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Socioeconomic determinants of factors influencing social media usage among poultry farmers in delta central agricultural zone, Nigeria

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Abstract
This study explores the socio-economic determinants of social media usage among poultry farmers in the Delta Central Agricultural Zone of Nigeria. Data were collected from 240 respondents using structured questionnaires. Key variables examined include age, gender, education, farming experience, household size, and income, with a focus on their influence on the adoption of social media for poultry farming. Descriptive analysis revealed that most poultry farmers were aged 31-45 (42.5%), male (70%), and well-educated, with 75% having at least secondary education. Most had 5-10 years of farming experience and earned between ₦50,000-₦100,000 monthly. A binary logistic regression model (Nagelkerke $R^2 = 0.48$; ROC AUC = 0.86) identified significant predictors of social media usage: age ($p = 0.004$), gender ($p = 0.028$), education ($p < 0.001$), income ($p = 0.012$), farm size ($p = 0.046$), and access to extension services ($p < 0.001$). Younger, male farmers with higher education and income, larger farms, and access to extension services were more likely to use platforms such as WhatsApp, Facebook, and YouTube. These platforms were mainly used for poultry health information, market access, networking, and innovation learning. The study also identified key barriers to social media use: limited access to digital devices (Mean = 3.92), privacy/security concerns (Mean = 3.79), and high internet/device costs (Mean = 3.73). Other notable constraints included digital literacy gaps and distrust of online agricultural content, while cultural and language barriers were minimal. Findings suggest that improving digital access and literacy could enhance information flow, productivity, and market integration, strengthening the economic resilience of smallholder poultry farmers in the region.

Keywords: Social media, Binary Logistics Regression, ICT, Socio-economic factors, Delta State

Introduction

The agricultural sector remains a cornerstone of economic development in many sub-Saharan African countries, including Nigeria. In recent years, technological innovations have increasingly become pivotal in transforming agriculture, especially with the proliferation of information and communication technologies (ICTs). Among these innovations, social media platforms have emerged as vital tools for improving agricultural productivity, facilitating knowledge transfer, and expanding market access. In the poultry subsector, where timely access to information on feed, disease control, veterinary services, and markets is crucial, social media has created new pathways for farmers to optimize operations and maximize profits. However, the extent to which poultry farmers in Nigeria adopt social media technologies is influenced by a combination of socioeconomic factors, which this study seeks to explore within the Delta Central Agricultural Zone. Nigeria's poultry industry is one of the most commercialized segments of the country's agricultural sector. It contributes significantly to food security, employment, and income generation, particularly in peri-urban and rural communities (Oladeebo and Ambe-Lamidi, 2017). Delta Central Agricultural Zone, located in the oil-rich Niger Delta region, is a vibrant area for poultry production due to its growing population, urbanization, and demand for animal protein. Despite these opportunities, poultry farmers in the region face challenges related to input costs, disease outbreaks, market fluctuations, and access to timely information. Consequently, many are turning to digital platforms, particularly social media, to bridge information gaps and improve their management practices.

The poultry industry in Nigeria is a significant contributor to the agricultural sector playing a vital role in income generation, employment creation and nutritional security (Adene and Oguntade 2006). In Delta State, poultry farming is particularly important for small scale and medium scale farmers, many of whom depend on its as their primary source of livelihood However, the sector faces multiple challenges, including poor access to market information, limited access to extension services, disease outbreak and inefficient production systems (Olawuyi, and Raufu, (2012). Despite the potential of social media to enhance agricultural productivity and profitability, the extent and pattern of its usage among poultry farmers in Delta State remains unclear. More specifically, there is limited empirical understanding of the socio- economic factors such as age, educational level, income, farm size access to digital devices and internet connectivity may significantly affect how and why poultry farmers use social media. Existing studies have largely focused on general agricultural information and rural digital inclusion, often overlooking the unique needs and behaviour of poultry farmers. Moreover, variation in social media usage across different socio-economic backgrounds in Delta State have not been thoroughly investigated. Without this understanding, intentions aimed at improving digital literacy and social media engagement among poultry farmers may not achieve their intended outcomes. Therefore, this study seeks to fill this critical knowledge gap by identifying and analyzing the socio-economic determinant s influencing social economic determinants influencing social media usage among poultry farmers in the study area. By so doing, the research aims to provide evidence-based recommendations for policy makers, extension workers and digital service providers to enhance the role of social media in agricultural development and rural livelihood improvement.

