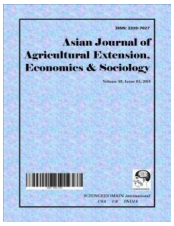

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Assessment of Mass Media Dependency for Climate Change Information Sourcing among Agricultural and Fishery Extension Service Field Agents in Akwa Ibom State

Samuel Awolumate[1*]

[1]Department of Fisheries and Animal Sciences, Faculty of Agriculture, National Open University of Nigeria, Kaduna Campus, Kaduna State, Nigeria.

Author's contribution

The sole author designed, analyzed and interpreted and prepared the manuscript.

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ABSTRACT

This study assessed the field agents' mass media dependency status for sourcing of environmental and climate-proof agricultural and fishery information for extension service delivery in Akwa Ibom State, Nigeria. Specifically, the study evaluated how mass media dependent were the spatially distributed agents, when sourcing for information on climate change and agriculture. Also the extent of agro-fishery information sourcing among field personnel of AKADEP and the climate change friendliness of Agricultural Development Programme in Akwa Ibom State. All the field agents served as population and sample for the study. The data were obtained through a validated questionnaire and were subjected to descriptive statistics. The results revealed that 58.4 percent of the respondents rarely sourced for climate change information in textbooks; while about 30.9% frequently do. About 55.1% rarely sourced for it in libraries outside their department or office; while 19.7% do that frequently. About 51.1% of the respondents frequently sourced for climate change information on conference proceedings; while 38.8% rarely do so and 10.15% never do that at all. Furthermore, about 62.0%,57.9%, 52.2% and 58.4% frequently sourced for climate change

**Corresponding author: E-mail: sawolumate@noun.edu.ng;*

information from journals, newsletters, newspapers, magazines and radio/television respectively while about 28.7%, 35.4%, 41.0% and 38.5% respectively do that rarely and 9.0%, 6.7%, 6.7%, and 2.8%respectively never do that at all. This could be suggesting that there is more dependency on print than audio/audio-visual media within the peri-urban and rural regions. Extension agents with low usage of some of the tools could be those without interest in using these tools or perhaps they have scanty knowledge of how to use these resources.

Keywords: Media; information seeking; agriculture; extension; development; climate change.

1. INTRODUCTION

One of the best approaches to capacity building on environmental and climate change resiliency is effective environmental-friendly agricultural extension education through the mass and social media, [1,2,3,4] and [5]. Thus, Information sourcing forms the core requirement for this capacity building process if the development of an efficient field extension agents in Agricultural Development Programme and other development communication agencies is strongly desired [5]. According to [6,7] and [8] the agricultural and fishery field agents are primarily saddled with the responsibilities of reviewing and communicating useful information towards achieving community and agricultural development policy goals, whether at short, medium and long terms. It is also strategically structured to disseminate knowledge dealing with crops, fisheries, forestry, and livestock etc,. The major objective of agricultural and fishery extension programme is to facilitate improved productivity and, in turn, enhance local and national food security and alleviate rural poverty. The agricultural and fishery field agents are mandated to provide technical and advisory support services as well as supplies of input if a need arises to promote adoption of high productivity enhancing techniques. They are the teachers to the farmers and as well as non-farmers [6]. Communication of useful information about climate smart agriculture is not excluded from a list of knowledge that requires urgent dissemination across the study area. The uncertainty surrounding the changing state of climate in Nigeria is quite discernable and opinions of scientists in the literature suggest huge uncertainties as changes in climatic conditions unfold [9,4,10,3] and [11]. Although positive and negative scenarios are being speculated, much concerns are paid towards more risk to the farmer with respect to production. Farmers in Akwa Ibom State may not understand the drivers of climate change [9], but it is certain that the dynamics of climate change will definitely alter the cropping and soil management systems and will cause many diversification strategies in order to mitigate and adapt to unfolding conditions [12]. Definitely, income and other livelihood activities are at risk; as majority are already living below the World Bank poverty line of two (2) dollars perday [13].

