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Determinants of Social Media Usage for Networking among Agricultural Extension Professionals in Selected Organizations in Rivers State, Nigeria

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Abstract

The study identified the determinants of social media usage for networking among agricultural extension professionals in selected organizations in Rivers State, Nigeria. A multi-stage sampling procedure was employed to select 73 respondents. Percentages, mean, and linear regression were utilized to meet the study's objectives. Findings revealed that majority of the agricultural extension professionals (65.8%) were females, had at least an HND/B.Sc./B.Ed. degree (67.1%), with an average income of ₦213,262.00. Furthermore, the areas of usage of social media were mainly for Workshops, Seminars, and Trainings (97.3%), and the key determinants of social media usage identified were perceived usefulness ($\bar{x}$= 3.82). Socio-economic factors influencing social media usage include age, educational certificate, monthly income, years of experience, and membership of professional associations, all at a 5% level of significance. The study recommends that extension agencies and universities should organize seminars and training in social media usage for agricultural extension professionals to enhance their performance.

Keywords: Determinants, social media usage, agricultural extension workers

Introduction

Social media is defined as a set of internet-based applications that build on the conceptual and technological foundations of Web 2.0 and enable the creation and exchange of user-generated content (Alhassan *et al*., 2023). Over the past decade, the integration of digital technologies into agriculture, especially social media, has accelerated farm productivity and rural development. Governments worldwide have actively promoted the adoption of digital tools in agriculture, enhancing rural information infrastructure and reducing internet costs (Khan *et al*., 2022). The world is also experiencing significant developments in communication as a result of the rapid spread of information and technology via the Internet through various media such as smartphones, social media platforms, and electronic devices (Barbara, 2024). Social media is a valuable tool for delivering extension, given that communication is the core process by which agricultural extension achieves its purpose of education and behavioral change. It also acts as a mass mobilizer, enabling agricultural extension professionals to communicate with large audiences online and facilitates one-on-one conversations between extension professionals

and their clients. Social media helps rural communities participate more actively in agricultural development by facilitating two-way communication, enhancing stakeholder interaction, and improving the dissemination of agricultural innovations (Atser *et al*., 2022). There is a multiplication of social media networking tools available for connecting, networking, and collaboration among agricultural stakeholders. Some of these tools include: Facebook, WhatsApp, WeChat, QQ, Twitter, Pinterest, Blogs, YouTube, Instagram, wikis, Facebook messenger, Snap chat, LinkedIn, Microsoft Teams, Google Workspace, zoom, Skype, VIMEO, Research Gate (Arunkumar *et al, 2023*) and some attributes of these social media networking tools include: networking, connectivity, individual content creation, global connectivity/interactivity, free marketing, real-time communication, multimodal communication.

Extension is an educational endeavor that seeks to help farmers develop a favorable attitude conducive to identifying and solving their problems themselves and adopting innovations. For many years in Nigeria, extension workers have disseminated information to farmers through traditional interpersonal communication, which has been faulted for being ineffective due to the high ratio of extension workers to farm families. The Food and Agriculture Organization (FAO) recommends an extension agent: farmer ratio of 1:500, whereas Nigeria has a ratio of 1:7500 (Ifeanyi-Obi & Corbon, 2023). To address this shortcoming, a more efficient and faster means of communication that will reach the majority of agricultural stakeholders at the same time became necessary. Using social media can provide information on agricultural extension with greater precision, speed, relevance, and higher quality. However, poor funding and scarcity of resources to support the few available extension agents in disseminating information constitute another major challenge in agricultural extension services.

