



SOCIOECONOMIC PROFILE OF LIVESTOCK FARMERS AND ITS EFFECT ON UTILIZATION OF DIGITAL MARKETING TOOLS IN TARABA STATE, NIGERIA

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ABSTRACT

The study examined the socioeconomic profile of livestock farmers and its effects on utilization of digital marketing tools in Taraba State, Nigeria. It specifically examined the socioeconomic characteristics of livestock farmers, factors influencing the use of digital marketing tools and the constraints to the utilization of digital marketing tools among livestock farmers. A multi-stage sampling procedure was employed to select 384 respondents for this study. Data were collected primarily through questionnaires administered to livestock farmers. The data collected were analyzed using descriptive statistics and logistic regression. The findings of the study revealed that, average age of livestock farmers was 41.4 years, with a significant majority being male (78%) and possessing tertiary education (76.0%). The livestock farmers had an average of 12.4 years of experience in livestock farming and 50% were members of a cooperative. The mean household size was eight members, and 50% of respondents had access to extension services. Reliance on personal savings was a common source of credit. Factors influencing the use of digital marketing tools included ease of use, age, extension contact, farm size, and sex. The main constraints were the high cost of digital devices, inadequate training or support on digital marketing, and fears of online fraud or scams. The study recommended that Taraba State Ministry of Agriculture and Food Security should facilitate the provision of affordable digital devices to livestock farmers through subsidy programmes, leasing schemes, or partnerships with telecommunications companies.

Keywords: Socioeconomic, Profile, Livestock, Farmers, Digital, Marketing.

INTRODUCTION

Livestock domestication and management have been integral to human societies for thousands of years, fundamentally transforming economic, social, and cultural landscapes (Damania & Joshi, 2025). Initially serving subsistence needs, livestock has evolved into a vital sector within modern agriculture, driven by technological innovations and shifting consumer preferences (Achmad *et al.*, 2022). The growth of the livestock industry has been especially notable during the 20th and 21st centuries, fueled by urbanization, population growth, and globalization trends (Sheng *et al.*, 2020). The sector's contributions extend beyond economic output, encompassing food security, employment, cultural significance, and environmental challenges. Globally, the livestock sector is a significant contributor to the economy, accounting for about 40% of the agricultural economy according to the Food and Agriculture Organization (Pandey & Upadhyay, 2022). It provides livelihoods for millions, especially in developing countries, and supplies essential nutrients through meat, milk, and eggs (Banda & Tanganyika, 2021). The sector's cultural and social importance further underscores its role in community identity and tradition, with specific animals linked to rituals and social status (Adams *et al.*, 2021). However, the sector faces environmental concerns such as greenhouse gas emissions, deforestation, and pollution, necessitating sustainable practices (Mehrabi *et al.*, 2020; Williams, 2024). In Nigeria, the livestock industry is among Africa's largest, comprising cattle, sheep, goats, poultry, and pigs, and plays a crucial role in rural livelihoods, food security, and economic development (Gavrilova, 2020). The country's livestock marketing system is characterized by a mix of traditional and modern practices, with much of the trade taking place in informal markets relying on local traders and decentralized systems (Daniel, 2023; Mumba *et al.*, 2024). Despite the sector's potential for growth driven by rising demand for protein-rich foods many farmers face obstacles such as limited market access, inadequate information, and resource constraints. Marketing activities in livestock farming encompass a broad spectrum, including market research, product differentiation, branding, and pricing



strategies (Bondarenko *et al.*, 2024). Understanding market trends and consumer preferences enables farmers to adapt and remain competitive (Moran & Blair, 2021). Digital technologies have started to revolutionize livestock marketing, offering tools like social media, e-commerce, and mobile applications that facilitate direct engagement with consumers, streamline sales, and enhance market data collection (Morepje *et al.*, 2024; Sharma *et al.*, 2022). These digital marketing tools encompass strategies such as online marketplaces, social media promotions, and data analytics, which can increase market reach, improve transparency, and empower farmers to make informed decisions (Sechele *et al.*, 2024; Li & Zhang, 2024). In Nigeria, particularly in Taraba State, livestock farmers rear animals such as cattle, goats, sheep, and poultry, which are vital for subsistence and commercial purposes. However, despite their economic significance, farmers often encounter challenges in accessing markets, information, and technological resources. The advent of digital technology presents opportunities to overcome these barriers by enabling farmers to reach broader markets, access real-time information, and improve their bargaining power through digital marketing platforms (Muoghalu & Akanwa, 2021; Sassi, 2024).

