IMPACT OF SOCIAL MEDIA PLATFORMS ON FARMERS' LIVELIHOOD ASSETS IN NORTH-WESTERN NIGERIA

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ABSTRACT

This study assessed the impact of Social media on farmer's livelihood assets in North-western Nigeria. A multi-stage sampling technique was used to select 369 respondents that constitute the sample size of the study. Data used for the study were collected with the aid of a structured questionnaire which was analysed using Principal component analysis, a descriptive and inferential statistics tool. Results of the study revealed that the mean age of the respondents was 40 years, majority of whom were male (80%) and married (84%) with an average household size of 6 people. Most of the farmers (71%) had low level of education and the mean annual income and the average farm size were ₦928188.00 and 2.01 hectares respectively. Results further indicated that 22% of the farmer's Off-farm livelihood activities was being middlemen while, cereal farming (37%) and goat and sheep farming (68%) were more prominent On-farm livelihood activities engaged by the farmers. WhatsApp (90%) and Facebook (92%) were the leading Social media platforms used by the farmers. Majority of the farmers (84%) used social media platforms daily and majority (89%) used the platforms on hourly basis, also, 42% of them were lower social media users. Thus social media has a significant impact on the farmer's livelihood. Hence farmers should be encouraged to explore all online avenues to access extension services that could improve their livelihoods.

Keywords: Social media, Farmers, Livelihood

INTRODUCTION

Social media has interestingly revolutionized the information and communication domain in the world. Today's technological advancement and sophistication is able to change the structure of interpersonal communication that was originally face-to-face to a mediated interpersonal communication (Ferry *et al.,* 2019). The development of social networking sites has penetrated rural areas to remote areas; this has accelerated agricultural and rural development. A large number of farmers relies on mass media and to a large extent social media as their source of information and the basis upon which they form their opinions. Therefore, any messages in both the social and mass media will have a profound influence and effect on the entire agricultural communities and hence could improve the livelihood activities of the farmers (Radhakrishnan *et al.,* 2020).

Moreover, farmers' livelihoods and agriculture generally have undergone series of revolutions that have driven impact, efficiency, yield and profitability to previously unattainable levels. The next period of growth is digital revolution which was envisaged to affect mainly the farmers; hence 70% of the poorest 20% in developing countries have access to mobile phones (World Bank, 2016). Additionally, more than 40% of the global population has internet access and there are major initiatives to connect the farmers of developing countries (World Bank, 2016).

In Nigeria, social media forms an integral part of the lives of both young and aged and has succeeded in changing the attention and lives of the farmers and its usage as a means of communication and socializing tool becomes a significant discussion amongst farmers and hence they could create, innovate, diffuse, share and exchange their perceptions, intuitions and attitudes through different means (Radhakrishnan *et al.,* 2020).

Nowadays, online world is a realistic one, because public fondness for social media breeds a phenomenon that is exploited for developmental projects and extension service

delivery. It is in this regard that, the West African Cotton Limited (WACOT) created a WhatsApp platform for agricultural extension updates for its field officers, where the field officers upon receipt of those information they disseminate it to the farmers contracted by the company, and this digital model of agricultural extension service delivery is being used by other fertilizer companies like Notore and Indorama. Consequently, the diffusion of agricultural innovations championed by these multinationals is undoubtedly having a direct bearing on the livelihood of farmers in rural communities where these companies operates (Ebenehi, 2022).

However, securing adequately impactful livelihood for farmers has remained a big challenge for most developing countries across the globe, particularly Nigeria. These farming communities constitute about 70% of the Nigerian population and contribute substantially to the overall development of Nigeria through the supply of food, raw materials for agro-allied industries, surplus labour and market for goods produced in other sectors of the economy (Muhammad *et al.,* 2017). Hence, achieving a sustainable livelihood for farmers is an essential element at the root of all human development and economic growth (Barad, Fletcher, and Hillbruner, 2020).

An impactful livelihood is built when people combine and use their assets, capabilities and undertake activities to secure a means of living (ICRISAT, 2019). Therefore, the need for long term adjustments, adaptation and exploitation of natural resources within an overall economic, social and political context at both local and national levels which respond to changes in the context of time (Famine Early Warning Systems Network, 2018). It is in line with this that, studies (Ferry *et al.,* 2019, Kothari *et al.,* 2016) have indicated a steady increase in the use of social media amongst the rural communities in north-western region of Nigeria.

According to Michael *et al.,* (2021), the livelihood of farmers is paramount in the development of the Nigerian state, given

that more than 70% of the people in Nigeria are farmers and they are often characterized with extremely low level of livelihood and poverty. Despite all efforts geared towards livelihood improvement for the Nigerian farmers, these farmers are still impoverished, and this has been compounded by the institutionalized corruption from the side of government agencies mandated with agricultural and rural development (Ike, 2018). A fact that has surprised scholars, is that after more than five decades of agricultural and rural development programmes by government and donor agencies, the livelihood of farming families remain in a precarious condition, this failure is often attributed to poor project funding, low level of Local Government support, poor community support, capacity building as well as mounting insecurity (Iheanacho *et al.,* 2020). In addition, Food and Agriculture Organization (2019) opined that poverty reduction for the farming families can be achieved by e-extension and digitalization of agricultural communities through social media utilization which has the potential to change every part of the agricultural food chain, therefore management of rural community's resources can become highly optimized, individualized, intelligent and anticipatory. Digital agriculture will therefore create farming systems that are highly productive, anticipatory and adaptable to changes. This, in turn, could lead to greater food security, profitability sustainability and general improvement in farmer's livelihood (FAO, 2019).

