







Media Practitioners' Knowledge and Coverage of Climate Change and Rural Farmers Adoption in Nigeria

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ABSTRACT

Climate change's impact on agriculture seriously threatens mankind because of antecedent food insecurity. In developing countries such as Nigeria, food prices and other commodities are currently high as farmers fail to produce, store, process, and distribute enough food due to erratic rainfall, temperature fluctuations, gully erosions, and herders-farmers conflicts, among others. Therefore, there is an urgent need for all the stakeholders, especially the mass media, to join in mitigating the impact by reporting accurately to hold the government and general public accountable for their actions, including promoting adoption strategies the farmers should consider. Hence, this study was conducted across six of Nigeria's geopolitical zones with a focus on media practitioners and rural farmers. Also, three research hypotheses were formulated from the study's four research objectives. During the survey, 768 respondents, comprising 384 media practitioners and 384 farmers, were selected using Krejcie and Morgan's (1970) sample size table. Purposive and convenience sampling methods were used in selecting and administering questionnaires through social media, phone calls, and face-to-face. The findings showed that mass media practitioners and farmers have considerable knowledge of climate change. It was also found that farmers were applying most of the adoption strategies being reported by the media. The study suggested increased media and farmers' relationships towards mitigating climate change impact generally.

Keywords: Climate Change; Media Practitioners; Knowledge; Rural Farmers; Adoption; Nigeria.

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INTRODUCTION

Agriculture is one sector adversely affected by climate change across the world (World Bank, 2021; Javed et al., 2023). The pastoralists, horticulturists, commercial and subsistence farmers in different agricultural value chains are grappling to survive because it depends on water, lands and others affected by the changing climate (Gowda et al., 2018). Some have lost their lives, including family members, farmlands and shelters due to rising sea levels, loss of biodiversity, erosion, drought, increase in temperature and excessive precipitation (Obarayese, 2023).

Similarly, several plants and animals have either gone extinct or currently in small proportions due to global warming mostly caused by human activities such as greenhouse gas emissions and desertification (Ruane &

Rosenzweig, 2019; IPCC, 2022). The rising temperature is also breeding new blights and pests which are causing serious damages to crops (Hasegawa et al., 2022). In developing countries like Nigeria, there are conflicts over land ownership, boundary adjustments and cattle grazing. Farmers are mostly affected by this as recent report indicated that over 60,000 lives have died because of herders-farmers clashes alone in Nigeria (Abdussalam et al., 2014; Agbakwuru, 2024). Some argued that the current Nigeria's economy inflicted with rising cost of living and others were generally caused because of climate change (Eshiemogie et al., 2023).

To mitigate the impact of climate change, many suggested that the country should focus more attention on adaptation than mitigation largely due to poor attention to agriculture and dependent on natural resources

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(Butu et al., 2022; Agbaoye, 2023). Experts are also in consensus that the mass media are needed in the fight to mitigate the impact of climate change all over the globe (Unesco, 2017; Ajaero & Anorue, 2018). The media, both the mainstream and the new media, are needed because they are agents of social orientation, agenda setters and mobilisers for action due to their informative, educative and entertaining powers (Schafer, 2015; Quiñones, 2022).

Unesco (2017) equally recommended capacity building for the mass media so as to equip them with the nitty-gritty of the skills needed in disseminating accurate information about climate policies, its causes, effects, bilateral agreements, including the climate action otherwise referred to as adaptation and mitigation strategies. Also, section 22 of the 1999 constitution of the Federal Republic of Nigeria (as amended) empowered the mass media to hold the government accountable. This is necessary especially now climate change has forced many to abandon farming to politics and other survival mechanisms (Melifonwu, 2022).

Nigeria's populace is currently grappling with food insecurity, malnutrition, unemployment, starvation, high cost of living, diseases, among others (World Bank, 2021; Villacis et al., 2022). The mass media, as climate stakeholders, are therefore needed to tell the implications to the general public while proffering lasting solutions to Nigerians across the six geopolitical zones comprising 36 States, 774 Local Government Areas, and communities. The six geopolitical zones, including North-central, North-east, North-west, South-east, South-south and South-west are bedeviled with the impact of climate change in all forms of agriculture (Merem et al., 2019; Haider, 2019; Ani et al., 2021; Villacis et al., 2022; Emelife et al., 2023; Kabir, 2023; World Bank, 2024).

