

Awareness and Level of Adoption of Improved Poultry Management Practices among Farmers in Mando, Igabi Local Government Area of Kaduna State, Nigeria

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Abstract:-The study investigated the awareness and level of adoption of improved poultry management practices in Mando, Igabi Local Government Area of Kaduna State. Data were collected randomly through the use of well-structured questionnaire from 57 poultry farmers. Descriptive statistics such as means score, percentage, frequency table and likert scale were used to analyze the data. The findings indicated that majority (71.93%) of the respondents were male, while 60% of the farmers were between the age of 30-50 years. The findings also revealed that majority of the farmers (85.96 %) are aware of improved poultry management practices in the study area. Keeping daily poultry records had the highest adoption level (68.4%), adoption level was also high in vaccine/vitamins. antibiotics (61.4%), improve feeding (59.7%), improved battery cage (59.7%), identification technique of sexing (47.4%), Debeaking machine (47.4%) and identification of culling sick birds (38.6%) while the lowest adoption level were improved heating source (21.1%) and slaughtering and packaging (21.1%). The likert scale result revealed that eight out of the twelve improved poultry management practices studied were adopted while only four was not adopted. Lack of credit/ fund to adopt improved practices (70.18 %), Improved practices were too expensive (58%), lack of government support (54%) lack of information (47%), lack of awareness (47%) and lack of training (42.11%) were the major constraints affecting adoption of poultry management practices in the study area. In view of the findings, the study highlighted the need for government to address the issue of credit availability through an institutionalize frame work aimed at linking farmers to formal sources of credit, if the quantum of poultry production is to keep pace with the protein requirement of the population. The study also recommended that farmers should establish cooperative society so that they can pooled their resources and knowledge together in solving most of the problems identified.

Keywords: Awareness, Adoption, Poultry, Farmers, Improved, Management Practices, Constraints

I. INTRODUCTION

The adoption of an innovation is defined as a decision of individuals or groups to make a sustainable use of an innovation or technology .It is a dynamic process, which consists of distinct but closely related sub-processes. The rate of adoption of any technology depends on the perceived technology characteristics, type of innovation decision,

channels of communication, social system and the extent of change agent promotion strategies. However, the relative advantage of a technology is regarded as the one with the strongest influence on the adoption rate (Rogers, 1995). Information is relevant in adoption and information sources are stimulants for adoption (Rogers, 1995). One of the factors which have contributed to the growth of the world agricultural output is new or improved technology .However, generation of a new technology is not a sufficient condition for increased agricultural output and productivity, a new technology must be disseminated and adopted by farmers. Hence, adoption and spread of any technology innovation in a given farming system depend on the benefit they offer (Rogers, 1995).

Diffusion is the process by which an innovation spread from the source of its invention to the ultimate users or adopters. Whereas adoption process deals with adoption of a new idea by an individual, diffusion process deals with the spread of new ideas in a social system or the spread of innovations between social systems or societies (Rogers, 1995). The theory of perceived attributes is based on the notion that individuals will adopt an innovation if they perceive that the innovation has the following attributes. First, the innovation must have some relative advantage over an existing innovation or the status quo. Second, it is important the innovation be compatible with existing values and practices. Third, the innovation cannot be too complex. Fourth, the innovation must have trial ability. This means the innovation can be tested for a limited time without adoption. Fifth, the innovation must offer observable results (Rogers, 1995).

Researches carried out by some researchers such as (Atala, 1980), have revealed that some socio-economic characteristics such as (age ,level of education, household size , farming size and availability of labor and institutional variables such as (access to credit, community status, joining cooperative groups, and contact with extension workers) influence adoption of recommended agricultural practices. Also in his study of the factors affecting adoption of improved practices by goat farmers in Southeastern Nigeria, Ajala (1992) reported that age, sex, education, herd size, nature of

farming, organizational participation, experience and management system were positively related to adoption.. According to Ani *et. al.* (2009), several factors influence the adoption of agricultural technologies. These include, among others, the needs of the farmers, their level of awareness, level of income and education.

