

## Technological Capabilities of Extension Personnel in the Use of Social Media for Agricultural Service Delivery in Southeast, Nigeria

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**ABSTRACT:** The study assessed the technological capabilities of extension personnel in the use of social media for agricultural service delivery in Southeast, Nigeria. One hundred and eighty-nine agricultural extension professionals constituted the population for the study. Data was analyzed using percentages, charts and mean scores. Results show that 97.4% of the agricultural extension professionals indicated that they use whatsapp for agricultural extension service delivery while 93.2% of the respondents indicated that they use facebook for service delivery. Data show that 95.3% of the respondents indicated that they use social media in linking with their colleagues. Entries show that 93.2% of the respondents indicated that they linked with Agricultural Development Programme (ADP) while 92.6% of the extension professionals linked with farmers group. Result show that 84.2% of the respondents had linkage with the ministry of agriculture. Also, 60.5% of the respondents interacted with the ministry of agriculture between 1-10 times while 54.2% of the respondents interacted with the ADP between 5-10 times in the last one year. Government should therefore ensure improved job satisfaction for agricultural extension professionals possibly by increasing their remuneration and providing logistics that would help them to keep in touch with other institutions for latest research results for the interest of the farmers.

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### INTRODUCTION

The agricultural sector in Nigeria has been dwindling in recent time due to numerous limitations, including poor infrastructure, poor linkage between agricultural professionals and farmers limited or no access to requisite agricultural information (Wasihun, 2022). The sector needs to be much more efficient and resilient to ensure food security especially amongst rural dwellers. Utilization of social media platforms in agricultural communication will not only help in establishing the needed linkages between major stakeholders but will also strengthen the few existing ones hence improving information and experience sharing in the sector. Social media hold much potential in this regard due to its connection with the internet.

The Internet makes it possible for individuals to connect, collaborate and share knowledge, information, document, photo, video, etc. continuously with anyone in the world. Furthermore, people are able to make use of social media platforms in order to increase range and richness of their networks, gather information and nowadays, increasingly organizations are finding ways of integrating social media into their business processes (Gaál et al, 2014). Social media have long been used in agriculture for facilitating communication among stakeholders, especially extension personnel (Iwuchukwu, 2019). It has greatly impacted development by making people more informed and aware. The advent of social media as a medium of communication has connected individuals throughout the world (Ortiz-Ospina, 2019). It enables people to connect and interact not only with individuals but with many other people, speaking concurrently regardless of their locations. Some of the most popular social media platforms are twitter, linkedIn, whatsApp, youtube and facebook etc, which gives people the ability to easily connect with friends, relatives, and co-workers including agricultural extension professionals (Ayinde, 2020).

Agricultural extension system in Nigeria introduces new agricultural techniques and idea to the farmers for incorporating them into their farming practices in order to improve their standard of living. The extension workers, therefore, not only inform farmers to improve their lands and prepare a cropping pattern, but also motivate them to use improved agricultural implements and adopt the modern agricultural practices according to their socioeconomic status. Extension workers do not only disseminate research findings to the farmers but they also take the farmers problems and help formulates activities designed to meet the ever increasing problems

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facing farmers. Therefore, extension professionals are involved in dissemination of valuable information to their clients but findings show that the extension professionals are still facing some challenges such as time limitations in visiting farmers, low extension personnel to farmer's ratio, and lack of communication skills (Akinagbe, et al., 2017). This may be premised on the extension professionals little or no technological capabilities (skillset) to use social media platforms as against the continuous use of interpersonal means of communication.

Extension professionals are expected to be using new agricultural communication technologies to ensure coverage of maximum number of farmers rather than using the conventional method (face - face) for dissemination of information and regular communication. These changes in information landscape are made possible through advances in technologies. Consequently, it is pertinent to build capacities to make efficient use of modern technologies. Technological capability (TC) involves technical efforts to master new technologies, adapt them to local conditions, and then improve and exploit them (Ayavoo, 2019). These efforts include skills, knowledge and experience, institutional structures, and interaction networks (Ayavoo, 2019) which enable extension personnel to systematically help farmers through conscious communication of information in order to help them form sound opinions and make good decisions by analyzing their present and expected future situations, being aware of their problems and proffering solutions to their problems (Adeyanju & Akinwumi, 2015).

