



Impact of Cyber-extension and Social Media (WhatsApp and Facebook) on Extension Workers in Federal Capital Territory, Abuja, Nigeria

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Abstract: The main purpose of this study is to examine the impact of cyber-extension and social media on extension workers service delivery in Gwagwalada area council in Federal Capital Territory, Abuja, Nigeria. Three objectives guided the study. A multistage sampling procedure was used to select a total of 100 extension workers from the study area. Using a set of structured questionnaire, data were obtained and analysed using descriptive statistical tools (frequency counts, percentages and mean score). The cyber-extension tool most used for capacity building was mobile phone (mean = 3.8), as most used, WhatsApp (mean = 2.8) and Facebook (mean = 2.6). Least used tool was MySpace, (mean = 0.7). Major constraints faced by the extension agent were economic constraints (57%) infrastructural constraints (66%) use of e-mail (55%), use of YouTube (53%) and use of twitter (77%). The rate of constraint in deploying cyber-extension and social media was adjudged high. The researchers suggest that there is a great need to train extension agents on the use of these tools. In addition, increase funding of extension activities involving utilization of cyber extension and social media should be considered to enhance information dissemination in the study area.

Keywords: Cyber-extension; social; social media; Facebook; WhatsApp

1. Introduction

The importance of cyber extension and social media in facilitating agricultural extension and development cannot be underestimated.^[1-27] Extension worker's dissemination of appropriate information to farmers using cyber extension will greatly enhance their job performance (Sennuga et al. 2021).^[1]

Useful information flow from Research Institutes, Universities, as well as relevant authorities in the area using the right Social methods, is very important, if the utilizers of the information must make meaning out of it and respond as intended. The inaccessibility of information by extension workers, has been identified by various scholars (Sharma, 2016;^[2] Oyekunle, 2017, Arokoyo, 2012^[3]), as one of the major factors, militating against development of agriculture in Nigeria today. The use of effective Social to promote agricultural development is being advocated for by stakeholders, as, it has been identified, that, no development programme can succeed without the effective use of Social (Chiazoka et al., 2021).^[4] The need for more effective agricultural extension has been a considerable demand and one that will bring numerous benefits, thus, the importance of cyber extension to a nation's economic growth and development cannot be overemphasized since it is a catalyst

necessary for the overall capacity building of extension workers for Agricultural development (Amin, 2013).^[5]

Due to the challenges of hunger, unemployment as well as poverty, and the continuous increase in population, which characterize the Nigerian nation, the need to ensure food security through agricultural sector is being agitated by various levels of government. It is believed that, if Nigeria, as a nation, can again get its rightful place in Agriculture, most of its present problems will be solved (Tuedon et al., 2021).^[6] This is because, agriculture, in the past, has proven, not only to feed the country, but generate revenues for the government to carry out its various developmental programmes, in addition to providing employment opportunities for the citizen.^[1] It is thus, no wonder that today; several steps are being taken to fast track agricultural development in the country.

According to Audu Ogbe 2016, the former Minister of Agriculture during an interview granted to the Daily Trust, a national daily in Nigeria, "the current one extension agent to over 3000 farmers" ratio (1:3000) in Nigeria is not encouraging. Hence the need for a robust extension system that will fill in the wide gap already created by the inadequacy of traditional extension systems" (Yahaya and Vincent, 2016). World food Program of the United Nations is also aware that, the development of cyber extension has nearly all people in the

world turn their heads to various kinds of Social technology which work fast and efficiently in the attempt to obtaining pieces of information. Moreover, it seems that people cannot find themselves daily without the sort of technology which they believe as the key factor in getting important information (WFP, 2017).^[7]

In the work of agricultural supervision, cyber extension has now been developed; it refers to one mechanism in the development of Social networks to disseminate new innovations in agriculture which is effectively programmed (Arokoyo, 2011).^[8]

Cyber extension is beneficial to put agricultural based research and development organizations and disseminators of innovation (i.e. supervisors), trainers, farmers, and stakeholders all in one place in which every included party brings about its particular needs of different forms of information with the hope that they can synergically work with each other (Lawal, 2009).^[9] Furthermore, cyber extension serves as a system that encourages the mechanism of managing, disseminating, documenting, researching, and synergizing agricultural innovations which developers of agriculture need to establish continuous development (Agbamu, 2006).^[10] Cyber Extension means, "Using the power of online networks, computer Socials and digital interactive multimedia to facilitate dissemination of agricultural technology" (Adekoya, 2007).^[11] Cyber Extension includes effective use of Information and Social technology, national and international information Networks, Internet, Expert Systems, Multimedia Learning Systems and Computer based training systems to improve information access to the Farmers, Extension Workers, Research Scientists and Extension Managers (Adekoya, 2007).^[11] Idu, (2017)^[12] and Fadiji (2007)^[13] in their works also corroborated the fact that effective Social will greatly enhance extension workers job capacity.

