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Social Media Usage and Agricultural Extension Service Delivery. Implications for Effectiveness in Northwest Nigeria

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Abstract

Social media are tools meant for digital communication that aids in the interaction among a group of people and acts as information exchange media across the globe. Since ages newspapers, television, and magazines have been the most used source of information in the agriculture sector. But now the power of the 21st century is literally in our hands. Platforms like Facebook, YouTube, and Whatsapp have 2.6 billion, 2 billion, and 1.6 billion active monthly users respectively as of 2020 (Anonymous1 2020). Agricultural extension agents use social media to access information needed to improve their agricultural service delivery in northwest Nigeria. The broad objective of this study is to assess the implications of social media usage in Agricultural Extension Service Delivery in Northwest Nigeria. Other specific objectives were to ascertain the areas where social media has helped extension agents in engaging youths in agriculture; find out the socioeconomic factors that influences usage of social media for agricultural information transmission. A sample of three hundred and sixty youths in agriculture was randomly selected through the multi-stage sampling techniques in the study area. The instruments used for data collection were questionnaire and focus group discussion. The theories of Utility and Rational served as theoretical framework for the study. The data was analyzed using descriptive statistics and logit regression model. Data were analysed using Statistical Packages for Social Science (SPSS). The null hypotheses that guided this study is socio- economic factors do not significantly influence the usage of social media by agricultural extension agents to engage youth in agriculture in the study area. Results of the logit regression analysis carried out to establish the social-economic factors that significantly influence the usage of social media by extension agents to train youth in agriculture showed that the independent variables studied accounted for a coefficient of multiple determination of 0.510 (51.0%). Out of all the socioeconomic factors that influenced usage of social media in agriculture only age (0.994), education (0.642), farm experience (-0.158), income (.000) and sex (1.768) were found to significantly influence the usage of social media in agriculture. Findings revealed that most of the

respondents (30.0%) indicated that extension agents used social media to engage youths in agriculture through extension services. These findings recommended the need of the useful of these variables in the usage of social media in agriculture.

Keywords: Implications, Social Media Usage, Agricultural Extension, Service Delivery, Northwest Nigeria

INTRODUCTION

Social media such as Facebook, Twitter, YouTube and whatsapp have become an integral part of human life. Countless individuals globally use these applications in their daily life for communication and entertainment, among other activities. Meanwhile, practitioners in both the public and private sector employ social media platforms to perform their tasks in serving their organizational objectives and goals in various areas, including marketing (Abdullahi, 2020)), Like other fields mentioned, practitioners and scholars involved in agricultural extension have paid increasing attention to social media (Adebayo, 2017)

Agriculture is the engine of growth for most developing countries like Nigeria and agricultural development is one of the most effective ways to alleviate hunger and poverty in a country (Baye, 2016). Agriculture has remained one of the top and widely profitable business sectors not only in Nigeria but in the world at large (Adebayo, 2017). It provides employment opportunities for the teeming population, eradicates poverty and contributes to the growth of the economy (Bamiro and Oyetoki, 2019). In spite of the agricultural sector's vibrancy in providing income-generating opportunities for rural youth, agriculture is still left to the elderly or uneducated youths. This has led to decline in agricultural output and the overall contribution of the sector to the economy and affected Nigeria's perception of the place and role of agriculture in national development considerably over time. As a result, achieving a balance between food and population growth is a serious challenge in Nigeria today (Ifeanyi and Agu. 2020).

