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ANALYSIS OF INFORMATION NEEDS ON CLIMATE SMART AGRICULTURAL PRACTICES AMONG ARABLE CROP FARMERS IN MAKURDI LOCAL GOVERNMENT AREA OF BENUE STATE, NIGERIA

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Abstract
The study analyzed information needs on climate smart agricultural practices among arable crop farmers in Makurdi Local Government Area of Benue State, Nigeria. The Population of this study consisted of all arable crop farmers in Makurdi Local Government Area of Benue State, Nigeria. Stratified, purposive and simple random sampling techniques were used in selecting a sample size of 125 farmers. Primary data were collected using questionnaire. Data collected were analyzed using descriptive statistics. The findings revealed that majority (51.20%) of the respondents were males and 53.60% were at least 20 years old. The findings also showed that the existing information were on crop rotation (72%) and farmers needed information on climate change adaptation (60%), factors influencing information needs included motivation (61.60%) and prior knowledge (58.40%). Constraints to information needs were information overload (0.4868) and high cost of accessing internet (0.4723). It is recommended that, timely and accurate information on climate smart agriculture should be disseminated to the farmers by extension agents.
Keywords: Analysis, Information, needs, climate smart, agricultural, practices

1.0 Introduction

There are several definitions of information needs, however, Ashikuzzaman (2018) defined information needs as specific requirements or wish for acquiring information to fulfill a specific intention or achieve a goal. Information needs arise in various contexts and drive people and organizations to seek, evaluate and access relevant information from different sources. By obtaining, understanding clearly and

addressing information needs, people and organizations can solve problems, contribute to personal and professional growth, make informed decisions and advance knowledge. Information is next to food, shelter, and clothes. Nowadays that the society has become highly interconnected, information has become the lifeblood of this generation. Humanity cannot do anything without information. In agriculture, information is needed to make decision on what to produce, how to produce it, when to produce, how to sale and where to sale among others.

Information need involve understanding what information is required to address a particular situation or objective. This includes determining the scope, depth, and specific information needed. For instance, a farmer planting soybean may require information needs related to types of soil, fertilizers and herbicides required, when to plant the crop and certain pests/diseases associated with crops, as well as markets to sale the produce. In order to address information needs, individuals or organizations typically engage in information-seeking activities. This involves searching for, accessing, evaluating and validation of information from various sources, such as friends, journal, articles, magazines, websites and extension agents, among others. The information sought must be reliable, credible, complete and relevant to meet the identified needs.

Information needs can vary in complexity and urgency. Some needs may be satisfied through quick searches or consultations on one hand and others may require more extensive research or in-depth analysis on the other hand. It is important to be aware that information needs are not static; they may change as new challenges emerge,

new questions arise, or new information becomes available.

Effectively addressing information needs, requires information literacy, critical thinking skills, and the ability to analyze and evaluate information from different sources. It also involves understanding the strengths and weaknesses of different information sources and being aware of the important considerations involved in accessing and using information.

The increasing frequency and intensity of climate-related events such as droughts, floods and desert encroachment just to mention a few, have disrupted agricultural production and reduced crop yields. Smallholder farmers, who constitute majority of the agricultural workforce, are particularly susceptible to these changes due to their limited adaptive capacity associated with lack of adequate information and access to information (Ozor *et al.,* 2021). Despite the growing recognition of the importance of climate smart agriculture (CSA), there remains a substantial gap in the dissemination of information about these practices to farmers in Nigeria. Many farmers are unaware of the benefits and implementation of CSA practices and existing extension services are often inadequate in providing timely and relevant information (Ayinde *et al.,* 2022).

2.0 Objectives of the Study

The broad objective of this study was to analyse information needs on climate smart agricultural practices. The specific objectives of the study were to:

i. describe the socio-economic characteristics of the respondents.
ii. identify the existing information on climate smart agriculture of the respondents

iii. determine information on climate smart agriculture practices.

iv. identify factors influencing information needs and

v. identify constraints to accessing information needs.