Despite its potential, the adoption of social media in poultry management and marketing is not uniform across the farming population. Several studies have shown that adoption patterns are strongly influenced by socioeconomic characteristics such as age, gender, education level, income, farm size, access to ICT infrastructure, and digital literacy (Audu *et al.*, 2021; Asadu *et al.*, 2019). Younger and more educated farmers are more likely to adopt social media technologies due to their exposure and familiarity with digital tools. Similarly, farmers with higher incomes may have better access to smartphones and internet services, enabling them to leverage social media more effectively. In Delta Central, where digital penetration is growing but still faces infrastructural and socioeconomic barriers, understanding the specific factors influencing social media adoption is crucial for designing targeted interventions. While some poultry farmers in the region have fully integrated digital tools into their management systems, others remain reliant on traditional methods of information exchange, such as physical extension visits or local market rumors. This digital divide presents a challenge to inclusive agricultural development and underscores the need for empirical studies that identify which segments of the farming population are being left behind and why. Moreover, while existing literature has broadly examined ICT adoption in agriculture, there is a paucity of research that focuses specifically on social media use in poultry farming, especially within the Nigerian context. Most studies tend to generalize across crop and livestock subsectors, thereby overlooking the unique dynamics of poultry production — such as its sensitivity to real-time management decisions and its reliance on rapidly changing market signals (Adeyemo & Oke, 2020). The poultry sector's high turnover rate and vulnerability to disease outbreaks make timely and accurate information more critical than in other forms of agriculture, hence the strategic importance of social media as a tool. Additionally, understanding the socioeconomic drivers of adoption is vital for agricultural policymakers, extension workers, and development practitioners. By identifying the key factors that facilitate or hinder the use of social media among poultry farmers, stakeholders can develop more inclusive digital strategies. These may include targeted training for older or less-educated farmers, subsidies for internet data packages, or the development of localized content in indigenous languages. Effective digital inclusion strategies would not only enhance productivity and profitability but also contribute to broader goals of rural development, food security, and poverty reduction.

In light of the above, this study seeks to examine the factors influencing socioeconomic determinants of social media adoption for poultry management and marketing in the Delta Central Agricultural Zone of Nigeria. Specifically, it will analyze how variables such as age, gender, education, income level, farm size, years of experience, and access to digital infrastructure influence the extent and manner in which poultry farmers use social media platforms. The findings will provide empirical evidence for tailoring digital agricultural interventions in the region and inform national policies on digital agriculture.

identify the types of social media platforms commonly used by poultry farmers for management and marketing activities in Delta Central Agricultural Zone. assess the level of adoption of social media among poultry farmers in the study area. To examine the relationship between selected socioeconomic characteristics (such as age, gender, education level, income, and farm size) and social media adoption for poultry management and marketing. To identify the key barriers and enabling factors influencing social media usage among poultry farmers in Delta Central Agricultural Zone.

Materials and Methods

Description of the study area

The study is carried out in the Delta Central Agricultural Zone of Delta State, located in the South-South geopolitical region of Nigeria. This agricultural zone is one of the most vibrant in the state in terms of farming and livestock production, particularly poultry farming. The Delta Central zone encompasses a number of Local Government Areas (LGAs), including Ughelli North, Ughelli South, Ethiope West, Ethiope East, Udu, and Sapele. Each of these LGAs contributes significantly to agricultural development in the region and has a growing number of poultry farmers engaged in both commercial and subsistence production. The choice of this zone is deliberate, as it represents a diverse socioeconomic and agricultural landscape of Delta State. The area is characterized by a mixture of rural and semi-urban communities, providing a rich context for exploring variations in access to technology, levels of education, income brackets, and farm sizes among poultry farmers. The semi-urban centers, such as Sapele and Ughelli, tend to have relatively better access to infrastructure, internet connectivity, and agricultural extension services, which could influence the level and manner of social media usage, (Ekokogbe et al 2025).

