Exploring small-scale farmers' attitudes toward the use of mass media for sourcing agricultural information in Delta and Edo States, Nigeria

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Abstract
The study analyzed small-scale farmers attitude toward use of mass media for sourcing agricultural information in Edo and Delta States, Nigeria. It employed multi-stage random sampling technique in selecting 582 respondents of the study. Data were analysed using descriptive and inferential statistics (binary logit model and binomial statistic). Results revealed that average age, farming experience, farm size and household size were 42.27 years, 20.95 years, 2.07 ha and 6 members respectively. Regarding media usage, 49.66% of farmers reported moderate use of mass media to source agricultural information. Importantly, income analysis revealed a positive shift: average income increased from ₦258,762.89 to ₦321,649.48 after farmers began utilizing mass media, demonstrating its impact on farm productivity and income. Attitudinal assessments showed that 56.53% of farmers had a favourable attitude toward the use of media, while 32.13% had an unfavourable attitude. A binomial test (p-value = 0.000) confirmed a statistically significant difference between the proportion of favourable and unfavourable attitudes, leading to the acceptance of the alternative hypothesis. Constraints to mass media use included: lack of finance (84.54%), poor power supply (78.35%), content irrelevance (68.90%), and lack of access to media tools (66.49%). Other issues included literacy challenges, language barriers, cultural differences, and unsuitable broadcast times. A binary logit model analysis revealed that age, education level, household size, farm size, and access to extension services significantly influenced farmers' mass media use. The study recommended that: there is need for the government and other stakeholders to improve access to finance for farmers through establishing grant and loan schemes to assist them in acquiring media tools and technology and that, Government needs to stabilize rural power supply needs in the rural areas by providing rural electrification projects, including the use of solar power solutions where grid supply is unreliable.
Keywords: farmers', attitudes, mass media, agricultural information, farmer income, extension services, cooperative societies

Introduction

The art of agriculture has been an age-long practice (Hakim, 2024). Daniel and Tajudeen (2023) identified the fact that most of the farmers involved in agriculture still operate at the subsistence level that involves the use of crude implements in farming on small plots of land, growing mostly for their families, selling little or none of their farm produce and engaging mostly family labour in farm work. Aruocha (2021) further noted that the practicing farmers are mostly operating at the subsistence level and that such situation or type of farm practice may pose a threat to food security in the face of rapid population growth.

In revamping the situation, Adamaagashi *et al.* (2023) stated that the Nigerian agricultural system of operation needs to move from its subsistence to commercial level and from producing little to plenty and that such narrative would require farmers access and use of agricultural information. Obiora (2023) defined agricultural information as the various sets of information and messages that are relevant to agricultural production activities of farmers, such as crop production and protection, animal production and management and natural resources protection and conservation. The author also observed that agricultural information services contribute significantly to agricultural production. Farmers value information that directly impacts their farming practices, such as weather forecasts, pest control methods, crop prices, and government programs (Adamaagashi *et al.,* 2023). Adamaagashi *et al.* (2023) opined that if information from mass media aligns with farmers immediate needs and is presented in simple, understandable language, farmers are more likely to see it as a useful tool. The authors stated in addition that media that focuses on indigenous language broadcasts tends to have more resonance in rural areas, where farmers may prefer local dialects over English.

The role of mass media in disseminating agricultural information to farmers can contribute to more informed and empowered farming communities, leading to sustainable agricultural practices, increased crop yields, and improved livelihoods in rural areas (Obiora, 2023). Nwibo *et al*. (2022) described mass media as that which has its own wide outreach and influence on farmers in line with the spread of agricultural information. Nwibo *et al*. (2022) also stated that they are increasingly becoming a veritable instrument for transforming Nigerian agriculture through which people will derive pleasure from learning how farming activities are carried out on daily basis and the tendency of increasing the production level of the farmers. Anyanwu and Udoh (2022) stated that mass media are of different types, namely: traditional media outlets, such as radio, television, newspapers, and agricultural extension services, and that they have been the primary means of communication for rural communities for decades. Alternative to the above mentioned is the print media which uses a physical object as a means of sending their information such as newspaper, magazines, brochures, newsletters, books, leaf lets and pamphlets. The other type is the outdoor media which comprises billboards, signs, placards, placed inside and outside of commercial buildings.

