EFFECTIVENESS OF MASS MEDIA IN DISSEMINATION OF CASSAVA TECHNOLOGIES AMONG FARMERS IN AKAMKPA LGA OF CRS, NIGERIA

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Abstract
This study analyzed the effectiveness of mass media in dissemination of cassava technologies among farmers in Akamkpa LGA of CRS, Nigeria. Specifically, the study assessed the level of awareness of mass media usage by cassava farmers in the area; determined the level of accessibility and utilization of mass media; and analyzed the effectiveness of mass media in the dissemination of information on agricultural technologies. One hypothesis was formulated to guide the study. The study adopted the multi stage and simple random sampling techniques to draw 150 respondents. Data obtained were analyzed using mean, percentages and frequencies, as well as chi square analysis. The result revealed that majority of the respondents were aware of the enumerated mass media, such as television, radio, internet, social media, email, mobile phone and computer. However, radio (94.4%) was widely known by the farmers in the study area, followed by mobile phone (91.7%) and television (90.3%). Results on accessibility of mass media showed that 8 out of 11 mentioned mass media were accessible to the respondents in the study area. Results on utilization of mass media revealed that radio, mobile phone, Television and internet ranked 1st, 2nd, 3rd and 4th as the most utilized mass media by cassava farmers in the study area. The study recommended among others, that government, NGOs and development practitioners should adopt radio, mobile phone and Television as the main channels of information dissemination to cassava farmers in the study area.

Keywords: Effectiveness of Mass Media, Cassava farmers, technology dissemination in Agriculture.

1.0 Introduction
Knowledge and information are crucial to the success of rural agriculture (Ayi, 2022). Information and knowledge are emphasized as important productive resources, underscoring their importance. This position is supported by the Food and Agriculture Organization (FAO) (2010), which asserts that knowledge and information are crucial to guaranteeing food security and sustainable development. Traditional farming methods by themselves are not sufficient to increase

the yield of staple crops like cassava. To meet the demand for cassava products both for consumption and non-consumption, it is necessary to employ more efficient production technologies, such as high yield, low tenure varieties, the availability of climate-smart information, and data-driven decision processes (Oyewole et al., 2017).

In a nation like Nigeria, the general public may now access scientific information, innovation, and technology thanks to the widespread use of the media. The choice of communication channel is crucial. Radio, for instance, can teach current agricultural techniques to both literate and illiterate farmers, even in remote locations, and is affordable by almost all income strata, making it an ideal medium for the dissemination of knowledge and cutting-edge technological know-how. Television-based training and technology are simple for farmers to understand. The breadth of communication was expanded by the print medium. Farmers can afford to purchase and read them at their convenience because they are inexpensive. Because the messages are permanently imprinted and have a high storage value, they are excellent for reference and research because they are a permanent medium.

According to a number of reports, cassava production levels, particularly in small-scale farmer farms, have remained significantly below those attained in Nigerian agricultural research stations (Akoroda, 2011). Despite all the efforts made by extension service organizations in the nation to disseminate enhanced agricultural innovations, there are many signs that there is still a gap between levels of awareness, accessibility, and adoption of cassava production methods (Nwaobiala and Anyanwu, 2018). According to the researchers, 95.8% of the target farmers were aware of newer cassava technology, such as enhanced varieties and methods for preventing insect and disease outbreaks. This is similar to the assertion made by Ugwoke et al. (2009) that raising awareness of a technology can help it be adopted and used, which increases agricultural productivity and income.

Governments, media outlets, NGOs, and private citizens have all worked to spread information about farming because there is a lack of understanding of new agricultural developments and a slow uptake of improved farming methods by small-holder farmers in rural communities in Nigeria, which has led to low agricultural productivity and a low standard of living for farmers. This is done in order to educate farmers about the agricultural practices that are available and urge them to use them. However, as noted by Balderama (2009), there is a lack of awareness and information regarding new agricultural technology that have not yet been fully utilized, particularly in the majority of developing nations like Nigeria. It is anticipated that farmers would receive new expertise and information from numerous research institutions. However, there is a challenge in getting the research organizations' findings to farmers. This indicates a knowledge gap between rural farmers and delivery institutions. The fact that farmers have limited access to and usage of new ICT tools in rural locations widens this knowledge gap even further.

Farmers in rural communities are increasingly using the media, like television, as a tool. Nearly 26% of Tanzanians watch television, according to the Tanzania Communication Regulatory Authority (TCRA, 2012). In Nigeria, many communication channels are being used to distribute agricultural information to farmers in accordance with the country's agricultural strategy. Farm magazine, booklets, newsletters, newspapers, pamphlets, radio, and television are just a few of the communication mediums (Dan, 2016). By extending the sphere of access, e-mail capabilities and websites have expanded the reach of media (Tawari, 2006).