Therefore, it is surprising over dearth of study on mass media knowledge and coverage of climate change in Nigeria with a focus on rural farmer's adoption. Few of the studies by Tagbo (2010), Amu & Agwu (2013) and others are not only outdated but focused on media attitudes and knowledge of climate change. Hence the need for this study to breach the current gap in knowledge. The study was conducted under the following research objectives:

1. To assess the level of knowledge of mass media practitioners and rural farmers in Nigeria with regards to climate change.
 2. To identify the factors that mass media practitioners' and rural Farmers in Nigeria consider as impact of climate change on farming.
 3. To investigate the sources of information on the impact of climate change on rural farming among mass media practitioners' s and rural farmers in Nigeria.
 4. To find out the types of climate-smart agricultural practices and adoption strategies media practitioners in Nigeria report most and rural farmers applied the most.
- The study objectives were further turned into four research questions namely:

1. What is the level of knowledge of mass media practitioners and rural farmers in Nigeria with regards to climate change?
2. What are the factors that mass media practitioners'

and rural Farmers in Nigeria consider as impact of climate change on farming?

3. What are the sources of information on the impact of climate change on rural farming among mass media practitioners' and rural farmers in Nigeria?

What are the types of climate-smart agricultural practices and adoption strategies media practitioners in Nigeria report most and rural farmers applied the most?

MATERIALS & METHODS

The methodology adopted for study of media knowledge and coverage of climate change and rural farmers' adaptation in Nigeria was a survey using questionnaires as an instrument for data collection. The sample size for the study was 768, comprising 384 media practitioners and 384 farmers selected from across the six geopolitical zones of Nigeria using Krejcie & Morgan's (1970) sample size table. Purposive and convenience sampling methods were used in selecting the respondents because the population is heterogeneous and the researchers have knowledge of their expertise, including their abilities and accessibility.

To achieve this, they recruited 12 additional research assistants who helped in reaching out to the respondents accordingly. However, the mass media practitioners were administered questionnaires prepared on Google form through their personal WhatsApp contacts, while the farmers were reached out via mobile phone calls and face-to-face (where applicable). The study instruments were earlier validated by 3 experts from the fields of communication, agriculture, and statistics, complying with face and content validation. To ascertain the reliability of the research instruments, a test-retest method was applied after which the results were subjected to a reliability test. Also, three research hypotheses were generated for the study. This includes:

H1. There is a significant relationship between mass media practitioners' and rural farmers' knowledge on the impact of climate change on farming in Nigeria.

H2. There is a significant relationship between mass media practitioners' and rural farmers on the sources of information on the impact of climate change on farming in Nigeria.

H3. There is a significant relationship between the types of climate-smart agricultural practices and adaptation strategies media practitioners in Nigeria report most and rural farmers adaptation the most.

At the end, the data extracted from the study using the SPSS, were analyzed using descriptive and inferential statistics, bar chart, simple tables and frequencies.

RESULTS & DISCUSSION

The results of the study revealed in Fig. 1 that the average of Nigerian farmers (47%) have a good knowledge level of climate change as against the media practitioners whose knowledge level of the same subject is mostly high (50%). This implied that both the farmers and media practitioners have considerable knowledge of climate change and should work together in mitigating its impact

