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EFFECTS OF ELECTRONIC MASS MEDIA ON THE DIFFUSION OF POULTRY TECHNOLOGIES AMONG FARMERS IN NORTHERN AGRICULTURAL ZONE OF PLATEAU STATE, NIGERIA.

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ABSTRACT

The study examined the effects of electronic mass media used in diffusion of poultry technologies among poultry farmers in Northern Agricultural Zone of Plateau State, Nigeria. Multi-stage sampling techniques were used to select 180 poultry farmers for study. Data were collected using structured questionnaire. Frequency, percentage, mean, and inferential statistics. Multiple linear regression and Spearman's rank were used to assess the relationship between the variables. The result of the findings revealed that majority (61.2%) of the poultry farmers were female and 38.8% were male. 34.1% of the poultry farmers were between the age range of 30-40 years. Majority (63.5%) of the poultry farmers were married while 52.9% had higher education. The use of mobile phone and the Television were effective, at mean scores of $\bar{x}$ 4.70 and $\bar{x}$ 4.20 respectively. The study concluded that Mobile phone, and Television were the most effective and frequently used mass media sources of information for poultry production in the study area. The recommendations were that: i Service providers of Telephones should subsidize their air time charges so as to enable farmers have easy access to means of communication. ii use of indigenous language should be encouraged for effective communication. Also, prices of electronic gadgets should be subsidized by Government for farmers to afford.

Keywords: Diffusion, Technologies, Mass Media, Poultry, Adoption.

1.0 INTRODUCTION

Although nearly all mass media outlets are metropolitan, communication channels can also be categorized as local and metropolitan, connecting the social system to external sources. Interpersonal channels may be either cosmopolitan or innovative. Mass media and urban channels are deemed more significant during the knowledge stage of the innovation process, but native and interpersonal channels are considered more crucial during the authorization stage of the invention process. Umar, (2022). Electronic mass media penetrate knowledge by the utilization of electronic channel followership. Any apparel utilized in electronic communication media analogous to

television, radio, telephony, or handheld gaming devices may also be classified as electronic media. Typically, mass media rapidly reaches a wide audience and facilitates the dissemination of agricultural knowledge. For farmers, they serve as instruments for notifying them of new developments and extremes, as well as useful repositories of agricultural knowledge. Menzli (2023). They may conversely be essential in stimulating manufacturers' interest in novel concepts and techniques. In the rural regions of developing countries, mass media play a crucial role in disseminating information, enabling them to make informed decisions regarding their management practices. Livestock management includes the domestication of all poultry birds such as chickens, ducks, turkeys, and geese. Annually, almost 50 billion chickens are raised for meat and eggs (Mohanty *et al*).

The study sought to investigate the effects of electronic mass media on the diffusion of poultry farming in Northern zone of Plateau State, Nigeria with the following specific objectives:
i describe the socio-economic characteristics of the farmers in the study area
ii identify knowledge sources considered most vital by the farmers
iii identify technologies employed in poultry farming by the poultry farmers; and
iv identify the challenges faced by poultry farmers in the study area.

2.0 MATERIALS AND METHODS

2.1 The Study area:

The study area is located between Latitudes 80^0 24' N to 10^0 30'N and Longitudes 80^0 32' and 26,026km^2 with a projected population of 4,717,300 (PLSG, 2021; NBS, 2022). The principal crops farmed comprise cereals (acha, sorghum, maize, rice), root/tubers (potato, carrots, sweet potato, cassava, yam, cocoyam), tree crops (avocado, olive, mango, guava, pawpaw), and an assortment of vegetables including tomatoes, cabbage, lettuce, radish, passion fruits, pepper, and spinach. Farmers rear livestock including pigs, lambs, goats, rabbits, chickens, and cattle, and also engage in beekeeping. The low temperatures in the research area are attributable to its elevated altitude, with the peak at Jos Wildlife Park reaching around 1,450 meters above sea level. The mean annual precipitation is 1,411mm, with temperatures fluctuating between 15.5°C and 18.5°C in the colder months, and between 27.5°C and 30.5°C in the warmest month.

