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EFFECTIVENESS OF DIGITAL COMMUNICATION TOOLS IN DISSEMINATING IMPROVED PRODUCTION INFORMATION AMONG POULTRY FARMERS IN AKWA IBOM STATE, NIGERIA

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ABSTRACT

The study examined the effectiveness of digital communication tools (DCTs)in disseminating improved poultry production information among poultry farmers in Akwa Ibom State, Nigeria. A multistage sampling technique was used to select 180 poultry farmers from three agricultural zones of the state. Primary data were collected using a structured questionnaire and analyzed with descriptive statistics and correlation analysis. The results showed that mobile phones were the most frequently used communication tool ($\bar{x}$ = 2.63), followed by radio ($\bar{x}$ = 2.28) and smartphones ($\bar{x}$ = 2.22). In terms of perceived effectiveness, respondents indicated a high perception of the effectiveness of DCTs. They perceived digital communication tools to improve access to disease prevention information ($\bar{x}$ = 3.18), facilitate easier access to improved poultry production information ($\bar{x}$ = 3.17), increase awareness of modern poultry production techniques ($\bar{x}$ = 3.08), and be effective in disseminating improved poultry production technologies ($\bar{x}$ = 3.08). The study concluded that digital communication tools, particularly mobile phones and smartphones, are effective in disseminating improved poultry production information in the study area. It recommended enhancing farmers' digital skills and strengthening digital agricultural extension services to improve poultry productivity in Akwa Ibom State.

***Keywords*: Digital communication tools, Effectiveness, Dissemination of improved information, Poultry farmers**

INTRODUCTION

Advances in information and communication technologies have transformed agricultural communication by introducing digital platforms capable of delivering information rapidly, interactively, and across wider geographical areas (Nwankwo *et al*. 2024). Digital communication refers to the exchange of information through electronic technologies and internet-enabled platforms that facilitate communication among individuals and groups (Nwachukwu, 2023). In agricultural extension, digital communication tools such as mobile phones, short message services, social media platforms, internet-based applications, radio-digital interfaces, computers, and online discussion forums have become increasingly important for disseminating agricultural information to farmers (Jat *et al*., 2021). The rapid diffusion of these technologies has created new opportunities for improving communication efficiency, expanding extension outreach, and strengthening knowledge-sharing networks among agricultural stakeholders.

Evidence indicates that livestock and poultry farmers are among the most active users of information and communication technologies for accessing agricultural information (Ifeoma *et al*., 2023). Mobile-based information delivery systems enhance the timeliness and accessibility of extension messages, while internet-enabled platforms provide access to extensive repositories of technical knowledge and advisory services (Buabeng *et al*., 2016). Furthermore, social networking platforms have demonstrated considerable potential for knowledge creation, information exchange, and farmer-to-farmer learning (Nain *et al*., 2019). Platforms such as Facebook, WhatsApp, YouTube, and web-based search engines have become increasingly important channels through which farmers obtain production information, interact with experts, and share practical experiences (Okorie *et al*., 2021).

The productivity and sustainability of poultry enterprises depend substantially on farmers' access to accurate, timely, and relevant production information. Information relating to disease prevention, vaccination schedules, feeding practices, housing management, biosecurity measures, and marketing opportunities is essential for improving poultry performance and reducing production losses (Okorie *et al*., 2022). However, the effectiveness of agricultural information depends not only on its availability but also on the communication channels through which it is disseminated to farmers.

The emergence of digital communication technologies has created alternative pathways for agricultural information dissemination. Mobile phones, social media platforms, internet services, and other digital tools have improved opportunities for accessing agricultural knowledge and interacting with extension service providers (Nwankwo *et al*., 2024). Nevertheless, the mere availability of digital technologies does not guarantee their effective utilization. Variations in digital literacy, internet accessibility, affordability of devices and data services, electricity supply, and technological competence may influence farmers' ability to access and utilize digital communication tools effectively.

Although digital communication tools are increasingly integrated into agricultural extension systems, empirical evidence regarding their effectiveness among poultry farmers in Akwa Ibom State remains limited. Existing studies have largely focused on general agricultural information systems, crop production, or extension service delivery, with relatively little attention given to poultry farmers as users of digital communication technologies. Furthermore, there is inadequate

information on the specific digital communication tools employed by poultry farmers, their level of access and utilization, and the extent to which these tools effectively disseminate improved poultry production information within the state.
This knowledge gap limits the capacity of extension organizations, policymakers, and development agencies to design evidence-based digital extension interventions tailored to the information needs of poultry farmers.

