

Perceived Constraints to Adoption of Improved Poultry Technology Among Poultry Farmers in Owerri Agricultural Zone of Imo State, Nigeria

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Abstract

Poultry farming constitutes an important sector in agricultural development as an important source of protein. The study determined farmers' response to poultry extension services in Owerri agricultural zone Imo state Nigeria. Poultry farmers would not break even in their business enterprise without adoption of improved techniques of farming. One hundred and twenty farmers were randomly selected for the study and data were analyzed using descriptive statistical tools such as percentage, mean, frequency and multiple regression at 0.1 level of significance (ordinary least square analysis). The results revealed that education was an important factor that determined farmers participation in extension programmes. Young farmers were also more receptive to extension programmes. The results also revealed that their major sources of information were from extension agents 2.7 and fellow farmers 2.6. The farmers also adopted the use of improved breeds, regular litter replacement and regular vaccination of birds with a mean of 2.8 respectively. They however did not adopt the use of artificial breeds. Their major constraints to the adoption of innovation were finance and high cost of livestock feeds. In recommendation, farmers were encouraged to form co-operative societies to enable them access loans from financial institution.a

Keywords: Adoption; Improved poultry technology; Imo state; Nigeria; Perceived constraints; Poultry farmers

Introduction

The poultry class of livestock constitutes an important component of agriculture economy in many developing countries and it is an important instrument to socio- economic change, improved income, and quality of rural life in Nigeria [1]. Livestock extension means the process of transferring, advising and informing livestock farmers about the innovation or technology in livestock such as pigs, goat, sheep, cattle and poultry.

It is widely demonstrated that protein and calories broadly explain the nutritional value of a diet. Protein is one of the most important nutrients. Proteins from animals' source are rated higher

than protein from other sources. F.A.O (2005) reported that the availability and consumption of animal protein in Nigeria was far below the estimated level in Africa. F.A.O (2007) highlighted that low intake of animal protein was due to lack of access, following the exorbitant price un-affordable by low income groups. One way to improve the intake of animal protein is to increase production.

Balogun [2] stated that if Nigeria would be self-sufficient in animal production requirement, the roles of livestock extension programme should be given prominent priority now than ever. Generally, these needs production techniques for optimal result.

These technologies should be properly disseminated by extension staffs in order to boost fanners' capacity to poultry production. Poultry extension means the transfer or dissemination of improved poultry production practices and innovation to farmers who are involved in poultry production in order to enhance their production capacity with a view to improving their live standard and performance.

Poultry extension holds wonderful prospect in this regard and people respond to poultry production because it is low capital intensive and the mission of poultry extension service is to provide relevant educational and services related programme for commercial poultry producers, allied industrial, representative, county extension personnel and small flock produces to enhance production and economic efficiencies while maintaining the state competitive position in poultry production Also extension mission involves providing quality and timely educational programs, problem solving activities and technology development and transfer through applied research and demonstration projects. The production of poultry therefore could be a sure bet to protein self-sufficiency in Owerri, Imo State.

Provision of extension service to rural farmers is a way of helping them increase their production and obtain higher yield and high standard of living and in their economic life, thereby reducing vicious cycle of poverty, which have been pursue by the government towards achieving, increasing, agricultural production. Both men and women cannot single-handedly change agricultural production. They both need adequate contact with extension personnel to carry out their agricultural production activities, therefore the relevance of this study seeks to find a way of improving male and female adoption to poultry farming in Imo-State.

Objective of the Study

The main objective of the study was to determine the Perceived Constraints to Adoption of Improved Poultry Technology among Poultry Farmers in Owerri Agricultural Zone of Imo State, Nigeria. Specifically, the study sought to

- Describe the poultry farmers' socio-economic characteristics;
- Determine the source of information available to the farmers,
- Analyze the level of adoption of improved technologies and
- Determine constraints to farmers adoption of improved technologies.