3.0 Methodology

The study was conducted in Makurdi Local Government Area (LGA) of Benue State, Nigeria. The LGA shares boundaries with Guma LGA to the North-east, Gwer LGA to the South, Gwer-West LGA to the West and Doma LGA of Nasarawa State to the North-west. The LGA is divided into two major blocks by River Benue, hence the North and South banks. It has a landmass of 16km radius, Makurdi town.The headquarters of the LGA also serves as the State capital. Makurdi lies on the geographical coordinates of 7^0 20 N latitude and 8^0 20 E longitude. The major ethnic groups are Tiv, Idoma and Etulo. The people are petty traders, civil servants and farmers, growing crops such as yam, pepper, rice, cassava, maize and sorghum. Farmers also keep livestock such as goats, pigs and poultry. The people are known for subsistence farming, especially rice and yam production. The population of this study consisted of all arable crop farmers in Makurdi Local Government Area of Benue State, Nigeria and due to enormity of this population, 125 respondents were selected as sample size, using stratified, purposive and simple random sampling techniques. Makurdi Local Government Area is made up of 11 council wards. Four council wards were purposively selected due to high population of farmers. The council wards were Agan, Mbalagh, Fiidi and Wailomayo. One rural community was randomly selected from each council wards. A sampling frame was developed for each of the communities and using proportional allocation of 8 % (0.08)

across board, a total sample size of 125 respondents was selcected.

Data for this study were collected from primary source using a structured questionnaire. The research instrument was validated by experts in the Department of Agricultural Extension and Communication, Joseph Sarwuan Tarka University, Makurdi, to ensure face and content validity. Data collected were analyzed using descriptive statistics.

The broad objective is to analyzed information needs on climate smart agricultural practices among crop farmers in Makurdi Local Government Area of Benue State, Nigeria and the specific objectives are to:

4.0 Results and Discussion

4.1 Socio-economic characteristics of the respondents

Table 1 revealed that majority (51.20%) of the respondents were males, while 48.80% were females. This implies that, a fairly balanced representation of both male and female farmers in the study area, however males were more than females. In Nigeria, few households are headed by females. The finding is in contrast to Olayemi*et al*. (2012) who reported that females dominates the farming system in most sub-Saharan African (SSA).

Table 1 also showed that majority (53.60%) were between 20 and 30 years old, with a mean age of 32 years. The farmers were relatively young and of average age, implying that young farmers were engaged in farming in the study area. The finding confirms Feder*et al.* (2015) who stated that young people were more involved in farming and that young farmers tend to be more open to adoption of new agricultural

practices, which may increase their productivity.

Regarding marital status, majority (52.80%) of the respondents were married and 35.20% were single. Marriage confers people with responsibilities, hence the need to find a source of livelihood to be up to the immediate family responsibilities. Engaging in farming is not seeing to be as expensive as compared to other enterprises most married people who have other source of livelihood find it as a last resort to enable them cater for their families.

Table 1 further revealed that, 49.60% attended tertiary institution, 34.40% had secondary education and an average time spent in school was 9 years. A reasonable (49.60%) proportion of the respondents attended tertiary institutions. Education is an important tool in human life; farmers who are educated are more likely to adopt innovations better than those with little or no education. This finding aligns with Oyekanmi and Okeleye (2017) who stated that high literacy level among farmers in North-central Nigeria has supported the dissemination of agricultural innovations to farmers.

It was also found that, 45.60% had at least 4 household members, with average household size 5 persons. In a society where manual farming is practised, smaller household size may suggest limited family labour availability. However, this could also mean fewer dependents, potentially allowing farmers to allocate more resources towards other investments. The finding is in tandem with Effoing (2015) who stated that most farmers had between 3 and 4 persons in their households.

Table 1 showed that majority (73.60%) of the respondents earned at least

₦500,000.0 with a mean income of ₦406,920. This implies that farmers had relatively low level of income. The implication is that they were small scale farmers who may lack many farm resources including collateral to obtain credit from the formal source and other farm inputs to expand their farm enterprises. The finding is similar to Sodiya and Oyediran (2014) who stated that subsistence farmers in Nigeria have similar income patterns, which limit their expansion of farm enterprises.