2.2 Population and sampling procedure

Two Local Government Areas (LGAs), Jos North and Jos South, were specifically selected from the Plateau Agricultural Development Programme registered farmers, exhibiting a significant prevalence of poultry farming, as shown by the initial phase of the multi-stage sampling procedure. In the Second Stage, four intentional selections of extension blocks from Jos South were made; however, only two blocks from Jos North were sampled, reasons being that they were the only registered blocks, resulting in a total of six (6) extension blocks. In the third stage, two extension cells were randomly picked from each of the two extension blocks in Jos North, and two extension cells were randomly selected from each of the four extension blocks in Jos South, resulting in a total of four extension cells. Fifty percent of the sample size in the previous stage was

proportionately selected from each of the four (4) Extension cells, utilizing a confidence level of 95%. A total of 170 completed questionnaires were used for analysis. Ultimately, the 4 extension cells yielded 180 respondents selected randomly and proportionately, using the formula below: n

n= $\frac{(Z)^2(S)^2}{e^2+Z^2\left(\frac{S^2}{N}\right)}$

Where;

n = Sample size

Z = Confidence level

S = Standard deviation

e = Margin of error/Confidence interval

N = Sampling frame/Population size

The study demonstrated that a sample size of 180 or more is statistically significant, with a confidence level of 95%, a standard deviation of 0.5, a margin of error of +/- 5%, and a sample frame of 360. Instantaneous temporal assessment.

Table 1: Sample Frame and Sample Size

Jos North				Jos South			
Blocks	**Cells**	**Sample frame**	**Sample Size (50%)**	**Blocks**	**Cells**	**Sample frame**	**Sample Size (50%)**
Naraguta	Babale	10	5	Gyel	Gyel	60	30
A & B	Russo Village	30	15	A & B	Nyango	12	6
	NaragutaVillage	20	10	Bukuru	Top	22	11
					Gura-Topp	16	8
Jos	Gwang	24	12	Zawan	Anguldi	20	10
Jarawa	Lamingo	36	18	A & B	Zawan	30	15
	Furaka	40	20	Du	Dura	22	11
					Kwang	18	9
		160	**80**			**200**	**100**

Source: PADP Northern Zone Office, 2024

2.3 Method of data collection

The data were collected using a structured questionnaire categorized into socioeconomic characteristics, aspects of poultry production, the effectiveness of electronic mass media, information source preferences, poultry farming technology types, the use of electronic mass

media in evaluating poultry farming technologies, and the challenges impeding the efficient use of electronic mass media.

2.4 Data Analysis

Descriptive statistics encompass frequency distribution, percentages, mean ranking, and charts to fulfill objectives i, ii, iii, and iv.

3.0 RESULTS AND DISCUSSION

3.1 Socioeconomic characteristics of the respondents

Table 2 indicates that, while males constituted 38.8%, the majority (61.2%) were females. This indicated that a greater number of women than men were engaged in poultry farming in the study area. The potential causes may include generating income and providing for the family's well-being. This outcome contradicted the findings of Simon *et al*. (2022), who asserted that men farmers in the studied region had a longer lifespan than their female counterparts. Table 2 indicated that within the active age group of 31 to 40, over half (34.1%) of the respondents discontinued participation. This aligns with Umar, (2022), who observed that the local poultry producers were within their active age demographic. The data indicated that the majority (63.5%) of the participants were married. This implies that the married individuals joined the organization to augment their revenue streams. This aligns with the findings of Simon *et al*. (2022), who observed that the majority of individuals residing in the research area were married. Furthermore, the data indicated that over half (52.9%) of the individuals possessed education beyond the basic level. This indicates the extent to which educational format has exposed poultry farmers to accessible information, aligning with the findings of Onuwa *et al*. (2024), who asserted that the majority of poultry farmers in the study area possessed higher education.