The attitude of farmers towards the use of mass media as a strategic tool to disseminate agricultural information in the study area can be understood by examining several factors including: benefits derived from its use by farmers, factors militating against its effective utilization, content relevance, and the media platforms available to them. Abun *et al*. (2021) acknowledged an individual's attitude as that which is produced by emotional and behavioural

beliefs and that it is an intrinsic frame of mind affecting one's thoughts or behaviour. Several studies have addressed issues relating to mass media use, role of mass media, effectiveness of mass media and so on, but none seemed to have addressed the attitude of farmers in this regard. This research hopes to bridge this gap. Against this background, the study described the socio-economic characteristics of the farmers in the study area, ascertain farmers level of mass media use to source for agricultural information, analysed the impact of mass media usage on farmers income, examined proportion of farmers with favourable and those with unfavourable attitude towards use of mass media as source of agricultural information; and identified factors militating against effective utilization of mass media as sources of agricultural information dissemination tool in the study area.

Hypotheses of the study

Ho1: Small-scale farmers socio-economic characteristics has no significant influence on the use of mass media for sourcing agricultural information.

Ho2: The proportion of farmers with favourable attitude to use of mass media as source of agricultural information is not significantly different from those with unfavourable attitude.

Methodology

Study area

The study was carried out in south-south zone of the Nigeria. The states used were Delta and Edo States. The states are not only contiguous in proximity but also having farmers with similar characteristics.

Delta State

Delta State comprises 25 Local Government Areas (LGAs), with its capital located in Asaba. The State's population is estimated at 5,636,100 (NPC, 2024). Delta State is renowned for its diverse ethnic groups and major tribes, including Isoko, Ika, Urhobo, Itsekiri, Ijaw, Ukwuani, and Aniocha. The primary occupations of its inhabitants include fishing, crop farming, and animal rearing, while others are involved in oil exploration, civil service, trading, and commerce (Okwuokenye, 2022a). Ikoyo-Eweto *et al.* (2023) reported that the state comprises 72, 80 and 48 communities in the Delta North, Central and South Agricultural Zone respectively. Geographically, the state lies between Longitude 5^0.00" and 6^0.45" North and Latitudes 18^0 and 23^0 South and is characterized by a monsoon climate, with an annual average temperature of 28.64°C (83.55°F) and an average yearly rainfall of 241.52 mm (Delta Climate Summary, 2023).

Edo State

Edo State was created in 1991 from the former Bendel State. It comprises 18 LGAs, with Benin City as its capital. The state covers an area of approximately 19,794 km² and is located between Longitudes 05°04'E and 05°44'E and Latitudes 07°34'N (Ebomwonyi *et al*., 2019). It shares borders with Ondo State to the west, Delta State to the south, Kogi and Anambra States to the east, and Kogi State to the north (Ebomwonyi *et al*., 2019). According to Okwuokenye and Akintoye (2018), the primary spoken language is Edo, while English serves as the official language.

The state projected population was estimated at 5,250,000 as at 2024 (NPC, 2024), making it the 22nd most populous state in Nigeria. The state's major towns include Auchi, Ekpoma, Uromi, and Irrua. The people are renowned for their expertise in arts and crafts, which significantly contribute to the state's tourism and creative industries. According to Edo State Wikipedia, the State is rich in various mineral resources, including quartzite, marble, limestone, lignite, and gold. Additionally, petroleum is found in some areas, such as Ovia and Orhionmwon.

Validation of research instrument

The research adopted the Jury Method in validating the research instrument while the reliability of the instrument was ascertained using the Test-re-test Method.