This study was designed to answer the questions that has to do with socio-economic characteristics of the farmers in the study area, the livelihoods activities engaged upon by the farmers in the study area, the social media platforms used by farmers for their livelihood activities, the impact of social media platforms on farmers' livelihood in the study area. This will be relevant in achieving the research objectives which include to describe the socioeconomic characteristics of farmers in the study area; to determine the livelihood activities engaged by farmers; to determine the social media platforms used by farmers for their livelihood activities; to determine the impact of social media platforms on farmer's livelihood;

MATERIALS AND METHODS
Description of the Study Area
This Study was conducted in the North western Nigeria. The region is one of the six geo political zones of Nigeria, located between latitude $9^010'$N and $13^0 50'$N of the equator and longitude $3^035'$ and $9^0 00'$ E of the Greenwich meridian. The regions fall within the Northern Guinea Savannah and Sudan Savannah agro-ecological zones of Nigeria. It comprises of seven states namely: Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto, and Zamfara States with a total land mass of 216,065km² which is equivalent to 18% of the total land area in Nigeria. North Western Nigeria is bounded to the North by Niger Republic, North East by Yobe State, South east by Bauchi and Plateau States to the South by FCT and Nasarawa States, South West by Niger State and the far west by Benin Republic. The region is projected to be a home for about 54,839886 million people (NPC, 2023). The area is known for low annual rainfall with less than 800 mm of rain with a prolonged dry season of up to 9 months. The rainfall intensity is between the months of July and August with a minimum rainfall of about 60mm and a maximum of about 99mm, an annual variation in rainfall of between 15% and 20% (NIMET, 2023). The soils are reddish brown or brown soils of the semi-arid and arid areas and are known as ferruginous soils which are made up of about 85% sand with pH values that varied between 6.0 to 7.0 (Inuwa *et al.,* cited in Abaje *et al.,* 2016). The region has few trees and more arable crops are grown, cereal crops such as maize, millet, sorghum, cowpea, wheat and vegetables are also grown in the region as a means of livelihood (Ebenehi, 2022). Off-farm activities in the study area include trading, tailoring, bricklaying, welding, carpentry among others. Majority of the people living in the region practice agriculture as their main source of livelihood. Major languages spoken in the region include Hausa, Fulfulde, Zabarma, and Atyap.
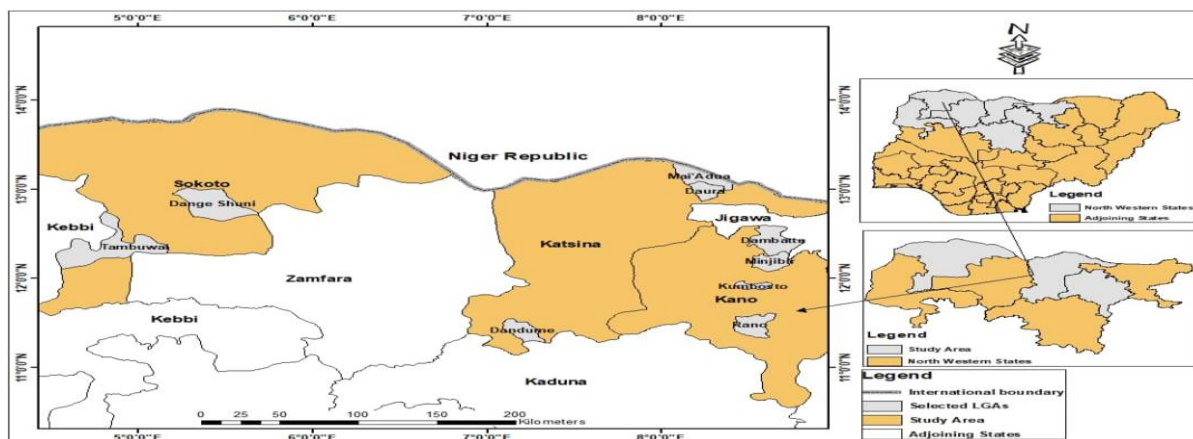

Figure 1: Map of the Study Area
Source: Geography Department, Usmanu Danfodiyo University Sokoto, Nigeria, (2023).