Radio, television, multi-media systems (VCDs, DVDs, VHS, overhead projectors), telephones (landlines and mobile phones), the internet (e-mailing, web-browsing, telephoning), computers, and personal digital assistants are the most common mass media components and gadgets (PDAs). Others are media players (MP2, MP3, and MP4), geographic information systems (GIS), geographic positioning systems (GPS), cable satellite, online newspapers, e-books, journals, tablet systems, and smart phones, Ipods, and Ipads. Farmers are increasingly using mass media because it is convenient for them to access information that helps them learn through educational programs regarding health and agricultural development (Clarke, 2012). Mungo and Vermeulen (2011) contend that the media can support the promotion of agricultural output. They said specifically that short movies and photographs can be utilized to capture what farmers are doing in one location and shared via mass media like CDs and DVDs. In light of this, the purpose of this study was to evaluate the efficiency of the media in educating farmers in the Akamkpa LGA of the CRS, Nigeria, about new cassava technology.

Specifically, the study assessed the level of awareness of mass media usage by cassava farmers in the study area; determined the level of accessibility and utilization of mass media by the farmers; and analyzed the effectiveness of mass media in the dissemination of information on agricultural technologies among the farmers in the area. One hypothesis was formulated to guide this study. It was stated in the null form as

Ho: The use of mass media is not effective in the dissemination of agricultural technology among the respondents in the study area.

2.0 Methodology
This research was carried in Akamkpa Local Government Area, Cross River State, Nigeria. It is bordered in the north by the local governments of Yakuur, Obubra, Ikom, and Etung; in the east by the Republic of Cameroon; in the south by the local governments of Akpabuyo, Calabar Municipal, and Odukpani; and in the west by the local government of Biase. The LGA covers an area of 5,003km^2, making it the largest local government by area in Cross River State. Geographically, the area lies between Latitudes $5.^000$''N and $5.^057$''S of the equator and longitudes 8^006''E and 9^000''W of the Greenwich Meridian. Akamkpa LGA has ten (10) council wards viz: Akamkpa Urban, Uyanga, Ikpai, Awi, Mbarakom, Ojuk South, Ojuk North, Oban,

Eku and Iko wards. The inhabitants of Akamkpa are predominantly Ejagham people and some other minorities that speak Efik.

Multi-stage sampling procedure was adopted for this study. Stage one involved the selection of 5 cells out of the 10 cells in the block. Afterwards, 2 villages were randomly selected from each cell, summing up to 10 villages (2x5). At the third stage, a list of registered cassava farmers was obtained from the Area Extension Officer (AEO) of Akamkpa block. The list, which had 585 registered cassava farmers, became the sampling frame for the study. Thus, a proportionality factor of 25% was used to randomly draw the sample farmers in each village, giving a total of 150 farmers.

Data generated by the study was analyzed using means, percentages and frequency distribution. However, Chi square was employed to test the hypothesis.

This was which is mathematically stated as:

$$\chi^2 = \sum \frac{(O-E)}{E}$$

Where:
$\sum$ = summation sign
O = observed frequency
E = expected frequency
Decision rule: if the calculated value is greater than the tabulated value, the null hypothesis will be rejected and the alternative hypothesis will be upheld, and vice versa.

3.0 Results and discussion
3.1 Level of awareness of mass media usage

Table 1: Distribution of respondents on their level of awareness of mass media

Mass media	Aware		Not aware	
	*Freq.	%	*Freq.	%
Magazines	85	59.0	59	41.0
Newspapers	119	82.6	25	17.4
Television	130	90.3	14	9.7
Radio	136	94.4	8	5.6
Internet	116	80.6	28	19.4
Social media (e.g Facebook)	117	81.2	27	18.8
Email	89	61.8	55	38.2
Extension bulletin	81	56.2	63	43.8
Tape recorder/ tape player	112	77.8	32	22.2
Mobile phone	132	91.7	12	8.3
Computer	115	79.9	29	20.1

Source: Field data, 2021   (* = Multiple response)

Results in Table 1 reveal that majority of the respondents indicated that they were aware of the usage of the listed mass media, which are magazines, newspapers, television, radio,

internet, social media (such as facebook), email, extension bulletin, tape recorder/ tape player, mobile phone and computer. However, the usage of radio was widely known (94.4%) by the farmers, followed by mobile phone (91.7%) and television (90.3%). This result implies that cassava farmers in Akamkpa LGA are most familiar with radio, mobile phone and television, to gather information concerning their enterprise. This result corroborates the finding of Nenna (2016) whose study revealed that majority of the respondents were aware of numerous ICT facilities as sources of receiving agricultural information related to cassava production.