Awareness creation is a key component of adoption process of new idea or technology. It is also the fundamental stage where people (participants) are introduced to new practice or technology exists but lack of details about it. This like seeing something without attaching meaning or importance to it, before any farmer can adopt any new technology or practice, the individual must first know about it. It is therefore the major task practice or technology to the knowledge of the farmer (Oduntan, 2010). The process of increasing the efficiency of agricultural production through agriculture modernization depends mainly on the extent to which farmers can incorporate improved agricultural practices or technologies into their farming operations (Ani and Adiegwe, 2005). Ani (1998) has shown that acceptance of new farming techniques takes place over time

Animal protein is essential in human nutrition because of its biological significance. Poultry and poultry products such as poultry meat and eggs are important foods for improving nutritional and health status particularly for children, pregnant women and weaken persons. Poultry is the term used to designate the species of birds domesticated to produce meat and eggs which are high sources of animal protein. Poultry has been recognized as one of the means to address the problems of malnutrition, food insecurity, low income and poverty (Adene, 2004). It is a profitable venture for livelihood improvement, enhancing subsidiary rural family income and financial empowerment. Extension and research are well-organized systems that design and disseminate technological innovations to farmers. Despite all the technological innovation transfer, the wide gap between levels of production which research contends is attainable and that which farmers achieve suggests a missing link (Oladele, 2002).

Much research has been conducted to find solution to improve productivity in agriculture especially poultry production, but in fact, those farmers who are expected to be the end users utilize very few research results. The important element of any innovation transfer is the appropriate adoption of such technology without any hitch. Some characteristics may speed up the rate of adoption while some serves as constraint to adoption process .Olaniyi *et. al.*(2008) reported that lack of access to capital(65.0 %), inadequate extension contact(55.0 %), inadequate information(27.5%), inadequate inputs supply (15.0 %) and marketing of products (11.2%) as the major constraints faced by farmers in Oyo state in adopting new poultry production technologies. The purpose of this study, therefore, is to examine the level of awareness and adoption of improved poultry management practices and also to identify constraints limiting the adoption of improved

poultry management practices among farmers in the study area.

II. MATERIALS AND METHODS

The study was conducted in Mando Igabi Local Government Area of Kaduna State which is located in guinea savannah zone of Nigeria on latitude 10°37"N and longitude 7° 17"E (Otegbeye *et. al.*, 2001). Annual rainfall is about 1000mm-1500mm per annum. Igabi Local Government Area of Kaduna State consists of three tribes Hausa, Fulani and Gbagi. The major crop produce in the area are maize, millet, yam and cassava and livestock/animals that are reared in the Local Government Area are poultry, cattle, goat and sheep. The poultry farmers in Mando, Igabi Local Government area constituted the sampling population. Random sampling technique was used to select a total of fifty seven poultry farmers that were used for the study. Primary data was used for the study. The primary data were obtained from poultry farmers in the study area with aid of well structured questionnaire and personal interview. The questionnaire was designed to collect information on socio-economic characteristics of the farmers, institutional factors, level of awareness, source of information, level of adoption, constraints to the adoption of improved poultry management practice that have been developed and disseminated to poultry farmers .Descriptive statistic such as percentage, frequency distribution, table, mean and likert- scale were used to describe the socio economic characteristics of the farmers, institutional factors, level of awareness, source of information, level of adoption and constraints affecting rate of adoption. Three points likert- scale was used to evaluate the rate and extent of adoption of improved poultry management practices among farmers in the study area. The three point were specified as Not- adopted =1, Tried = 2 and Adopted = 3. The likert scaling type measuring instrument is represented by the formula:

$$X = \sum Fx / N$$

Where X = mean score

\sum = summation sign F = frequency

N = no of respondents.

x = no of nominal value of each response category 3 + 2 + 1/ 3 = 2 for rate/level of adoption of improved poultry management practices .Therefore, 2 is the weighed mean of the scaling statement for rate/level of adoption of improved poultry management practices among farmers in the study area. Decision rule: Any mean value greater or equal 2 is positive (adopted) while mean value less than 2 are negative (not – adopted).