Extension agents need to involve the youths in agriculture via social media usage in order to ensure continuity in occupation. Youth participation in agriculture is definitely the only means to increase agricultural production and reduce unemployment rate in Nigeria (Adebayo, 2017). The youths have great potentials to drive forward the sector and also preserve it for posterity. They have the physical strength, mental alertness and innovations to embark on large scale agricultural activities. However, the role of the youth as the next generation for the sustainability of the agricultural sector is very important. This calls for securing the interest and participation of youth in agriculture (Nwanko and Anyanwu, 2021). Exposure of youths to modern technologies by the change agents give them access to information from around the world is changing the perceived needs of young people, and this must be recognized especially by leaders, thus harnessing the opportunities and challenges thereof, Hence the evolution of internet-based communication tools known collectively as "social media" has provided a viable solution to this challenge. Social media are a contemporary channel of digital communication that is composed of various evolving tools for discussion, interaction and sharing of information among people (Baye, 2016). The main purpose of social media is sharing information, creating awareness and opportunities in agriculture. Social media can effectively empower the youths

with information in agriculture and education that are capable of spurring them into agricultural or agro-based activities. Social media can be used to help better agriculture's image across a broad audience and allow for sharing of information and experiences between young people and young farmers (Bamiro and Oyetoki, 2019).

Using social media by extension agents for youth engagement can help organizations reach young people where they can be found online through search engines, communicate with young people in familiar settings and make ideas and opportunities accessible to other youth (Abdullahi, 2020). This will enhance the introduction of modern extension and agricultural technologies and will increase extension coverage. The use of social media provides reliable markets and modern production information on existing livestock and crops thereby providing better access to profitable markets. Therefore, the focus of this study is to assess the usage of social media in engaging youths in agricultural development in the Federal Capital Territory and how this can bring about development in the agriculture sector.

LITERATURE REVIEW

Brief about Social Media

Social media refers to the interaction with people in which they create, share, consume, and exchange information and ideas in virtual communities and networks. Nwanko and Anyanwu (2021) define social media as "a set of Internet-based applications that build on the conceptual and technological foundations of Web 2.0 and that allow the creation and exchange of user-created content". "Social media are web-based tools of electronic communication that allow users to exchange information individually or in groups, share ideas and opinions, make decisions and create, store, retrieve and exchange information -Allows to provide the facility of providing (text, images, videos, etc.), by anyone in the virtual world (Baye, 2016).

These are digital networks that use user-created information - opinion, Video, audio, and multimedia are used to share and discuss. Adebayo (2017) defines social media as forms of electronic communication through which user information, ideas, can create online communities to share personal messages and other content. Definition focuses on three core components - content, community, and Web 2.0 - and the conduct of social media as a form of people interaction. And makes comments in content creation, exchange, and viral dual communities and networks.

Why Social Media: Is social media important for agricultural Extension? Although many outsiders would never think of connecting farmers, dairy farmers, animal keepers with Facebook and Twitter, they both represent a large group of active users on social networking sites. According to some farmers and scientists, social media is an indispensable communication tool to educate farmers about their industry.

Social media can be advantageously used in agricultural extension, as discussed below (Baye, 2016):

1. Highly cost-effective
2. Simultaneously reaches large numbers of clients.
3. Location and client-specific, problem-oriented.

4. User-generated content and discussion among the community members.
5. Easily accessed from mobile phones.
6. Increases the internet presence of extension organizations and their client reach.
7. The democratization of information by making it accessible to all.
8. Brings all stakeholders into a single platform.
9. Can measure reach and success by tracking the number of visitors, friends, followers, mentions, Facebook

Social Media Tools Commonly Used in Agricultural Extension Service Delivery

The use of social media in the agriculture sector and expansion has gained momentum in recent times, with only popular platforms such as Facebook, Twitter, and YouTube being used for agriculture and extension related works. Whatsapp is another major platform used by extension professionals to communicate with peer or client farmers but as communication (individual and group) is personal, more information is available about groups other than being referred to by media Is not. The various social media tools popular these days are listed below.

Facebook:

Facebook is the most used social media platform in the world, with more than 1.87 billion monthly active users on its site (Adebayo, 2017). And this means a huge potential for extension professionals. Some examples where Facebook is being used as an extension tool by individuals, professional networks, and extension organizations.

Twitter:

Microblogging site Twitter is one of the most popular social media platforms globally with 320 million users. In a social context, it has been one of the major catalysts used for creating public opinions and for organizing people into groups. In agriculture too, it is one of the most used platforms.