Despite the promising potential of digital marketing tools, adoption remains limited among Nigerian livestock farmers, partly due to socioeconomic factors such as age, education, farm size, and access to extension services (Ali & Xia, 2022). Younger, educated farmers with better access to resources tend to adopt new technologies more readily, while barriers like high costs, limited digital literacy, and infrastructural deficits hinder broader adoption. Understanding these socioeconomic profiles and their influence on digital marketing utilization is crucial for designing effective interventions that promote inclusive technological adoption. In light of these issues, this study focuses on the socioeconomic profile of livestock farmers in Taraba State and investigates how these factors influence the utilization of digital marketing tools. Given the increasing importance of digital solutions in modern agriculture, insights from this research will aid policymakers, development agencies, and stakeholders in creating targeted strategies to enhance digital literacy, improve resource access, and foster sustainable growth in Nigeria's livestock sector. Ultimately, this research aims to bridge the gap between technological potential and actual adoption, contributing to the development of a more efficient, inclusive, and sustainable livestock marketing system in Taraba State and beyond.

METHODOLOGY

Study Area

This study was conducted in Taraba State. The state is located between latitude 6°30'N and 9°36' N and longitude 9° 10'E and 11°50'E of the Greenwich meridian. It has a landmass area of 60,291.82km² with a population of 2,294,800 (NPC, 2006) and a projected 3,785,747 people as at 2025 based on 3.2% annual population growth of the State. Taraba State is bordered by Bauchi and Gombe State to the North-East, Adamawa State to the East and by Plateau State to the North- West. It is bordered to the West by Nasarawa and Benue States. It shares an international boundary with the republic of Cameroon in the South-Western part as shown in figure 2. The state has a mean annual rainfall of about 1000-1500mm with a temperature of 15°C to 38°C depending on the season and locality within the state. The dry and rainy seasons common to the tropical regions are also the dominant climatic features found in the State. The rainy season start by early April and last till October while the dry season start by November and ends in March. It has undulating topography with complex group of mountains and hills. The soil type ranges from sandy to sandy – loamy which makes it rural inhabitants mostly farmers (Emmanuel *et al.*, 2024). The state is endowed with many rivers and streams and large water bodies. This natural environment with its seasonal climate, varied topography, and abundant water resources creates favorable conditions for diverse livestock production systems (Oruonye *et al.*, 2024).

The state comprises three distinct vegetation zones: the Guinea Savannah in the southern parts such as Wukari, Takum, and Donga LGAs, characterized by forests and tall grasses; the Sudan Savannah in areas like Jalingo and Lau, marked by short grasses interspersed with short trees; and the semi-temperate zone on the Mambilla Plateau, featuring grasses with tall trees. Crops and livestock production are the major sources of employment for the inhabitants, with rice, maize, yam, and cassava



being the predominant staples of most peasant families. The majorities of LGAs are connected to the national grid and have access to modern means of communication, which support the growth of digital marketing. Institutions such as banks and savings and learning centers provide essential financial and educational services, including mobile banking, digital literacy, and capacity building for local entrepreneurs and farmers. Educational institutions further facilitate digital skills development, enabling smallholder farmers and traders to leverage online platforms for marketing their products. Additionally, the presence of markets and trading centres, combined with telecommunications infrastructure, creates opportunities for digital marketing of agricultural produce, crafts, and other local products. The diverse ethnic composition, including groups like the Jukum, Hausa-Fulani, Mumuye, Yandang, Wurkum, Kuteb, Tiv, and Mambila also allows for culturally tailored digital marketing strategies, reaching various communities effectively.