III. RESULTS AND DISCUSSION

A. Social-Economic Characteristics of Poultry Farmers in the Study Area.

Table 1 show that 71.93% of the poultry farmers are male

while 28.07% were female. This implies that men dominate the poultry sector in the study area. This is in line with the finding of Aphunu and Akpobasa (2009) in the study of adoption of improved poultry management practices in Ughelli in which males also dominated poultry sector. The result in Table 1 also indicates that 33.33 % of the respondents fall within the age of 30-39 years old while 26.32% fall within 40-49 years old, 24.56% were above 50 years old and 15.79 % of the respondents are within 20 -29 years old. The result showed that about 60% of the respondents were between the age of 30-50 years which implies that majority of the respondent belong to the young and middle-aged group, that is, working class group that favours the learning of new technologies which in-turn will encourage greater adoption. Table 1 showed that 49.12% of the respondents are post-secondary education, 35.09% have secondary school certificate, 8.77% have no formal education and about 7.02% have primary school education. This implies that majority of the poultry farmers are literate which is an advantage for adoption of farm innovations as education as been shown to be a factor in the adoption of high yielding modern farm practices (Obinne, 1991). It is very important to know the literate level of the farmers since it influences the ability of the farmer to properly comprehend new techniques and method required to bring about positive changes in their business. Agwu and Anyanwu (1996) reported that increased in education of farmers positively influence adoption of improved practices. 50.88% of respondent are married, 29.82% are single while 12.28% are divorcee and 7.02% are widows. It means married men/women are actively involves in poultry production than single, widow and divorce. The result in Table 1 also shows that 33.33% of respondents had 0-9 years of experience in poultry farming, 21.1% of respondents have 10-19 years, 17.54% had 40-49 years of experience, 14.00% of respondents had between 20-29 years while 8.77% had 30-39 years of experience and about 5.26% has above 50 years of experience. This means that majority of the respondents had over 10 years experience in poultry farming. Agwu (2004) noted that long period of farming experience could increase farmers level of acceptance of new ideas as a means of overcoming their production constraints and hence an advantage for increase production. Long farming experience is also an advantage for increase in farm productivity since it encourages rapid adoption of farm innovation (Obinne, 1991).

B. Source of Finance to the Poultry Farmers.

The result in Table 2 shows that the major source of finance to the farmers was from personal savings (68.42 %) which was in agreement with the work of Akanni (2007) that reported that the major source of finance to small scale poultry farmers in South Western Nigeria was from personal savings (60.75%). Other sources of finance were agricultural development bank (10.53 %), cooperative society (8.77 %), commercial bank (7.02 %) and money lender (5.26 %). This implies that most of the poultry farmers got their initial capital

for their business from savings which will help them to be able to withstand any losses that might arise as a result of poor management, mortality or poor sales.

C. Flock Size

The result of the number of poultry birds possessed by the farmers is presented in Table 3. The table revealed that 29.82 % of the farmers possessed 200 birds and above, 22.81 % have a range of 150 -199 birds, 17.54 % have 50 -99 birds, 15.79 % have less than 50 birds and 14.04 % have 100 -149 birds. The result implies that most or majority of the farmers in the study area are small scale producers. This result is in agreement with the findings of Agwu *et.al.* (2008) that obtained an average flock size of approximately 28 birds in their study which signifies that the farmers are operating at small scale level.

D. Contact with Extension Agent

Table 4a revealed that 92.98 % of the farmers were privileged to have contact with extension agents while 7.02 % never had contact with extension agent and 4b shows that 12.28 % has contact on weekly basis, 15.79 % had contact with extension agents once in two weeks, 19.29 % of poultry farmer had contact on monthly basis while 22.81% and 28.0% had contact with extension agent once in two months and once in a year respectively and also 7.02 % has never had contact with extension agent. It is evident that dissemination of poultry farm innovation was fair in the study area. This result contradicts the work of Agwu *et.al.* (2008) which reported that 70.40 % of the farmers investigated in their study in Enugu State never had contact with extension agents.

