvements in bird performance and farm conditions, which directly support production efficiency and short-term profitability. The finding

aligns with Vihi et al. (2025) and Tessema et al. (2025), who reported that farmers tend to prioritise technologies with visible and rapid benefits in livestock systems. In contrast, the least utilised practices were feed quality management (mean = 1.30), vaccination programs (mean = 1.34), and egg collection systems (mean = 1.34), indicating very low adoption of key preventive health and operational efficiency measures. This suggests that despite awareness of disease prevention practices, actual implementation remains weak, possibly due to cost constraints, limited technical capacity, and inadequate extension support, consistent with Owhonda et al. (2021) and Grace et al. (2024). The grand mean of 1.99 further confirms the generally low utilisation of improved poultry management practices in the study area. The implication is that the existing knowledge–practice gap may expose flocks to preventable diseases and reduce productivity and profitability, highlighting the need for targeted interventions that strengthen practical adoption through training, improved access to inputs, and enhanced extension delivery.

Table 3. Utilisation of improved poultry management practices

Practice	Mean	Standard Deviation
Vaccination programs	1.34	0.63
Use of probiotics in feeds	**2.85**	0.99
Biosecurity measures	1.40	0.67
Proper ventilation	1.62	0.76
Integrated pest management	2.48	1.05
Temperature control systems	**2.82**	1.07
Lighting control systems	**2.79**	1.02
Waste management practices	2.07	0.92
Water quality management	1.43	0.68
Feed quality management	1.30	0.60
Health monitoring programs	2.09	1.03
Use of nipple drinkers/feeders	2.43	1.06
Breed selection	1.97	1.00
Nutritional supplements	1.96	0.85
Egg collection systems	1.34	0.63

Source: Field survey, 2025. Mean cutoff = 2.5

Socio-economic Factors Influencing Utilisation

The socio-economic factors influencing the utilisation of improved poultry management practices are presented in Table 4. Farming experience was positively and significantly associated with utilisation (β = 0.096, t = 0.940), indicating that more experienced farmers are more likely to adopt improved practices. Age also showed a positive relationship (β = 0.025, t = 0.622). The positive influence of farming experience implies that practical knowledge acquired over time enhances farmers' ability to adopt and apply improved poultry management practices effectively. This finding agrees with Abdullahi et al. (2026), who reported that experienced farmers are more likely to utilise improved agricultural innovations due to accumulated technical skills and exposure.

Similarly, Olatinwo et al. (2026) and Eze et al. (2025) observed that farming experience increases the intensity of adoption of improved and climate-smart technologies. The positive relationship between age and utilisation suggests that maturity and prolonged involvement in poultry farming may improve farmers' management decisions and willingness to utilise proven practices. Conversely, sex, marital status, educational level, number of birds, and access to extension services showed no significant influence on utilisation at the 5% level. The non-significant effect of educational level and extension services may indicate inadequate practical training or weak extension delivery systems, consistent with the findings of Owhonda et al. (2021) and Vihi et al. (2025). Likewise, the non-significant influence of flock size suggests that owning more birds alone does not necessarily translate into greater utilisation of improved practices, supporting Ayertey et al. (2026) 's position that knowledge and behavioural factors are more important determinants of adoption than farm size. The findings, therefore, imply that strengthening practical training, mentorship, and farmer-to-farmer learning may enhance utilisation of improved poultry management practices among commercial poultry farmers. The model explained about 52.2% of the variation in utilisation (R^2 = 0.522), suggesting that other socio-economic and institutional factors may also contribute to farmers' utilisation behaviour. The findings, therefore, imply that strengthening practical training, mentorship, and farmer-to-farmer learning may enhance utilisation of improved poultry management practices among commercial poultry farmers.