The population of the study consists of all farmers engaged in the rearing of cattle, goats, sheep, poultry, and pigs in Taraba State, Nigeria.

Sampling Procedure

The study employed a multi-stage and snowball sampling procedure to select respondents. In the first stage, all the four agricultural zones in the state were used for the study. In the second stage, simple random sampling techniques were used to select two blocks from the six blocks in Zone I, three blocks from the four blocks in Zones II and III, and one block in Zone IV. The selected blocks included Ardo-Kola and Lau in Zone I, Bali, Gassol, and Wukari in Zone II, Donga, Takum, and Kurmi in Zone III, and Sardauna in Zone IV.

In the third stage, two cells were selected from each chosen block using simple random sampling. These included Jauro Yinu and Iware in Ardo-Kola, Jimlari and Mayo-Lope in Lau, Garba-Chede and Daka in Bali, Nannai and Tella in Gassol, Rafinkada and Bantaje in Wukari, Mararraba and Tor-Damisa in Donga, Tampa and Rogo in Takum, and Abong and Kpwola in Kurmi, as well as Gembu I and Nguroji in Sardauna.

In the fourth stage, Stratified sampling was employed to ensure representative inclusion of farmers across different livestock categories. The population was first divided into strata based on the type of livestock i.e. cattle, goats, sheep, poultry, and pigs. Within each stratum, farmers were selected using snowball sampling techniques. Initial respondents was identified through local leaders and extension agents, and these farmers were asked to refer other farmers involved in livestock rearing who met the study criteria. This process continued until the desired number of respondents per cell was reached.

The total sample size for this study was determined using Cochran's formula for sample size calculation, considering an estimated proportion of livestock farmers engaged in digital marketing activities, a 95% confidence level, and a 5% margin of error. A total of 384 respondents were used for this study, rounded to the nearest whole number, based on the calculations.

Data Collection and Analysis

The data for this study were collected from primary sources through the administration of structured questionnaires.

Frequency, percentage, mean and standard deviation were used to analyse the socioeconomics characteristic of the livestock farmer and the constraints to the utilization of digital marketing tools. Logistic regression was used to determine the factors influencing the use of digital marketing tools.

RESULTS AND DISCUSSION

Socioeconomics Characteristic of the Livestock Farmers

The results in Table 1 showed that, the average age of livestock farmers was 41.4 years. This implies that livestock farming is typically undertaken by experienced, stable, and mature individuals, which may enhance their capacity to adopt new technologies such as digital marketing tools. This finding aligns with Sennuga *et al.* (2024), who observed that many smallholder livestock farmers in Nasarawa State, Nigeria, are young and actively engaged in farming, making them more likely to adopt ICT solutions.



Furthermore, Table 1 showed that the majority of respondents were male (78 %). This implies that men predominantly participate in livestock farming, indicating that the sector is largely male-dominated. This trend could be attributed to cultural, social, or economic factors that favour male involvement in agriculture and livestock activities. The study concurs with Agboola *et al.* (2020), who reported that men in Osun State are more actively involved in dairy farming, reflecting gender differences.

Additionally, the result revealed that most livestock farmers had a tertiary education (76.0%), followed by those with secondary education (18.0%) and non-formal education (3.9%). This implies that the majority of respondents are well-educated, which could positively influence their ability to utilize digital marketing tools effectively. This finding supports Ezekiel *et al.* (2024), who found that higher education levels improve poultry farmers' technical efficiency in Oyo State, Nigeria. Sennuga *et al.* (2024) also noted that educated farmers are more likely to use ICT effectively to access market information, thereby enhancing their market participation.

The average years of farming experience among respondents was 12.4 years (Table 1). This shows that most farmers possess substantial experience in livestock farming, which may influence their familiarity with farming practices and openness to adopting new tools like digital marketing platforms. This is consistent with Ayeni *et al.* (2023), who found that experienced Nigerian farmers have strong traditional livestock skills that influence their willingness to adopt new technologies such as digital marketing.