The objectives of the study were to examine the digital communication tools used by poultry farmers in disseminating improved poultry production information in the study areas; assess the level of access to and utilization of digital communication tools among poultry farmers in Akwa Ibom State; and determine the perceived effectiveness of digital communication tools in disseminating improved poultry production information among poultry farmers in the study area.

METHODOLOGY

The study was conducted in Akwa Ibom State, located in the southern part of Nigeria. The State has a projected population of 5,671,223 persons for 2017 at a growth rate of 3.46% per year (AKSG, 2014). The state has 31 Local Government Areas, which are divided into six agricultural zones, namely: Uyo, Etinan, Eket, Oron, Abak, and Ikot Ekpene. The people are mainly farmers, civil servants, and traders. A multistage sampling procedure was employed for the selection of respondents for this study. In the first stage, three (3) agricultural zones were purposively selected from the six agricultural zones in the state, namely Uyo, Ikot Ekpene, and Abak. This was due to a high concentration of poultry farmers, according to the data from the Akwa Ibom State Ministry of Agriculture. Furthermore, 3 blocks were selected randomly from each of the selected agricultural zones. This gave a total of 9 blocks. In the second stage, 2 cells were randomly chosen from each of the nine blocks. This led to the selection of 18 cells. In the final stage, ten poultry farmers were selected from each sampled cell using a systematic random sampling technique, which gave a total of 180 poultry farmers that were sampled for the study.

Primary data were collected using a well-structured questionnaire administered to the respondents. Descriptive statistics were used to describe the types of digital communication tools used by poultryfarmers.
Extent of utilization was analyzed using a three-point Likert scale of Utilized (3), Rarely Utilized (2), and Not Utilized (1). The mean cut-off point was: 2.00. A mean score of 2.00 or above indicated utilization, while a mean score below 2.00 indicated non-utilization. Perception of effectiveness was measured using a four-point Likert-type scale of Very Effective (4), Effective (3), Less Effective (2), and Not Effective (1). The mean cut-off point was 2.50. Mean values equal to or greater than 2.50 were interpreted as effective, while values below 2.50 were interpreted as not effective. The hypothesis of the study was tested using Pearson Product-Moment Correlation (PPMC) analysis to examine the relationship between the level of utilization of digital communication tools and the effectiveness of dissemination of improved poultry production information among the poultry farmers.

RESULTS AND DISCUSSION

Digital tools utilized by poultry farmers in disseminating improved production information

The findings revealed that mobile phones, through calls and SMS, were the most widely used digital communication tool, with 75% of respondents indicating that they used them to access improved production information. This indicates that mobile phones serve as the primary channel for information access among poultry farmers in the study area. The high level of use may be attributed to their affordability, portability, ease of operation, and widespread availability. Mobile phones enable farmers to communicate directly with extension agents, veterinarians, and fellow farmers, thereby facilitating access to timely and relevant poultry production information.

Table 1: Digital Tools Used by Poultry Farmers in Disseminating Improved Production Information (n = 180)

Digital Communication Tools	Yes (%)	No (%)
Mobile Phones (SMS, calls)	135(75.0)	45(25.0)
Smart Phones (With Internet)	81(45.0)	99(55.0)
Radio	99(55.0)	81(45.0)
Television	57(31.67)	123(68.33)
WhatsApp	54(30.0)	126(70.0)
Facebook	30(16.67)	150(83.33)
YouTube	36(20.0)	144(80.0)
Agric. Mobile Apps	51(28.33)	129(71.67)
Internet Browsing (Search Engines, AI)	42(23.33)	148(76.67)
Online Video Conferencing (Zoom, etc.)	30(16.67)	150(83.33)

Source: Field Survey, 2026

Radio was the second most used communication tool, with 55% of respondents indicating that they used it to access poultry production information. Radio remains an important source of agricultural information due to its wide coverage, affordability, and ability to reach farmers in rural areas. Radio programmes provide information on improved production practices, disease management, and market opportunities. Nirmala (2018) noted that community radio serves the diverse needs of the country's national, local, and rural populations due to its adaptability, ability to provide timely information, and significant potential. Smartphones with internet access were used by 45% of respondents. This indicates moderate utilization of smartphones for accessing poultry production information. Smartphones provide access to internet-based platforms, including social media, mobile applications, and online advisory services. The moderate level of use suggests that while some farmers are benefiting from digital information services, a substantial proportion are not yet utilizing these tools. This may be due to constraints such as the cost of smartphones, internet access challenges, and limited digital literacy. Television was used by only 31.67% of respondents. This indicates low utilization of television as a source of poultry production information. Although television has the advantage of providing visual demonstrations, its use may be limited by poor electricity supply, the cost of ownership, and the limited availability of relevant agricultural programmes. This aligns with the view of Sonam *et al.* (2018), who noted that television is moderately effective in their efforts to obtain agricultural information. Digital communication tools