The prominence of poultry farming across the LGAs in Delta Central also makes the zone particularly suitable for this study. Many farmers in the area engage in small- to medium-scale poultry enterprises involving the rearing of broilers and layers, which form a critical part of the local food supply and livelihood strategies. The presence of organized poultry farmer associations, cooperatives, and extension offices further enhances the viability of the zone for structured data collection. Overall, Delta Central Agricultural Zone provides a strategic and contextually rich environment for investigating the socioeconomic determinants influencing social media usage among poultry farmers.

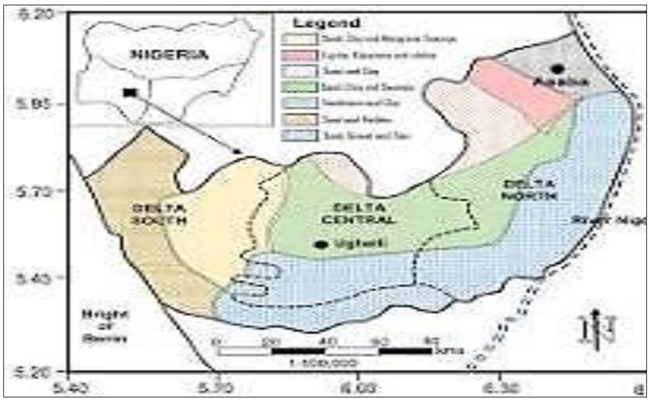

Fig 1: Map of the study area

Sampling techniques/Size

A multi-stage sampling technique is used to select respondents for the study. Stage one involve a purposive selection of LGAs Out of the LGAs in Delta Central, three LGAs (Ughelli North, Ethiope East, and Sapele) are purposively selected based on their high concentration of poultry farmers and accessibility. The second stage involves the purposive selection of communities were poultry farms were prevalent. The third and the final stage involve a simple random selection of individual poultry farmers using the Taro Yamane's formula (1967);

n=N1+N(e)2n = {N}{1 + N(e)^2}n=1+N(e)2N

Where:

- *n* = sample size
- *N* = population size (estimated at 600 registered poultry farmers)
- *e* = level of precision (0.05)

n=6001+600(0.05)2=6001+1.5=6002.5=240n = \frac{600}{1 + 600(0.05)^2} = \frac{600}{1 + 1.5} = \frac{600}{2.5} = 240n=1+600(0.05)2600=1+1.5600 =2.5600=240

Thus, a total of 240 poultry farmers are selected for the study.

Data Analysis

Collected data are coded and analyzed using Statistical Package for the Social Sciences (SPSS) version 25. Descriptive statistics such as frequencies, percentages, means, and standard deviations are used to summarize the data. Inferential statistics such as Binary logistic regression

Results and Discussion

Table 1: Socio-Economic Characteristics of Poultry Farmers (n=240)

Characteristic	Categories	Frequency (n)	Percentage (%)	Mean/Median
Age				42years
	18-30 years	36	15.0	
	31-45 years	102	42.5	
	46-60 years	78	32.5	
	>60 years	24	10.0	
Gender	Male	168	70.0	
	Female	72	30.0	
Education Level	No formal education	18	7.5	
	Primary education	42	17.5	
	Secondary education	96	40.0	
	Tertiary education	84	35.0	
Farm Experience	<5 years	54	22.5	8 years
	5-10 years	108	45.0	
	>10 years	78	32.5	
Household Size	1-3 members	60	25.0	5 members
	4-6 members	132	55.0	
	≥7 members	48	20.0	
Income Level	<₦50,000/month	72	30.0	₦85,000
	₦50,000-₦100,000/month	96	40.0	
	>₦100,000/month	72	30.0	

Source: Field Survey 2025

Table 1 provides descriptive statistics on age, gender, household size, educational attainment, farming experience, and income levels of poultry farmers in Delta Central Agricultural Zone. These indicators reveal critical patterns that help assess the demographic profile, livelihood structures, and potential constraints faced by farmers in the study area.