The social and mass media thus offer a potential platform, which large number of people can receive information and entertainment; through internet, television, radio and the newspapers. The media is one of the veritable tools needed for the delivery of key information on climate issues [13] especially in regions and localities that are already vulnerable. It took relatively too long for the world to face the fact that the earth is getting warmer and human beings are to be blame mainly [4]. Not all the world's inhabitants are ready to accept that everyone can take action to mitigate the damage [14] and [15]. Climate change is now a global phenomenon and the consequences in different regions is becoming more significant [16]. Though, at the primordial stages, many reasons were attached to socio-cultural and religious beliefs. Recently, research reports have shown that the effect of climate change and uncertainties before and during planting seasons has led to an unusual sequence of poor harvest and food shortages, [3,17] and [9]. In the study area, climate related stressors are already influencing the agricultural processes and outputs, causing poor yield of crops and fisheries outputs [17] and [9]. Nothing can stop the marching of climate change, but there is still time to mitigate its effects if there is a strategized extension education communication programme. Furthermore, technical support is needed for the creation of awareness on the mitigation of the impact of climate change on livelihoods from fishery and agriculture sectors in the dry tropical regions especially in the sub-Saharan Africa [12] and [3]. The sub-saharan Africa is already fragile due to prevailing climatic conditions and population growth. Unlike in the temperate zones, the production seasons becomes shorter when the temperature rises. Rice yield, for example start declining at over

34°Celsius. Even more worrisome, are changes in the rainy season and rainfall intensity. Temperature and rainfall have direct impact on crops and fisheries sectors [11]. Falling outputs in areas where communities rely almost exclusively on agriculture were noted to have the devastating effect, [16,12] and [10]. Having realized that one of the best approaches to capacity building on environmental and climate change resiliency is effective environmental-friendly agricultural and fishery education, it became expedient to assess the human resource capacity of the Akwa Ibom Agricultural Development Programme on the environmental and climate-smart agriculture friendliness and how mass media dependent are the field agents in acquiring knowledge on subject matter that have direct impact on the service delivery efficiencies.

Nigeria and indeed Akwa Ibom State risks the worst ravages of global climate change, if most of its development extension communication agencies seem to be ignorant of the basic issues and the grave challenges they pose [1]. It is essential that the agricultural and fishery field agents be more proactive in acquiring and disseminating climate change information through the mass media to areas that awareness is low. The information that needs to be communicated clearly are: climate change is real and the effects are long term; it is possible to adapt to mitigate the impacts that climate change will bring and that there are risks to the do-nothing option. This could be aimed at significantly raising the level of awareness of the community to the opportunities and threats brought about by climate change and to accept their responsibilities to adapt to and mitigate against its impacts. People who are severely impacted by climate change will be better able to adapt if they are well informed about the issue. Farmers will change the varieties of seeds they plant, the crops they grow, the times they sow and reap and adaptive techniques to promote aquaculture and managed artisanal fisheries. Water and other resources will be husbanded far more carefully. Floods and drought will be anticipated and planned for, livelihoods and businesses will change and adapt [11].

2. METHODOLOGY

The study was carried out across the six (6) agricultural development project zones of the thirty-one (31) local government areas of Akwa Ibom State. The State is located at latitude 4º33[1] and 5º33[1] North and longitude 7º25[1] and 8º25[1] East and occupies a total land area of 7,246 square kilometers, with an estimated population of about 3.9 million [18]. The study area is in the rain forest zone and has two distinct seasons viz; the rainy and the dry season. Most of the inhabitants of the area are crop farmers and substantial fish farmers and fishermen. In addition, some micro-livestock are usually raised in the backyard of most homesteads. The study population is made up of all field personnel or otherwise called development communicators of Akwa Ibom State Agricultural Development Programme (AKADEP). The population served as the sample size. Out of the 206 respondents earmarked to administer the questionnaire, a total of 178 on the extension agents willingly participated in the exercise. Descriptive statistics such as frequency count and simple percentages were used to analyze data collected on socio-economic characteristics, knowledge level of AKADEP agents, information seeking behavior and information sourcing of AKADEP agents on climate change. The composite index (CI) analytical procedure was adopted to derive the proportional levels or probabilistic estimate of the construct variable, which was based on the measurable attributes of the Utilization of Climate Change Information Sources (UCCIS), level of climate-change friendliness (CCF) and climate change information sourcing aptitude (CCISA), [19] and [8]. In any given scale, its components either at ordinal or nominal scale $X_{1.....}X_{n,}$ responses are summatively aggregated into scores. The scores are normalized with recourse to its possible maximum score of the constructed variable resulting in ratio or index values. Accordingly, [20] admitted that the index value is probabilistic, thus, can be considered as a probability or likelihood of the constructed variable being displayed, since the value only ranges between 0 and 1. The index can also be expressed in percentage form; if multiplied by 100. For ease of description of the degree of the measurable estimates, the index distribution can be discretionally organized into an equal interval of choices with recourse to meaningful descriptive ability.