Nevertheless, several problems have militated against effective use of cyber extension by extension workers in carrying out their jobs in the development of agriculture in the global competition by hindering effective information passage by extension workers.^[7] Therefore, several attempts must be made to empower extension worker with the appropriate Social tools of cyber extension and Social media with regards to improving their job performance. Cyber-extension has been used by the World Food Programme (WFP) to boost information flow to local insurance companies and micro-finance institutions and gradually supporting farmers to start paying for insurance in cash with supervision to empower the primary actors for the sake of creating a conducive business environment and increasing their awareness to the importance of information through the emerging cyber-extension.^[7] Capacity building of farmers can be achieved through cyber extension which avails both extension agents and rural farmers' access to information readily and create an atmosphere that will help build sustainable assets in farming for a better life of rural people.^[7] Cyber-extension is an innovation designed to deliver agricultural information Social to farmers in a quick manner, enabling them to obtain fast, appropriate, and relevant information regarding their needs (Ifeoma *et al.*, 2021).^[14]

The specific objectives of the study are to:

- i. describe the socio-economic characteristics of farmers in the study area,
- ii. determine the level of cyber-extension tools used by farmers for capacity building,
- iii. examine the ways cyber-extension has impacted on the job performance of extension; workers in the study;
- iv. ascertain the constraints in the usage of cyber-extension by extension workers.

2. Methodology

2.1. Area of the Study

The Federal Capital Territory, commonly known as FCT, or loosely as FCT-Abuja, is a federal territory in central Nigeria. Abuja, the capital city of Nigeria, is located in this territory. FCT was formed in 1976 from parts of the states of Nasarawa, Niger and Kogi. It is within the Middle Belt region of the country. Unlike the States of Nigeria, which are headed by elected Governors, it is administered by the Federal Capital Territory Administration, headed by a minister appointed by the President. The territory is located just north of the confluence of the Niger River and Benue River. FCT is bordered by the states of Niger to the West and North, Kaduna to the northeast, Nasarawa to the east and south and Kogi to the southwest. Lying between latitude 8.25 and 9.20 north of the equator and longitude 6.45 and 7.39 east of Greenwich Meridian, Abuja is geographically located in the center of the country. The Federal Capital Territory has a landmass of approximately 7,315 km², has a population of 1,406,329 as provided by the national census in 2006. Population density of FCT is 190 per square kilometer (500 per square mile) it is situated within the Savannah region with moderate climatic conditions. The territory is currently made up of six local councils, comprising the City of Abuja and five Local Government Areas, namely: Abaji Abuja Municipal, Gwagwalada, Kuje, Bwari, and Kwali. Some major natural resources found in the FCT include: Marble, Tin, Clay, Mica, Tantalite and Lead/Zinc. Major crops grown within the FCT are: Maize, sorghum, millet, yam, potatoes; tree crops are: guava cashew, mangoes, etc. The indigenous people of Abuja are: the Gbagi, (Gwari) which constitute the major, others are the Bassa, Gwandara, Gade, Ganagana and Koro (Wikipedia, 2018).

2.2. Sample and Sampling Techniques

One hundred extension workers of the FCTADP were purposively selected for the research work. Primary data were used for the study; the data was collected with the aid of well-structured questionnaire which were administered to the extension workers with the help of an enumerator. Descriptive statistics (frequency, percentage and mean) was used for data analyses with the aid of Statistical Package for Social Science (SPSS) to analyses the data. The descriptive statistics was used to present the results. Descriptive statistics was used to summarize data in an organized manner by describing the relationship between variable in a sample/population.