Based on this background, there is need to access the technological capacity of the extension personnel in the use of social media in southeast, Nigeria. Thus, the key questions are: what social media technologies are used by extension personnel for service delivery? What are the technological capabilities (investment, linkages, changes, and learning capabilities) possessed by extension personnel?

### **OBJECTIVE OF THE STUDY**

The overall purpose of the study is to access the technological capabilities of extension professionals in the use of social media in southeast, Nigeria. Specifically, the study sought to

- i. describe the social media technologies used by extension professionals for service delivery; and
- ii. examine the technological capabilities (linkage capabilities) of extension professionals.

### **METHODOLOGY**

The study was carried out in the southeast geopolitical zone of Nigeria. The zone is located between latitudes 04° 30'N and 07° 30'N and longitudes 06° 45'E and 08° 45'E. The area comprises the geographical location of the following States: Abia, Anambra, Ebonyi, Enugu, and Imo. It is bordered by Kogi and Benue States to the north, Cross River to the east and Delta to the west. The population for the study comprises the members of staff of the Department of Agricultural Extension University of Nigeria, Nsukka, Department of Federal University of Technology Owerri, and members of staff of the Department of Agricultural extension Nnamdi Azikiwe university Awka. Others include members of staff of the Department of Extension Federal Ministry of Agriculture in Imo State, Enugu State and Anambra State. Also, the zonal extension personnel (Zonal manager (ZM), Zonal Extension Officer (ZEO), Subject Matter Specialist (SMS), Block Extension Supervisors (BES), Block extension Agents (BEA) and Extension Agents (EAs)) in Enugu, Imo and Anambra States Agricultural Development Programme (ADP) all constituted the population for the study.

Ten (10) academic staff were randomly selected from the Department of Agricultural Extension, University of Nigeria while fifteen (15) academic staff each were randomly selected from the Department of Agricultural Extension, Federal University of Technology Owerri and the Department of Agricultural Extension, Nnamdi Azikiwe University Awka giving a total of forty (40) academic staff for the study. Similarly, ten (10) members of staff of the Department of Extension, Federal Ministry of Agriculture was randomly selected in Enugu, Imo and Anambra States giving a total of thirty (30) staff of the Department of Extension, Federal Ministry of Agriculture.

Multistage sampling technique was used in the selection of extension personnel at the zonal level as follows:

Stage one: from the six, four and three agricultural zones in Enugu, Anambra and Imo States respectively, two zones (Nsukka and Enugu-Ezike zones in Enugu State, Aguata and Awka zones in Anambra State and Owerri and Orlu zones in Imo State) each was purposively selected. The selection was based on the high number of extension personnel in the zones.

Stage two: from the total number (50) of extension personnel each (Nsukka and Enugu-Ezike zones) in Enugu State, (Aguata and Awka zones) Anambra state and (Owerri and Orlu zones) Imo State, proportionate sampling technique was used to select 80% of extension personnel in each of the zones giving a total of one hundred and twenty (120) extension personnel for the study. This gave a grand total of one hundred and ninety (190) respondents for the study. Data was collected using structured interview schedule. The age, number of years spent in school and experience of the respondents as extension professionals was measured in years.

The social media technologies used by the extension professionals for service delivery was measured by asking the respondents to tick yes or no from a list of social media technologies. Some of the technologies listed include; Facebook, YouTube, WhatsApp, telegram, Instagram, Twitter, blog, etc.

The use of social media enhances both formal and informal interaction and cooperation amongst individuals, therefore the

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technological capability (linkage capability) of the agricultural extension professionals was ascertained by asking the respondents to tick yes if their university/ministry/organization have interaction with agricultural extension professionals in other university/ministry/organization enhanced by the use of social media or no if they don't interact. Furthermore, the respondents were asked to indicate the number of institutions they have interacted with and the frequency (number of times) of linkage within the last one (1) year.