The role social media play in improving the work efficiency of agricultural extension professionals, farmers, and other stakeholders in the sector cannot be overstated. It allows researchers to get feedback on research outcomes at their fingertips. It has broken down physical barriers to reaching one another and extended the reach of exposure from one-to-one to one–to-many and many-to-many instant dialogues. Social media helps transfer information to large audiences of professionals and farmers at the same time. From the foregoing, one can say that social media plays the role of boosting communication among a large number of people at the same time by making reports visible instantly. It can create awareness of new research reports among large audiences. Also, individual and organizational profiles can be created and made available to establish connections with interest groups, such as scientists, that can work together. According to Ahmad *et al*., (2023), Nigeria faces a big gap between extension agents and the farmer population. This has resulted in a severe shortage of food production and poor livelihoods for farmers, which has, over time, translated into hunger and famine in the country.

Furthermore, inadequate funding and scarcity of resources to support the few available agricultural extension professionals in disseminating information constitute another major challenge in agricultural extension services. Also, Iwuchukwu *et al*., (2023) identified the major challenges inhibiting the integration of social media into extension work as lack of access to social media by some target audiences and the complexity of using social media and other media accessories (smartphones and laptops). This study therefore addresses this gap by examining the determinants of social media usage for networking among agricultural extension professionals.

Specifically, the objectives of the study are to: describe the socioeconomic characteristics of agricultural extension professionals in the selected organizations; ascertain the areas of usage of social media tools; and identify the determinants of social media usage among the extension professionals. The study hypothesized that the socioeconomic characteristics of agricultural extension professionals do not have any significant influence on their use of social media for networking.

Methodology

The study was carried out in Rivers State. The state lies between latitude 4.75° N and longitude 6.83° E on the Greenwich Meridian (OyeIdeki, 2024). There is a strong presence of agricultural activities in the state, including fishing due to the state's rich water resources. Agricultural extension services in Rivers State are provided by the Rivers State Agricultural Development Programme (RISADP) in collaboration with the State Ministry of Agriculture, NGOs, Universities, and private-sector actors. Farmers were registered under these organizations for easier networking and transfer of technologies.

Multistage sampling technique was used in selecting the respondents for the study. The first stage involved a stratification of the organizations into three categories: those rendering Public Extension Services, those rendering Private Extension Services, and those handling Research (Universities). In the second stage, five organizations were purposively selected based on the availability of agricultural extension professionals working in the organizations and these included: Rivers State Ministry of Agriculture and Rivers State Agricultural Development Programme (Public Extension Service), Green River Project of Agip Oil Company (Private Extension Service), Rivers State University and University of Port Harcourt (Universities) which were grouped under agricultural zones. The third stage involved the use of purposive sampling to select all the agricultural extension professionals working in the selected organizations, which gave rise to a sample size of seventy-three agricultural extension professionals. Data were collected using a questionnaire and analyzed using percentages, mean scores, and linear regression.

Following Starbuck (2023), the functional form of the linear regression model is specified as follows

$$Y=a+b_1X_1+ b_2X_2+ b_3X_3+ b_4X_4 +b_5X_5+ b_6X_6 + b_7X_7 + b_8X_8 + b_9X_{9\,+}\, e$$

Where:

Y= Social media use by extension professionals
X= independent variables (where i goes from 1-9)
e = error term
a= Constant
b1– bn= Coefficient of independent variables
Where
X_1 = Gender (Male=1, Female= 0);
X_2 = Age of extension professionals (years);
X_3= Marital status;
X_4 = Level of education (years);
X_5 = Monthly income (Naira);
X_6 = Household size of professionals (persons);
X_7= Years of experience (years)
$X_{8\,=}$ Membership of professional associations;
X_9 = Awareness of social media.