Sampling technique and sampling size

The sample for the study was obtained from a population of farmers served by extension agents in Delta and Edo States. A multi-stage random sampling technique was employed. In the first stage, Delta and Edo States were purposively selected as contiguous states and due to similarity in characteristics of the farmers. The second stage involved randomly selecting two agricultural zones from each state, resulting in a total of four zones. In the third stage, two Local Government Areas (LGAs) were randomly selected from each zone, yielding a total of eight LGAs used for the study. Stage 4 involved random selection of two villages from each LGA, resulting in a total of 16 villages. Subsequently, 40 farmers were randomly selected from each village, bringing the total number of farmers administered the questionnaire to 640. Out of the returned questionnaires, 582 (90.94%) were deemed suitable for analysis. Table 1 below provides detailed information on the zones, LGAs, villages, and distribution of the farmers.

Table 1: Distribution of Agricultural zones, LGAs, Villages and farmers used for the study

State	Agricultural zones	LGAs	Villages	No. of Farmers
Delta	Delta North	Aniocha South	Ubulu-Uku and Nsukwa	40 + 40 = 80
		Ika North East	Mbiri and Ute-Okpu	40 + 40 = 80
	Delta Central	Ethiope East	Abrake and Isiokolo	40 + 40 = 80
		Ughelli South	Olomu and Okwagbe	40 + 40 = 80
Edo	Edo South	Oredo	Oredo and Uzebu	40 + 40 = 80
		Ovia South West	Usen and Ora	40 + 40 = 80
	Edo North	Etsako West	Auchi and Jattu	40 + 40 = 80
		Akoko Edo	Ogbe and Ogugu	40 + 40 = 80
Total = 2	4	8	16	640

Data analytical techniques

Descriptive statistics (frequency distribution, percentage and mean) were used for determining the socio-economic characteristics of the respondents, ascertaining farmers level of mass media usage, impact of mass media on farmers income and the proportion of farmers with favourable and unfavourable attitudes to use of mass media as source of agricultural information. In analysing the factor limiting the use of mass media, four-point Likert scale was adopted. It ranges from, strongly agreed limiting factor (rank 1), agreed limiting factor (rank 2), disagreed limiting factor (rank 3) and strongly disagreed limiting factor (rank 4). In the instance where up to 50% of the respondents indicated that the factor was a limiting factor, it therefore means such was strongly agreed as a limiting factor to the use of mass media by farmers in accessing agricultural information. On the contrary, if the response is less than 50%, it is then regarded as a non-limiting factor.

Inferential statistics were used to analyse hypotheses one and two of the study. These were Logistic regression and Binomial test. Hypothesis one (small-scale farmers socio-economic characteristics has no significant influence on their use of mass media for sourcing agricultural information) was analysed with Logistic regression. Logistic analysis was used to position if small-scale farmers use of mass media was determined by socio-economic characteristics.

The model is written as:

$Yi = a + b_iX_i + e_i$

Where Y_i = farmers use of mass media

a = Vector of logistic respect coefficients

e_i = error term

Xi = Vector of independent variables (socio-economic characteristics) given below as:

Y = Farmers use of mass media (High = 1; low = 0)

X_1 = Gender (dummy: male = 1; female = 0)

X_2 = Marital status (single = 1; married = 2; divorced = 3; widow(er) = 4)

X_3 = Age of farmers (in years)

X_4 = Level of formal education of farmers (no formal educ., primary. educ., secondary educ. and post-secondary educ.)

X_5 = Household size (number of people living and feeding together)

X_6 = Farm size (measured in hectares)

X_7 = Farming experience (years)

X_8 = Cooperative membership (dummy: membership = 1; non-membership = 0)

X_9 = Access to extension services (dummy: yes = 1; no = 0)

The model can be represented explicitly by taking it as a probability, p, and making its logarithm depend linearly on the independent variables:

$Log\ P = a+b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + b_6X_6 + b_nX_n + e_i$

Binomial test was used to determine if significant difference exist between farmers with favourable and unfavourable attitudes towards using mass media as a source of agricultural information.