Sampling Procedure and Sample Size
Multistage sampling technique was used to arrive at the sample size of the study. The first stage involved a convenient sampling of three out of the seven states making up the total number of states in the region, the selection was based on the accessibility of the researcher to the states and the accessibility of the researcher to the groups of farmers using social media platforms. The second stage included a purposive selection of 50 percent of the total number of ADP

zone in each of the three states based on the number of Local Government Areas and the level and the intensity of agricultural production couple with the usage of social media among the farmers in each of the selected zones, hence, 2 ADP zones each were selected from Kano and Katsina States, as for Sokoto state with only two ADP zones, one ADP zone was selected. The third stage involved a random selection of two Local Government Areas from the selected ADP zones of the states, the fourth stage involved the random selection of

two communities or villages in each of the Local Government Area selected. In order to reduce the population of the respondents to a manageable level by the researcher, a 9 percent proportionate selection was made from the total

number of registered farmers in each of the communities or villages selected. This made us to arrive at a sample size of 369 farmers for the study.

Table 1: Sample Procedure and Sample Size

North western States	Selected States	No of ADPs	Selected ADPs (50%)	LGAs in the selected ADPs	No of Villages	Selected Villages	Farmers in Selected Villages	(9%) of farmers
Sokoto	Sokoto	2	Western ADP Zone	Dange/Shuni	21	Wababe	130	11
						Bayo	141	13
				Tambuwal	19	Jabo	140	13
						Bashire	123	11
Katsina	Katsina	3	Funtua Zone	Funtua	20	Jabiri	340	31
						Kamaji	320	29
				Dandume	25	M/Wando	339	30
						Tumburkai	338	30
			Ajiwa Zone	Daura	24	Gurjiya	300	27
						Dannakola	313	28
				MaiAdua	21	Dumurkol	320	29
						Tsabu	320	29
Kano	Kano	3	Danbatta zone	Danbatta	22	Digol	120	11
						Dausa	140	13
				Minjibir	25	Kunya	130	12
						Wasai	125	11
			Rano zone	Rano	23	Madachi	107	9
						Dawaki	120	11
				Kumbotso	21	Wailari	120	11
						Yankusa	115	10
Total		**8**			**221**		**4101**	**369**

Source: States Agricultural Development Project Offices, 2023

Data Collection
Both primary data and secondary information were used in this study. For the primary data, structured questionnaire was used to collect the primary data needed to achieve the study objectives. While secondary information was sourced from reviewed journals, textbooks, bulletins and news letters from relevant agricultural organizations, past Projects, Dissertations, Thesis and internet sources.

Data Analysis
Objective 1 2 and 3 were achieved using descriptive statistics and objective 4 was achieved using Principal component analysis.

RESULTS AND DISCUSSION
Socio-economic Characteristics of the Respondents
Age of the respondents
Results in Table 2 revealed that the pooled average age of the sampled farmers was 40 years implying that majority of the farmers using social media in the north-west Nigeria were in their active productive ages. This connotes that the farmers using social media in the study area were in the same age

range implying that they belong to middle age classes, therefore their youthfulness would allow them withstand all the rigours, stress and tedium involved in agricultural production, also these group of farmers are mentally capable and alert to adopt new ideas and innovations brought about by modernisation and technological advancement like the use of social media to facilitate the spread of agricultural information on both production and marketing which will have positive effect on their livelihood, this finding was in concordance with the finding of Guo *et al.* (2015) who reported that, age has a significant impact on agricultural output and invariably impactful on the livelihood of the farmers. This is in tandem with the finding of Halidu (2022), Haruna *et al.* (2019) and Abdulrahman et *al.* (2016) who additionally reported that the middle aged farmers are capable of providing sustainable food and livelihood security.

Sex of the respondents
Table 2 showed that majority (80%) of the respondents using social media in the study area were males and female farmers accounted for only (20%) of the respondents, also there were male dominance among the respondents in Kano State which

accounted for (80%) male dominance, while Katsina and Sokoto States accounted for (79%) and (81%) respectively. This is not unconnected with the fact that there is disproportionate access and acquisition social, economic and educational opportunities based on gender of an individual in the study area, this is in line with the finding of Lawson (2010) who carried out a similar research and established that most of the farmers in rural Nigeria are males, he concluded that the patriarchy nature of the farming population in the study area was as a result of the fact that men being the heads of the households are saddled with the responsibility to cater for the responsibility of the whole family hence they tends to dominate most of the out of home occupations like farming. Also men have higher access to educational opportunities so they tends to be more socially inclined to using technologies for their livelihood activities like the social media.

Marital status of the respondents
Results in Table 2 also indicated that cumulatively majority, (86%) of the respondents are married, 8% are single and very few (6%) were divorced. This finding is in tandem with the submission of Abdulrahman *et al.* (2016) Ajayi (2016) who reported that married respondents with additional member of household members to cater for could be encouraged and incentivized to adopt agricultural technologies and innovations.

Educational attainment of the respondents
Results in Table 2 further revealed that cumulatively 34% of the respondents had secondary education, 27% had either Ordinary National Diploma (OND) or National Certificate of Education (NCE), 22% of them had Bachelor degree, 4% had master's degree and only few (6%) had no formal education. Summarily, majority of the respondents had a certain level of formal education which could be the reason why most of them use one social media or the other for their livelihood activities. This finding is in agreement with the finding of Oladimeji *et al.* (2016) and Halidu (2022) who opined that education assist farmers in reducing the transaction costs for using technologies that could assist them in accessing and interpreting information regarding alternative income generating activities and this could be achieved using the social media.