3. RESULTS AND DISCUSSION

3.1 Demographic Characteristics of the Field Extension Agents

This sub-section analyzed the profile of the field extension agents who are spatially distributed to carry out agricultural development communica-

tion in order to assist the farmers to acquire skills and capacities to survive the economic and social demands of the environment. The workforce is mixed in terms of sex and generation composition. Table 1, Item 1 showed that majority (61.8%) of the respondents were married whereas 33.7% were single. This suggests that there are strong affiliations to the family institutional value system in the study area. Item 3 revealed that 23.0% of the respondents have National Diploma (ND), 42.1% have Higher National Diploma (HND), 33.7% have Bachelor's degree while 1.1% have other higher educational qualifications. This result revealed that all the respondents should be capable of seeking information with minimum supervision. As majority of the respondents are graduates, it is fundamental that they should be better informed and know how to better inform others about topical issues of their environment. Item 4 showed that 66.3% of the respondents were between the age ranges of 30- 39 years. Other distribution (27.0% were in the range of 40-49 years,6.7% in the range of 50-59 years) showed that as age increased, the percentage decreased accordingly. The pattern portrays AKADEP agents as being relatively young. This category of people ought to be active, inquisitive and willing to learn to add to their knowledge.

3.2 Climate- change Information Sourcing Aptitude among Field Extension Agents

Food production resiliency amidst changing a state of climate requires agricultural and fishery extension agents to better understand the big picture and be able to relate it to specific action. By operational thinking within the agency, there expect to be a close interactive knowledge exchange between field experience of Akwa Ibom Agricultural Development Programme (AKADEP) personnel and research institutions that specialized in the Climate-Smart Agriculture. The interaction should be occasioned by organization of regular symposiums, discussions, seminars and conferences on climate change issues in order to update the field agents with topical issues of the environment. In absence of such expected knowledge generation and sharing platforms, the field agents seek alternative solutions towards ensuring service delivery on climate-smart agriculture. This sub-section examined the field extension agents' mass media sourcing aptitude for climate change information amidst diverse information sources. In their individual efforts towards seeking alternative solutions, how intense do the use of social media platforms been mainstream to generate and share lessons for climate-smart agricultural service delivery? The results on

Table 1. Distribution of field extension agents based on demographic characteristics

Item	Variables	Frequency	Percentages
1	**Sex**		
	Male	109	61.20
	Female	69	38.80
2	**Marital status**		
	Single	60	33.70
	Married	110	61.80
	Divorced/separated	5	2.80
	Widowed	3	1.70
3	**Level of education**		
	ND	41	23.00
	HND	75	42.10
	Bachelors degree	60	33.70
	PG certificates	2	1.10
4	**Age**		
	30-39	118	66.30
	40-49	48	27.00
	50-59	12	6.70
5	**Family size**		
	0-5	82	46.10
	6-10	95	53.40
	11-15	1	0.60

Note: ND means National Diploma, HND means Higher National Diploma, Postgraduate (PG) certificates

Table 2. Distribution of extension agents based on climate change information sourcing aptitude

S/N	Information sourcing aptitude	D	A
1	I find it hard to go about searching climate-change literatures or information in libraries	75.3	24.7
2	I don't always like to waste my energy to search for climate change information through internet.	85.4	14.6
3	When I consider the time, I will use to search in libraries, I normally feel discouraged	80.9	19.1
4	I do feel discouraged because library services are poorly organized.	36.5	63.5
5	It is discouraging to search because my expectations are hardly available.	65.4	32.6
6	I don't find information when I don't have something as reward.	84.8	15.1
7	I cannot regard search for information as part of my hobby.	69.1	30.9
8	I like to avoid situation that will require me searching for information.	83.7	16.3
9	I don't have interest to search for information about climate change.	75.8	24.2
10	I don't usually bother myself to personally look for information since I will get from my friend.	80.4	19.6

Table 2, item 1 revealed that 75.3% of the respondents disagreed that they find it hard to go about searching for climate change literature in libraries while a few of 24.7% agreed. This is suggesting that the agents do willingly seek climate change information in libraries and other sources. Item 2 further depicts that climate change is gaining more interest as the literates are having more explanation of the changing state of the environment unlike some years back when the awareness was quite low and changes were linked to superstitious beliefs. About 14.6% of the respondents agreed that they don't usually border themselves to personally look for information on climate change while 85.4% of the respondents disagreed on that. Based on the distribution of the respondents across the items, most the responses depict favorable attitudinal disposition to seeking information on climate [5] even though the information archival environment is quite unfriendly.