3.2 Accessibility and Utilization of Mass Media
Accessibility of Mass Media
Table 2: Distribution of farmers based on their accessibility of Mass Media

Mass Media	Fully Accessed	Occasionally Accessed	Not Accessed	SD	$\bar{x}$	Rank
Magazines	25	72	47	0.69	1.85	10th
Newspapers	46	84	14	0.61	2.22	4th
Television	61	71	12	0.63	2.34	3rd
Radio	71	63	10	0.62	2.42	2nd
Internet	50	67	27	0.72	2.16	6th
Social media	56	60	28	0.74	2.19	5th
Email	34	61	49	0.75	1.90	9th
Extension bulletin	20	68	56	0.68	1.75	11th
Tape recorder/ tape player	43	68	33	0.73	2.07	8th
Mobile phone	73	61	10	0.62	2.44	1st
Computer	50	66	28	0.72	2.15	7th

Source: Field data, 2021

Table 2 reveals that 8 out of the 11 fitted mass media were accessed by the respondents in the study area. They are newspapers, television, radio, internet, social media, tape recorder/ tape player, mobile phone and computer. Mobile phone ranked 1st ($\bar{x}$=2.44), followed by radio ($\bar{x}$=2.42) and television ($\bar{x}$=2.34). This result is consistent with the findings in 4.2, that radio, mobile phone and television were the top three mass media that were known to cassava farmers in the study area. This result also agrees with the findings of Oyewole et al. (2017), who found that that a larger percentage of the respondents in their study on accessibility of cassava processors to mass media channels' information on cassava processing innovations in Saki Agricultural zone of Oyo State, Nigeria, had access to radio while 60.5% had access to television, as their mass media sources of information. Also, the finding is similar to those of Agada and Akpan (2017), who found that out of 16 ICTs listed, farmers reported access to only 3. These are radio ($\bar{x}$= 2.05), television ($\bar{x}$= 2.09) and mobile phones ($\bar{x}$=1.5).

3.3 Utilization of Mass Media

Table 3: Distribution of respondents according to their utilization of mass media

Mass Media	Always	Occasionally	Never	SD	$\bar{x}$	Rank
Magazines	21	71	52	0.68	1.78	10th
Newspapers	35	91	18	0.59	2.12	7th
Television	55	78	11	0.61	2.31	3rd
Radio	68	71	5	0.56	2.44	1st
Internet	57	64	23	0.71	2.24	4th
Social media	54	60	30	0.75	2.17	5th
Email	31	53	60	0.77	1.80	9th
Extension bulletin	18	69	57	0.67	1.73	11th
Tape recorder/ tape player	27	81	36	0.66	1.94	8th
Mobile phone	72	57	15	0.67	2.40	2nd
Computer	47	68	29	0.72	2.13	6th

Source: Field data, 2021

The result of the weighted mean score, as shown in Table 3 reveals that mass media such as newspapers, television, radio, internet, social media, mobile phone and computer, all had mean score greater than 2.0, which implies that they were utilized by cassava farmers in the study area. However, the result further revealed that cassava farmers in the study area utilized radio most ($\bar{x}$=2.44), followed by mobile phone ($\bar{x}$=2.40) and television ($\bar{x}$=2.31). This finding is the same with those of Toluwase and Apata (2017), who revealed that television, radio and mobile phone top the various forms of ICT usage in the study area. The finding also corroborates that of Agada and Akpan (2017), who found that mobile phones ($\bar{x}$=1.80), video player ($\bar{x}$=1.68), television ($\bar{x}$=1.55) and radio sets ($\bar{x}$=1.53) were the ICTs often used by the respondents in their study area in Obudu, Cross River State.

3.4 Effectiveness of mass media in the dissemination of information on agricultural technologies

Table 4: Effectiveness of mass media in disseminating information on agricultural technologies

Technologies/activities	Highly effective	Partially effective	Not effective	SD	$\bar{x}$	Rank
Providing information on new varieties of cassava	71	57	16	0.68	2.38	2nd
Providing information on land selection	58	64	22	0.70	2.25	10th

Providing information on best planting techniques	72	50	22	0.73	2.35	5th
Providing information on input management	60	58	26	0.74	2.24	11th
Providing information on fertilizer application	78	56	10	0.63	2.47	1st
Providing information on pest management	65	62	17	0.68	2.33	6th
Providing information on new methods of disease prevention and control	68	60	16	0.68	2.36	4th
Providing information on marketing of cassava products	62	65	17	0.68	2.31	7th
Providing information on transportation of harvested tuber	61	61	22	0.71	2.27	8th
Providing information on best processing methods	59	64	21	0.69	2.26	9th
Providing information on packaging	59	55	30	0.76	2.20	12th
Providing information on quantities of herbicide to use	59	63	22	0.71	2.26	9th
Providing information on how to store produce	69	57	18	0.69	2.35	5th
Providing information on record keeping	63	56	25	0.74	2.26	9th
Providing information on acquisition of skills	72	53	19	0.71	2.37	3rd
Providing information on weather forecasting	71	56	17	0.69	2.38	2nd