The binomial formular is stated below as follows:

b(x;n,p) = nCx*px*(1-p) n-x

Where b = binomial probability

x = total number of successes (favourable and unfavourable attitudes)

p = probability of success on an individual trial

n = number of trials

When making a decision, the potential values of the test statistics are segmented into two ranges. The critical region of the sample distribution represents the area or areas where the values of the statistic lead to rejecting the hypothesis being tested when that hypothesis is true.

Results and Discussion

Results on socio-economic characteristics of farmers is shown in Table 2. It revealed that majority (61.17%) of them were males while 38.83% were females. This means that farming in the area is skewed towards males and this may be attributed to the fact that land ownership is mostly ascribed to the males and this is in accordance to the tradition and custom of the people of the area and by implication, they have ownership right of their farms. This assertion agreed with Ikoyo-Eweto *et al*. (2023) which observed male dominance in same area. The average age of the farmers was 42.27 years with majority (45.19%) of them fall within the age group of 40 – 59 years. The result implies the farmers are young and in their active age group. Their young status predisposes them with the potentials of seeking for information from the mass media which could help improve their farming activities. This result is corroborated by the findings of Ukwuteno and Ukwuteno (2022) which expressed that most farmers who are in their active age group are interested in seeking farm information from the mass media.

Farmers educational level revealed that almost all the farmers had formal education with majority (46.22%) having secondary school qualification. Impliedly, the farmers can leverage on mass media information to better their farm operation since education is key to farmers enlightenment and awareness creation. The result agreed with Ukwuteno and Ukwuteno (2022) that most farmers of the area are educated beyond primary school level. Marital status of the farmers showed that most (67.69%) of them were married. Being married is an indication that they are responsible and have people to cater for economically and may on the other hand be a source of farm labour. Findings of Ikoyo-Eweto *et al*. (2023) confirmed this result, they found dominance of married farmers in farming operations in same area. Majority (46.56%) of the farmers had farming experience of between 10 – 19 years and the average was 20.95 years. The result suggested that the respondents were experienced in their farming activities. The experience provides them with the skill of how to identify and handle farm challenges. The result concurred with the findings of Okwuokenye and Okoh (2018) that good farming experience will enhance farmers skill towards solving farm shortcomings for greater productivity.

Further revealed by the Table was farm size which revealed that most (40.55%) of the farmers had a farm size range of between 1.1 – 2.0 hectares, with an average size of 2.07 hectares. The result indicated that the farmers were

mainly small-scale farmers since they majorly operated below 4 hectares. Ikoyo-Eweto *et al*. (2023) agreed with this result, they found majority of farmers in the study area to be small-scale in nature since they majorly operate on farm sizes between 1 – 3 hectares. The average household size of the farmers was 6 persons with the modal (47.08%) having between 4 – 6 persons in their households. By implication, the farmers had large household size that can complement as source of farm labour to the farmers. This result is supported by findings of Agahiu and Akogu (2019) which revealed that most Nigerian farmers have household size ranging between 6 – 10 persons.

On cooperative membership, most (80.41%) of the farmers were members of one cooperative society or the other. Membership participation was ascribed to the various benefits, inclusive of information sourcing to better their farming activities. This assertion was agreed by Akpomedaye (2023) findings that farmers involvement in cooperative societies attract numerous benefits that help to enhances their farming activities. Farmers access to extension services showed that majority (57.56%) of them had access to extension services. Farmers accessibility helps to improve on the needed information to operate their farms. The result implies that farmers are not devoid of agricultural information. This result agrees with findings of Ayenew *et al*. (2020) that found more of the farmers having access to extension services which has improved their access to information and consequent adoption of improved technologies.