3.3 Extent of Climate Change Information Sourcing Aptitude among Extension Agents

Primarily, assessing the extent of climate change information sourcing aptitude demanded ascertaining the index of climate change information sourcing aptitude of each respondent that participated in this study. This gave credence to the relative comparison across the study population based on the composite index derivation. The distribution pattern of climate change information sourcing index was analyzed using the broadly categorized three ranges of low, average and high. The respondents were distributed across the three categories alongside their respective climate change information sourcing aptitude mean index. Quite a negligible percentage of the population (1.10%) were in the low climate change information sourcing aptitude category and had there about or less than 33% climate change information sourcing aptitude status. About 18.00% were in the average category with a climate change information sourcing aptitude status ranging between 34 to 66%. About 80.90% of the population expressed a sufficient high climate change information sourcing aptitude status that stood at or above 67%. In line with the study [5] this result asserts that communication agents are strongly disposed to always voluntarily seek for climate change information and offer much hope for effective climate-smart agriculture and fisheries extension service delivery.

3.4 Utilization of Climate Change Information Sources among Field Extension Agents

Information sourcing infrastructure and environment do influence the pattern of information resource utilization especially on a subject matter that is quite technical and evolving. From the list of information source in the Table 4, it could be observed that majority of the field agents were more dependent on non-electronic materials than the electronic and social media devices. This could be because of high cost and limited access to internet infrastructures and associated accessories for timely

accessibility to the resource repository. Thus, the hardcopies of the related materials become predominantly utilized. Table 4, item 1a revealed that 58.4% of the respondents rarely sourced for climate change information in textbooks, 30.9% did that frequently while 10.7% never did it. Table 4, item 1d revealed that about 68.0% rarely sourced for climate change information on dissertations and thesis and only 15.2% did that frequently. With reference to Item 1f, about 55.1% rarely sourced for it in libraries outside their department/office,19.7% did that frequently and 25.3% never sourced from it there at all. Table 4, item 1 c about 51.1% of the respondents frequently sourced for climate change information on conference proceedings 38.8% rarely did and 10.1% never did. Item 1e, (62.40%), Item 1 h (57.9%), Item 1i (52.2%), and Item 4b (58.4%) frequently sourced for climate change information on journals, newsletters, newspapers/magazines and radio/television respectively. This could be suggesting that the field agents' information sourcing approach depended more on print than audio/audio-visual media. Thus, promoting social media like the web 2 tools and subscription to virtual networking groups on community of practice would be a major boost to their high aptitude on information seeking behavior [5]. Again, with proliferation of android technologies, the information time lag and geospatial divide in information communication will be firmly mitigated among agents within urban, peri-urban and rural regions. High proportion of extension agents who do not or rarely use the ICT tools are those who do not have interest in using these tools or perhaps they have scanty knowledge of how to use these tools for climate change information sourcing. It could also mean that these tools are not available for them. Extension agents should see the need to communicate climate change in different ways. For instance, they should engage people especially farmers in the community in climate change debate in order to breakdown some barriers that exist and connect people to the role that their attitude and lifestyle play in causing the problem and working towards solutions. This could be achieved through effective usage of the mass media.

3.5 Extent of Utilization of Climate Change Information Sources (UCCIS) among Field Extension Agents

Assessing the climate change information sources utilization implies seeking composite understanding of the magnitude and direction of the extent or index of use of climate change information sources among the field agricultural and fishery extension agents. Their frequency of use of the array of climate change information sources give insights into the relative comparison across the study population based on the composite index derivation. The distribution pattern of respondents on climate change information sources utilization index was analyzed using the broadly categorized two ranges of low and high utilization. The respondents were distributed across the two categories alongside their respective climate change information sources utilization mean index. The divide revealed that 12.90% of the study population were in the low climate change information sources utilization category and had less than 66% climate change information sources utilization status, while 87.10% were in the high category with a climate change information sources utilization status 66%. This showed that agricultural and fisheries extension service delivery agents are good.