2.3. Method of Data Collection

Primary data was obtained using well-structured questionnaires that were given to 100 extension workers in the study area. The information gathered includes socio-economic characteristics of the

Table 1. Socio- Economic Characteristics of Farmers

Parameters	Frequency	Percentage (%)
Gender		
Male	71	71
Female	29	29
Age		
0-35	31	31
36-45	34	34
46-55	6	6
56>	9	9
Marital status		
Married	71	71
Single	29	29
Education		
Non formal	14	14
Primary	34	34
Secondary	29	29
Tertiary	28	28
Working experience		
1-5	17	17
6-10	14	14
11-15	31	31
16-20	20	20
21>	9	9
House hold size		
1-5	28	28
6-10	66	66
11-15	3	3
16>	3	3
Income		
1000-20,000	20	20
21,000-40,000	20	20
41,000-60,000	26	26
61,000-80,000	17	17
81,000>	17	17

Source; field survey, (2021)

respondents, such as age in years, sex, household size, education level, and marital status, among others. Data on the Level of cyber-extension usage by farmers in the research area was also obtained. In addition, Impact of cyber extension and Social media on extension workers job were obtained. Data on Constraints Faced by Farmers Using Cyber-extension and Social media was also obtained.

2.4. Data Analysis

The data were obtained and analyzed using descriptive statistical tools (frequency counts, percentages and mean score. With aid of the Statistical Package for Social Science (SPSS) version 24 the data were analyzed and the descriptive statistics were used to present the results. Descriptive statistics was used to summarize data in an organized manner by describing the relationship between the variables in a sample or population.

2.5. Measurement of Variables Tools of cyber-extension (usage)

Tools of cyber-extension (Facebook, twitter, Skype, YouTube, e-mail, WhatsApp, Instagram, BBM, Blogs, Google talk, MySpace), were assessed on the basis of their usage by farmers on a 4 Likert scale (Very often = 4, Often = 3, Rarely = 2 and Not at all = 1). A mean value 2.5 will indicate often used and below 2.5 as not used at all.

3. Results and Discussions

3.1. Socio-economic characteristics of extension workers

Table 1 Shows that most (34%) of the extension workers were between 36 and 45 years old at a mean age of 41 years for the group, representing 34 respondents of the entire 100 farmers selected for the study. 28% were between 20-21 years, 20% down to 8% fell between the ages of 46-75 years and above. This result is consistent with Egbojuku 2021^[15] who found that population between 21 and 40 years of age constitute the active work force. It implies that most of the extension workers are still active on the job. Hence, there is high prospect for cyber-extension usage. This implies that extension workers can respond to their needs using variety of Social strategies. This result confirmed the findings of Tologbonse (2013)^[16] and Asadu (2014)^[17] that a greater proportion of extension workers were within the age range of 36 – 45 years. By implication, active personnel are more likely to accept cyber-extension facilities faster than those who are too old and who are not ready to take risk. Cyber-extension use would furnish opportunities like enhancing the linkage between and among extension agents and farmers, efficiency and effectiveness of farmers and raising the productivity of farmers.

Majority (71%) of the farmers were male while only 29.0% of them were female. This indicates a serious gender imbalance in male to female ratio involved in extension activities in the area of study. This agrees with the findings of Adedoyin et al, (1999)^[18] that number of male extension workers surpass female extension workers in most extension establishments in the country. The dominance of male extension workers could be adduced to the traditional consideration in favour of the male child in almost every facet of the society. Males are believed to more capable. The female extension agents are assets for the Women-In-Agriculture (W.I.A.) programme which could be explored.^[19]

The result further revealed that most of the respondents were married (71%) while (29%) were not. This simply implies that most of these extension agents were responsible and had a family to maintain. The predominance of married people among the extension agents could be attributed to their age as majority were over 36 years. It should be noted that the basic needs of the family will take priority position in the family budget before cyber-extension facilities will be considered.

The study shows that 28 respondents (28%) had one form of tertiary education or the other, 29% had secondary education and 29% also had primary education respectively, while 14% had no formal education. This result indicates that, a good number of the workers in the study area are educated can easily key into cyber-extension usage. This will provide a solid platform to inculcate cyber-extension for dissemination of agricultural information required to drive the on-going Nigeria's agricultural Promotion Policy-APP, (2016-2023), popularly called The Green Alternative of the Buhari administration. (FMRAD, 2016) asserted that, education, training and retraining of extension workers is required as a basic prerequisite to knowledge, skills and practices (capacity building) for effective delivery if food security will be achieved in Nigeria. The study area shows that 26% of the respondents of the total extension workers earn between N 41,000 and 60,000, 17% earn between N 61,000 to 80,000 and 40% earn only below N 41,000 monthly. The income