E. Level of Awareness of Improved Poultry Management Practices

Farmers were asked to indicate their awareness of improved poultry management practices. Twelve recommended practices were made available for the farmers to indicate their level of awareness out of two options of Aware or Not Aware for each of twelve recommended practices. The result of the analysis presented in Table 5a shows that farmers have high awareness for all the recommended management practices with 85.96 % of the farmers indicated awareness in all the twelve improved practices while 14.04 claimed not to be aware of these practices. Table 5b shows that 91.23% claimed the awareness of improved feeding and battery cages respectively, 87.72% use of vaccine/vitamins/antibiotics and record keeping respectively, 80.70% debeaking, 71.93% identification technique of sexing, 68.42% identification of culling sick birds, 63.16 % detection of good breeds and improve heating source respectively, 57.89 % for egg grading/candling and use of incubator for hatching respectively while only 54.39% of the respondents claimed the awareness of hygienic slaughtering and packaging. Though there is high level of awareness of technology but Roger and Shoemaker (1971) however cautioned on the use of awareness to determine adoption of innovation in that it is not always

certain that farmers who are aware of innovation will adopt. The result also opined with the findings of Olaniyi et. al. (2008) that reported similar high level of awareness of improved poultry production technologies among farmers in Oyo State, Nigeria.

Table 1: Socio-economic characteristics of the poultry farmers

Socio-economic	Frequency	Percentage
Variables	N = 57	(%)
Sex		
Male	41	71.93
Female	16	28.07
Age		
20-29years	9	15.79
30-39 years	19	33.33
40-49 years	15	26.32
50 years Above	14	24.56
Level of Education		
No formal education	5	8.77
Primary	4	7.02
Secondary	20	35.09
Tertiary	28	49.12
Marital Status		
Single	17	29.82
Married	29	50.88
Widow	4	7.02
Divorcee	7	12.28
Household size		
1-5	30	52.63
6-10	19	33.33
> 10	8	14.04
Years of Experience		
0-9	19	33.33
10- 19	12	21.10
20 - 29	8	14.00
30 – 39	5	8.77
40 – 49	10	17.54
50 and Above	3	5.26

Table 2. Frequency Distribution of Respondents Based on Source of Finance

Source of Finance	Frequency	Percentage %
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Source of Finance	Frequency	Percentage %
Personal Savings	39	68.42
Cooperative Society	5	8.77
Money Lender	3	5.26
Commercial Bank	4	7.02
Agricultural Development Bank	6	10.53
Total	57	100

Table 3. Frequency Distribution of Respondents Based on Flock Size

Flock Size	Frequency	Percentage %
Below 50	9	15.79
50 – 99	10	17.54
100 -149	8	14.04
150 – 199	13	22.81
200 birds and above	17	29.82
Total	57	100

Table 4a. Distribution of Respondents Based on Contact with Extension Agents

Contact with Extension Agents	Frequency	Percentage %
Yes	53	92.98
No	4	7.02
Total	57	100

Table 4b. Distribution of Respondents Based on Frequency of Contact with Extension Agents

Number of Contact Extension Agents	Frequency	Percentage %
Weekly	7	12.28
Once in two weeks	9	15.79
Monthly	11	19.29
Once in two months	13	22.81
Once in a year	13	22.81
No contact(Zero)	4	7.02
Total	57	100

Table 5a. Distribution of Respondents Based on Awareness of Improved Poultry Management Practices (IPMP).

Awareness of IPMP	Frequency	Percentage %
Yes	49	85.96
No	8	14.04
Total	57	100

Table 5b: Awareness of Improved Poultry Management Practices (n-57)

Improved Management Practice	Aware (%)	Not Aware (%)
Identification of culling sick birds	39 (68.42)	18 (31.58)
Improved feeding	52 (91.23)	5 (8.77)
Detection of good breeds	36 (63.16)	21 (36.84)
Keeping daily poultry record	50 (87.72)	7 (12.28)
Vaccine/vitamins/antibiotics	50 (87.72)	7 (12.28)
Improved heating source	36 (63.16)	21 (36.84)
Identification techniques of sexing	41 (71.93)	16 (28.07)
Debeaking machine	46 (80.70)	11 (19.30)
Egg grading/candling	33 (57.89)	24 (42.11)
Use of incubator for hatching	33 (57.89)	24 (42.11)
Slaughtering and packaging	31 (54.39)	26 (45.61)
Improved battery cage	52 (91.23)	5 (8.77)

F. Farmers Sources of Information on Improved Poultry Management Practices

The findings of this study as shown in Table 6 revealed that farmers obtained information on improved poultry management practices from various sources ranging from interpersonal to mass media. About 68.42 % of the sampled farmers indicated extension agents and 63.16 % veterinary officers as their major source of information on improved poultry management practices; this is followed by feed millers (52.63%), inputs suppliers (45.61 %), Radio (42.11%), Television (36.84%), poultry association (28.07 %), internet/social media and newspapers (12.28%) respectively while family/friends (8.77%). From this result it could be inferred that extension agents, veterinary doctors and feed millers serves as the main source of information to the farmers on improved management practices. This finding is similar to the findings of Olaniyi et al, (2008) who reported that extension agents and veterinary officers were the major source of information in creating awareness of improved poultry production technologies to farmers in their study.