Household size of the respondents
Table 2 shows that cumulatively more than half (55%) of the respondents had a household size of 1-5 persons, 32% of them had a household size of 6-10 persons, 10% of them had a household size of 11-15 persons, 2% of them had a household size that is within the range of 16-20 persons and only 1% had a household size of 21-25 persons. The average number of the household members in the whole of the study area is 6 persons. These findings imply that majority of the respondents in the study area had a relatively small household size, these results show a positive and a direct correlation with the educational attainments of the respondents as it has been scientifically proven that the higher the education of an individual the smaller the size of his household. This finding is in sharp contrast with the finding of Barnabas (2019) who reported a large household size among the users of the internet based e-wallet system in Kaduna state, Nigeria

Table 2: Distribution of the Respondents based on Socio-economic Characteristics (n = 369)

Variables	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
Age				
20 – 29	11(13)	28(12)	14(29)	53(14)
30 – 39	33(38)	83(36)	17(35)	133(36)
40 – 49	23(26)	96(41)	9(19)	128(34)
50 – 59	13(15)	22(9)	2(4)	37(10)
60 – 69	8(8)	5(2)	6(13)	19(6)
Mean	41.1	38.8	39.35	40
Sex				
Male	71(80)	184(79)	39(81)	294(80)
Female	17(20)	49(21)	9(19)	75(20)
Marital status				
Single	7(8)	15(7)	5(11)	27(8)
Married	75(85)	204(87)	39(80)	318(86)
Divorced	6(7)	13(6)	4(9)	23(6)
Widowed	0(0)	0(0)	0(0)	0(0)
Separated	0(0)	0(0)	0(0)	0(0)
Education				
Primary educ.	1(1)	19(8)	6(12)	26(7)
Secondary edu	43(48)	75(32)	6(12)	124(34)
OND/NCE	30(34)	53(23)	20(42)	103(27)
Bachelor	10(12)	64(27)	6(12)	80(22)
Master's degree	0(0)	6(3)	9(19)	15(4)
No formal educ	4(5)	16(7)	1(3)	21(6)
Household size				
1 -5	60(68)	122(52)	21(44)	203(55)
6 – 10	21(24)	76(32)	20(42)	117(32)
11 -15	5(6)	27(12)	4(8)	36(10)
16 -20	2(2)	6(3)	2(4)	10(2)
21 – 25	0(0)	2(1)	1(2)	3(1)
Mean	5	6	6	6

Source: Field survey, 2023; figures in parenthesis are in percentages

Farm size of the respondents

Results in Table 3 posited that the respondents were small scale farmers with an average cumulative farm size of 2.01 ha. In Kano state the average farm size of the respondents was 2.44 ha, in Katsina State the average farm size of the respondents was 1.90 ha and in Sokoto state, the average farm size of the respondents was 1.70 ha. Results of the finding in this study revealed that majority (74%) of the respondents in Kano state had a farm size of 1.0-1.5 ha in Kano State, also majority (77%) of the respondents had a farm size of 1.0-1.5 ha in Katsina state as compared to those in Sokoto state where 48% of the respondents had a farm size of 1.0 – 1.5 ha. Conversely, 5% of the respondents in Kano state had a farm size that ranges above 2.8 ha and 2% among them had a farmland that is above 2.8 ha in Sokoto state. This implies that majority of the respondents are small holder farmers producing mainly for consumption and very little for sale. Palemo *et al.* (2019) reported that any farm size lower than 5ha is regarded as small land holding while any piece of land above 5 ha hectares is regarded as large land holding.

Farming experience of the respondents

As shown in Table 3, the findings revealed that cumulatively majority (86%) of the respondents had a farming experience of 1-10 years, 9% of the respondents had a farming experience of 11-20 years, 2% of them had a farming experience of 21-30 years and only 3% had a farming experience of 31-40 years. The cumulative mean of the years of farming experience of the farmers is 7.01 years. These findings are in disagreement with the finding of Adeseji *et al.* (2015) who reported that the average years of farming experience of the farmers in his study area was 25 years

Land ownership of the respondents

Results presented in Table 3 revealed that cumulatively, more than half (59%) of the respondents acquired their land by inheritance, 19% acquired that land by gift, 16% acquired their lands by purchase and only 6% acquired their land by leasing. These results directly correlate and confirm the findings above which reported that most of the respondents had small land holdings, and which could be attributable to land fragmentation that occur due to sharing of farmlands to the children of the deceased. This is in tandem with the findings of Halidu, (2022) who reported that majority of the farmers in his study area acquired their farmlands through inheritance. However, in a related study Mugere *et al.* (2013) opined that land acquired through inheritance has a significant relationship with the adoption of improved technology.