Results on farming experience indicated that 36.80% of the respondents had 6 to 10 years of farming experience, with an average experience of 9 years. This level of experience provides a fundamental understanding of smart crop agricultural practices, although long-term experience could be more beneficial for adopting advanced smart crop agricultural practice techniques. This observation aligns with Altieri (2002) that farmers with moderate practical experience are more likely to engage in sustainable agricultural practices.

Table 1 depicted that 54.40% of the respondents had farm size of more than 7 hectares, with a mean farm size of 4 hectares. This is relatively large farm size, implying that many farmers may have operated beyond subsistence levels, potentially allowing for greater agricultural output. However, one thing with subsistence farmers is that the farmland may be scattered at different locations, moving from one piece of land to another may take many hours and also, making it practically difficult for it to be mechanized.

Majority (90.40%) of the respondents had limited extension contact of at least 4 times in a year with an average mean of 3 contacts (Table 1). This limited contact with extension services may hinder farmers' access to up-to-date information on agricultural innovations, potentially slowing down adoption process of beneficial practices.

Table 1: Socio-economic Characteristics of the Respondents (n=125)

Variables	Frequency	Percentage	Mean
Sex			
Male	64	51.20	
Female	61	48.80	
Age (years)			
20-30	67	53.60	
31-40	33	26.40	32
41-50	17	13.60	
51-60	6	4.80	
= 20	2	1.60	
Marital status			
Married	66	52.80	
Single	44	35.20	
Separated	8	6.40	
Divorce	4	3.20	
Widower	2	1.60	
Widow	1	0.80	
Level of education			
Tertiary	62	49.60	
Secondary	43	34.40	
Primary	15	12.00	
Non-formal	5	4.00	
Years spent in school (Years)			
5-8	39	31.20	
13-16	36	28.80	
9-12	24	19.20	
= 4	22	17.60	9
> 16	4	3.20	
Household size (persons)			
= 4	57	45.60	5
5-8	48	38.40	
9-12	20	16.00	
Annual income (Naira)			
= 500,000	92	73.60	
500,001-1,000,000	30	24.00	406,920
> 2,000,000	2	1.60	
1,000,001-1,500,000	1	0.80	
Farming experience (years)			
6-10	46	36.80	
= 5	39	31.20	9
11-15	22	17.60	
> 20	11	8.80	
Farm size (Hectares)			
> 7	68	54.40	
3.1-5.0	21	16.80	4
11-15	22	17.60	
= 3	18	14.40	
5.1-7.0	18	14.40	
Contact to extension agent			
= 4	113	90.40	
5-8	12	9.60	3

4.2 Existing information on Climate smart Agriculture

Table 2 revealed that majority (72%) of the respondents had access to information on crop rotation. Crop rotation is one of the simple and very important smart crop agricultural practices farmers can apply that is capable of reducing pest/disease infestations, improve soil nutrients, reduce soil erosion and improve crop yields among others. The finding confirms Giller *et al.* (2015) that crop rotation is a core element of sustainable agriculture, contributing to soil health and pest management. Extension agents should enlighten farmers on the principles, importance and encourage them to adopt crop rotation.

Table 2: Existing Information on Climate Smart Agriculture (n=125)

Technologies	Frequency	Percentage
Crop rotation	90	72.00
Climate change adaptation	87	69.60
Resilience and risk management	82	65.60
Sustainable agriculture	81	64.80
Soil conservation management	80	64.00
Integrate pest management	75	60.00
Conservation agriculture	72	57.60
Organic farming	69	55.20
Climate change mitigation	60	48.00

Multiple responses

4.3 Information needs on Climate smart Agriculture

Table 3 showed that majority (60.80%) of respondents needed information on crop rotation and water conservation techniques each. Information on crop rotation and water conservation techniques are very essential; farmers require this information to add to their local knowledge to be able to adjust to the current realities of climate change. The

negative effects of climate change on the environment have created a need for farmers to consistently adopt climate smart agricultural practices in order to obtain high yields. Another important aspect of smart crop agricultural practices is that, some of them are location specific, which allows farmers in a particular location to practise it in their own way. The finding is in line with Ajayi *et al.* (2018) that there is a growing demand for information on smart crop agricultural practices adaptation strategies especially in places that are highly vulnerable to climate change.