Table 6: Source of Information on Awareness of Improved Poultry Management Practices (n=57)

Source of Information	Yes (%)	No (%)
Extension Agent	39 (68.42)	18 (31.58)
Radio	24 (42.11)	33 (57.89)
Television	21 (36.84)	36 (63.16)
Family/ Friends	5 (8.77)	52 (91.23)
Veterinary Officers	36 (63.16)	21 (36.84)
Poultry Association	16 (28.07)	41 (71.93)
Feed Millers	30 (52.63)	27 (47.37)
Inputs Supplier	26 (45.61)	31 (54.39)
Internet/ Social Media	7 (12.28)	50 (87.72)
Newspapers	7 (12.28)	50 (87.72)

H. Level of Adoption of Improved Poultry Management Practices

Table 7a shows that poultry farmer have adopted and were using a number of improved management practices. The adoption level were high for keeping daily poultry record (68.4%), vaccine/vitamin antibiotic (61.4%), improved feeding (59.7%), improved battery cage (59.7%) Others include the use of debeaking machine (47.4%) and identification techniques of sexing (47.4%). They were low level of adoption for identification and culling of sick birds (38.6%), detection of good breeds (31.6%), improved heating source (21.1%), egg grading / candling (29.8%), slaughtering and packaging (21.1%). Therefore the low adoption rate listed above could be attributed to high cost and complexity associated with the use of these technologies. The result in Table 7b showed the likert scale rating of level of adoption of improved poultry management practices among the farmers in the study area. The result revealed that the total average mean score for all the improved poultry management practices by the farmers stood at 2.00 which signify that majority of the improved management practices were adopted by the farmers with only few of them not adopted. The table indicates that mean score for the adoption level for improved feeding (2.56), improved battery cage (2.56), keeping daily poultry record (2.53), vaccine/vitamin antibiotic (2.44), identification and culling of sick birds (2.23), use of debeaking machine (2.19), understanding techniques of sexing (2.11) and detection of good breeds (2.04) were all above 2.00 which means they were adopted by the farmers following our decision rule while improved heating source (1.93), egg grading / candling (1.90), Use of incubator for hatching(1.88) and slaughtering and packaging of poultry birds(1.68) were not adopted because their mean score were below 2.00. This finding was in agreement with the assertion of Olaniyi *et.al.* (2008) that observed that the majority of farmers had high awareness of all the recommended improved poultry production technologies among farmers in Oyo state, Nigeria.

Table 7a: Percentage Distribution Level Based on Level of Adoption of Improved Poultry Management Practices (n=57)

Improved Management Practice	Not-Adopted (%)	Tried (%)	Adopted (%)
Identification & culling sick birds	9(15.80)	26(45.60)	22(38.60)
Improved feeding	2(3.50)	21(36.80)	34 (59.70)
Detection of good breeds	16(28.00)	23(40.40)	18(31.60)
Keeping daily poultry record	9(15.80)	9(15.80)	39(68.40)
Vaccine/vitamins/antibiotics	10(17.50)	12(21.10)	35(61.40)
Improved heating source	16(28.00)	29(50.90)	12(21.10)
Techniques of sexing	21(36.80)	9(15.80)	27(47.40)
Debeaking machine	16(28.00)	14(24.60)	27(47.40)
Egg grading/candling	23(40.40)	17(29.80)	17(29.80)
Use of incubator for hatching	23(40.40)	18(31.60)	16(28.00)
Slaughtering and packaging	30(52.60)	15(26.30)	12(21.10)
Improved Battery Cage	2(3.50)	21 (56.30)	34 (59.70)

Figures in parenthesis are the percentages

Table 7b. Likert Scale Rating of Level of Adoption of Improved Poultry Management practices among the Farmers (n= 57).