such as WhatsApp, Facebook, YouTube, Agricultural Mobile Apps, Search engines, and Video conferencing tools fell below the benchmark. This implied that they were not often used by poultry farmers as a tool for disseminating poultry production information. Ifeoma *et al.* (2023) reported that mobile phones, televisions, radios, computers, and internet access were the major tools utilized by poultry farmers in accessing information. Michael *et al.* (2022) reported that internet services and radios were prominent information sources among poultry farmers, while Kalio (2020) reported mobile phones, televisions, radios, and computers as the most used by farmers, and Ajah and Okorie (2016) reported that farmers mostly used mobile phones, radio, and television to access information. Okorie *et al.* (2022) reported that the internet was utilized by poultry farmers for information needs. Ekerete and Ekanem (2015) reported that farmers utilized radio, mobile phones, television, and laptops for information needs. Ifeanyi-Obi and Corbon (2023) reported that WhatsApp was commonly utilized. Onyeneke *et al.* (2016) reported that computers, the internet, radio, television, and mobile phones were used by poultry farmers.

Level of Utilization of Digital Communication Tools for Improved Production Information

The result showed that mobile phones ranked first with the highest mean score of 2.63, with 75% of respondents indicating that they utilized them, 13.33% rarely utilized them, and only 11.67% did not utilize them. This finding indicates that mobile phones were the most extensively utilized digital communication tool among poultry farmers in the study area. The high level of utilization may be attributed to their affordability, accessibility, ease of operation, and widespread ownership. Mobile phones enable farmers to communicate directly with extension agents, veterinarians, input suppliers, and other farmers, thereby facilitating access to timely and relevant poultry production information.

Table 2: Level of Utilization of Digital Communication Tools for Improved Production Information in the Study Area (n = 180)

Digital Communication Tools	Utilized (%)	Rarely utilized (%)	Not utilized (%)	Mean	Rank
Mobile Phones (SMS, calls)	135(75.0)	24(13.33)	21(11.67)	2.63	1st
Radio	99(55.0)	33(18.33)	48(26.67)	2.28	2nd
Smart Phones (With Internet)	81(45.0)	57(31.67)	42(23.33)	2.22	3rd
Television	57(31.67)	75(41.67)	48(26.67)	2.05	4th
WhatsApp	54(30.0)	60(33.33)	66(36.67)	1.93	5th
Internet Browsing (Search Engines, AI)	42(23.33)	72(40.0)	66(36.67)	1.87	6th
Agric. Mobile Apps	51(28.33)	45(25.0)	84(46.67)	1.82	7th
Facebook	30(16.67)	84(46.67)	66(36.67)	1.8	8th
YouTube	36(20.0)	45(25.0)	99(55.0)	1.65	9th
Online Video Conferencing (Zoom, etc.)	30(16.67)	48(26.67)	102(56.67)	1.60	10th

Source: Field survey, 2026

Radio ranked second with a mean score of 2.28, with 55% of respondents utilizing it, 18.33% rarely utilizing it, and 26.67% not utilizing it. This indicates that radio remains an important source of poultry production information. Radio is widely accessible, relatively inexpensive, and capable of reaching a large number of farmers simultaneously. Its continued utilization suggests that it remains an effective medium for disseminating agricultural information, particularly in areas where access to internet-based technologies is limited. Smartphones ranked third with a mean score of 2.22, with 45% utilizing them and 31.67% rarely utilizing them. This indicates moderate utilization of smartphones for accessing improved poultry production information. Smartphones provide access to internet-based platforms such as social media, mobile applications, and online advisory services. However, the relatively high proportion of respondents who rarely or did not utilize smartphones suggests that factors such as the cost of internet data, limited digital skills, and lack of training may restrict their effective use. This limits the potential of smartphones as tools for disseminating poultry production information.

Television ranked fourth with a mean score of 2.05, with 31.67% utilizing it and 41.67% rarely utilizing it. This indicates low to moderate utilization. Although television has the capacity to provide visual demonstrations that can enhance farmers' understanding of poultry production practices, its utilization may be limited by irregular electricity supply, the cost of television ownership, and lack of access to relevant agricultural programmes.