Source: Field data, 2021

Table 4 shows that farmers perceived the following activities to be very effective: Providing information on new varieties of cassava ($\bar{x}$=2.38), providing information on new methods of disease prevention and control ($\bar{x}$=2.36), providing information on quantities of herbicide to use ($\bar{x}$=2.26), providing information on marketing of cassava products ($\bar{x}$=2.31), providing information on how to store produce ($\bar{x}$=2.35), among others. The results also reveal that providing information on fertilizer application ranked 1st, providing information on new varieties of cassava and providing information on weather forecasting both ranked 2nd, and providing information on acquisition of skills ranked 3rd.

This result is similar to those of Chikaire et al. (2017), who found in their study titled "effect of use of information and communication technologies (ICTs) on

farmers' agricultural practices and welfare in Imo State", that respondents showed positive response (agreed) to all the listed effects of use of ICTs. Specifically, respondents improved in areas such as: adoption of soil conservation practices ($\bar{x}$=3.20), ability to adopt better land use practices ($\bar{x}$=2.82), ability to use and apply manure/fertilizer ($\bar{x}$=3.05), supply chain/risk management ($\bar{x}$=2.95), better residue/organic matter management ($\bar{x}$=2.85) and ability to monitor pest/disease outbreak ($\bar{x}$=2.83) among others.

3.5 Hypothesis test

Table 5: Chi square test of significance

Mass media	Df	X^2-Cal	X^2-Tab
Magazines	2	26.54*	9.21
Newspapers	2	60.79*	9.21
Television	2	48.29*	9.21
Radio	2	57.86*	9.21
Internet	2	20.04*	9.21
Social media	2	10.50*	9.21
Email	2	9.54*	9.21
Extension bulletin	2	29.63*	9.21
Tape recorder/ tape player	2	34.88*	9.21
Mobile phone	2	36.38*	9.21
Computer	2	15.88*	9.21

Source: Field data, 2021   * = Significant at P<0.01

Table 5 presents the result of the chi square test, to support or reject the hypothesis that 'the use of mass media is not effective in the dissemination of agricultural technology among the respondents in the study area.' From the result, the table revealed that all the fitted mass media had large X^2 values (magazines=26.54; newspapers=60.79; television=48.29; radio= 57.86; internet=20.04; social media=10.50; email=9.54; extension bulletin=29.63; Tape recorder/ tape player=34.88; mobile phone=36.38; and computer=15.88). The analysis produced tabulated X^2 value of 9.21, at degree of freedom of 2, at 0.01 alpha level. Since all the calculated X^2 values are greater than the tabulated X^2 value, it was concluded that the use of mass media is effective in the dissemination of information on agricultural technology among the respondents in the study area.

This finding is similar to that of Ariyo et al. (2013), who showed that 90.7% of the respondents claimed that mass media was effective in the dissemination of agricultural information in their study area. Furthermore, these authors employed Chi square test of significance to test the effectiveness of mass media on. Their result gave a calculated X^2 value of 48, which was greater than the tabulated X^2 value of 16.27. This result was significant at 1% level of probability, leading to the rejection of the null hypothesis, that the

use of mass media is not effective in the dissemination of agricultural technology among the respondents, thus, they concluded that mass media is effective in the dissemination of information on agricultural technologies to farmers in their study area.

4.0 Conclusion

The research comes to the conclusion that the majority of respondents were aware of the mass media outlets specified in the survey, including periodicals, newspapers, television, radio, the internet, social media, email, extension bulletins, tape recorders and tape players, mobile phones, and computers. However, radio, followed by mobile phones and television, were the mass media that farmers in the study area were most familiar with. It was also found that all the investigated variables had mean scores above 2.0 in terms of the effectiveness of mass media use, indicating that the respondents agreed that the media is effective in distributing knowledge about agricultural technologies in the study area.

5.0 Recommendations

The study recommended the following:
i. Government, NGOs and development practitioners should adopt radio, mobile phone and TV as the main channels of information dissemination to cassava farmers.
ii. Awareness on the importance and use of extension bulletin should be increased 999 by extension agents in the study area, so that it could be used to serve those farmers who may not have access to electronic devices or as reference materials when their electronic devices are down.

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