Annual income of the respondents

Results presented in Table 3 shows that the mean annual income of the respondents in the study was ₦928,188.00. Based on cumulative annual income, findings revealed that 42% of the respondents had an annual income that ranges from ₦501,000.00- ₦1,000,000.00, 30% of the respondents had an annual income that ranges from ₦100,000.00-₦500,000.00, 16% of the respondents had an annual income of ₦1,500,000.00 and above and only 12% of the respondents had an annual income of ₦101,000.00- ₦150,000.00. The average annual income of the respondents in Kano state was ₦1,012,273.00 slightly below the average income of the respondents in Katsina state which stood at about ₦1,027,189.00 and significantly above the average income of the respondents from Sokoto state which stood at about ₦745,104.00. These findings are in agreement with Udiji *et al.* (2019); Itobiye (2013) and Okoh *et al.* (2018) who reported that farmers in their study areas were moderate income earners, which was found to negatively influence the farmers output and invariably their livelihoods.

Table 3: Distribution of Respondents based on Socio-economic Characteristics Cont... (n=369)

Variables	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
Farm size (ha)				
1.0 – 1.5	65(74)	180(77)	23(48)	268(72)
1.6 – 2.1	11(13)	52(22)	16(33)	79(21)
2.2 -2.7	7(8)	1(1)	8(17)	16(4)
>2.8	5(5)	0(0)	1(2)	6(3)
Mean	2.44	1.90	1.70	2.01
Farming experience (yrs)				
1 – 10	85(97)	188(81)	38(79)	311(86)
11 -20	2(2)	36(15)	5(10)	43(9)
21 -30	1(1)	0(0)	2(4)	3(2)
31 -40	0(0)	9(4)	3(7)	12(3)
Mean	4.19	7.75	9.27	7.07
Land ownership				
Leasing	3(3)	10(4)	9(18)	22(6)
Inheritance	43(49)	148(64)	26(54)	217(59)
Purchase	26(30)	21(9)	11(24)	58(16)
Gift	16(18)	54(23)	2(4)	72(19)
Annual income (₦)				
₦100000 - ₦500000.	19(22)	64(28)	28(58)	111(30)
₦501,000 – ₦1000000	45(51)	111(48)	0(0)	156(42)
₦1010000 – ₦1500000	9(10)	14(6)	20(42)	43(12)
>₦1500000	15(17)	44(18)	0(0)	59(16)
Mean	₦1,012,273	₦1,027,189	₦745,104	₦928,188

Source: Field survey, 2023; figures in parenthesis are in percentages

Extension contact of the respondents

The pooled result of the frequency of extension contacts amongst the farmers in Table 4 indicated that 36% of the respondents reported to have had extension service fortnightly, this involve both private and public extension service, 24% reported to have had extension contacts on weekly basis, 18% had an extension contact once in every six months, 9% of them had extension contact on daily basis, 6% had extension contact yearly and only few (7%) of the respondents had no extension contact. These findings imply that most of the respondents in the study area had a certain level of extension contacts and hence the respondents are expected to have favourable behavioural disposition to change agents and their technologies that could improve their livelihoods. This assertion is in agreement with the finding of Ebenehi (2023) and Uzonna and Qijie (2013) who corroborated with the finding of Khalid and Sherzad, (2019) who reported that regular extension visit facilitates the adoption of improved technologies in their study area.

Membership of association of the respondents

Results in Table 4 indicated that cumulatively 39% of the respondents are affiliated to All Farmers Association of Nigeria, 26% of them were affiliated to Poultry Farmers Association of Nigeria, 17% of the respondents were members of the Rice Farmers Association of Nigeria also 12% of the respondents were members of the Maize Farmers Association of Nigeria and only few (7%) of the respondents were not affiliated to any cooperative society or association. This shows that majority (97%) of the respondents were members of one farmers association or the other. This implies that social media usage for livelihood activities would be high as farmer's association would serve as an avenue where farmers socialize and share valuable insights on how they can improve their livelihood through both on and off-farm livelihood activities. These findings corroborate with that of Ebenehi (2023) and Effiom, (2014) where both reported that membership of farmer's association can lead to improvement in rural livelihood assets.

Source of credit of the respondents

Table 4 indicated that 35% of the respondent's access credit from informal sources like family and friends, 26% of the respondents' access credit from government loan schemes, 22% of the respondent's access credit from commercial banks, 6% among them access loan from Non-government loan schemes and only 13% among them had no access to credit. This implies that majority (87%) of the respondents across the states under study had access to credit. Access to credit is expected to have positive impact on the usage of social media and the livelihood of the respondents. This is in agreement with the finding of Kudi *et al.* (2010) who opined that access to credit positively influence the use and adoption of improved technologies and would enable the farmers purchase some farming inputs which could improve their productivity and thereby improve their livelihood. The finding on the other hand is in disagreement with the finding of Lawan (2018) who hypothesized that access to credit negatively influenced the adoption of improved technologies by farmers, meaning any increase in the access of farmers to credit could reduce or even hamper the chances of farmers adopting improved agricultural technology.