Results and Discussion

Socio-economic Characteristics of Agricultural Extension Professionals

The results presented in Table 1 indicate that majority of the agricultural extension professionals across the selected organizations: public institutions (70.0%), private organizations (66.7%), and universities (52.9%) were female, with male representation being comparatively lower in all categories. This implies that female dominance in the agricultural extension workforce suggests improved gender inclusivity and a potential advantage in engaging more female farmers. This finding is contrary to Omole and Fasina (2024), who indicated male dominance in agricultural professions. The pooled mean age of the agricultural extension professional across the 3 institutions was 51 years, suggesting that the workforce is predominantly composed of middle-aged. This age distribution implies a level of maturity and experience that may support rational decision-making, particularly in the adoption and use of social media for professional networking and enhanced job performance. The study further revealed that a substantial proportion of the respondents were married, accounting for 62.0% in public organizations, 50.0% in private organizations, and 88.2% in universities. In terms of educational attainment, a significant percentage of extension professionals in public (88.0%) and private (83.3%) organizations possessed HND/ B.Sc./B.Ed. degrees, while the majority (94.1%) of university-based extension professionals held Doctor of Philosophy (PhD) degrees, implying that majority of extension professionals are well educated and will be able to use social media for both personal and organizational work.

The mean monthly income of the respondents was ₦213,262.00, indicating that agricultural professionals in the study area earn above the national minimum wage of ₦70,000; as such, they can afford to buy and adopt ICT gadgets for social media utilization. This finding negates that of Aja et al., (2024) that most extension personnel earned between N50,001.00 and N100,000.00 monthly, with a mean monthly income of N58,798.30 for Ebonyi and Imo States. The study also revealed that the mean household size of the extension professionals was 5 persons, which suggests moderate family responsibility and less financial obligation that can translate to more ICT/social media adoption. This finding aligns with Aja et al., (2024), who revealed that the mean household size of agricultural extension personnel was 6 persons per household for both Ebonyi and Imo states and that people appear to be more committed to whatever they do when they have people who depend on them for food, shelter, and clothing. Regarding years of experience, the result showed a pooled mean of 14 years, which implies that the respondents had acquired a lot of experience in extension work using different extension teaching methods including the social media to complement the traditional media used in disseminating information or innovation to farmers. This also corroborates the findings of Aja et al., (2024) that showed that most agricultural extension personnel in Ebonyi and Imo States have an average of 12 years of experience. Years of experience are very crucial in organizational performance. Membership in professional associations was (100%) among extension professionals in private organizations and universities, whereas only 50% of those in public organizations reported professional affiliations. Finally, the study also revealed that all (100%) of extension professionals across the three categories of organizations were aware of social media, highlighting a widespread level of familiarity with digital communication tools within the sector. This finding is similar to the finding of Ifeanyi-Obi and Corbon

(2023), who reported that extension agents in Akwa Ibom state were highly knowledgeable in the use of WhatsApp and mobile phone calls.

Table 1: Socioeconomic characteristics of agricultural extension professionals in Rivers State

Variables	Public organization (Rivers State ADP & Ministry of Agriculture) (n = 50)		Private organization (Green Rivers Project (n = 6)		University (Rivers State University & University of Port Harcourt) (n = 17)		Pooled
	%	Mean	%	Mean	%	Mean	Grand Mean
Gender							
Male	30.0		33.3		47.1		
Female	70.0		66.7		52.9		
Age (years)							
<40	30.0		16.7		5.9		
41-50	24.0	49	16.7	53	23.5	50	51
51-60	28.0		33.3		38.8		
61 and above	18.0		33.3		11.8		
Marital status							
Single	-		50.0		70.6		
Married	62.0		50.0		88.2		
Divorced/Separated	43.0		-		11.8		
Widowed	4.0		-		-		
Level of education							
HND/B.Sc./B.Ed.	88.0		83.3		-		
M.Sc.	8.0		16.7		5.9		
PhD	4.0		-		94.1		
Monthly income (₦)							
<100,000	10.0		-		-		
101,000-200,000	78.0	160,000	33.3	259,083	-	220,705	213,262.00
201,000-300,000	8.0		66.7		58.8		
>301,000	4.0				41.2		
Household size (Persons)							
Less than 3	18.0		66.7		23.5		
3-6	58.0	6	33.3	**3**	64.7	4	**5**
7-10	24.0		-		11.8		
Years of experience							
Less than 5	-		-		23.5		
5-15	46.0	15	66.7	14	33.3	13	14
16-26	54.0		33.3		41.2		
Membership of professional association							
Yes	50.0		0.0		0.0		
Awareness of social media							
Yes	100.		100.0		100.0		