YouTube:

YouTube It is the video-sharing platform with a mission to give everyone a voice and show them the world and is based on four values: Freedom of expression, Freedom of information, Freedom of opportunity, and Freedom of belonging. Users can upload and watch the videos, and there is provision for sharing and commenting on videos with additional facilities for the subscription of other users.

Blogs:

Blogs contain detailed information on specific topics. They create and facilitate an in-depth discussion on any issue through comments from the readers. With increased popularity, many blog competitions are also organized worldwide for rural youth to encourage them to start a discussion about farming. Even organizations like World Bank, Food and Agriculture Organization (FAO) and International Food Policy Research Institute (IFPRI) have their blogs not just to discuss issues but announce their new publications like policy papers, working papers, and reports and so on; communicate summaries of important publications, and to increase awareness and discussion on important issues related to agriculture and rural development.

Whatsapp:
A messenger app for smartphones, it is an internet-based messaging platform that supports text, audio, video, pdf, and various other forms of files. Real-time video chatting has also been integrated recently, making it more popular among users. Currently, there are more than one billion users of the app in 180 countries. Though initially used for personal messaging, it is gaining more popularity among agricultural professionals and practitioners to share information, which is aided by the group messaging feature. There are a few hundred thousand Whatsapp groups created for agricultural extension and advisory services in India.

Role of Social Media in Agricultural Extension Service Delivery: In the global context, the agricultural sector is using social media to promote relevant information and knowledge within the industry and to network with other like-minded agricultural professionals. Social media channels enhanced and strengthened the relationships of agri-based communities and helped rural workers combat the segregation created by their work. It has crossed geographical boundaries, thereby connecting the peasant communities to mutual interest.

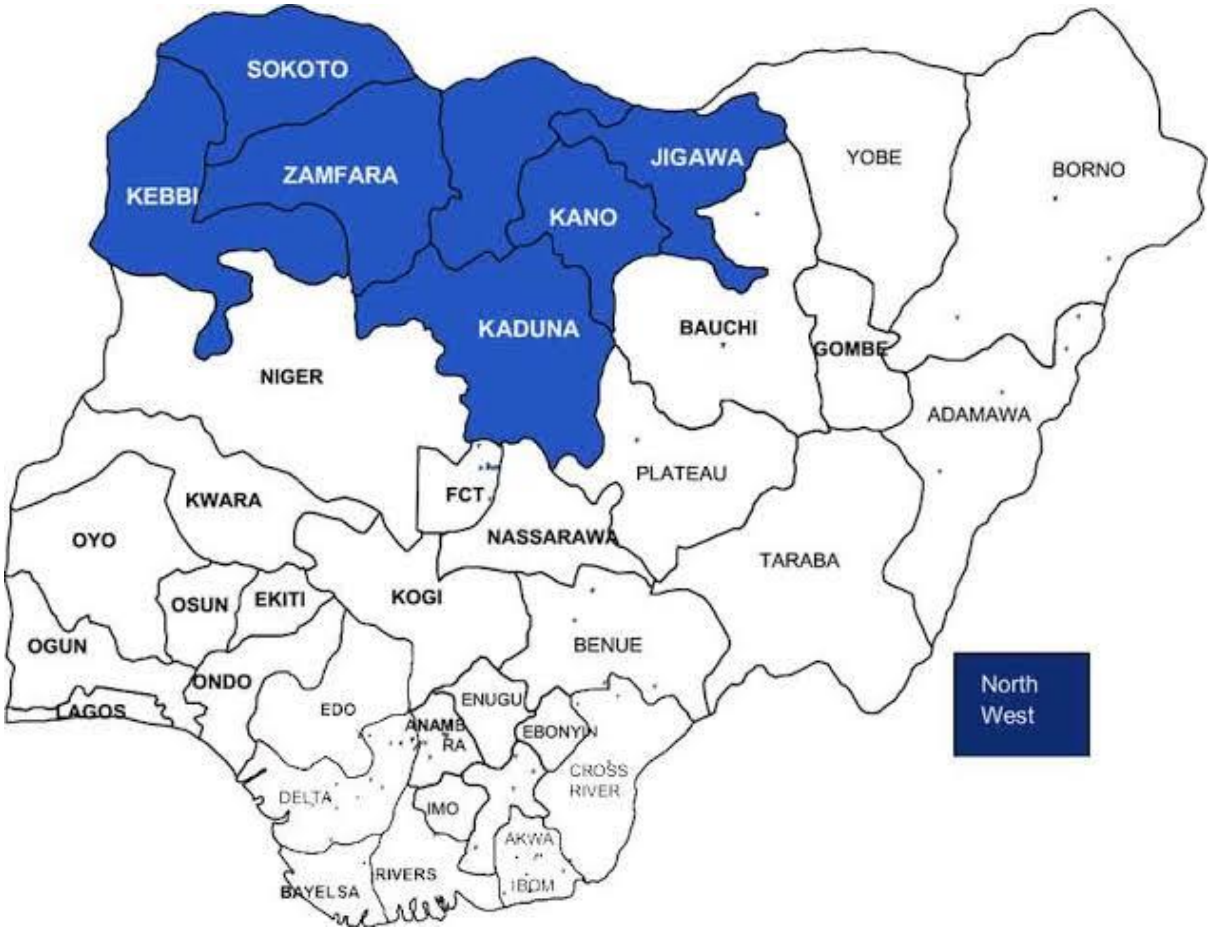
So far, blogs have a large presence covering topics on agriculture, animal husbandry, health, education, and other topics/topics of general interest. Social media such as Facebook, Twitter, YouTube, and blogs are