Table 4: Distribution of Respondents based on Socio-economic Characteristics Cont... (n=369)

Variables	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
Freq of extension contact				
Daily	4(5)	31(13)	5(10)	40(9)
Weekly	25(28)	43(18)	12(25)	80(24)
Fortnightly	30(35)	77(33)	19(39)	126(36)
Half a year	15(17)	58(26)	5(10)	78(18)
Yearly	14(15)	7(3)	1(2)	22(6)
No Extension contact	0(0)	17(7)	6(14)	23(7)
Membership of association.				
AFAN	53(60)	48(21)	17(35)	118(39)
RIFAN	17(20)	46(20)	5(10)	68(17)
MAN	7(8)	43(18)	5(10)	55(12)
PFAN	6(7)	77(33)	18(38)	101(26)
None member	5(5)	19(8)	3(7)	27(7)
Source of credit				
Informal sources	43(49)	107(46)	5(10)	155(35)
Commercial banks	16(19)	50(21)	12(25)	78(22)
Gov't loan scheme	11(12)	48(20)	19(40)	78(26)
Non-gov't loan scheme	3(3)	12(5)	5(10)	20(6)
No credit access	15(17)	16(8)	7(15)	38(13)

Source: Field survey, 2023; figures in parenthesis are in percentages

Livelihood Activities Engaged Upon by the Respondents
On-farm livelihood activities

Results in Table 5 indicated that the pooled results for crop based farming revealed that majority (81%) of the respondents were into cereal crop production, also majority (77%) were into legume crop production, majority (73%) were into mixed cropping, furthermore, 32% of them were into vegetable crop production, 21% were into root and tuber crop production, 20% among them were into tree crop production. Also findings indicated that the result for crop based farming shows the comparative advantages of the states under study based on agricultural commodity production. Based on legume crop production, Katsina state respondent's proportion of farmers is higher with 84% of the respondents producing leguminous crop compared to Sokoto (67%) and Kano (61%), likewise in cereal crop (87%) and mixed

cropping (76%) in which the Katsina state farmers were in the majority slightly above Sokoto and Kano states. Conversely, Sokoto state farmers were found to be the majority of the farmers in the study area in the production of root and tuber crops (63%) and vegetables (56%). This finding is in line with that of Abdullahi (2019) who opined that a significant proportion of the farmers in some part of the north –west Nigeria were into crop farming each state contributing significantly towards food security in Nigeria.

Based on livestock based farming, findings show that the pooled results for livestock based farming revealed that majority (68%) of them were into goat production, the same proportion (68%) were also into sheep production, almost half

(49%) of the respondents were into poultry production, 47% among them were into cattle production 19% of them were into fish farming and very few (9%) among the respondents were into Bee keeping. However, the population of the livestock farmers in the study area confirm that despite cattle rustling currently happening in the study area, livestock farming still offers a promising opportunity to the agricultural sub-sector of the nation's economy, this corroborates with the finding of Abubakar *et al.* (2019) who reported that livestock farming against all odds has historically been considered a highly resilient and a major economy boaster supporting the livelihood of millions of Nigerians.

Table 5: Distribution of the Respondents based on their On-farm Livelihood Activities (n=369)

On-farm livelihood	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
Crop based				
Cereal crop farming	58(66)	202(87)	38(79)	298(81)
Vegetable farming	27(31)	65(28)	27(56)	119(32)
Tree crop farming	15(17)	47(20)	11(23)	73(20)
Root & tuber farming	12(14)	36(15)	30(63)	78(21)
Legume crop farming	54(61)	198(84)	33(67)	285(77)
Mixed cropping	60(68)	176 (76)	36(75)	272(73)
Livestock based				
Poultry rearing	47(53)	114(49)	21(44)	182(49)
Bee keeping	6(7)	21(9)	6(13)	33(9)
Fish farming	17(19)	39(17)	14(29)	70(19)
Goat rearing	38(43)	170(73)	43(90)	251(68)
Sheep rearing	40(45)	181(78)	31(65)	252(68)
Cattle rearing	31(35)	120(52)	24(50)	175(47)

Source: Field survey, 2023; figures in parenthesis are in percentages

Off-farm livelihood activities of the respondents
Results in Table 6 indicated that the pooled result of the off-farm livelihood activities revealed that a higher proportion (24%) among them were into carpentry, 23% among them were masons, 22% among the respondents were middlemen, a good proportion (21%) among them were into daily wage labour, 18% of the respondents were civil servants,17% of them were into laundry services, 16% among them were into bricklaying, 16% among them were into painting, 16% among them were into tailoring, also 14% among them were into

automobile repair and 13% of the respondents were into commercial transport (*kabu-kabu*) also 13% among them were into dying.

However, Findings revealed that most of the respondents were into more than one livelihood activity hence they had a diversified livelihood strategy. This corroborates with the finding of Abdullahi (2019) who reported that majority of her sampled respondents in her study area had a diversified livelihood supporting activities.