In obtaining data on possible strategies in enhancing extension professionals capabilities in the use of social for service delivery, a four (4) point Likert - type scale of strongly agree (SA) - 3, Agreed (A) - 2, disagreed (DA) - 1, and strongly Disagree (SD) -0 point was used. The values on the Likert-type scale were summed to get 6, which were later divided by 4, to get a mean score of 1.5. Any mean score higher or equal to 1.5 was regarded as a major strategy while mean scores lower than 1.5 was regarded as minor strategy. Some of the strategies listed include; user's enlightenment/awareness creation, availability of source of credit etc. Data on socio economic characteristics of the respondents and social media platforms used by the respondents were presented using frequency and percentage while data on linkage capability of the respondents and strategies in enhancing the use of social media by the respondents in service delivery was analyzed using mean score and standard deviation.

### RESULTS

#### Social media technologies used by extension professionals for service delivery

Data in Table 1 show that the majority (97.4%) of the agricultural extension professionals indicated that they use whatsapp for agricultural extension service delivery while 93.2% of the respondents indicated that they use facebook for service delivery. Similarly, 79.4% of the respondents indicated that they use email for service delivery while 56.3% indicated that they use youtube for extension service delivery. Table 1 also shows that 28.4% of the respondents indicated that they use Instagram, telegram (25.1%), and twitter (24.8%) for agricultural extension service delivery.

**Table 1: Social media technologies used by extension professionals for service delivery**

Variables	Percentages (%)
Facebook	93.2
YouTube	56.3
WhatsApp	97.4
Email	79.4
Instagram	28.4
Twitter	24.8
Telegram	25.2
Blog	13.7
Snapchat	4.7
Imo	4.7
LinkedIn	7.4
Skype	12.1

#### Technological capabilities (linkage capabilities) of extension professionals

##### Social media linkage

Entries in Table 2 show that 95.3% of the respondents indicated that they use social media in linking with their colleagues and in the delivery of agricultural extension services. Similarly, Greater proportion (54.7%) of the respondents indicated that they interacted with between 6-10 departments of agricultural extension while 36.3% of the extension professionals indicated that they interacted with between 1-5 agricultural extension departments (Table 2).

**Table 2: Technological capabilities (linkage capabilities) of extension professionals**

Variables	Percentages n=190
Use of social media in linking/interacting with colleagues	95.3
Number of institutions/department/organization the extension professionals interacted with in the last one year	
0	4.2
1-5	36.3
6-10	54.7
≥11	4.7

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### Linkage with Institutions

Data in Table 3 show that the majority (93.2%) of the respondents indicated that they have had interaction with Agricultural Development Programme (ADP), 92.6% of the extension professionals linked with farmers group while 87.4% of the respondents indicated that they interacted with research institutes'/agencies. On the other hand, 84.2% of the respondents had interaction with the ministry of agriculture, 69.5% of the extension professionals linked with financial institutions while 55.8% and 53.2% each of the respondents indicated that they interacted with non-governmental organizations and donor agencies.

**Table 3: Linkage with Institutions**

Links/Interactions	Percentage
Agricultural Development Programme (ADP)	93.2
Research institutes/Agencies	87.4
Non-governmental organizations	55.8
Farmer group	92.6
Ministry of Agriculture	84.2
Financial institutions	69.5
Donor Agencies	53.2

### Frequency of linkage with institutions'/organizations in the last one year

Table 4 shows that 54.2% of the respondents interacted with the ADP between 5-10 times while 14.7% of the respondents linked with ADP between 1-4 times. Also, 11.1% of the agricultural extension professionals indicated that they linked with the ADP 25 times and above. On the other hand, 47.9% of the respondents indicated that they interacted with research institutes between 5-10 times while 16.8% of the respondents indicated that they interacted with research institutes between 1-4 times. Similarly, about 12.6% of the respondents indicated that they had zero interaction with research institutes.