Age Distribution of Poultry Farmers

The age distribution of the respondents shows that the majority fall within the age bracket of 31-45 years (42.5%), followed by 46-60 years (32.5%), 18-30 years (15.0%), and over 60 years (10.0%). The mean age is 42 years, indicating a relatively youthful and active population engaged in poultry farming. This is significant because youth involvement in agriculture is essential for ensuring innovation, adaptability to new technologies, and long-term sustainability of the sector. These findings are in line with those of Adeniran and Afolabi (2019), who reported that the active working population (aged 31-50 years) dominate poultry farming in Ogun State. Similarly, Adebayo and Adeola (2020) found that the average age of poultry farmers in Oyo State was 40.6 years, reinforcing the idea that poultry farming tends to attract younger to middle-aged individuals. This age composition has implications for training and extension services. Young and middle-aged farmers are more likely to be receptive to modern poultry practices, including biosecurity measures, vaccination protocols, and digital marketing tools.

Gender of Respondents

A significant majority of the respondents were male (70.0%), while females constituted 30.0%. This gender imbalance highlights the male-dominated nature of poultry farming in the Delta Central zone. Although poultry farming is often considered a gender-neutral agricultural enterprise, cultural and socio-economic dynamics in Southern Nigeria may still limit women's participation, especially in commercial poultry operations that require higher capital investment. Nonetheless, the 30% female representation is notable and suggests a growing interest among women in agribusiness. In corroboration, Oladejo and Sanusi (2018) noted that female participation in poultry farming in South-West Nigeria stood at 33%, indicating a rising trend of gender inclusiveness. Empowering women through access to land, finance, and training could further enhance their contributions to food security and family welfare.

Household Size

The distribution of household size shows that 55.0% of respondents have 4-6 household members, 25.0% have 1-3 members, and 20.0% have 7 or more. This distribution reflects a typical Nigerian rural household structure, where extended family systems are common. The implication is that labor availability may not be a significant constraint for most poultry farmers in this region, as larger households can provide family labor, reducing labor costs and increasing productivity. These results align with those of Nnadi and Akwiwu (2019), who observed that household sizes of 4-6 persons were predominant among poultry farmers in Imo State. Adequate family labor supply contributes positively to farm management and daily operations, especially in semi-intensive and backyard poultry production systems.

Educational Attainment

Education plays a pivotal role in agricultural productivity and decision-making. The results show that 40.0% of respondents had secondary education, followed closely by 35.0% with tertiary education. Only 17.5% had primary education, while 7.5% had no formal education. This finding suggests a relatively literate farming population, with 75% of the farmers having at least a secondary education. This level of education is beneficial for adopting improved poultry technologies, maintaining farm records, and accessing information about market trends, government programs, and veterinary services. Comparable findings were reported by Olalekun *et al.* (2011) in their study on poultry farming in Kaduna State, where over 70% of farmers had secondary or tertiary education. A well-educated farmer population is more likely to respond to extension services and adopt biosecurity measures, ultimately improving poultry health and productivity.

Farm Experience

Farming experience is a vital indicator of skill, risk management, and enterprise sustainability. In the study, 45.0% of respondents had 5-10 years of poultry farming experience, 32.5% had more than 10 years, while 22.5% were relatively new entrants with less than five years of experience. This distribution suggests that poultry farming is not just a temporary livelihood strategy but a relatively stable occupation for many. The substantial proportion of experienced farmers indicates the maturity of the poultry sector in Delta Central. These farmers are more likely to have developed coping mechanisms against common challenges such as disease outbreaks, feed price fluctuations, and marketing constraints. The findings correspond with those of Emokaro and Ekunwe (2020), who found that most poultry farmers in Edo State had between 5 and 15 years of farming experience. Experience plays a crucial role in determining enterprise profitability and resilience, especially in contexts with limited formal support systems.

Monthly Income Level

Income levels are an essential indicator of economic viability. About 40.0% of the respondents earn between ₦50,000-₦100,000 per month from poultry farming, while 30.0% each fall into the categories of below ₦50,000 and above ₦100,000. This income distribution suggests that a considerable proportion of poultry farmers in the zone generate moderate income, which supports livelihood security. However, the 30% earning below ₦50,000 may be indicative of subsistence or small-scale operations, possibly due to high input costs, poor market access, or low productivity.