Table 2: Distribution of farmers socio-economic characteristics

Socio-economic variables	Categories	Freq.	Percentage	Mean
Gender	Male	356	61.17	
	Female	226	38.83	
Age range (years)	≤ 20	76	13.06	
	20 – 39	158	27.15	
	40 – 59	263	45.19	
	≥ 60	85	14.60	42.27
Formal educational Status	No formal educ.	36	6.19	
	Primary educ.	181	31.10	
	Secondary educ.	269	46.22	
	Post-secondary educ.	96	16.49	
Marital status	Single	135	23.19	
	Married	394	67.69	
	Divorced/Separated	31	5.33	
	Widow(er)	22	3.78	
Farming experience (yrs)	< 10	81	13.91	
	10 – 19	271	46.56	
	20 – 29	95	16.32	
	30 – 39	73	12.54	
	≥ 40	62	10.65	20.95
Farm size (ha.)	≤ 1.0	128	21.99	
	1.1 – 2.0	236	40.55	
	2.1 – 3.0	81	13.92	
	3.1 – 4.0	62	10.65	
	4.1 – 5.0	44	7.56	
	≥ 5.1	31	5.33	2.07
Household size (years)	1 – 3	82	14.09	
	4 – 6	274	47.08	
	7 – 9	148	25.43	
	≥ 10	78	13.40	6.15
Member of cooperative society	Yes	468	80.41	
	No	114	19.59	
Access to extension services	Yes	335	57.56	
	No	247	42.44	

Source: Field Survey, 2025, n = 582

Farmers level of mass media use in sourcing agricultural information

Table 3 shows farmers level of mass media use in sourcing agricultural information. Results revealed that most (49.66%) of the farmers made moderate use of mass media in sourcing agricultural information for their farm practice. This implies that they use mass media every day but not throughout the day. Result thus implies that the farmers had access and made good use of mass media in sourcing for agricultural information. This result agreed with findings of Sawe (2022) which stated that agricultural information was mostly sourced from mass media (television and radio) and that they also ranked the most

important source of agricultural information to the farmers.

Effect of mass media access and use on farmers income

The effect of mass media on farmers income was analyzed in terms of farm income earned on annual level from farm produce in naira (₦) value (see Table 4). The result showed that majority (40.55%) of the farmers earned

Table 3: Farmers level of mass media use in sourcing agricultural information

Level of mass media use by farmers	Frequency	Percentage
High	159	27.32
Moderate	289	49.66
Low	93	15.98
Poor	41	7.04
Total	582	100.00

Source: Field Survey, 2025

₦200,001 – ₦300,000 before access and usage of mass media for sourcing agricultural information. On the other hand, most of the farmers (43.97%) earned between ₦300,001 – ₦400,000 after having and using mass media as a source of enriching themselves with agricultural information. The farmers respectively earned ₦258,762.89 and ₦321,649.48 before and after accessing and usage of mass media in sourcing agricultural information for farm use. The result revealed that the income earned by the farmers after accessing and usage of mass media was higher than what was earned before their encounter with mass media usage. By implication, access and use of mass media positively impacted on their output and farm income. The result was confirmed by findings of Inegbedion *et al.* (2020) which revealed that the use of social media was found to enhance efficiency and turnover of farmers through a significant reduction in the cost of marketing agricultural products as well as increased demand for products.

Farmers attitude to the use of mass media as source of agricultural information

Table 5 examined the proportion of farmers with favourable and those with unfavourable attitude towards using mass media as a source of agricultural information. The result revealed that a larger fraction (56.53%) of the respondents showed favourable attitude towards usage of mass media in sourcing of agricultural information. The other fraction (32.13%) showed unfavourable attitude in same regard. Drawing inference, a good proportion of the farmers had positive attitude toward mass media usage in sourcing for agricultural information. Farmers favourable attitude exhibited is perhaps as a result of their exposure to mass media which has impacted on their productivity and income. Nwibo *et al.* (2022) supported this finding, noting that farmers held a favourable attitude toward mass media because they recognized it as essential and valuable tools for disseminating critical information, especially during emergencies and warnings

Factors limiting the use of mass media as a source of agricultural information to farmers