Likert Scale Rating

Improved Management Practices	Not-Adopted=1	Tried=2	Adopted=3	Total Score	Mean Score	Decision
Identification and culling sick birds	9(9)	26 (52)	22 (66)	127	2.23	Adopted
Improved feeding	2(2)	21 (42)	34 (102)	146	2.56	Adopted
Detection of good breeds	16(16)	23 (46)	18 (54)	116	2.04	Adopted
Keeping daily poultry records	9(9)	9 (18)	39 (117)	144	2.53	Adopted
Vaccine/vitamins/antibiotics	10(10)	12 (24)	35 (105)	144	2.44	Adopted
Improved heating source	16(16)	29 (58)	12 (36)	139	1.93	Not-Adopted
Techniques of sexing	21(21)	9 (18)	27 (81)	120	2.11	Adopted
Debeaking machine	16(16)	14 (28)	27 (81)	125	2.19	Adopted
Egg grading / candling	23(23)	17 (34)	17 (51)	108	1.90	Not-Adopted
Use of incubator for hatching	23(23)	18 (36)	16 (48)	107	1.88	Not-Adopted
Slaughtering and packaging	30(30)	15 (30)	12 (36)	96	1.68	Not-Adopted
Improved battery cage	2(2)	21 (42)	34 (102)	146	2.56	Adopted
Average mean score					2.00	Adopted

Figures in parenthesis are the likert scores

1. Constraints Limiting the Adoption of Improved Poultry Management Practices by Farmers

Table 8 presents the percentage score of factors militating against the adoption of improved poultry management practices. The mean percentage score was calculated as 48.62 %. Any constraints above the mean score were perceived serious and hinder adoption, while those below the mean percentage score were perceived not too serious to affect adoption. The table reveals lack of credits/ fund to adopt improved practices (70.18%), high cost of improved practices(57.89%) and lack of government support (54.39%) were rated the most serious constraints; this implies that majority of the farmers were resources poor farmers with no adequate financial resources to finance the acquisition of

improved management practices. Others s constraints hindering adoption are lack of information (47.37%), lack of awareness (47.37%) and lack of training (42.11%) which were considered to be factors that also hindered adoption at optimum level. These findings supported the findings of Aphunu and Akpobosa (2009) in which the reported improved practices are too expensive, lack of training, lack of credit/funds to adopt and lack of government support to be the serious constraints facing the adoption of poultry management practices in Ughelli of Delta State.

IV. CONCLUSION

The findings revealed that majority of the poultry farmers in Mando Igabi Local Government Area were male (71.93%). The source of financing for poultry production was mainly through personal savings (56.14%) which may have accounted for the low adoption of some the management practices. The findings also revealed that majority of the farmers (85.96 %) are aware of improved poultry management practices in the study area. The study also revealed that poultry farmers in the study area has adopted and were using some improved poultry management practices and the likert scale result revealed that eight out of the twelve improved poultry management practices studied were adopted while only four was not adopted But the major constraints militating against adoption of improved poultry management practices were lack of credits/ fund to adopt improved practices (70.18%), improved practices are too expensive (57.89%), lack of government support (54.39%), lack of information (47.37%), lack of awareness (47.37%) and lack of training (42.11%). .Based on the findings of the study, it is highly recommended that government should encourage poultry farmers to form a poultry co-operative association, so that they can pooled their resource and knowledge together in solving most of the problems identified in the study area and government should address the issue of credit availability through institutionalize frame work aimed at linking poultry farmers to formal sources of credit for an enhanced production and extension service should be enhanced to adequately train poultry farmers to be technically competent to handle modern farming practices.

Table 8: Constraints Limiting the Level of Adoption of Improved Poultry Management Practices in the Study Area.

Constraints	Frequency	Percentage (%)
Improved practices are too expensive	33	57.89
Improved practices too complex	12	21.05
Lack of training	24	42.11
Lack of credit/funds to adopt	40	70.18
Lack of government support	31	54.39
Lack of information	27	47.37
Lack of awareness	27	47.37
Mean percentage score	=	48.62 %

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