Table 3: Information Needs on Climate Smart Agriculture (n=125)

Variables	Frequency	Percentage
Crop rotation	76	60.80
Water conservation techniques	76	60.80
Climate adaptation practices	75	60.00
Greenhouse gas reduction techniques	72	57.60
Disease resistant crops	65	52.00
Drought resistant crops	64	51.20
Organic farming method	61	48.80
Soil fertility management	61	48.80
Agroforestry practices	59	47.20
Sustainable pest control	56	44.80
Access to climate smart resources	56	44.80
Renewable energy usage	54	43.20
Effect of climate change	53	42.40
Efficient irrigation methods	49	39.20

Multiple responses*

4.4 Factors influencing information needs

Table 4 indicated that motivation (61.60%) and prior knowledge (58.40%) were some of the factors influencing information needs. A major (61.60%) proportion of the respondents identified that motivation was one of the factors influencing information needs. Motivation is an important factor in all aspect of life; motivation serves as a driving force for all human beings to get involved in any action, to apply an idea and also to implement it. Farmers are motivated in applying smart crop agricultural practices on their farmland to obtain high yield. The finding is in line with Rogers (2003) that

motivated farmers are generally more proactive in seeking agricultural information to improve their productivity and resilience.

Table 4: Factors Influencing Information Needs (n=125)

Variables	*Frequency	Percentage
Motivation	77	61.60
Prior knowledge	73	58.40
Environmental concern	68	54.40
Interest	66	52.80
Farming experience	66	52.80
Educational level	66	52.80
Geographical location	65	52.00
Cultural background	64	51.20
Time constraints	62	49.60
Awareness	55	44.00

*Multiple responses

4.5 Constraints to accusing information

Table 5 of factor analysis procedure with varimax rotation applied to 7 attributes yielded a 2-dimensional solution, namely; technological factors (Factor 1) and socio-cultural factors (Factor 2). For technological factors, attributes with high loading included limited internet access (0.7124), high cost of accessing internet (0.4723), information overload (0.4868) and others (0.4134). Limited internet access (0.7124) is one of the challenges all the internet users are facing in Nigeria. Internet has made access to information very simple as within the comfort of your room information on different things can be accessed. In Nigeria, however, poor or limited access to internet has made many people disenchanted with internet service providers. Many internet users buy data with the hope of having access to certain information on the internet and end up not getting the information at their desired time because of service fluctuation or non-availability. Poor access to internet has left many people frustrated in their attempt to

access online services, the situation is even worse in the rural areas. The finding confirms Effoing (2015) that poor internet infrastructure in many locations impedes farmers' ability to access agricultural information effectively.

For socio-cultural factors, attributes with high loading included language barrier 0.2897 and high cost of accessing internet 0.4723 Language barrier is one of factors that affects access to information, especially among the rural farmers, who may or may not have the digital literacy to access information that is written in other languages. Most online information is written in foreign languages and this is a strong barrier against access to it by the rural farmers, who may be good at their local dialect only. This is in line with Feder*et al.* (2015) that one of the greatest barriers to farmers' access to online resources is the non-availability of local dialect online materials, which has made it difficult for farmers who can read and write only in the local dialect.

Table 5: Constraints to Accessing Information (n=125)

Variables	Factor 1	Factor 2
Limited access to internet	0.7124	-0.1976
High cost of accessing internet	-0.1824	0.4723**
Outdated information	0.3888*	-0.0602
Lack of relevant and local information	0.4300*	0.0428
Language barrier	0.1687	0.2897**
Information overload	0.4868*	-0.1702
Others (Socio-cultural, institutional and technological)	0.4134*	0.1016

Varimax with Kaiser's Normalization
*Factor 1 = Technological constraints
*Factor 2 = Socio-cultural contraints

5.0 Conclusion and recommendations

Information is an essential component of our daily lives, and the need for information is pervasive across various domains. From personal growth to all facets of development, access to relevant and accurate information is critical to making informed decisions and achieving our goals. The need for information has become even more critical in today's fast-paced and ever-changing world. Individuals and organizations need access to the latest research, trends, and ideas to stay competitive and relevant.It is recommended that timely and accurate information on climate smart agriculture should be disseminated to farmers by extension agents

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