Table 2: Binary Logistic Regression Analysis of Socio-Economic Factors Influencing Social Media Usage Among Poultry Farmers (n=240)

Predictor Variable	β Coefficient	S.E.	Wald χ^2	Odds Ratio [Exp(B)]	p-value
Age (Years)	-0.12**	0.04	8.17	0.89	0.004
Gender (Male=1)	0.68*	0.31	4.82	1.97	0.028
Education Level			21.34***		<0.001
• Primary	-	-	-	1.00	-
• Secondary	0.92***	0.28	10.79	2.51	0.001
• Tertiary	1.85***	0.35	27.91	6.36	<0.001
Monthly Income (₦'000)	0.003**	0.001	6.25	1.003	0.012
Farm Size (No. of Birds)	0.002*	0.001	3.96	1.002	0.046
Access to Extension	1.42***	0.33	18.56	4.14	<0.001
Constant	-3.27***		20.61	0.04	<0.001

Model Summary Statistics

- Nagelkerke R^2: 0.48
- Hosmer-Lemeshow Test: χ^2=7.32, p=0.50 (Good fit)
- Overall Prediction Accuracy: 82.3%
- ROC AUC: 0.86 (Excellent discrimination)

The result presented in Table 4.2 provides a comprehensive overview of the socio-economic factors influencing social media usage among poultry farmers using binary logistic regression analysis. The dependent variable is binary—whether a poultry farmer uses social media (1 = Yes, 0 = No). The analysis helps to determine which characteristics significantly predict the likelihood of social media usage.

Age: The coefficient for age is negative and statistically significant (β = -0.12, p = 0.004), suggesting that as age increases, the likelihood of using social media decreases. The odds ratio of 0.89 indicates that for each additional year in age, the odds of using social media decrease by 11%. This suggests that older poultry farmers are less likely to use social media platforms for their faming activities compared to younger farmers. This finding is consistent with the study by Ali *et al.* (2020), who reported that younger farmers in Pakistan were significantly more likely to use mobile phones and social media for agricultural activities.

Gender: The gender variable (coded as Male = 1) has a positive and significant influence on social media use (β = 0.68, p = 0.028). The odds ratio of 1.97 means that male poultry farmers are 97% more likely to use social media than female poultry farmers, holding all other factors constant. This indicates that being male significantly increases the odds of using social media for poultry farming purposes compared to being female. This may reflect gender disparities in technology access, digital literacy, or cultural roles. Chikaire *et al.* (2016) also found similar patterns in rural Nigeria, noting that male farmers had more exposure and access to digital platforms compared to female farmers.

Education Level: Education emerged as a strong predictor, with both secondary (β = 0.92, p = 0.001) and tertiary education (β = 1.85, p < 0.001) having significant positive effects compared to the reference category (primary education). Farmers with tertiary education were over six times more likely (OR = 6.36) to use social media. This underscores the role of literacy and digital competence in facilitating the adoption of modern communication tools. This result supports findings from Owolabi and Adebayo (2019**)**, who emphasized the positive correlation between education level and ICT adoption among farmers in South-Western Nigeria.

Monthly Income: Monthly income also significantly influences social media use (β = 0.003, p = 0.012). Although the coefficient appears small, it is meaningful: higher-income farmers are more likely to afford smartphones and data, which are prerequisites for social media usage. This confirms the observations of Effiong and Okon (2020), who linked income levels with access to digital tools in small-scale agribusinesses.

Farm Size: Farm size measured by the number of birds also positively influences social media usage (β = 0.002, p = 0.046). Larger-scale farmers may rely more on digital platforms for marketing, customer engagement, and information access. This is in line with Mtega *et al.* (2016), who found that larger farm enterprises were more inclined to integrate ICTs into their operations due to their complexity and wider market reach.

Access to Extension Services: The strongest predictor in the model is access to extension services (β = 1.42, p < 0.001), with an odds ratio of 4.14. This suggests that farmers who receive support from agricultural extension agents are four times more likely to use social media. Extension workers likely encourage or introduce farmers to digital tools, thus bridging the technology gap. Ayanwale and Alimi (2020) similarly reported that extension agents often act as catalysts in promoting ICT adoption among rural farmers. The model fits the data well, as evidenced by a Hosmer-Lemeshow test p-value of 0.50, indicating no significant deviation between observed and predicted outcomes. The Nagelkerke R^2 value of 0.48 shows that about 48% of the variability in social media usage is explained by the model.