Table 2: Socio-economic distribution of respondents

Variables	Percentage
Sex	
Male	38.8
Female	61.2
Age	
20-30	20.0
31-40	34.1
41-50	27.1
51-60	12.9
61-70	5.9
Marital Status	
Single	24.0
Married	63.5
Widowed	11.8
Divorced	0.7

Educational Level	
No Formal Education	6.5
Primary School	14.1
Secondary School	26.5
Higher Education	52.9
Years of Farming Experience	
1-5	30.0
6-10	31.2
11-15	20.6
16-20	8.2
21 and above	10.0
Household Size	
1-5	30.6
6-10	51.2
11-15	8.8
16-20	9.4
Membership of Poultry Association	
Yes	62.4
No	37.6
Primary Occupation	
Full time poultry Farming	35.3
Trading	14.1
Crop Production	3.5
Civil Servant	42.9
Pensioner	4.1

Source: Field Survey, 2024

3.2 Distribution of respondents according to Farming experience, Household size, Membership of Poultry association and Primary Occupation

Years of agricultural experience, respondents' major occupation, household size, and membership in poultry associations. Table 3 indicates that fewer than half (31.2%) of the respondents possess farming experience ranging from six to ten years. This indicates that due to their inexperience in poultry farming, farmers want adequate education on poultry farming technology to enhance their output and profitability. This corresponds with the findings of Goni *et al*. (2024), who observed that the majority of farmers in the research area have fewer than ten years of experience in chicken raising. Moreover, the results indicated that the majority (51.2%) of the poultry farms in the research area had six to ten individuals residing in homes. This indicates that the typical household size of the poultry farmers in the research area adequately supplies the necessary agricultural labor. This conclusion corresponds with the findings of Bedima *et al*. (2024), who noted that respondents

in the study area had between six and ten individuals residing in their households. Moreover, the results indicated that the majority (62.4%) of respondents were affiliated with the poultry producers' membership association in the research region. This implies that the farmers might exchange their information with each other. This aligns with the findings of
Goni *et al*. (2024), who claimed that the majority of Nigerian chicken growers belong to groups. The data further indicated that 42.9% of the respondents were civil personnel. This indicates that the respondents own alternative sources of income in addition to poultry farming. This corresponds with Nwalieji *et al*. (2023), who observed that the majority of chicken producers in the study area initiated additional enterprises to enhance their income.

Table3: **Distribution of respondents according to Farming experience, Household size, Membership of Poultry association and Primary Occupation**.

Variables	Percentage
Years of Farming Experience	
1-5	30.0
6-10	31.2
11-15	20.6
16-20	8.2
21-30	10.0
Household Size	
1-5	30.6
6-10	51.2
11-15	8.8
16-20	9.4
Membership of Poultry Association	
Yes	62.4
No	37.6
Primary Occupation	
Full time poultry farming	35.3
Trading	14.1
Crop production	3.5
Civil servant	42.9
Pensioners	4.1

Source; field survey (2024)

3.3 Effectiveness of electronic mass media in the diffusion of poultry technology.

Table 4 demonstrated the effectiveness of electronic mass media in the diffusion of poultry technology. T he results demonstrated that these devices were quite effective, with mean scores beyond the threshold of 3.00, specifically $\overline{x}$ = 4.36 for gadgets and $\overline{x}$ = 4.21 for television. Social media, with a mean score of $\overline{x}$ = 3.82, E-library at $\overline{x}$ = 3.45, Internet at $\overline{x}$ = 3.17, and Radio at $\overline{x}$ = 3.06, shown benefits, all surpassing the threshold mean. Email achieved a neutral score of 3.00,

however other electronic mass media E-conference, storage device, VCD/DVD were considered less effective, with their mean scores falling below the threshold of 3.00. This result validated the conclusions of Nwalieji *et al*. (2021), who claimed that farmers effectively acquired poultry information via television, radio, and mobile phones.

Table 4: Electronic Mass Media employed in the dissemination of poultry technology

Variables	**Mean**	**Ranking**
Mobile phone	4.36	1st
Radio	3.06	6th
Television	4.21	2nd
E-mail	3.00	7th
E-library	3.45	4th
Internet	3.17	5th
E-conferencing	2.43	8th
Social media	3.82	3rd
Storage devices	2.32	9th
VCD/DVD Player	2.18	10th

Source; Field survey (2024) Cut-off mean = 3 and above

3.4 Sources of Information

Table 5 reveals that poultry farmers demonstrated a pronounced preference for mobile phones and television ($\bar{x}$= 4.20), as their mean scores surpassed the threshold mean of 3.00. Conversely, social media ($\bar{x}$=3.74), internet ($\bar{x}$ = 3.44), E-library ($\bar{x}$ = 3.31), radio ($\bar{x}$ = 3.11), and email ($\bar{x}$= 3.08) were similarly preferred, ($\bar{x}$= 4.70) and exhibiting mean scores over the threshold mean. Alternative electronic media sources, including E-conferencing, storage devices, and VCD/DVD, were less favored, since their average scores were below the threshold mean of 3.00. The findings substantiate the research conducted by Goni *et al*. (2024), which shown that mobile phones and television substantially affect farmers' views, since they generally place greater trust in visual information compared to aural or textual sources.