The factors limiting the use of mass media as a source of agricultural information to farmers are analysed on the basis of their weighted mean and the result is shown in Table 6. The factors revealed that lack of finance (84.54%), poor power supply to the rural areas (78.35%), inability of mass media to address farmers' needs (68.90%) and lack of media tools or gadgets (66.49%) were some of the identified factors which respectively ranked 1st, 2nd, 3rd and 4th factors limiting the use of mass media by the farmers. The other factors include low literacy level of farmers (62.20%), language barriers (60.31%), cultural differences/barriers (59.11%) and broadcasting time not suitable to the farmers (54.81%) and they respectively ranked 5th, 6th, 7th and 8th limiting factors associated with the use of mass media to source for agricultural information. The factors adversely affecting farmers in accessing needed agricultural information were numerous and these by implication will go a long way in hampering accessing agricultural information by farmers. Obiora (2023) agreed with the results on lack of finance, poor power supply to the rural areas, inability of mass media to address farmers' needs and low literacy level of the farmers as constraining factors to accessing agricultural information from mass media. Findings of Nwibo *et al.* (2022) was in line with the results on unfavouable broadcasting time, high cost of mass media tools, language barriers and unsuitable broadcasting time as limiting factors.

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Table 4: Effect of mass media access and use on farmers income

Farm income (₦)	Before access and use of mass media			After access and use of mass media		
	Frequency	Percentage	Mean	Frequency	Percentage	Mean
≤ 100,000	41	7.05		28	4.81	
100,001 - 200,000	127	21.82		73	12.54	
200,001 - 300,000	236	40.55		98	16.84	
300,001 - 400,000	118	20.27		256	43.97	
400,001 - 500,000	38	6.53		91	15.64	
> 500,001	22	3.78		36	6.19	
Total	582	100.00	258,762.89	582	100.00	321,649.48

Gain in annual farm income after mass media usage = ₦321,649.48- ₦258,762.89= ₦62,886.59
Source: Field survey, 2025

Table 5: Farmers attitude to the use of mass media

Farmer attitude to usage of mass media	Frequency	Percentage	Mode
Favourable attitude	329	56.53	
Unfavourable attitude	187	32.13	
Neutral attitude	66	11.34	
Total	582	100.00	Favourable attitude

Source: Field survey, 2025

Table 6: Factors limiting the use of mass media as a source of agricultural information to farmers

Limiting factors	Strongly disagree (1)	Disagree (2)	Agree (3)	Strongly agree (4)	Ranking
- Lack of finance	7 (1.20%)	31 (5.33%)	52 (8.93%)	492 (84.54%)	1st
- Poor power supply to the rural areas	12 (2.06%)	43 (7.39%)	71 (12.20%)	456 (78.35%)	`
- Mass media does not address farmers' needs	36 (6.19%)	52 (8.93%)	93 (15.98%)	401 (68.90%)	3rd
- Lack of media tools or Gadgets	11 (1.89%)	32 (5.50%)	152 (26.12%)	387 (66.49%)	4th
- Low literacy level of farmers	57 (9.79%)	62 (10.65%)	101 (17.35%)	362 (62.20%)	5th
- Language barrier	50 (8.59%)	88 (15.12%)	93 (15.98%)	351 (60.31%)	6th
- Cultural differences/barriers	67 (11.51%)	75 (12.89%)	96 (16.49%)	344 (59.11%)	7th
- Broadcasting time is unsuitable to the farmers	74 (12.71%)	96 (16.49%)	93 (15.98%)	319 (54.81%)	8th
- Media report biased information	102 (17.53%)	99 (17.01%)	94 (16.15%)	287 (49.31%)	9th
- Lack of interest to listen to the media	111 (19.07%)	121 (20.79%)	89 (15.29%)	261 (44.85%)	10th

**Agreed (mean ≥ 50%) Source: Field survey, 2025*

Table 7: The influence of farmers' socio-economic characteristics on usage of mass media in sourcing agricultural information

Socio-economic variables	Coefficient (B)	t-value	Prob. level	Odd-ratio
Constant	5.2853	2.225	0.001	
Gender	1.0253	2.250	0.532	0.947
Marital status	1.9244	1.001	0.610	1.045
Age	-1.6034	-1.506*	-0.871	3.214
Level of formal educ.	2.8961	2.971**	0.000	2.119
Household size	2.9806	2.134*	0.001	2.033
Farm size	3.2217	3.421*	0.002	2.041
Farming experience	0.9932	0.124	0.514	1.394
Cooperative membership	2.6454	1.623	0.891	0.872
Access to extension services	1.9168	2.872**	0.013	3.007
LR Chi^2	65.84			
Prob > Chi^2	0.0000			
Pseudo R^2	67.5214			
Log likelihood				