WhatsApp ranked fifth with a mean score of 1.93, with only 30.0% utilizing it and 36.67% not utilizing it. This indicates relatively low utilization of WhatsApp for accessing poultry production information. WhatsApp has strong potential as an agricultural extension tool because it allows instant communication, sharing of multimedia information, and group interaction. However, its utilization is constrained by smartphone ownership, internet access, and digital literacy. Internet browsing through search engines and artificial intelligence tools ranked sixth with a mean score of 1.87, with only 23.33% utilizing it and 36.67% not utilizing it. This indicates low utilization of online information search platforms. This finding may suggest that many poultry farmers are not actively searching for poultry production information online. This may be due to a lack of digital skills, internet access limitations, and a lack of awareness of available online resources. This finding agrees with the report of the Food and Agriculture Organization (2018), which noted that limited digital literacy restricts farmers' use of digital agricultural information services in developing countries.

Agricultural mobile applications ranked seventh with a mean score of 1.82, with 46.67% of respondents not utilizing them. This indicates low utilization of specialized agricultural mobile applications designed to provide advisory services and technical information. This suggests that the potential of agricultural mobile applications to improve poultry production information dissemination is not fully realized in the study area. Facebook ranked eighth with a mean score of 1.80, indicating very low utilization. Although Facebook has the potential to facilitate information sharing and farmer interaction, most poultry farmers are not utilizing it for production information. This may be due to limited awareness, lack of digital skills, and limited access to internet-enabled devices.

YouTube ranked ninth with a mean score of 1.65, with more than half of the respondents not utilizing it. This indicates very low utilization of video-based learning platforms. This limits farmers' access to visual demonstrations of poultry production practices, which could enhance learning and adoption of improved technologies. Online video conferencing platforms such as Zoom ranked tenth with the lowest mean score of 1.60, with 56.67% of respondents not utilizing them. This indicates extremely low utilization of online training platforms. This suggests that virtual extension services and online training programmes are not yet widely adopted among poultry farmers in the study area.

The findings indicate that poultry farmers mainly utilize basic communication tools such as mobile phones and radio for accessing improved poultry production information. These tools are more effective because they are widely available, affordable, and easy to use. Kalio (2020) and Ekerete and Ekanem (2015) reported that mobile phones, televisions, radios, and computers were mostly utilized by poultry farmers. Ajah and Okorie (2016) reported that mobile phones, radios, and television were extensively utilized by farmers. Ifeanyi-Obi and Corbon (2023) reported that WhatsApp was commonly utilized. Onyeneke *et al.* (2016) reported that computers, the internet, radio, television, and mobile phones were used by poultry farmers. Effiong *et al.* (2024) reported that WhatsApp was extensively used by farmers in Akwa Ibom State.

Perception of Effectiveness of Digital Communication Tools for Improved Production Information Technology Use

The results in Tables 3 and 4 present poultry farmers' perception of the effectiveness of various digital communication tools for disseminating improved production information in Akwa Ibom State, Nigeria. The findings indicated that all the perception statements presented to the poultry farmers scored above the benchmark score of 2.5. Among the perception indicators assessed, the statement that digital communication tools improved access to disease prevention and control information ranked first ($\bar{x}$ = 3.18). This suggests that poultry farmers perceived digital communication platforms as highly effective in facilitating access to poultry health management information.

Table 3: Perception of Effectiveness of Digital Communication Tools for Improved Production Information Technology Utilization in the Study Area (n = 180)

S/N	Perception Statements	Very Effective (%)	Effective (%)	Less Effective (%)	Not Effective (%)	Mean	Rank
1	Digital communication tools improve access to disease prevention and control information	87 (48.33)	54 (30.00)	24 (13.33)	15 (8.33)	3.18	1st
2	Digital communication tools make access to improved poultry production information easier	84 (46.67)	57 (31.67)	24 (13.33)	15 (8.33)	3.17	2nd
3	Digital communication tools improve my awareness of modern poultry production techniques	75 (41.67)	60 (33.33)	27 (15.00)	18 (10.00)	3.08	3rd
4	Digital communication tools are effective in disseminating improved poultry production technologies	78 (43.33)	57 (31.67)	27 (15.00)	18 (10.00)	3.08	3rd
5	Digital communication tools provide poultry production information in a timely manner	72 (40.00)	60 (33.33)	30 (16.67)	18 (10.00)	3.03	5th
6	Digital communication tools help me make better poultry management decisions	69 (38.33)	63 (35.00)	30 (16.67)	18 (10.00)	3.02	6th

Source: Field survey, 2026; Benchmark: 2.5

Table 4: Perception of Effectiveness of Digital Communication Tools for Improved Production Information Technology Utilization in the Study Area (n = 180)