3.6 Level of Climate Change Friendliness among AKADEP Agents

This sub-section examined the level of climate change friendliness in terms of the knowledge of the facts of climate change drivers, exposures to climate change threats and mitigation techniques among AKADEP agents given their high disposition to voluntarily seek for climate change information and their relatively average extent of actually sourcing for climate change information. The study revealed that only 25.3% of the respondents fell into the high knowledge level category while 72.5% of the respondents only had average knowledge about climate- change. This depicts that only a few number of these development communicators or agents are quite friendly with climate change issues. Even when these agents claim to have high information seeking and sourcing behavior, the above result has shown that they don't sincerely do so or perhaps they have not been getting climate change information when they search or they don't know how to use the mass media sources to get climate change information. Irrespective of the danger signals posed by climate change, the study has revealed that the media and the community development agencies in Akwa Ibom State seems to be lagging behind, leaving the awareness of

Table 3. Distribution of agents based on extent of climate change information sourcing aptitude (CCISA)

CCISA index interval	CCISA Index interval interpretation	Frequency	Percentages
0.0-0.33	Low	2	1.10
0.34-0.66	Average	32	18.00
0.67-1.00	High	144	80.90

Table 4. Distribution of field extension agents based on extent of utilization of climate change information sources

Item	Information sources	Extent of utilization		
		frequently	Rarely	Never
1	**Libraries**			
a)	Textbooks	30.90	58.40	10.70
b)	Catalogues	21.90	56.70	21.30
c)	Conference proceedings	51.10	38.80	10.10
D	Dissertations and thesis	15.20	68.00	16.30
E	Journals	62.40	28.70	9.00
F	Libraries outside your office and department	19.70	55.10	25.30
G	Monograph	42.10	38.80	19.10
H	Newsletters	57.90	35.40	6.70
I	Newspaper/magazines	52.20	41.00	6.70
2	**Discussions with colleagues and others**	45.50	40.40	14.00
3	**ICT tools**			
A	CD. Rom literature search	16.90	61.20	21.90
B	Radio/television	58.40	38.80	2.80
C	Internet/electronic mails	43.30	37.66	19.10

Table 5. Distribution based on extent of utilization of climate change information sources (UCCIS)

UCCIS index interval	UCCIS index interval interpretation	Frequency	Percent
0.0-0.66	Low	23	12.90
0.67-1.00	High	155	87.10

Table 6. Distribution of agents of AKADEP based on Climate Change Friendliness (CCF) index

CCF index interval	Interpretation of CCF index interval	Frequency	Percent
0.0-0.33	Low	4	2.20
0.34-0.66	Average	129	72.50
0.67-1.00	High	45	25.30

climate change to nobody, thus exposing the state to the risk of getting badly bruised from the after effect of climate change. Many efforts need to be exerted by the research institutions and government agents with climate change information so as to raise their level of knowledge for mitigation and adaptation.

4. CONCLUSION

This research was centered on mass media dependency status of community development communicators on climate change smart agricultural education. The study revealed that a good number of the communicators or agents

had the urge to voluntarily search for climate change information through the mass media, both print and electronic. The study also revealed that the few development communicators who actually did source for climate change information depended more on the print than the audio/audio-visual media. The study also revealed that the level of friendliness of Akwa Ibom Agricultural Development Programme (AKDEP) on climate change depended on or is influenced by the climate change information seeking behavior of the field agents and the extent to which they use the mass media to source for climate change information. The study showed AKADEP agent as being relatively young and educated; and should be able to competently seek and use the media sources of climate change information.

On the whole, the study revealed that only 25.3% of AKADEP field agents were highly friendly or had high level of knowledge about climate change. The study has affirmed that mass media dependency status of AKADEP field agent when sourcing for climate change information is generally very low. Also despite the high proportion with high climate change information sources utilization index, it is obvious based on Table 4 that AKADEP should endeavour to improve its climate change friendliness status by providing motivational facilities to its field agents to keep them satisfied on the core requirement of their knowledge development and management mandates. By so doing, the agents will be motivated to continually seek and source for more climate change information. Thus, adaptation and mitigation strategies will be improved followed by improvement in productivity. AKADEP agents should be trained on how to use different facilities of information sources for them to increase the degree of information sourcing and use the sources effectively.

COMPETING INTERESTS

Author has declared that no competing interests exist.

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