Objective of the Study
The broad objective of this study is to assess the implications of social media usage in agricultural extension service delivery in Northwest Nigeria.

Specifically, this study is designed to:
1. Ascertain the areas where social media has helped Extension agents in engaging youths in agriculture.
2. Find out the socio-economic factors that influences usage of social media for agricultural information transmission.

METHODOLOGY

Study Area
This study was specifically conducted in Zamfara State. The capital of Zamfara State is Gusau. The state was established in 1996 by the then military administration of the Late General Sani Abacha. Zamfara State was carved out of Sokoto State. It comprises of fourteen (14) Local Government Areas, with an area landmass of 38,418 sq. km. The state stretches between Latitude 10 21' to 13 15'N and Longitude 60 20'E Fig 3.1 (Google maps, 2019). Zamfara Sate is bordered in the North by Niger Republic, in the South by Kaduna State, in the East by Katsina State and in the West by Sokoto, Kebbi and Niger States respectively, the state lies in the Sudan Savannah Agro Ecological Zone of Nigeria and has a population of 4,515,400 according to (NPC, 2006).



Study Population

The target population of the study by the change agents comprised youths in agriculture who were between 18 and 35 years old.

Data Collection Procedure/ Measurement of Variable

Data were collected through the use of questionnaire, which was administered by the change agents to the youth in agriculture and well-trained enumerators who live among the youth and understand the locality and their languages. This enabled the researcher to get the required information needed for the study. Also, Focused Group Discussions (FGD) was held to validate the data collected from the respondents.

Data Analysis

This was ascertained by asking the respondents to indicate on the option provided. To find out socioeconomic factors influencing the usage of social media for accessing agricultural information, logit regression analysis was used. This was determined by subjecting the respondents to indicate their usage of social media in agriculture through their socio-economic characteristics.

RESULTS AND DISCUSSION

Table-1. Socio-demographic information on young farmers.