Table 2. Distribution of The Level Cyber-extension and Social media usage

Tools	Very often Used	Often Used	Rarely Used	Not used at all	X
	Percentage	Percentage	Percentage	Percentage	
	%	%	%	%	
Facebook	23	23	23	2.6	
WhatsApp	17	17	20	2.8	
YouTube	17	14	49	1.5	
Email	14	14	40	2.3	
Handset	-	9	-	3.8	
Internet	29	11	26	2.7	
Twitter	14	23	63	1.5	
Skype	3	11	77	1.4	
Instagram	31	6	57	1.7	
BBM	11	14	66	1.5	
Myspace	6	14	80	0.7	

Source: Field survey, (2021)

distribution of the extension workers reveals that they were not earning enough in the study area. Consequently, their financial status will affect their purchasing of cyber-extension tools needed that will directly impact on their work. FAO (2012) opined that all extension workers should be empowered to ensure proper and adequate agricultural information delivery. The extension workers low income can also be attributed to their reduced capacity to acquire cyber-extension tools and use them for capacity building which could have translated to increased earnings information flow. Majority of the extension workers (31%) had above 16 and 20 years of working experience. It implies that a good number of the farmers have considerable years of experience in working and adapting to new technologies might not be difficult, this finding agrees with Jibowo, (2015) that extension workers are curious and may be willing to experiment in a variety of areas to achieve their information dissemination objectives. The studies of Abdullahi & Atala (1992) and Tologbonse et al (2013)^[16] also confirmed that reasonable years of experience of extension workers as a better pedestal for the utilization of cyber-extension.

3.2. Level of cyber-extension usage by farmers?

Table 2 shows that phone has mean use of 3.8 is very most often (91%) used cyber-extension tool among the farmers, followed by WhatsApp (3.8), internet (2.7) and Facebook (2.6) mean use (46.0%, 34% and 31%) respectively. This medium if well harnessed the gap between researchers and farmers can be bridged for massive capacity building of the farmers. This is premised on the fact that, cyber-extension enables blogging, tagging, discussion and networking, e-marketing etc. however YouTube had mean = 1.5) twitter (mean = 1.5), Skype (mean = 1.4) instagram (mean = 1.7) BBM (mean = 1.5) and least not used was MySpace (mean = 0.7). This agrees with the findings of Thomas et al.,(2015)^[20] that twitter, Skype, instagram, BBM and MySpace were among cyber-extension tools with low level of usage by farmers. This could be attributed to their inability to understand and use these tools for more impact on their farming practice. Cyber-extension is becoming the mainstream cultural phenomenon and Agricultural Researchers (ARS) have found the tremendous role, cyber-extension can play in establishing connections, facilitating dissemination of agricultural research findings and exchange of information as an important ingredient for increasing agricultural production (Boyd and Ellison, 2013).^[21]

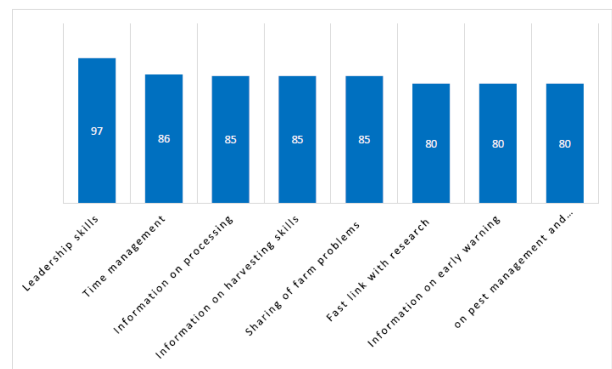


Fig. 1. Impact of cyber extension and social media on extension workers job.

Table 3. Constraints Faced by Extension workers

Parameters	Frequency	Percentage (%)
Facebook		
Tagging of pictures and videos	63	63
Receiving messages	40	40
Creating group	34	34
Uploading pics and videos	29	29
Twitter		
Unfollowing	83	83
Making a tweet favourite	77	77
YouTube		
View video on line	66	66
Post messages	66	66
Receive video messages	40	40
Email		
Receiving messages	71	71
Economic constraints		
High cost of internet services/tools of cyber extension	80	80
Infrastructural constraints		
Power supply	69	69
Poor internet services	63	63
WhatsApp		
Creating group	65	65

Source: Field survey, (2021)

3.3. Impact of cyber extension and Social media on extension workers job

The result in Fig. 1 below shows capacity building was measured in terms of knowledge, attitude, practice and skills. The perceived capacity-building from the use of cyber-extension by farmers shows that, majority over (70%) averagely agreed to have being impacted positively in carrying out their jobs from cyber-extension usage. Thus, were adjudged as quite impressive.