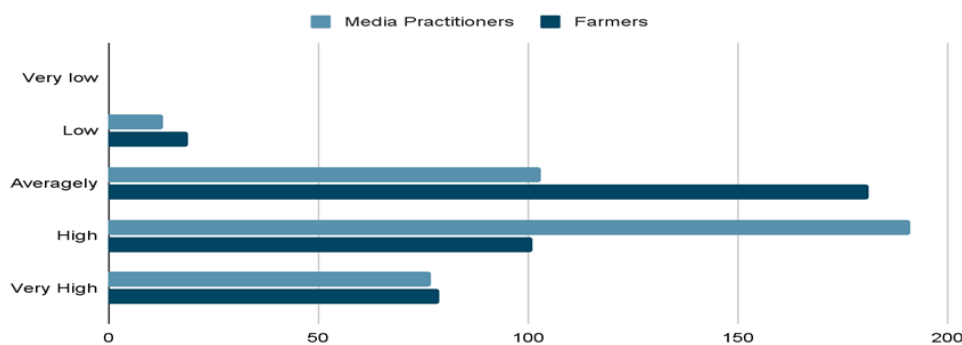


Fig. 1: Knowledge Level of Climate change; Source: Researchers field work 2023

on the country, mostly through the promotion of adaptation strategies. This was against the study by Amu and Agwu (2013) and Tagbo (2010) who reported that the media have poor knowledge of climate change in Nigeria. But the study was in consonance with the findings by Madaki et al. (2023) which showed that farmers are aware of climate change and some of its causes in Nigeria. Galle (2019) also found that the mass media are aware of climate change but are not giving it the attention it deserves in their various platforms. The author argued that the implication of the media failure to publicize climate change, were the reasons why the public attitudes to climate mitigation and adaptation were poor in Nigeria. But Elia (2021), in a descriptive research design, found that the mass media are aware of climate change impact on all sectors but why they are not reporting them in Tanzania especially were because the gatekeepers often refused to publish climate change stories. Danaa (2018) and Binuyo et al. (2022) argued that mass media practitioners with good knowledge of climate change and smart climate agricultural measures should be able to communicate them to others succinctly.

It was also found in Table 5 that both the media practitioners (7.3.8%) and farmers (6%) are knowledgeable of the impact of climate change on farming although farmers are more knowledgeable (82%) on the issue of food insecurity and decreasing crop yields than the media practitioners (76%). This was further confirmed by the results of correlation on the variables in Table 1 where r value was 1.00 while the P value was 0.01 thereby indicating a positive and significant relationship between mass media practitioners' and rural farmers' knowledge on the impact of climate change on farming in Nigeria. This could also imply that climate change's impact on rural farmers was affecting food security in Nigeria and the rest of the world, and the mass media should step up actions towards mitigating this by relating well with farmers and other experts for accurate information sharing and dissemination in that regard. This could be why the findings by Siyao & Sife (2021) and Naazie et al. (2024) respectively showed that farmers valued the mass media. Jusheng et al. (2019) also found that the mass media are the most important stakeholders in climate change mitigation.

The findings in Table 6 showed that both media practitioners and rural farmers are in agreement (65%) on the sources of information on the impact of climate change on rural farming in Nigeria. This implied that if the mass media practitioners and farmers could team up with information, they have on climate change and adaptation

Table 1: Pearson correlation scale items measuring hypotheses 1 'mass media practitioners' and rural farmer's knowledge on the impact of climate change'

MMPKICC & RFKICC	Correlations	
	R	P
	1.00	0.01

Source: Researchers field work 2023; *MMPKICC= Mass Media Practitioners' Knowledge on the Impact of Climate Change *RFKICC= Rural Farmers Knowledge on the Impact of Climate Change.

Table 2: Pearson correlation scale items measuring hypotheses 2 'relationship between mass media practitioners' and rural farmer's sources of information on impact of climate change on farming in Nigeria

MMSIICCF & RFSIICCF	Correlations	
	R	P
	0.836	0.01

Source: Researchers field work 2023; *MMSIICCF= Mass Media Practitioners' Sources of Information on the Impact of Climate Change on Farming *RFSIICCF= Rural Farmers Sources of Information on the Impact of Climate Change on Farming.

Table 3: Pearson correlation scale items measuring hypothesis 3 'the types of climate-smart agricultural practices and adaptation strategies media practitioners in Nigeria report most and rural farmers applied most'.

CAPASMPR & RFA	Correlations	
	R	P
	0.781	0.01

Source: Researchers field work 2023; CAPASMPR= Climate-smart Agricultural Practices and Adaptation Strategies Media Practitioners in Nigeria Report *RFA= Rural Farmers Adaptation.

practices the effects will be drastically reduced in Nigeria. In other words, both stakeholders need to work together in mitigating the impact of climate change. The finding was collaborated by Churi et al. (2012) and Alidu et al. (2022), where radio, and television, among others, were listed as communication channels where farmers gain information on climate change and climate-smart adaptation practices. Afele et al. (2024) also showed that farmers sourced their information on climate change from the media. In cross sectional research, Siyao & Sife (2021) also found that media practitioners (newspaper journalists) in Tanzania gather information they need on climate change mostly from experts and daily events, including farmers, community meetings and social gatherings. Another cross-sectional investigation conducted at Ghana by Alidu et al. (2022) found that smallholder farmers are accessing information about climate change smart adaptational agricultural practices from agricultural extension services due to social and economic reasons. Relatively, a study by Javed et al. (2023) found that the mass media (social media) reports on climate change can make farmers cope or adapt to the changing climate. The study conducted in Pakistan using a correlation-experimental research design and purposive sampling technique found that media reports significantly predicted