Variables	Frequency	%
Sex		
Male	255	69.86
Female	110	30.14
Age (years)		
≤40	8	2.19
41–50	56	15.34
51–60	163	44.66
61–70	124	33.97
≥71	14	3.84
Education		
No formal education	12	3.29
Primary education	299	81.92
Junior secondary education	39	10.68
Senior Secondary education	12	3.29
Tertiary education	3	0.82
Farming experience (years)		
≤10	71	19.45
11–20	88	24.11
21–30	115	31.51
31–40	73	20.00
≥41	18	4.93
Farm Size		
≤10	339	92.88
≥11	26	7.12
Farm income		
≤50,000	196	53.70
50,001–100,000	113	30.96
≥100,001	56	15.34
Main crops Cultivated		
Rice	161	44.11
Maize	191	52.33
Others (e.g., banana, and soybean)	13	3.56
Group memberships		
Yes	338	92.60
No	27	7.40

Source: Field data, 2022

Table 2: Areas social media helped extension agents to engage young farmers in agriculture

Area of Engagement	Frequency	%
Conducting Farmer to Farmer Training	33	18.33
Extension Services	54	30.00
Conducting Vocational Training	19	10.56
Entrepreneurship Education Programs	26	14.44
Agricultural Seminars	28	15.56
Consumer Engagements	20	11.11

Source: Field data, 2022

Table 3: Factors Influencing Usage of social media for agricultural information transmission.

Variables	Beta Coefficient Value (B)	Standard Error	Wald	P-Value
Marital Status	-0.039	0.304	0.017	0.897
Age	0.094	0.038	6.220	0.013***
Education	0.642	0.164	15.410	0.000***
Occupation	0.051	0.115	0.196	0.658
Farming Experience	-0.158	0.032	24.083	0.000***
Membership of Association	0.317	0.313	1.031	0.310
Extension Visit	-0.030	0.028	1.157	0.282
Farm Size	-0.189	0.167	1.287	0.257
Household Size	-0.064	0.059	1.179	0.278
Income	0.000	0.000	27.871	0.000***
Gender	1.768	0.369	22.921	0.000***
Constant	-4.641	0.971	22.857	0.000

Pseudo R-Square=0.510, Log likelihood = 325.340a, ***significant at 1% Level of probability
Source: Field Data, 2022

Age of the Respondents

Socio-Demographic Information on Farmers:

Table 1 shows a summary of the farmers' socio-demographic information including sex, age, education, farming experience, farming areas, farm income, main crops, and group memberships. It was found that nearly three-quarters of the respondents were male (69.86%). With the average age of farmers being 58 years, it is evident that they are part of an aging society. Indeed, a number of the respondents were aged between 51 and 60 years (44.66%), followed by those aged between 61 and 70 (33.97%). When taking into account those respondents aged 51 years or more, they made up the majority of 82.47%. It has been reported by others (Abdullahi, 2020) that farmer aging is prevalent across Northwestern Nigeria. This situation could affect farmers' use of social media, as age is a determining factor for adoption of new technologies (Baye, 2016). The age of the respondents also reflects their farming experience, which averaged around 27 years, while approximately one-quarter of them had farming experience of between 21 and 30 years. In fact, the respondents could be seen as

veterans because more than half of them had practiced agriculture for 21 years or more. Farming is undeniably their livelihood and this is unlikely to change in the foreseeable future. It was apparent that the respondents had a low level of formal education. A majority of them only had primary school education (81.92%), which is below the country's basic education level. Some had no formal education (3.29%), and only a fraction obtained basic upper secondary school education or more (3.29% and 0.82%, respectively). According to Bamiro and Oyetoki. (2019), young Thai farmers had gained more education, thereby improving the prospect for introducing modern technology into the field. However, the fact remains that farmers are largely part of the elderly group, and they possess limited formal education. Thus, the introduction of new technology may be challenging for them. The findings on the famers' use of social media applications presented below help to prove this point.