Moreover, Table 1 showed that 50.0% of livestock farmers are members of cooperative societies. This indicates that many farmers participate in cooperatives, which can improve their access to resources and support. According to Idris and Tsagem (2024), cooperative societies facilitate access to vital information and support, thereby increasing acceptance of digital marketing. Membership also fosters trust and collective engagement, which can encourage the adoption of new technologies. Ubandoma *et al.* (2025) further emphasize that these societies play a significant role in rural development and serve as effective channels for training farmers in digital literacy.

The average household size among livestock farmers is eight persons (Table 1). This suggests that larger households provide more labor for farming activities, thereby enhancing livestock care and productivity. This finding aligns with Ojumu *et al.* (2023), who observed similar household sizes among rural livestock households in Southwest Nigeria, noting that larger households contribute to increased labour availability, productivity, and management efficiency.

Table 1 also showed that, 67.2% of livestock farmers rely on personal savings for credit, indicating a strong dependence on self-financing. This reflects limited access to external credit, which could hinder their ability to invest in digital marketing tools. Additionally, 14.3% obtained credit from friends and family, highlighting the importance of social capital. Smaller proportions accessed credit through cooperative societies (13.3%) and commercial banks (5.2%), possibly due to barriers such as lack of collateral, financial literacy, or awareness. This finding is similar to Elum and Obiajunwa (2022), who reported that small-scale poultry farmers primarily obtained credit from relatives, friends, savings, and traders, with limited use of formal banking services.

Furthermore, Table 1 indicates that most respondents (28.1%) are engaged in poultry farming, reflecting its popularity and significance as a livelihood. This is likely due to its low capital requirements and quick returns. The finding aligns with Obialo (2024), who noted that poultry farmers in Ibadan favour poultry farming because of its accessibility, affordability, and rapid profitability, which encourages widespread adoption.

Lastly, the result in table 1 shows that 43.0% of respondents are small-scale livestock farmers, 44.5% are medium-scale, and 12.5% are large-scale farmers. This distribution suggests that most livestock farming in the area is conducted on small to medium scales, likely influenced by local farming practices, resource availability, land, and economic factors. This observation is consistent with Sennuga (2024), who found that smallholder farmers constitute the majority of livestock producers in Nigeria due to limited land, capital, and access to technology. Ibeagha-Awemu *et al.* (2025) also reported that Nigeria's livestock sector is predominantly composed of small- and medium-scale farms, with large-



scale operations being less common but more capital-intensive. They noted that farm size is affected by land tenure systems, credit access, and extension services, which tend to favor smallholders.

Table 1: Socioeconomics Characteristic of the Livestock Farmers

Variable	Frequency	Percentage	Mean	Std. Deviation
Age of the Respondents			41.4	10.28
Sex of the Respondents				
Male	298	77.6		
Female	86	22.4		
Educational Level of Respondents				
Non-formal education	15	3.9		
Secondary education	69	18.0		
Tertiary education	292	76.0		
Other	8	2.1		
Farming Experience			12.4	8.27
Membership of cooperative				
Yes	192	50.0		
Household Size			8	3.34
Access to extension services				
Yes	192	50.0		
Sources of credit				
Personal savings	258	67.2		
Friends and families	55	14.3		
Commercial banks	20	5.2		
Cooperatives Societies	51	13.3		
Type of Livestock Farmed				
Cattle	93	24.2		
Goats	48	12.5		
Sheep	59	15.4		
Poultry	108	28.1		
Pigs	76	19.8		
Farm Size				
Small-scale	165	43.0		
Medium-scale	171	44.5		
Large-scale	48	12.5		

Source: Field Survey, 2025

Factors Influencing the Use of Digital Marketing Tools

The results from the logistic regression as shown in Table 2, highlighted several important factors that influenced livestock farmers' use of digital marketing tools. The model fits the data well, with about 56% to 68% of the differences in tool use explained by the factors studied. It is also statistically significant (p -value < 0.001), meaning the results are reliable. Plus, the model correctly predicts farmers' behaviour in 82% of cases, underscoring its predictive robustness.