Leadership skills had the highest perceived capacity building (97%) followed by time management (86%), processing skills (85%). Supporting this finding, Adebowale (2009) opined that cyber-extension facilitates effective and timely information delivery. This was followed by use of improved varieties (80%), improved ways of harvesting (80%), sharing of farm problems (80%). Adeniyi (2016), noted that cyber-extension gives one direct access to global agricultural information. Faster link to extension agents and early warning and management of pests and diseases through cyber-extension also had high capacity building (80%) each. This agrees with the findings of Ndukwe (2014) that cyber-extension will foster better, easier and faster access of farmers to up-to date information.

This also agrees with the findings of Madukwe (2016) and Adeniyi (2010) that cyber-extension aids in improving skills, knowledge and practice which is capable of enhancing attitude of farmers towards a much more profitable agricultural venture in Nigeria. This impressive result could be attributed by the use of mobile phones, WhatsApp and Facebook which were among the major tools used by the extension agents for carrying out their job in the study area to improve their knowledge, attitude, practice and skills (KAPS).

3.4. Constraints Faced by Farmers Using Cyber-extension and social media

Table 3 revealed that the top constraint areas in the use of Facebook faced by the farmers were: 'tagging contact to a picture or video (63%)', followed by sending and receiving messages (40%)', 'creating a group (34%)' and 'uploading pictures and videos (29%)'. The top needed areas of constraint in the use of Twitter were 'unfollowing a friend (83%)', 'posting a link (83%)' and 'making a tweet one's favourite (77%)'. In addition, the top areas of constraint in the use of YouTube were 'how to view a video offline (66.0%)', 'posting and receiving a video message (60% and 40%)'. Top area of constraint in the use of email was receiving messages from other cyber-extension tools (71%). The top economic areas of constraint was 'high cost of internet services (80%)', 'Major infrastructural constraint faced by the famers was inadequate power supply (69%)' followed closely by poor internet services (63%)'. This result shows that the extension workers require basic skills in the use of all the various cyber-extension tools they are not very familiar with. Never the less, poor state of cyber infrastructure and services are adversely affecting their usage of cyber extension services are revealed by the study. This finding confirms the findings of Thomas et al., (2015)^[20] that extension workers are faced by a number of constraints in the use of cyber-extension tools. Therefore, it is fair to posit that cyber extension usage is adversely affected by the constraints mentioned above and capable of affecting extension service delivery by extension workers in the study area and agricultural productivity in general.

4. Conclusions

The potentials of cyber-extension facilities to make agricultural extension in developing countries more effective appear incontrovertible. Yet, to go a great extent government in many developing countries like Nigeria have reduced their budgetary allocation to agricultural extension service provision. This situation has posed a bigger challenge on agricultural extension service to remain relevant and effective in meeting its ultimate goal of provision of affordable, relevant and reliable agricultural information to farmers. In this scenario, to make agricultural extension service relevant and effective, there is urgent need to look out for better alternative sources of information dissemination rather than the face-to-face information service delivery approach. Cyber-extension and social media tool with their enormous potentials in every field of human endeavour seems to be the answer to the threat on the relevant of agricultural extension service delivery in today's world. It is therefore good news that internet users in Nigeria were reported

to be over 119 million as at April 2019 (NCC, 2019). If cyber-extension appropriate use of social media are adopted and effectively applied, they have the potentials to transform agricultural extension service delivery in developing countries like Nigeria. However, to achieve this will require deliberate intervention, synergy and proactive response on the part of government, non-governmental organization and private extension sector in providing farmers with access to cyber-extension, training and retraining of Extension agents on appropriate use of cyber-extension and social media for efficient agricultural extension delivery.

Recommendations

1. The Federal Ministry of Agriculture and Rural Development in conjunction with the FCTADPs should mount education campaigns on the importance of cyber-extension use in agricultural extension delivery. Sensitize extension workers and increase for improve knowledge, practice and skills.
2. Government, private organizations, farmers' cooperative societies and capable individuals should make effort towards procuring and installing essential cyber-infrastructure such as internet networks, mast and other connectivity facilities to enhance disseminations of information via cyber-extension.
3. Government should create enabling environment for private sector involvement in cyber- extension delivery.
4. Regular training and retraining of extension workers and farmers on the use of cyber-extension and social media tools such as: WhatsApp, Facebook, Skype, Twitter, YouTube, etc.
5. Affordable user friendly smart phone should be made available to replace the old java phones mostly used by farmers and extension workers in the study area.

Conflicts of Interest

The authors declare no conflict of interest.

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