Table 5: Preferred Sources of Information for Poultry Farmers

Variables	**Mean**	**Ranking**
Mobile phone	4.70	1st
Radio	3.11	6th
Television	4.20	2nd
E-mail	3.08	7th
E-library	3.31	5th
Internet	3.44	4th
E-conferencing	2.64	8th
Social media	3.74	3rd
Storage devices	2.30	9th
VCD/DVD Player	2.21	10th

Source; Field survey (2024) Cut-off mean = 3 and above

3.5 predominant information sources available to poultry farmers

Figure 1 indicates that the predominant information sources available to poultry farmers in the research area were mobile phones (99.4%) and television (97.1%). Furthermore, radio and social media functioned as significant sources of electronic information. In contrast, e-library, e-conferencing, internet, and storage devices received poor ratings, signifying restricted accessibility for farmers in the area. Thus, the primary information sources employed for production processes were mobile phones, television, radio, and social networks. This discovery supports the claims of Goni *et al*. (2024), who observed that the main information sources for farmers in the study area were mobile phones, television, and radio.

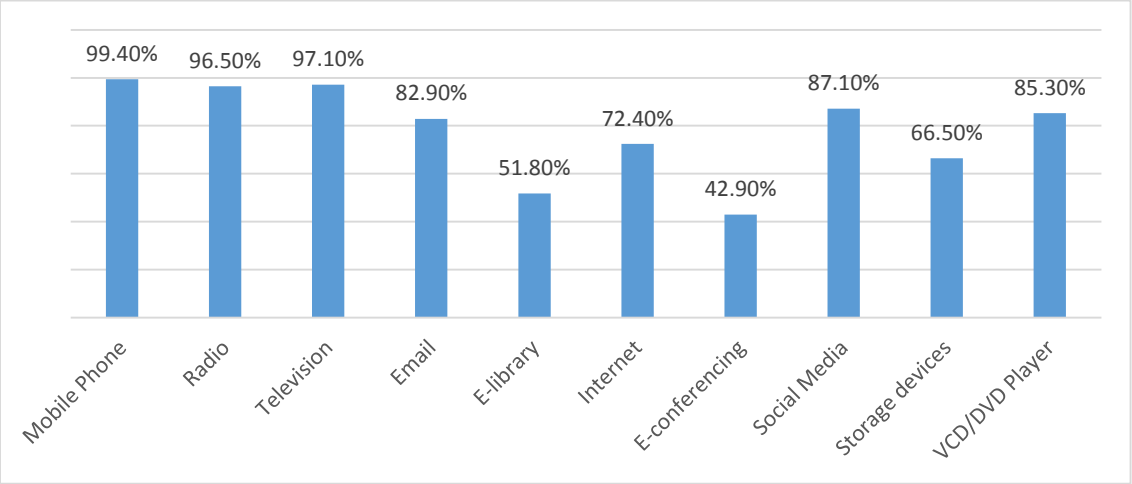

Figure 1: Distribution of replies according to electronic mass media sources
Source: Field research scheduled for 2024

3.6 Types of Technologies Used by the Farmers

Table 6 indicated that the poultry farming technologies disseminated to farmers encompassed information on chick brooding and brooding techniques, with a mean score of $\bar{x}$= 4.28; general housing construction, $\bar{x}$ = 4.26; sources of input supply, $\bar{x}$=4.24; and disease outbreak prevention and treatment, $\bar{x}$ = 4.17. All these mean scores exceeded the cut-off mean of 3.00, signifying their effectiveness. Despite their mean scores exceeding 3.00, credit facilities with a mean score of $\bar{x}$ = 3.91 and daily routine management practices with a mean score of $\bar{x}$ = 3.80 were deemed $\bar{x}$= 4.32; vaccination and drug administration, $\bar{x}$= 4.25; marketing information, beneficial. Alternative technologies, such as consultations with extension agents, poultry processing and preservation, and information regarding governmental regulations, were significant however not particularly beneficial, as their average scores fell below the threshold mean of 3.00. This outcome aligns with the findings of Bedima *et al*. (2024), which indicated that governmental policies, inconsistent extension communication, and irregular timing of extension messages pose significant barriers to information-seeking behavior among chicken producers.