The majority (44.1%) of the respondents revealed that they had zero linkage with the non-governmental organizations (NGOs) while 31.1% of the agricultural extension professionals indicated that they interacted with the NGOs between 1-5 times (Table 4). Similarly, 13.7% of the respondents linked with the NGOs  $\geq 19$  times. The Table also show that 60.5% of the respondents interacted with the ministry of agriculture between 1-10 times while 15.8% of the respondents revealed that they had zero (0) interaction with the ministry of agriculture (Table 4).

Table 4 also show that 49.5% of the agricultural extension professionals had linkage with financial institutions between 1-10 times while 30.5% of the respondents revealed that they had zero (0) linkage with financial institutions. Also, 11.6% of the respondents had linked with financial institutions between 11-21 times. Greater proportion (46.8%) of the respondents indicated that they had zero (0) link with donor agencies while 38.4% of the respondents linked with donor agencies between 1-10 times.

**Table 4: Frequency of linkage with institution's/organizations in the last one year**

Frequency of linkage/Interaction	Percentage
Agricultural Development Programme (ADP)	
0	6.8
1-4	14.7
5-10	54.2
11-17	6.3
18-24	6.8
$\geq 25$	11.1
Research institutes/Agencies	
0	12.6
1-4	16.8
5-10	47.9
11-17	8.4
18-24	4.7
$\geq 25$	9.5
Non-governmental organizations	
0	44.2
1-5	31.1
6-11	4.7

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12-18	6.3
≥19	13.7
Farmer group	
0	7.4
1-10	71.6
11-21	11.1
≥22	10.0
Ministry of Agriculture	
0	15.8
1-10	60.5
11-21	13.2
≥22	10.5
Financial institutions	
0	30.5
1-10	49.5
11-21	11.6
≥22	8.4
Donor Agencies	
0	46.8
1-10	38.4
11-21	8.4
≥22	6.3

**DISCUSSION OF FINDINGS**

**Social media technologies used by extension professionals for service delivery**

Table 1 shows that greater proportion (97.4%) of the respondents use whatsapp, facebook (93.2%) and youtube for agricultural extension service delivery. It could be inferred that the use of facebook and whatsapp for agricultural extension service delivery is conspicuous among agricultural extension professionals in south east Nigeria and thus helps in prompt delivery of services to its clientele. This result could also imply that the extension professionals adopted the use of email in communicating with fellow professionals since it ensures fast delivery of messages to colleagues in the shortest possible time. Similarly, the prevalence of the use of youtube in extension service delivery could confirm the heterogeneity of agricultural extension audience since some clientele would prefer video recordings for easy assimilation of extension messages. This agrees with Ibe et al. (2023) whose findings unraveled the need for the adoption of more innovative ways of reaching out to clientele in an efficient and cost-effective way.

The use of Instagram, telegram and twitter was also revealed by the professionals (Table 1). It is safe to conclude that the extension professionals are well trained and accustomed with the use of technical social media tools such as twitter, Instagram and telegram. It is therefore sufficient to say that the use of social media tools in extension service delivery has put to an end, the challenges of using the traditional face to face medium of communication in agricultural extension service delivery (including limited access to knowledge in fast and efficient mannar) (Khan et al., 2020).

**Technological capabilities (linkage capabilities) of extension professionals**

**Social media linkage**

The study revealed that 95.3% of the respondents use social media in linking with their colleagues and in the delivery of agricultural extension services (Table 2). This suggests that the agricultural extension professionals are technologically inclined and as such has built the individual capacity of using different social media platforms for ease of information dissemination with fellow staff and farmers. This implies that social media can play an important role in filling the gap in communication between extension professionals and farmers. Thus, social media can be said to be a good avenue for knowledge acquisition on agriculture among farmers (Alhassan et al., 2023)

On the other hand, the majority (54.7%) of the extension professionals interacted with between 6-10 departments of agricultural extension (Table 2). This suggests the existence of strong linkage between agricultural extension professionals within the same agency and other institutions. The existence of such linkage may have been enhanced by the use of social media tools. The implication is that extension services can be made available using social media and this will enhance the rate of networking among stakeholders in agriculture and various groups of farmers and thus increases the rate of information flow (Ifeanyi and Agu, 2020).