*Source: Computed from field survey data, 2025; **Significant at 1%; Significant at 5%**

Table 8: Categorization of farmers on use of mass media for sourcing agricultural information

Variable	Category	N	Observed Proportion	Test Proportion	Prob. Level
Attitude of farmers to use of mass media	Favourable attitude (score: >20)	383	0.6581	0.50	0.000
	Unfavourable attitude (score: 20 & below)	199	0.3419		
	Total	582	1.0000		

Source: Computed from field survey data, 2025

The influence of farmers' socio-economic characteristics on mass media usage in sourcing agricultural information

Table 7 presents binary logit model analyzing the relationship between mass media use and estimated socio-economic characteristics of farmers. The likelihood ratio (Chi^2) and R^2 show values of 65.84 and 67.52 respectively. This indicates that about 68% influence of socio-economic characteristics on mass media use have been explained by the regression results. Five (age, level of formal education, household size, farm size and access to extension services) of the nine variables were found to significantly influence farmers use of mass media as source of agricultural information. The results are further discussed below:

Age of farmers was negatively signed and significant at 5% level to the use of mass media for sourcing agricultural information. The coefficient was -1.6034, with t-value of -1.506 while its probability value was -0.871. The result suggests that younger farmers are more likely than their older counterparts to utilize mass media for accessing agricultural information. The odds ratio was 3.214, indicating that the young farmers are likely to use mass media about 3 times more than their older counterparts in sourcing agricultural information. This result agrees with the findings of Muhammad *et al*. (2019), which indicate that younger farmers are more inclined to collect and share information using Information and Communication Technologies (ICTs), which are closely related to mass media. The coefficient, t-value and probability level of farmer's educational level was 2.8961, 2.971 and 0.000 respectively. The relationship was positive and statistically significant at 1% level, indicating that farmers with higher levels of education are more likely to utilize mass media for accessing agricultural information. The odds ratio of 2.119 implies that more educated farmers are approximately twice as likely to use mass media to obtain agricultural information. This result is consistent with the findings of Okwuokenye (2022b), which identified farmers' level of education as a key determinant of their use of mass media in sourcing agricultural information.

The relationship between farmers' household size and access to mass media was positive and statistically significant at the 5% level. The coefficient was 2.9806 with a t-value of 2.134 and a p-value of 0.001. This positive relationship suggests that farmers with larger household sizes are more likely to access and utilize mass media for obtaining agricultural information. The odds ratio of the relationship was 2.033 and it indicates that farmers with larger household sizes are approximately twice as likely to utilize mass media for accessing agricultural information. Farm size had a coefficient of 3.2217, with a t-value of 3.431 and a p-value of 0.002, indicating a positive and statistically significant relationship at the 5% level. This positive relationship suggests that farmers with larger farm sizes are more likely to utilize agricultural information obtained through mass media. This finding aligns with the results of Muhammad *et al.* (2019), who reported that an increase in land size encourages farmers to make greater use of ICTs synonymous to mass media to bridge the agricultural information gap. The odds ratio of 2.041 indicates that with each unit increase in farm size, farmers are approximately twice as likely to use mass media to source agricultural information for farm-related activities. Access to extension services exhibited a positive and statistically significant relationship with mass media usage in sourcing agricultural information at the 1% level. The coefficient was 1.9168, with a t-value of 2.872 and a p-value of 0.013. This positive association suggests that greater access to extension services encourages farmers to increasingly utilize mass media for obtaining agricultural information. The odds ratio of 3.007 indicates that farmers with greater access to agricultural services are approximately three times more likely to access agricultural information through mass media compared to those without such access. The findings of Ikoyo-Eweto *et al*. (2023) support this result, as they observed that farmers with greater access to extension services tend to seek more information, often preferring mass media as a source.