Table 6: Distribution of Technologies used by Poultry Farmers

Poultry Technologies	**Mean**	**Rank**
Information on chicks brooding & brooding techniques	4.32	1st
Vaccination/drugs administration	4.28	2nd
Daily routine management practice	3.80	8th
General housing construction	4.26	3rd
Poultry processing and preservation	2.31	10th
Marketing Information	4.24	4th
Disease outbreak, prevention and cure	4.15	6th
Information on government policies	2.20	11th
Credit facilities	3.91	7th
Sources of inputs supply	4.25	5th
Meeting with extension agents	2.35	9th
Poultry Technologies	**Mean**	**Rank**
Information on chicks brooding & brooding techniques	4.32	1st
Vaccination/drugs administration	4.28	2nd
Daily routine management practice	3.80	8th
General housing construction	4.26	3rd
Poultry processing and preservation	2.31	10th
Marketing Information	4.24	4th
Disease outbreak, prevention and cure	4.15	6th
Information on government policies	2.20	11th
Credit facilities	3.91	7th
Sources of inputs supply	4.25	5th
Meeting with extension agents	2.35	9th

Source; Field survey (2024) Cut-off mean = 3 and above
You are supposed to dicusss your results or findings based on the specific objectives

3.7 Challenges faced by poultry farmers in efficiently utilizing electronic mass media

Table 7 illustrated the challenges faced by poultry producers in efficiently utilizing electronic mass media. The findings revealed that the negligence of certain poultry farmers in adopting modern technology, with a mean score of devices, with a mean score of ranked third. Delayed feedback from most electronic mass media, particularly radio and television, with a mean $\bar{x}$= 4.46, ranked first. This was followed by irregular electricity supply for the utilization of electronic $\bar{x}$= 4.33, ranking second. Poor network coverage, with a mean score of $\bar{x}$ = 4.23, score of $\bar{x}$ = 4.15, ranked fourth. Lastly, airing inconveniences on TV and radio news/programs, with a mean score of $\bar{x}$ = 4.13, ranked fifth. The non-durability of electronic equipment, with a mean

score of $\bar{x}$ =4.02, is rated sixth, followed by the usage of foreign language, which poses a barrier to the utilization of electronic mass media for poultry farmers, with a mean score of $\bar{x} = 4.00$, placed seventh. Their average scores exceeded the threshold mean of $\bar{x}$ 3.00. The high cost of electronic gadgets posed significant challenges for the poultry farmers, with a mean score of $\bar{x}$ = 3.51, ranked ninth, and high charges for airtime and data, with a mean score of $\bar{x}$ = 3.37, ranked tenth. This is in agreement with Oladimeji *et al*. (2023), who said that erratic power supply and insufficient network coverage significantly hinder the mass media utilization by poultry producers.

Table 7: Challenges Encountered by poultry farmers in the use of electronic mass media

Variable	Mean	Rank
High charges on Airtime and data	3.37	10th
Irregular electricity power supply	4.33	2nd
Poor network coverage	4.23	3rd
High cost of electronic gadgets.	3.51	9th
Airing inconvenience on TV and Radio	4.13	5th
Delayed feedback	4.15	4th
Use of foreign language	4.00	7th
Most information from electronic mass media are too brief.	3.99	8th
Negligence of some poultry farmers from the use of modern technology.	4.46	1st
Non durability of electronic devices	4.02	6th

Source; Field survey (2024) Note: Cut-off mean = 3 and above

4.0 CONCLUSION AND RECOMMENDATIONS

4.1 Conclusion

Based on the study findings, it was concluded that mobile phone and Television were the most effective and frequently used mass media sources of information for poultry production in the study area

4.2 Recommendations.

i Poultry farmers should embrace the use of electronic mass media for effective poultry production and not neglect them.

ii There should be regular electricity supply by the providers so as to boost poultry production in the study area.

iii The private sector should generate and provide electricity to guarantee dependable electricity for poultry production.

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