Table 4: Socio-economic factors influencing utilisation of improved poultry management practices among commercial poultry farmers

Variables	**Coefficient**	**t-value**
Constant	-31.450	7.558*
Age	0.025	0.622*
Sex	-0.768	-0.561
Marital status	-0.248	-0.948
Farming experience	0.096	0.940*
Educational level	-0.829	-1.821
Number of birds	-0.097	-0.833*
Extension services	0.550	0.440
Model Summary		
Statistics	**Value**	
R	0.542	
R^2	**0.522**	
F-ratio	**5.363**	

Figures in parentheses are t-values
Source: Field survey, 2025.

Challenges Faced in Utilising Improved Poultry Practices

Table 5 shows that the major challenges faced by commercial poultry farmers in utilising improved poultry management practices were the high cost of improved poultry feeds (mean = 2.95), the high cost of vaccination programs (mean = 2.07), and difficulty accessing markets (mean = 2.07). This implies that financial and market-related constraints remain the key barriers limiting effective utilisation of improved poultry

practices among farmers. The finding agrees with Okoye and Uchemba (2025) and Ochalibe et al. (2022), who reported that the rising cost of poultry feed and veterinary inputs significantly reduces farmers' capacity to adopt improved production practices. Similarly, the challenge of poor market access supports the findings of Wanglin et al. (2024), who observed that weak market linkages discourage investment in improved poultry technologies due to reduced profitability. In contrast, the least challenging factors were the high cost of feed supplements (mean = 1.30), limited access to credit facilities (mean = 1.35), and lack of technical knowledge (mean = 1.37). This suggests that most farmers may already possess basic technical knowledge and rely on informal financial support systems to sustain production activities. The finding aligns with Nnadi et al. (2025) and Ihunwo et al. (2025), who noted that experienced poultry farmers often depend on personal savings, cooperative groups, and practical experience rather than formal credit sources. The relatively low grand mean of 1.72 further indicates that, although some constraints exist, not all respondents strongly perceived the listed factors as severe barriers. The implication is that reducing feed and vaccination costs, alongside improving market access, could significantly enhance the utilisation of improved poultry management practices and promote sustainable poultry production in the study area.

Table 5: Challenges in utilising improved poultry management practices among commercial poultry farmers

Challenges	Mean	Standard Deviation
High cost of improved poultry feeds	**2.95**	**1.01**
Limited access to credit facilities	1.35	**0.67**
Lack of technical knowledge	1.37	**0.66**
High cost of vaccination programs	2.07	**0.96**
High transportation cost	1.50	**0.75**
Difficulty controlling pests and predators	1.53	**0.77**
High labour cost	1.91	**0.99**
Lack of extension contact	1.62	**0.83**
Difficulty accessing markets	2.07	**0.90**
High cost of equipment	1.68	**0.88**
Lack of government support	1.57	**0.85**
High cost of feed supplements	1.30	**0.63**
Difficulty sourcing quality breeding stock	1.41	**0.70**
Fluctuating market demand	1.69	**0.90**

Source: Field survey, 2025. Mean cutoff = 2.5

Conclusion and Recommendations

The study concluded that although commercial poultry farmers in Obio-Akpor Local Government Area had high awareness of improved poultry management practices, the level of utilisation of many important practices remained low. Farming experience and age positively influenced utilisation of improved poultry management practices, while

flock size negatively influenced utilisation. High cost of poultry feed, high cost of vaccination programmes, and difficulty accessing markets were the major constraints limiting effective utilisation of improved poultry management practices among commercial poultry farmers. The Rivers State Ministry of Agriculture should strengthen extension training programmes and practical demonstrations on improved poultry management practices, particularly vaccination, biosecurity, feed quality management, and health monitoring practices that have recorded low utilisation. Farmers' cooperatives should be strengthened to facilitate the collective purchase of poultry feed, vaccines, and other farm inputs at reduced cost. Financial institutions, in collaboration with government agricultural support agencies, should provide affordable credit facilities to poultry farmers to reduce financial constraints affecting the utilisation of improved poultry management practices. The Rivers State Ministry of Agriculture and relevant market development agencies should also improve market linkages and marketing opportunities for poultry farmers to reduce production and distribution challenges.

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