patterns of farmers' behavior towards the adaptation of advanced measures to select crops, reduce pest attacks, manage land, and store water. However, while the media practitioners (80%) rely solely on reports from government ministries, departments, and agencies, most of the rural farmers (78%) live by their exposure to agricultural programs introduced by any organization (as contained in Table 6). This was not different from the findings of Abunyewah et al. (2023), Nwabueze et al. (2015) in Nigeria & Hase et al. (2021) across 10 countries of the globe. This was also in line with the findings in Table 2, where it was confirmed that there is a significant relationship between mass media practitioners and rural farmers on the sources of information on the impact of climate change on farming in Nigeria ($r=0.836$, $P=0.01$).

Similarly, the majority of media practitioners (Table 7) know the types of climate-smart agricultural practices and adaptation strategies (60.5%) just as the majority of rural farmers are aware and are adapting to climate-smart agricultural practices and adaptation strategies (64%). This implies that both mass media practitioners and farmers are very knowledgeable about climate action and should be consulted by relevant agencies when making policies in that regard. This finding agreed with Jürkenbeck et al. (2021) whose study of German citizens (including farmers) showed that having knowledge of climate change changes people's attitudes while influencing their choice of nutrition and 'climate-friendly diets', Naazie et al. (2024) equally found that farmers in Ghana are aware of climate change impact and incorporate climate mitigation and adaptation agricultural practices learned. According to the mixed method study, farmers often learned about climate change adaptation strategies for improved food production from friends, neighbors, and agricultural service workers, followed by the media, especially television (66%) and radio (15%), even as personal observation does not provide them with enough insight into how to adapt their agricultural activities.

It was further confirmed in Table 3 of this study that there is a significant relationship between the types of climate-smart agricultural practices and adoption strategies media practitioners in Nigeria report most and rural farmers adopt or applied the most ($r= .781$, $P= 0.01$). Thus, media practitioners' knowledge of climate change will help to improve responses towards it (Campbell et al., 2023). Hence, Kalele et al. (2021), who investigated the climate change impacts and relevance of smallholder farmers' response in arid and semi-arid lands in Kenya, found that farmers' low adoption level of on-farm climate adaptation strategies could be because of poor media reportage of the subject matter. The implication is that the more the mass media improve in their reportage of climate change adaptation strategies the more the farmers will improve in their adoption, thereby reducing or totally eradicating food security. Ajaero & Anorue (2018) believe that this development would further accelerate public awareness of climate change and contribute to realizing the 17 United Nations Sustainable Development Goals (SDGs). This is in agreement with Javed et al. (2023), who found a significant positive association between social media reporting and farmers' attitudes toward taking steps for future interventions to prevent pests and protect crops. Also, a study by Ogbodo et al. (2018) indicated that 52.34% of maize farmers in Nigeria source their information from radio, 48.44% source theirs from television, and 20.31% garner theirs from the internet/social media. It also confirmed the findings of Naazie et al. (2024), where the media, especially television (66%) and radio (15%), were found to be valuable means of disseminating smart climate agricultural practices and adoption strategies in Ghana. Afele et al. (2024) made similar findings in Ghana, although most respondents accessed information about climate change impact and climate-smart agricultural practices through education, attendance to meetings and training, and radio, among others.

Table 4: Respondents biodata

Questions	Responses	Media practitioners Frequencies	Farmers Frequencies
Gender	Males	167	117
	Females	217	267
Age	18-30 years	89	46
	31-43 years	123	102
	44-56 years	108	182
	57 years and above	64	54
Marital Status	Single	166	38
	Married	91	159
	Divorced /Separated	53	77
	Widow/widower	74	110
Media/ farming		64 (Radio)	49(Aquaculture)
		83 (Television)	121 (Crop farming)
		93 (Print)	77 (Animal husbandry)
		101 (Online/New media)	74 (Mixed farming)
		43 (News Agency)	63(Horticulture)
Years of experience	0-5 years	88	96
	6-10 years	134	87
	11 years and above	162	201
Geopolitical zone	North Central	64	64
	North East	64	64
	North West	64	64
	South East	64	64
	South South	64	64
	South West	64	64

Source: Researchers field work 2023

Table 5: Media practitioners and rural farmers knowledge of climate change impact