Table 6: Distribution of Respondents based on their Off-Farm Livelihood Activities (n=369)

Off-farm livelihood	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
Commercial transportation (*Kabu-kabu*)	16(18)	19(8)	12(25)	47(13)
Civil service	14(16)	32(14)	22(46)	68(18)
Carpentry	29(33)	46(20)	14(29)	89(24)
Painting	16(18)	32(14)	13(27)	61(16)
Bricklaying	18(20)	27(12)	16(33)	61(16)
Laundry services	21(24)	22(9)	22(46)	65(17)
Auto-mobile repair	11(13)	29 (12)	13(27)	53(14)
Daily wage labour	30(34)	19(8)	31(65)	80(21)
Dying	6(7)	36(15)	7(15)	49(13)
Tailoring	18(20)	8(3)	33(69)	59(16)
Mason	14(16)	39(17)	31(65)	84(23)
Middleman	28(32)	21(9)	33(69)	82(22)

Source: Field survey, 2023; figures in parenthesis are in percentages

Social Media Platforms Used by the Respondents

Table 7 revealed that the pooled results for the users of social media among the respondents revealed that majority (92%) of the respondents used Facebook, also majority (90%) of the respondents used WhatsApp, 25% of them use Twitter, also 25% of them used Instagram, 17% used YouTube and 14% used Telegram for their livelihood activities. This implies that majority of the respondents use all the social media platforms with WhatsApp and Facebook having a higher proportion of users across the states. This finding corroborates with that of Ferry *et al.* (2019) who reported that that social media particularly WhatsApp and Facebook has revolutionized the communication and information domain today and has deeply penetrated even in the rural areas.

Table 7: Distribution of Respondents based on the Social Media Platforms Used (n=369)

Social media platforms	Kano state (n= 88) Freq (%)	Katsina state (n=233) Freq (%)	Sokoto state (n=48) Freq (%)	Pooled (n=369) Freq (%)
WhatsApp	78(89)	212(91)	44(91)	334(90)
Facebook	80(91)	208(89)	46(96)	334(92)
Twitter	18(20)	46(21)	16(33)	80(25)
Instagram	22(25)	27(12)	18(38)	67(25)
Telegram	12(14)	38(16)	6(13)	56(14)
YouTube	10(11)	43(18)	11(23)	64(17)

Source: Field survey, 2023; figures in parenthesis are in percentages

Impact of Social Media Platforms on Farmer's Livelihood Assets

Table 8 revealed that after subjecting the 18 indicators of livelihood to PCA, the KMO value obtained was 0.960. This is considered acceptable as it is greater than 0.7 and the data is appropriate for factor analysis. Bartlett's Test showed that correlation matrix is significantly different from correlation (P<0.000). SPSS uses the Kaisers criterion and extracts all factors with eigenvalues of 1 and above. Therefore, on account of that five factors were extracted which include natural capital, physical capital, human capital and financial capital, however, social capital was found to have an eigenvalue less than 1. These factors were explained.

Table 8: Test of Sampling Adequacy

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.960
Bartlett's Test of Sphericity	Approx. Chi-Square	8437.248
	Df	231
	Sig.	0.000

Results in Table 9 revealed that overall, five major components explained 79.9 % of the total variance in the livelihood status. Having been subjected to parallel analysis, these considered more statistically reliable than the initial factors suggested using Kaiser's criterion. The components were subsequently interpreted. The first component is made up of two indicators such as ownership of land and water. These explained 61 % variance before rotation and 58.7 % after rotation, their initial eigenvalue was 13.464 which become 12.923 after rotation and the component named as natural capital. The second component was composed of nine indicators including possession of a physical assets like a house, car, motorcycle, bicycle, generator, grinding machine and livestock, this was named as physical capital, the physical capital was responsible for about 7.71% of the variance which change to about 7.74% after rotation, the eigenvalue also changes from 1.698 to 1.703 after rotation.

Four indicators put together to form the third component and named human capital which is made up of knowledge, health, skill and ability to labor, the initial and rotated eigenvalues was 1.401 and 1.646 respectively, the human capital was responsible for about 6 % of the variance which improved to 7 % after rotation. The fourth component consists of three indicators including savings, loans and regular income, it was hence named financial capital and responsible for 4 % and 5 % of the variance before and after rotation respectively, its initial eigenvalue of 1.021 improved to 1.312 after rotation. Lastly, the fifth component comprises of four indicators such as social contacts and network, membership of association, membership of cooperative society, confidence and trust in relationship hence it was named social capita, its eigenvalue was found to be less than one.

The factor that explained the highest proportion of variance of livelihood among the social media users as a result of their usage of social media in the study area was natural capital, this was followed by physical capital, human capital and financial capital components.