Source: Field survey, 2025

Areas of Usage of Social Media

Table 2 presents the ranking of areas in which agricultural extension professionals across public institutions, private institutions, and universities utilize social media. The pooled results revealed that workshops, seminars, and trainings ranked 1st, indicating that they constitute the most prominent area of social media use. Crop disease and *pest* management/plant protection measures ranked 2nd, followed by market access *and* agribusiness promotion, which ranked 3rd. This implies that extension professionals primarily use social media as a tool for capacity building, knowledge sharing, information dissemination, networking, and extension support services; conversely, areas such as teaching, research, and mechanization remain relatively underutilized**.** This finding corroborates Udoye and Madukwe (2025), who found that extension professionals use social media platforms to disseminate agricultural information, provide virtual training, offer mentorship, and communicate with farmers, thereby improving extension service delivery in Southeast, Nigeria.

Table 2: Areas of usage of social media tools for networking by agricultural extension professionals

Areas of usage of social media tools	Public (n=50)	Private (n=6)	Univ. (n=17)	Pooled	
	%	%	%	%	Rank
Workshops, seminars & trainings for extension personnel and farmers	100.0	66.7	100.0	97.3	**1st**
Crop disease & pest management / plant protection measures	84.0	100.0	82.4	84.9	**2nd**
Market access and agribusiness promotion	84.0	100.0	58.8	79.5	**3rd**
Livestock management	82.0	66.7	70.6	78.1	**4th**
Information about different government schemes and policies	76.0	83.3	76.5	76.7	**5th**
Weather forecasts and early warning messages	62.0	83.3	58.8	63.0	**6th**
Teaching and research	42.0	50.0	100.0	56.2	**7th**
Farm mechanization	44.0	50.0	47.1	45.2	**8th**

Multiple response
Source: Field survey, 2025

Determinants of Usage of Social Media in Selected Organizations

The results in Table 3 indicate that agricultural extension professionals across the three selected organizations generally perceived most of the examined factors as significant determinants of social media usage. Based on the mean responses, perceived usefulness recorded the highest mean score ($\bar{x}$= 3.82, SD = 0.43), indicating that it is the most influential determinant of social media. Similarly, *ease of* use and multimedia content ($\bar{x}$= 3.74, SD = 0.55) *and* cost of internet, Android phones, and other devices ($\bar{x}$= 3.74, SD = 0.52), were also highly rated; this suggests that the use of social media by agricultural professionals is strongly influenced by usability and affordability, which are key predictors of technology adoption behavior. This finding aligns with the technology acceptance model (TAM),

which posits that perceived usefulness and ease of use can influence technology adoption and use. Ezeh *et al*., (2023) found that agricultural professionals tend to adopt digital tools primarily when they perceive them as enhancing communication and work efficiency.

However, government regulations and data privacy ($\bar{x}$= 2.39, SD = 0.99) were low, indicating that respondents perceived this factor as Less Determinant (LD). This implies that government regulatory concerns do not significantly influence agricultural extension professionals' usage of social media.

Table 3: Determinants of social media use for networking by Agricultural extension professionals