The result showed that, the coefficient of ease of use of digital tools was positive and significant at 1% level of probability. This means that as digital tools become easier to use, livestock farmers are more likely to use them. Making digital marketing tools more user-friendly can increase their usage, leading to better marketing, improved market access, and higher income. This study agrees with Patil *et al.* (2025), who found that user-friendly digital platforms increase farmer engagement, market access, and income. Simplifying digital tools is especially important for farmers with limited technical skills. Additionally, Triatmojo *et al.* (2024) state that perceived ease of use is key in the Technology Acceptance Model, as users are more likely to adopt technologies they find simple and user-friendly.

The coefficient for age is negative and statistically significant ($\beta = -0.087$). This implies that as age increases, the likelihood of using digital marketing tools decreases. Older livestock farmers are less likely to use digital marketing tools than younger farmers, possibly due to family and business



responsibilities that limit their usage. This aligns with Olaitan *et al.* (2025), who found younger farmers are more open to digital innovations due to greater familiarity and adaptability. Older farmers may face challenges like lower digital literacy, reducing their use of mobile apps. Similarly, Ahmad *et al.* (2025) reported a significant negative relationship between age and social media use for livelihood activities in North West Nigeria.

Extension contact greatly increases the likelihood of digital tool use ($\beta = 1.210$). Farmers who regularly interact with extension agents are more likely to adopt digital marketing tools because they receive training, guidance, and updates that boost their confidence and understanding. Extension agents help reduce uncertainties and promote the benefits of digital technology in farming. Amoussouhoui *et al.* (2024) note that extension services help bridge information gaps and boost farmers' confidence in using digital platforms, with frequent contact increasing usage. Ogunsola *et al.* (2022) highlight that regular interaction with extension agents and digital channels improves farmers' familiarity and comfort with digital tools.

Access to wider markets significantly influences the use of digital marketing tools ($\beta = 1.149$). This implies that farmers who see these tools as effective for reaching more customers are more likely to use them, as they believe digital platforms can help expand their sales and income. Increasing farmers' awareness of these market benefits can further encourage digital tool adoption and improve livestock marketing. This finding supports Oseni (2025), who states digital trading platforms help Nigerian farmers' access international markets and expand exports. Similarly, Awotunde *et al.* (2025) show that mobile technology improves market information flow, boosting productivity and market access for poultry farmers.

Farm size significantly influences digital marketing tool use ($\beta = 0.623$), with larger farm operators more likely to use these tools due to greater resources and access. This finding aligns with Ekokogbe *et al.* (2023), who found farm size and socioeconomic factors influence social media use among Nigerian poultry farmers. Asanwana *et al.* (2024) also noted that farm characteristics affect farmers' willingness to adopt digital tools, impacting resources and engagement. Additionally, Olanrewaju *et al.* (2025) emphasized that larger poultry farms are more likely to use digital tools to improve productivity and market access.

Sex was significantly negatively associated with digital tool usage among farmers ($\beta = -1.588$), indicating that male farmers are more likely to use digital marketing tools than females, due to factors like access to resources, digital literacy, and socio-cultural influences. Women may face societal restrictions or fewer opportunities to engage with such technologies. This finding aligns with Olutumise (2026), who emphasizes gender's significant role in online marketing's impact on fish marketers in Southwest Nigeria, indicating gender disparities influence digital engagement. Similarly, Ekeke *et al.* (2021) found that gender, resources, and digital literacy are key factors affecting social media use among poultry farmers in Anambra State.