Table 2 revealed that most of the respondents (30.0%) indicated that social media helped to engage young farmers in agriculture through extension services. This implies that social media can play an important role in bridging the gap between youths in agriculture through extension. This is because social media plays a key role in disseminating information to and from both sides for enhanced agricultural production. This implies that social media is a good avenue for knowledge acquisition on agriculture among farmers in Northwest Nigeria. The implication is that extension services can be made available using social media and this will enhance the rate of networking among various groups of youths and increase the rate of information flow. This result is in line with Ifeanyi and Agu (2020) that the most important factor for using social media in agricultural extension is engaging the rural youths continuously in agriculture. In response to the question in your opinion, what are the areas where social media has helped in engaging the youth in agriculture? A focused group member said:

"Social media is the only option to connect us with agriculture through extension service. Extension service is very important in agriculture and we need them for information delivering. We are aware that numbers of extension agents had drastically reduced. Still government is not doing anything about it. So, from my own opinion I think social media usage in agriculture is a welcome idea that will not only disseminate agricultural information but will connect us back to agriculture. The same was reiterated in a focus group discussion. "Yes, social media will help to engage us in agriculture through extension because the two fit each." (Inferred from a Focus Group Discussion).

Age was positive and statistically significant at 1%. The positive relationship between age and usage of social media shows that a unit increase in age will lead to about 0.094 probability increase in the usage of social media. This means that the drive for the use of social media tools could be higher with increasing age. This implies that an increase in the age of the youth even when they grow beyond a certain age (35 years) their tendency to use social media may not decline. This result agrees with Nwanko and Anyanwu (2021) that age had positive relationship with ability to use ICT utilization. This implies that with age the youth are expected to acquire more capital to enable them use ICT. This result disagrees with the finding of Khan *et al.* (2016) who found out that age had a highly negative relation with internet usage thus increasing age represented falling average daily usage. On the other hand, the result disagrees with Adebayo (2017) that found age having an inverse relationship to the extent of use of ICT

tools, implying that younger farmers are more receptive to new ideas and innovations compared to older ones.

Education was positive and statistically significant at 1%. The positive relationship between education and usage of social media shows that a unit increase in education will lead to about 0.642 probability increase in the usage of social media. It is not surprising because majority of the respondents had tertiary education; they were therefore literates and could utilize social media ability. This means that the drive for the use of social media tools could be higher with increasing education. This implies that the higher the level of education attained, the higher the adoption of technology. The more educated farmers are the more likely it is that they have knowledge about usage of social media tools to acquire and disseminate agricultural information. This is true as educated people are more exposed to knowledge. This result agrees with the finding of Bamiro and Oyetoki, (2019) which revealed that education has positive relationship with ability to use ICT in the Study Socio-Economic Factors Affecting ICT Utilization by Youths in Fish Farming in Kaduna State. Further, this result also agrees with the study of Baye (2016) who found out that education was significant with the usage of ICT. The result agrees with the findings of Abdullahi (2020) who reported that educational qualification influenced ICT utilization.

Farm experience was negative and significant at 1%. The negative relationship between years of experience and usage of social media depicts that a unit increase in year of experience will lead to about -0.158 probability decrease in the usage of social media. The result has some negative implications for increased agricultural productivity because youths do not need to spend more years in farming before they can use social media. This suggests that experienced farmers make use of social media for agricultural information less often as compared to those with less farming experience. This result disagrees with Adebayo (2017) who reported that working experience had a significant positive relationship with the use of cyber-extension facilities.

Income was significant at 1% and had a positive relationship with the usage of social media. The positive relationship between income and usage of social media depicts that a unit increase in income will lead to about 0.001 probability increase in the usage of social media. By implication, it means that the more income the respondents earn, the higher the tendency for them to participate in the usage of social media. This implies that adoption of technology increases with enhanced increase in income. It is expected to be positive because it is the main drive for which most farmers go into farming or other economic activities hence a naira increase in income will result to an increase in the usage of social media. This according to Ifeanyi and Agu (2020) is because individuals with a higher level of income are likely to have a higher purchasing power for social media tools. This result agrees with Baye (2016) who found out that income had significant relationship with the use of cyber-extension facilities. Nwanko and Anyanwu (2021) found out that income is positively significant factor influencing ICT usage. In response to the question “what are the socio-economic factors that influences the usages of social media, findings were realized from the focus group that:

Coefficient of gender was positive and significant at 1% probability. This shows a direct relationship between gender and the usage of social media. This means that units increase in male respondents will result to an increase in the usage of social media. This means that males have better usage of social media than their female counterparts. This could be attributed to the fact that land ownership is low among women as they mostly depend on land owned by family/spouses (Bamiro and Oyetoki, 2019). Women lag behind on information access due to lack of asset ownership. Women are constrained in access and ownership of resources including capital and land than Men. This result agrees with the finding of Adebayo (2017) who found out that male respondents (68.8%), registered the most as compared to their female counterparts (31.2%) in the study carried out on use of social media as a source of agricultural information by small holder farmers in kiambu county. The finding also agrees with Abdullahi (2020) who found out that major respondents in a Study on Role of social media in Agriculture Marketing and its Scope were from the male gender more than the female respondents. Focus Group Discussions were in agreement with the above findings.

Group members pointed out that money is involved to buy social media tools and data. Secondly, they need to be educated enough to enable them use these tools very well. Moreover, if they are adequately motivated and rewarded by the Nigerian government, many youths might be attracted to agriculture and this could, in the long run, accelerate agricultural production in the study area.

Factors Influencing Usage of Social Media in Agriculture by the Youth

Logit regression result model produced the ratios that were used to test the hypothesis and further explained the influence each socio-economic characteristic had on social media usage. From the Logit regression on (Table 3), the R^2 was 0.510 (51.0%) which shows that the combined effect of the independent variables explained 51% of items relating to usage of social media. The remaining 49% were caused by other factors not included in the mode. This confirms that usage of social media by change agents to engage youth farmers was significantly influenced by their socio-economic factors. By implication, for youth farmers to successfully use social media for accessing agricultural information change agents are required, their socio-economic characteristics will also play a great role in the utilization of social media. The factors considered are Age, sex, education, farming experience, income, marital status, occupation, and membership of association, extension visit, farm size and household size. Furthermore, from the results obtained from the multiple regression analysis, the following interpretations can be deducted. The analysis showed that the following socio-economic factors age, education, farm experience, farmer's income and gender of the respondents are significant at 1 % percentage level of probability. Therefore, the null hypothesis is rejected for them. This implies that there is a significant relationship between them and the social media usage among the respondents in Northwest, Nigeria. For other socioeconomic factors namely marital status, occupation, membership of association, extension visits, farm size and house hold are not significant. Therefore, the null hypothesis is accepted for them. This also implies that there is no significant relationship between them and the social media usage among the respondents.

CONCLUSION/RECOMMENDATIONS

Social media are electronic communication tools that allow users to interact, create, share, retrieve and exchange information and ideas in any form that can be discussed upon, archived, and used by virtual communities and networks. Agricultural is not in new concept; however, changing platforms for communication can seem foreign to some people. Perception of social media as a valuable tool rather than a time-wasting application is important to change to extend to the value to more people. The popular social media tools i.e., Facebook, Whatsapp, and YouTube are being used for information delivery and sharing across different agriculture subsectors (crops, horticulture, dairy, goat farming) in Northwest Nigeria. The use of social media in agriculture increased opportunities motivated and increased the capacity of the youth to engage in profitable agriculture targeting niche markets. The outcome of this shows that: (a), Most of the respondents (30.0%) indicated that social media has helped change agents to engage youths in agriculture through extension services. and (b), Age, education, farm experience, income and gender of the respondents significantly influence the usage of social media in agriculture in the study area. Therefore, these variables should be able to lead themselves into policy formulation/advice to increase social media usage by extension agents towards training more youths in Agriculture in the study area. Extension agents therefore highly influence the usage of social media young farmers (Youth). In this regard, there is need to link social media to agricultural Extension Service delivery.

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