Factors	Level of Agreement (%)															
	Media Practitioners								Rural Farmers							
	1	2	3	4	5	M	SD	Over All (%)	1	2	3	4	5	M	SD	Over All (%)
Frequent droughts	8.3	12.5	25.8	38.5	14.8	3.4	1.1	68	27.9	21.9	22.4	8.6	19.3	2.7	1.5	54
Erratic rainfall and water scarcity	0.0	3.4	18.8	27.1	50.8	4.3	.88	86	4.9	18.8	29.4	15.4	31.5	3.5	1.2	70
Increased flooding and rise in sea level	2.1	0.0	6.0	51.6	40.4	4.3	.76	86	5.7	22.1	2.9	40.6	28.6	3.6	1.3	72
Soil and gully erosions	0.0	18.8	31.0	26.6	23.7	3.6	1.0	72	17.4	18.5	4.4	28.9	30.7	3.4	1.5	68
High cost of farm tools and agricultural produce	14.8	9.4	20.1	24.5	31.3	3.5	1.4	70	27.6	18.0	21.6	12.5	20.3	2.8	1.5	56
Rising temperatures and weather patterns	0.0	3.9	11.5	48.2	36.5	4.2	.78	84	10.2	18.5	3.9	37.5	29.9	3.6	1.4	72
Changes in pest and disease patterns	23.2	6.5	34.6	26.3	9.4	2.9	1.3	58	23.7	11.7	17.4	21.4	25.8	3.1	1.5	62
Food insecurity and decreasing crop yields	0.0	2.9	25.5	56.8	14.8	3.8	.70	76	4.2	14.1	3.1	26.6	52.1	4.1	1.2	82
Loss of shelters, livestock, and livelihoods	0.0	4.2	16.1	24.5	55.2	4.3	.89	86	9.6	17.2	21.6	42.2	9.4	3.2	1.1	64
Disruptions to traditional farming practices	12.2	19.0	31.8	21.1	15.9	3.1	1.2	62	15.1	25.3	26.3	18.8	14.6	2.9	1.3	58
Exposures to conflicts and epidemics	13.8	2.9	44.5	25.8	13.0	3.2	1.1	64	4.4	6.0	20.3	31.0	38.3	3.9	1.1	78
Total						3.7	1.0	73.8						3.3	1.3	67

Source: Researchers field work 2023 Note: 2.5 is the cut-off point between agreement & disagreement on Table

*Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree
(1-20%) (21-40%) (41-60%) (61-80%) (81-100%)

Table 6: Media practitioners and rural farmers' climate change information source

Sources of Information	Level of Agreement (%)															
	Media Practitioners								Rural Farmers							
	1	2	3	4	5	M	SD	Oval (%)	1	2	3	4	5	M	SD	Oval (%)
Mass media	15.1	6.5	24.0	31.5	22.9	3.4	1.3	68	12.2	20.1	4.9	32.8	29.9	3.5	1.4	70
United Nations and International Organizations (IPCC, etc.)	.5	12.8	51.6	17.7	17.4	3.4	.94	68	13.8	7.6	15.4	36.2	27.1	3.6	1.3	72
Academic institutions and scientific journals	2.3	13.8	22.1	38.3	23.4	3.7	1.1	74	8.6	22.9	23.7	18.2	26.2	3.3	1.3	66
Government ministries, departments and agencies	11.5	0.3	14.6	23.7	50.0	4.0	1.3	80	12.0	18.5	4.9	31.0	33.6	3.6	1.4	72
Experts from NGOs/CSOs	17.7	4.9	47.7	20.3	9.4	3.0	1.2	60	21.6	17.2	23.7	25.3	12.2	2.9	1.3	58
Agricultural research institutions	34.6	8.9	25.8	20.8	9.9	2.6	1.4	52	36.7	6.0	28.9	21.6	6.8	2.6	1.4	52
Agricultural extension workers	4.7	33.6	20.6	35.4	5.7	3.0	1.1	60	21.6	28.6	23.7	24.5	1.6	2.6	1.1	52
Personal research and observations	0.0	2.6	32.3	52.3	12.8	3.8	.70	76	22.1	23.7	6.0	29.9	18.2	3.0	1.5	60
Exposures to agricultural programs	28.6	4.4	31.0	24.0	12.0	2.9	1.4	58	3.4	6.0	17.2	47.1	26.3	3.9	1.0	78
Community and opinion leaders	21.1	25.3	19.0	27.3	7.3	2.7	1.3	54	13.3	18.0	18.8	19.0	31.0	3.4	1.4	68
Family and friends	14.1	13.3	26.3	16.7	29.7	3.3	1.4	66	18.2	3.1	8.9	42.2	27.6	3.6	1.4	72
Total						3.3	1.2	65						3.3	1.3	65