Table 2: Factors Influencing the Use of Digital Marketing Tools

Variable	B	Std. Error	Wald	Df	p-value	Odds Ratio (Exp(B))
Educational Level	0.251	0.218	1.324	1	0.250	1.285
Ease of use	1.911	0.573	11.103	1	0.001***	6.757
Age	-0.087	0.025	11.853	1	0.001***	0.917
Extension Contact	1.210	0.312	15.089	1	0.000***	3.355
Cost-effectiveness	-0.181	0.415	0.191	1	0.662	0.834
Access to wider markets	1.149	0.453	6.430	1	0.011**	3.155
Farm Size	0.623	0.274	5.194	1	0.023**	1.865
Farming Experience	0.074	0.030	6.148	1	0.013**	1.076
Sex	-1.588	0.348	20.835	1	0.000***	0.204
Constant	0.976	1.325	0.542	1	0.461	2.654
-2 Log Likelihood	314.079					
Cox & Snell R Square	0.556					
Nagelkerke R Square	0.681					
Model Chi-square (Likelihood Ratio)	(p < 0.001)					
Overall Classification Accuracy	82.0%					

Source: Field Survey, 2025

Significance levels: ***P ≤ 0.01, ** P ≤ 0.05

Constraints to the Utilization of Digital Marketing Tools

The result as presented in Table 3 showed that, the main constraints to livestock farmers' use of digital marketing tools, in order of severity, are high costs of digital devices (\bar{x} = 4.34), which many farmers see as a major barrier due to affordability issues. Insufficient training or support (\bar{x} = 4.2) is the second obstacle, as lack of knowledge hampers effective use of digital platforms. Fear of online scams or fraud (\bar{x} = 4.14) is the third concern, as security worries discourage full engagement. This finding aligns with studies by Sennuga *et al.* (2024), Ukwuaba *et al.* (2023), Lilian and Ezike (2024), and Afolayan *et al.* (2024), which highlight that financial constraints and lack of digital skills significantly hinder farmers' access to and use of ICTs for marketing and market information. High costs of digital tools and limited training reduce farmers' ability to adopt digital solutions, suggesting that improving affordability and digital literacy could enhance their engagement with digital marketing platforms

Table 3: Constraints to the Utilization of Digital Marketing Tools

Constraints	Mean	Std. Deviation
High cost of digital devices (smartphones, computers)	4.34	1.12
Insufficient training or support on digital marketing.	4.22	1.05
Fear of online fraud or scams.	4.14	.953
Lack of trust in digital platforms.	4.10	1.09
Lack of credit or financial resources to invest in digital tools.	4.08	1.17
Language barriers or lack of local language options.	4.07	1.20
Lack of technical support or customer service.	3.96	1.30
Poor internet connectivity in my area	3.95	1.17
Uncertainty about the effectiveness of digital marketing.	3.87	1.136
Cultural resistance to adopting new marketing methods.	3.83	1.23
Limited digital literacy among farmers.	3.79	1.35
Time constraints or busy schedules.	3.78	1.23
Regulatory or policy restrictions.	3.77	1.22
Lack of knowledge or skills in digital marketing	3.73	1.45
Limited access to smartphones or computers.	3.70	1.29
Limited awareness of available digital marketing tools.	3.37	1.64

Source: Field Survey, 2025



CONCLUSION AND RECOMMENDATION

Based on the findings of this study, it can be concluded that younger, educated farmers who were part of cooperatives and have regular extension contact were more likely to use digital marketing tools. Factors such as ease of use, market access, and sex influence utilization, while age has a negative effect.

Based on the finding of this study, the following recommendation were made;

- i. Taraba State Ministry of Agriculture and Food Security should facilitate the provision of affordable digital devices (smartphones, tablets, and computers) to livestock farmers through subsidy programs, leasing schemes, or partnerships with telecommunications companies. This is important because reducing the cost of devices will increase their usage among livestock farmers, enabling more to access digital marketing platforms, improve their digital literacy, and expand their markets for greater income.
- ii. The National Agency for Science and Technology Infrastructure (NASENI) and Nigeria Communications Commission (NCC) should develop and promote digital literacy programs tailored for livestock farmers, focusing on the use of social media, mobile applications, and online marketplaces, it will lead to increased digital competency among livestock farmers. This enhanced digital literacy will enable them to effectively utilize digital platforms for marketing, accessing information, and networking, ultimately boosting their market reach, productivity, and income.

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