Attitude of farmers toward the use of mass media in sourcing agricultural information

The attitude of respondents toward the use of mass media in sourcing agricultural information is presented in Table 8. This was tested under Hypothesis 2, which stated: There is no significant difference between the proportion of farmers with a favourable attitude and those with an unfavourable attitude toward using mass media for agricultural information. The analysis employed the Binomial test alongside the propensity score matching method. The results applied a dichotomous approach and it revealed that a significant majority of farmers (65.81%) held a favourable attitude toward using mass media for sourcing agricultural information applicable to their farming practices. A smaller proportion of the farmers (34.19%) exhibited an unfavourable attitude toward the use of mass media. Based on these findings, it can be inferred that mass media has proven beneficial in disseminating agricultural information, which likely explains why the majority of farmers actively engage with it. The benefits of mass media in this context include its role in alerting farmers to new developments and emergencies, stimulating interest in innovative ideas and practices, and providing essential information that empowers rural communities to make informed decisions about their agricultural activities (Oba *et al.,* 2020).

Statistically, the test proportion was set at 0.50 (50%), representing the benchmark against which the observed proportion was compared to determine whether a significant difference existed between farmers with favourable attitudes and those with unfavourable attitudes toward using mass media for agricultural information. The resulting p-value was 0.000, indicating a highly significant outcome (a p-value less than 0.05 is typically considered significant at the 1% level). This result demonstrates that the observed proportion of respondents with favourable attitudes significantly differs from the hypothesized test proportion. Consequently, the null hypothesis was rejected in favour of the alternative hypothesis. These findings align with those of Nwibo *et al*. (2022), who also reported a favourable disposition among farmers toward the use of mass media as a vital tool for disseminating

relevant agricultural information, particularly during emergencies.

Conclusion and Recommendations

The study analyzed the socio-economic characteristics of farmers and their use of mass media in accessing agricultural information. Regarding media usage, 49.66% of farmers reported moderate use of mass media to source agricultural information. Importantly, income analysis revealed a positive shift: average income increased from N258,762.89 to N321,649.48 after farmers began utilizing mass media, demonstrating its impact on farm productivity and income. The positive shift in income levels after the adoption of mass media indicates its potential in enhancing farm productivity and decision-making. Despite these benefits, various challenges such as: lack of finance (84.54%), poor power supply (78.35%), content irrelevance (68.90%), and lack of access to media tools (66.49%) along line with other issues which included literacy challenges, language barriers, cultural differences, and unsuitable broadcast times continue to hinder optimal media utilization.

A binary logit model analysis revealed that age, education level, household size, farm size, and access to extension services significantly influenced farmers' mass media usage. Younger, better-educated farmers with larger households and farms, and access to extension services, were more likely to use mass media for agricultural information. Attitudinal assessments showed that 56.53% of farmers had a favourable attitude toward using mass media, while 32.13% had an unfavourable attitude. This positive perception is likely influenced by improved access to useful agricultural information. A binomial test (p-value = 0.000) confirmed a statistically significant difference between the proportion of favourable and unfavourable attitudes, leading to the acceptance of the alternative hypothesis

The study thus recommended that:

- There is a need for the government and other stakeholders to improve access to finance for farmers. This can be achieved through establishing grant and loan schemes to assist farmers in acquiring media tools and technology to use to access agricultural information for farm use.
- Government needs to stabilize rural power supply needs in the rural areas by providing rural electrification projects, including the use of solar power solutions where grid supply is unreliable. Doing this will help the farmers to be keeping their media tools in use at minimum cost.
- Planning and development of agricultural media programs should be done in such a way to ensure content relevance or meeting farmers' needs so that programmes will be interesting to the farmers, and;
- There is also a clarion call for the government to partner with tech companies to subsidize or distribute affordable radios, TVs, and mobile phones to farmers for them to use in the sourcing of farm information.

Competing Interests

The author has declared that no competing interests exist

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