Table 9: Total Variance Explained by the Factors Extracted

Component	Number of indicators	Initial Total variance	Initial Percentage variance	Initial Cumulative Variance	Rotation Total variance	Rotation Percentage variance	Rotation Cumulative Variance
1	2	13.464	61.200	61.200	12.923	58.741	58741
2	9	1.698	7.716	68.916	1.703	7.742	66.483
3	4	1.401	6.370	75.286	1.646	7.483	73.966
4	3	1.021	4.642	79.928	1.312	5.963	79.928

1 = Natural capital,2= Physical capital,3= Human capital,4 = Financial capital,5= Social capital
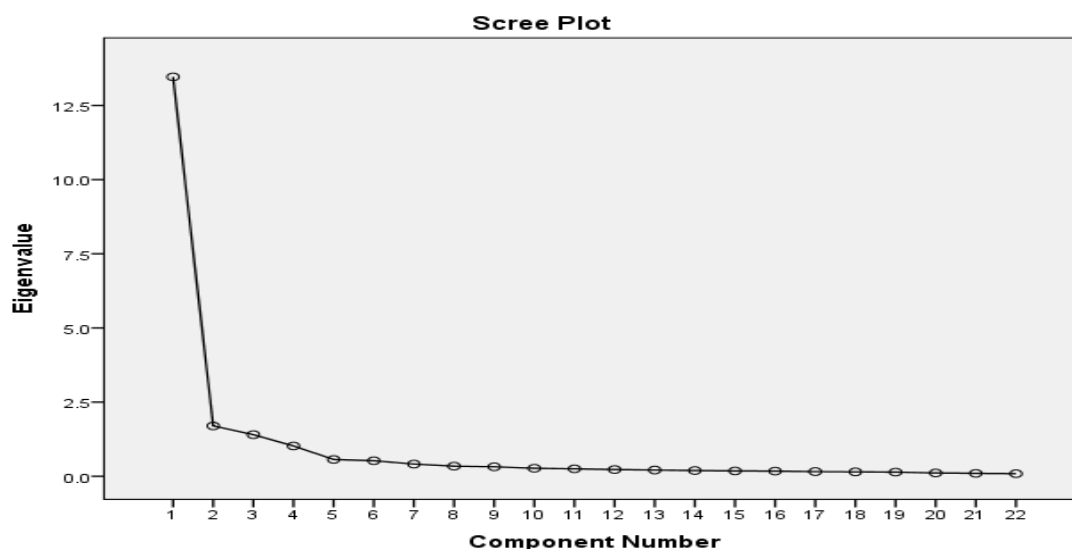
Figure 2: Scree Plot for Livelihood assets

CONCLUSION

The study assesses the impact of social media on farmer's livelihood in the north-west Nigeria. The study specific objectives were to describe the socioeconomic characteristics of farmers in the study area; determine the livelihood activities engaged by farmers in the study area; determine the social media platforms used by farmers for their livelihood activities in the study area; examine the frequency, level and the average time spent on social media by farmers in the study area; determine the impact of social media platforms on farmer's livelihood; Multi-stage sampling technique was used to select 369 farmers from the three selected states in the north-west Nigeria using a questionnaire. Descriptive and inferential statistics were used to analyse the data collected from the study area.

With respect to Socio-economic characteristics of the respondents, the results of data analysis indicated that majority were males with a mean age of 40 years. The mean number of people within the household under study were 6 persons, majority of the respondents had lower level education with the highest percentage having Ordinary National Diploma (OND) and National Certificate of Education (NCE). The mean number of farm size was 2.01ha, majority of the respondents were married. The mean number of farming experience was 7.07 years. The mean annual income of ₦928188.00, a good number of the respondents were affiliates of All Farmers Association of Nigeria, a good proportion of the respondents had extension contact fortnightly. Based on access to credit, a good number of them access credit facilities from informal sources and more than half acquired their lands by inheritance.

Based on On-farm livelihood activities of the respondents, the pooled result indicated that majority were into cereal crop production, also majority of them were into goat farming. The pooled result of Off-farm livelihood activities results indicated that a good number of the respondents were middlemen. With respect to social media platforms used by the respondents, result revealed that majority used Facebook and also majority of them used WhatsApp. Based on impact of social media platforms on farmer's livelihood, results revealed that social media had a significant impact in the livelihood assets of the respondents.

Following the logical interpretation of the research findings, the study concluded that the farmers in the north-west Nigeria

were characterised with lower level of education, fewer household size, farmers cultivated fewer hectares of land and farmers earned relatively moderate amount of income per annum. The study also concluded that farmers in the study area majorly used WhatsApp and Facebook as the main social media platforms used for livelihood activities. Also the study concluded that farmers engaged in both on-farm and off-farm livelihood activities, the study finally concluded that social media had a significant impact on the livelihood assets of the respondents.

RECOMMENDATIONS

Based on the findings of this study, the following recommendations were made:

Farmers should be encouraged and motivated to explore all avenues including that of the social media to form both online and offline cooperative societies and they should be enlightened to use the cooperative society to boast their socio-economic status

Farmers should be encouraged to take advantages of the opportunities modern ICT particularly what social media offers to enhance their production and marketing

Extension organization both private and public should be encouraged to explore online avenues to enlighten of the farmers to diversify into other off-farm livelihood activities thereby improving their quality of life.

Agricultural Extension agency and other non-governmental organizations working in the study area should design and provide need based training programmes on how to ensure a paradigm shift on the use of social media for socialization only to the use of social media for production and marketing of agricultural commodities.

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