	Information received through digital						
7	communication tools is relevant to my poultry farming needs	66 (36.67)	60 (33.33)	33 (18.33)	21 (11.67)	2.95	7th
8	Information disseminated through digital communication tools is accurate and reliable	63 (35.00)	66 (36.67)	30 (16.67)	21 (11.67)	2.95	7th
9	Information received through digital connunication. tools is easy to understand	60 (33.33)	69 (38.33)	30 (16.67)	21 (11.67)	2.93	9th
10	Digital communication tools improve communication between poultry farmers and extension agents	63 (35.00)	63 (35.00)	33 (18.33)	21 (11.67)	2.93	9th
11	Digital communication tools encourage the adoption of improved poultry production technologies	60 (33.33)	66 (36.67)	33 (18.33)	21 (11.67)	2.92	11th
12	Digital communication tools allow farmers to receive feedback and clarification when needed	57 (31.67)	66 (36.67)	36 (20.00)	21 (11.67)	2.88	12th

Source: Field survey, 2026
Benchmark: 2.5

The perception that digital communication tools make access to improved poultry production information easier ranked second ($\bar{x}$ = 3.17), indicating that poultry farmers believed that digital platforms simplify the process of obtaining production-related information.

The statements that digital communication tools improved my awareness of modern poultry production techniques and that digital communication tools are effective in disseminating improved poultry production technologies both ranked third ($\bar{x}$ = 3.08), respectively. This implies that digital platforms are moderately effective in exposing farmers to innovation and facilitating technology transfer. The closeness of their mean values also suggests consistency in respondents' views regarding the role of digital tools in knowledge enhancement and technology dissemination. The perception that digital communication tools provide poultry production information in a timely manner ranked fifth ($\bar{x}$ = 3.03). This indicates that timeliness is considered a major aspect of poultry production, especially in the areas of information in health management. This implies that poultry farmers perceive digital tools as useful for receiving prompt and timely production information.

The perception that information received through digital tools was relevant to my poultry farming needs, and that information disseminated through digital communication tools was accurate and reliable, both ranked seventh ($\bar{x}$ = 2.95), respectively, indicating an increasing reliance on digital communication tools for information on poultry production as opposed to traditional methods of information dissemination.

Similarly, the perceptions that information received through digital communication tools is easy to understand and that digital communication tools improve communication between poultry farmers and extension agents both ranked ninth ($\bar{x}$ = 2.93), respectively. This implies that digital communication tools are bridging the extension gap and can be harnessed by extension agents to reach poultry farmers in a timely and effective manner. The least mean score of 2.88 was recorded for the statement that digital communication tools allow farmers to receive feedback and clarification when needed, ranking twelfth. This indicates that feedback mechanisms within digital communication systems are perceived as the weakest aspect. It suggests that while information dissemination was relatively effective, interactive communication and real-time clarification remained limited.

Test of Hypothesis

The result revealed a strong positive and highly significant relationship between the level of utilization of digital communication tools and their effectiveness in disseminating improved poultry production information ($r = 0.697$; $p = 0.000$). This implied that increased utilization of digital communication tools was associated with higher effectiveness in accessing, receiving, and applying improved poultry production information. The magnitude of the correlation coefficient further indicated a strong association between the two variables.

Since the p-value is less than 0.01, the hypothesis is rejected. Therefore, there is a significant positive relationship between the level of utilization of digital communication tools and the effectiveness of the dissemination of improved poultry production information among poultry farmers in Akwa Ibom State.

Table 5: Correlation result of the relationship effectiveness of dissemination of DCTs and the level of utilization of DCTs

Characteristics	Correlation	p-value
Effectiveness of Dissemination of Improved Poultry Production	1.000	
Level of Utilization	0.697	0.000***

Source: Computed Using STATA 15, 2026

Note: *asterisks ***, **, * represents significance at 1%, 5%, and 10% level*

CONCLUSION

The findings of this study demonstrate that digital communication tools were already embedded in the information environment of poultry farmers, but their effectiveness was shaped by accessibility, capacity, trust, and relevance. The widespread use of mobile phones showed that digital communication has become a practical and immediate tool for supporting poultry production activities.

RECOMMENDATIONS

Agricultural information disseminated through digital platforms should be simplified, translated into local languages where necessary, and tailored specifically to poultry production to improve its usefulness and application.

Digital platforms that allow direct interaction between poultry farmers and extension agents, veterinarians, and agricultural experts should be strengthened to improve understanding and encourage the practical use of information.

Since mobile phones are the most widely used digital communication tool among poultry farmers, extension agents should prioritize the use of mobile phone calls and SMS messages to disseminate poultry production information effectively.

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