Source: Researchers field work 2023 Note: 2.5 is the cut-off point between agreement & disagreement on Table

*Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree
(1-20%) (21-40%) (41-60%) (61-80%) (81-100%)

Table 7: Climate-smart agricultural practices and adaptation media report most and applied most by farmers

Practices/Adaptation	Level of Agreement (%)															
	Media Practitioners								Rural Farmers							
	1	2	3	4	5	M	SD	Oval (%)	1	2	3	4	5	M	SD	Oval (%)
Water conservation techniques	23.2	19.0	25.3	15.4	17.2	2.8	1.4	56	26.8	3.9	34.6	14.3	20.3	3.0	1.4	60
Improved soil management practices	16.9	25.8	10.7	25.3	21.4	3.1	1.4	62	7.3	21.1	12.0	17.2	42.4	3.7	1.4	74
Use of irrigation for all seasons of farming	31.0	22.4	15.9	21.9	8.9	2.6	1.4	52	4.9	15.4	25.3	31.3	23.2	3.5	1.1	70
Planting of trees, flowers, and grasses to control erosion	34.9	20.8	5.7	14.3	24.2	2.7	1.6	54	8.6	15.9	23.2	26.6	25.8	3.5	1.3	70
Government programs supporting climate-smart agriculture	13.3	18.5	17.7	25.5	25.0	3.3	1.4	66	2.6	15.4	16.1	28.9	37.0	3.8	1.2	76
Early warning systems for extreme weather events	26.3	16.9	11.7	37.2	7.8	2.8	1.4	56	14.8	25.5	16.4	40.4	2.9	2.9	1.2	58
Use of improved seedlings	23.7	23.2	21.4	19.0	12.8	2.7	1.3	54	7.6	14.8	22.9	24.0	30.7	3.6	1.3	72
Use of renewable energy sources in agriculture	2.9	15.4	25.3	16.1	40.4	3.8	1.2	76	31.3	24.0	21.1	3.1	20.6	2.6	1.5	52
Diversification of crops and livestock	10.2	22.9	18.8	16.7	31.5	3.4	1.4	68	23.2	33.1	16.9	14.8	12.0	2.6	1.3	52
Drought-resistant crop varieties	4.2	11.5	41.4	28.4	14.6	3.4	1.0	68	25.8	30.2	31.5	7.8	4.7	2.4	1.1	48
Use of renewable energy sources in agriculture	25.5	29.4	8.3	26.3	10.4	2.7	1.4	54	15.9	4.9	13.8	13.5	51.8	3.8	1.5	76
Total						3.0	1.4	60.5						3.2	1.3	64

Source: Researchers field work 2023 Note: 2.5 is the cut-off point between agreement & disagreement on Table

*Scale: 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, 5=Strongly Agree
(1-20%) (21-40%) (41-60%) (61-80%) (81-100%)

Conclusion

The study on media practitioners' knowledge and coverage of climate change and rural farmer's adoption in Nigeria was conducted in the six geopolitical zones of Nigeria with at least 384 respondents participating from the media and farmers respectively. The respondents (in Table 4) are exposed and within 11 years and above practicing experience although women were more (57% female media practitioners) and (70% female farmers).

The findings showed that both the media practitioners and the rural farmers have a high

knowledge level of climate change, including its impacts on farming, sources to be consulted for information to improve in their practices and adaptation strategies to be adopted. The findings were in line with the study literature and results of the hypotheses carried out with the help of Pearson correlation. This implied that both the farmers and media practitioners have a considerable knowledge of climate change and should work together in mitigating its impact in the country mostly through promotion of adaptation strategies. It is therefore recommended that further studies should explore the use

of In-depth interviews and focus group discussion in researching a similar topic.

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Authors' Contribution

Onuegbu, O. C.: - Conceptualisation, original draft, investigation, writing, data curation and discussion. Wogu, J. O.: - Writing, investigation, supervision and editing. Okaiyeto, S. A.: - Investigation, software, analysis and data curation. Anunike, O. W.: - Investigation, reviewing, writing and editing. All authors critically revised the manuscript and approved the final version. We hereby declare that there are no financial and personal relationships with other people, institutions or organization's that could unsuitably affect our research work.

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