Table 3: Constraints faced by poultry farmers in utilization of social media (N = 240)

Constraints faced by poultry farmers	Mean	Std.	Remark
Limited Access to Technology	3.68	0.55	Important
Digital Literacy	3.57	0.51	Important
Cost of Internet and Devices,	3.73	0.44	Important
Language Barriers	1.93	0.57	Not Important
Poor Infrastructure, including erratic power supply	3.42	1.60	Important
Access to devices	3.92	2.25	Important
Cultural and social norms	1.94	0.70	Not Important
Limited content relevance	3.19	2.29	Important
Trust issues and credibility	3.72	1.54	Important
Privacy and security concerns	3.79	0.41	Important

Source: Field Survey 2025. Bench Mark = 2.5

The results from the study indicate that poultry farmers in the sample (N=240) face several significant constraints in utilizing social media, with all but two of the listed challenges scoring above the benchmark of 2.5, indicating their importance. The most critical constraint identified was access to devices (Mean = 3.92), revealing that many farmers lack essential tools such as smartphones and computers. This finding aligns with Olanrewaju *et al.* (2023), who reported that limited access to digital devices severely hampers digital adoption in Nigeria's poultry sector. Privacy and security concerns (Mean = 3.79) and cost of internet and devices (Mean = 3.73) were also rated highly, indicating that economic and cybersecurity issues are critical deterrents. These align with Bolarin *et al.* (2021), who emphasized that affordability and data privacy fears discourage smallholder farmers from engaging with online platforms. Similarly, digital literacy (Mean = 3.57) and limited access to technology (Mean = 3.68) highlight knowledge and infrastructural gaps, consistent with findings by Agwu and Murray (2015) who noted that farmers often struggle to utilize ICT due to lack of training and exposure.

Other notable constraints include trust issues and credibility (Mean = 3.72) and limited content relevance (Mean = 3.19), suggesting that misinformation and irrelevant content hinder engagement. This finding is supported by Oladipo and Olaniyi (2020), who observed that while farmers had access to mobile phones, they often doubted the reliability of agricultural information shared on social media. Conversely, language barriers (Mean = 1.93) and cultural and social norms (Mean = 1.94) were considered not important, implying that linguistic or cultural factors may no longer significantly impede social media use, possibly due to increased digital exposure and literacy efforts in rural communities.

Conclusion and recommendation

The study on the socioeconomic determinants influencing social media usage among poultry farmers in Delta Central Agricultural Zone, Nigeria, has provided insightful findings on how various social and economic characteristics affect the adoption and utilization of digital platforms in poultry farming practices. Social media has emerged as a powerful tool for information sharing, market access, networking, and agricultural extension, especially in the face of traditional extension service limitations. This research reveals that factors such as age, level of education, farming experience, income level, farm size, and access to smartphones or internet-enabled devices significantly influence the frequency and purpose of social media usage among poultry farmers. The findings show that younger, more educated farmers with larger farm sizes and higher income levels are more likely to engage with social media platforms like WhatsApp, Facebook, and YouTube. These platforms are mainly used to access information on poultry disease management, feed formulation, veterinary services, market prices, and customer engagement. Furthermore, the study highlights that social media bridges information gaps, encourages peer learning, and provides a low-cost means of improving productivity and profitability in poultry production. However, barriers such as poor internet connectivity, high data costs, limited digital skills, and skepticism about online information were also identified. These constraints underscore the need for targeted policy interventions and digital literacy programs to improve access and effective use of social media tools among less-privileged or older farmers.

The study recommended that

1. Policy makers should prioritize the development of affordable and reliable internet connectivity in rural and semi-urban farming communities
2. Government Promote Digital Literacy and Capacity Building Programs
3. Extension agents should be trained and equipped to use social media platforms for disseminating timely and accurate agricultural information.
4. To enhance innovation in poultry farming, government policies should encourage youth participation by supporting agritech startups and digital platforms that connect farmers to veterinary services, input suppliers, and markets.

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