Determinants	Public n = 50		Private n = 6		Uni n = 17		Pooled		Remark
	$(\bar{x})$	SD	$(\bar{x})$	SD	$(\bar{x})$	SD	$(\bar{x})$	SD	
Perceived usefulness	3.74	0.59	3.83	0.37	3.88	0.32	3.82	0.43	GD
Ease of use and multimedia content	3.64	0.74	3.83	0.37	3.76	0.55	3.74	0.55	GD
Cost of Internet, Android phones, and other devices	3.74	0.59	3.83	0.37	3.65	0.59	3.74	0.52	GD
Internet and smartphone access	3.56	0.78	3.83	0.37	3.41	0.84	3.60	0.66	GD
Digital literacy and skills	3.46	0.78	3.67	0.47	3.65	0.59	3.59	0.61	GD
attitude and motivation	3.36	0.77	3.83	0.37	3.41	0.84	3.53	0.66	GD
Market and business opportunities	3.22	0.86	3.67	0.47	3.12	0.90	3.34	0.74	GD
Peer influence and networks	3.04	0.92	3.67	0.47	2.94	1.00	3.22	0.80	GD
Weather and crises situations	3.10	0.94	3.17	0.69	3.00	0.84	3.09	1.91	GD
Government and NGO support	3.16	0.83	2.50	0.96	2.88	0.83	2.85	0.87	GD
Trust in information sources	2.70	0.90	2.83	1.07	2.94	0.94	2.82	0.97	GD
Government regulations and Data privacy	2.50	1.02	2.50	0.96	2.18	0.98	2.39	0.99	GD

*≥2.50=Great determinant (GD), <2.50 = Less determinant (LD)
Source: Field survey, 2025

Influence of Socioeconomic Characteristics of Agricultural Extension Professionals on Social Media Use for Networking

Table 4 presents the results of a multiple linear regression analysis examining the influence of selected socio-economic characteristics on social media usage among agricultural extension professionals. The model explains a substantial proportion of the variance in social media use, as indicated by the high coefficient of determination (R^2 = 0.812). This implies that approximately 81.2% of the variation in social media use is explained by the independent variables included in the model. The regression results further revealed that age had a statistically significant negative influence on social media use (p = −.001). This indicates that younger agricultural extension professionals are more likely to use social media for networking than their older counterparts. Similarly, level of education had a positive and statistically significant influence on social media use (p = 0.003). This suggests that agricultural extension

professionals with higher educational qualifications are more likely to use social media for networking. both age and level of education are significant at 0.1 level of significance. In addition, monthly income **(**p = 0.015), years of experience (p = 0.020), and membership in professional associations (p = 0.042) all had positive and statistically significant effects at the 0.05 level of significance. This implies that increases in these variables are associated with a higher likelihood of social media use among agricultural extension professionals. However, other variables, including gender (p = 0.185), marital status (p = 0.265), and household size (p = 0.186), did not have statistically significant effects on social media use.

Table 4: Influence of socioeconomic characteristics of agricultural extension professionals on social media use for networking

Variables	Unstandardized coefficients B	Std. error	Standardized coefficients Beta	T-values
(Constant)	-.073	.153		-.482
Age	-.047	.033	-.225	-3.439*
Gender	-.069	.051	-.155	-1.339
Marital status	.033	.029	.145	1.124
Level education	.227	.074	.914	3.068*
Monthly income	.020	.030	.051	2.656*
Years of experience	.013	.043	-.035	-3.307*
Household size	.052	.039	.180	1.337
Membership of professional associations	.172	.083	-.410	-2.074*
Years of experience	.013	.043	-.035	-3.307*
R^2 0.812				
DW 1.922				

*Significant at p ≤ 0.05; Dependent variable: Social media usage

Conclusion and Recommendations

The study concluded that most of the agricultural extension professionals were female-dominated and middle-aged, with a mean monthly income of ₦213,262.00. Also, the major determinants of social media use were perceived usefulness, cost of internet, and smartphones among agricultural extension professionals in the study area. The study further highlighted the major areas of social media usage as workshops, seminars, and trainings, crop disease, and pest management/pest protection measures. It was ascertained that the use of social media was significantly influenced by age (although negative), educational level, monthly income, years of experience, household size, and membership in a professional association. Based on these findings, the study recommended that extension agencies and universities in the study area should conduct periodic training and workshops on social media usage to boost digital literacy among their extension professionals. Extension organizations in the state should endeavor to provide internet routers for their professionals to access free data during work hours, which would facilitate social media use at little or no cost as a means of encouraging staff to engage in its use, thereby increasing the efficiency of extension delivery. Government at all levels should support extension organizations with the necessary infrastructure to improve social media usage in these organizations

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