**Linkage with Institutions**

The study revealed that a greater proportion of the respondents had linkage with the ADP, farmers group, research institutes, ministry

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of agriculture and financial institutions (Table 3). This implies that there is synergy between extension professionals, the ADP and research institutes in terms of agricultural information acquisition and dissemination. This synergy may have been enhanced by the use of social media tools which facilitates interaction and dissemination of agricultural extension service duties. It has been observed that the use of those social media tools by agricultural extension professionals has a greater impact on their target audience (Munthali et al., 2018). This could also suggest that several organizations have adopted the use of social media tools in their activities to attain the Information and Communication Technology for Development (ICT4D) development objectives and consequently improving interaction among stakeholders. An increase in the use of communication tools which cuts across every sector, such as health, education, financial, political, business as well as agriculture has been massively recorded (Owolabi and Yekinni, 2022).

### Frequency of linkage with institutions'/organizations in the last one year

Greater proportion (54.2%) of the respondents interacted with the ADP between 5-10 times while about half of the extension professionals interacted with research institutes between 5-10 times (Table 4). This could imply that although there is existence of a medium of communication between extension professionals and the ADP, there is however irregular contact with the ADP. This suggests that farmers who are the direct beneficiaries of the agricultural innovative research results through the programmes organized by the ADP overtime tends to be outdated in terms of ideas and practices and this often results to low agricultural productivity. This result supports the findings of Udoye, et al. (2024) which revealed that only 15.6% of poultry producers indicated that they have linkage with agricultural extension professionals'. Similarly, agricultural extension professionals in the study area engage in minimal collaboration with research institutes' thus, indicating that there is a gap between agricultural extension practitioners and research institutes. Similarly, 60.5% of the respondents interacted with the ministry of agriculture between 1-10 times (Table 4). The interaction existing between the extension professionals and the ministry of agriculture is not surprising since there is a department of agricultural extension in the ministry of agriculture which is saddled with the responsibility of promoting effective linkage between research and farmers. However, zero linkage was reported with the non-governmental organizations (NGOs). This suggests that farmers in the location would often have access to improved agricultural technologies geared towards sustainable agricultural development in south east Nigeria. It can be inferred that agricultural extension professionals in the area may be lacking necessary information aimed at helping them to better the life of the rural people since a greater proportion have no linkage with the NGOs. The NGOs play an intermediary role between the poor, the private sector and the state. They aim at providing the services the poor lacks and without doubts are instrumental for a successful agricultural extension service delivery. Consequently, the needs of the farmers may not be completely taken care of at the appropriate time.

Also, about half of the agricultural extension professionals had linkage with financial institutions between 1-10 times. This suggests that the respondents through their collaboration with financial institutions may be informed about good single digit interest loans which farmers could access and use for optimal agricultural productivity. More so, about half of the respondents indicated that they had zero (0) link with donor agencies (Table 4). This could infer that agricultural extension professionals in south east Nigeria are either not aware of available donor agencies that could support agricultural programmes which could help improve the livelihood of farmer or they lack the capacity on how to prepare proposals that could qualify them for such assistance possibly in the form of grants.

## CONCLUSION

The agricultural extension professionals in southeast Nigeria revealed that they use social media tools such as whatsapp, facebook and youtube for service delivery and linkage with their colleagues. Extension professionals have linkage with institutions such as Agricultural Development Programme, research institutes and the ministry of agriculture. However, the frequency of linkage/interaction between the ADP and research institutes was between five to ten times in the last one year, revealing low linkage with the agricultural extension professionals. There is urgent need by the government to review the activities of the extension professionals' in Nigeria vis-à-vis their remuneration, infrastructural provision and capacity building so as to encourage them to keep up with the task of linking with research institutions to access information and technologies that could help improve the livelihood of their clientele.

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