Hypothesis

There is no significant relationship between the socio-economic characteristics of farmers and their level of adoption of improved livestock technologies

Research methodology

Area of study: The study was conducted in Owerri agricultural zone of Imo state. Imo state lies in the rainforest and is located in the south eastern region of Nigeria. The state share common boundaries with a number of other states with a total area of about 5100km² and a population of 3934,899 people (NPC 2006) and the state lies within latitude 4014'N and 7015'N and longitude 6050'E and 7025'E (National Geographical, 2010). There are twenty-seven (27) local government area (LGA) in the state. Imo state is divided into three agricultural zones namely Okigwe, Orlu and Owerri etc. Owerri agricultural zone was purposively selected for this study due to researches familiarity with the area and the fact that it has received wide dissemination of this technology by the extension arm of Imo state agricultural development programme (A.D.P). It has nine (9) local government areas namely Owerri municipal, Owerri west, Owerri north, Ngor okpala, Aboh mbaise, Ohaji egbema, Oguta, Ikeduru and Mbaitoli. The topography of the area is flat and gently sloppy land with few hilly and undulated lands. The people of the zone were predominantly farmers and traders. Most residents of Owerri agricultural zone consume poultry products (chicken) in different forms (fried, garnished, used in cooking and for soup preparation).

Sample selection: The study was conducted in Owerri agricultural zone, four local government area namely Mbaitoli, Ikeduru, Owerri west and Owerri north were purposively selected for the study because the technology has been disseminated to farmers by Imo state agricultural zone (IMADP), two communities were randomly selected from each local Government Area to give a total of eight (8) communities. They communities are as follows: Ubomiri, Alaenyi ogwa, Obili, Ihiagwa, Akabo and Ugirike as well as Emekukwu and Awaka. Fifteen poultry farmers were randomly selected from each community to give a total of 120 farmers for the study.

Data Collection: Collection of data for the study was done using both primary and secondary data. The primary data for this work were collected using structured questionnaire which was administered by the researcher with the help of Imo Agricultural development programme staffs. The questionnaire collected information from the respondents relevant to the objectives of the study socio economic characteristics, source of information, level of awareness and adoption of improved technology and constraints to farmer's adoption of improved technology. Secondary data were obtained from journals, textbooks and other relevant materials related to the topic under study.

Data Analysis: Data was analyzed using descriptive statistics, mean score (Likert type rating scale), component bar chart and Ordinary least square multiple regression was used to analyze the hypothesis.

Expressed mathematically as follows:

$$y=f(x_1, x_2, x_3, \dots, e) \quad (1)$$

Where Y= level of adoption of improved technologies among poultry farmers in Owerri agricultural zone Imo state, Nigeria.

X1= Age of respondents

X2= Sex of respondents

X3= Marital status of the respondents

X4= Educational level (years spent in school)

X5= Fanning experience

X6= Occupation of the respondents

X7= Organizational membership of the respondents

e = error term

Result and Discussion

Socio-economic characteristics of respondent

The result in Table 1 shows that 71.23% of the respondents were males while 28.33% were females. This means that the area was dominated by male poultry fanners. This disagrees with the findings of Ohajianya and Onyewealu (2003) that female farmers dominated fanning activities in rural areas. The high percentage of married couples is as a result that farming communities believed in marriage due to the high labor requirement in farming. Majority of poultry farmers in the area (33.67%) were within the age bracket of 41-50 years. The mean age of the farmers was 33.95 years, this means that Owerri agricultural zone was dominated by young farmers who are active and can continue positively towards agricultural production. The age bracket according to Asiabaka (2003) is motivational and innovative.

Table 1: Socio economic Characteristics of the Farmers.

Variables	Frequency	Percentages
Sex		
Male	86	71.67
Female	34	28.33
Total	120	100
Marital Status		0
Married	102	85
Single	18	15
Total	120	100
Age		0
21 - 30	11	9.17
31 - 40	34	28.33
41 - 50	44	36.67
51 - 60	25	20.83
61 - 70	6	5
Total	120	100
Level of Education		
06-Jan	11	9.17
12-Jul	23	19.17
13 - 18	67	55.83
19- 24	19	15.83
Total	120	100
Farming Experience		
05-Jan	26	21.67
10-Jun	31	25.83
15-Nov	27	22.5
16 - 20	31	25.83
21 - 25	5	4.17
Total	120	100
Household size		

05-Jan	56	46.67
10-Jun	49	40.83
15-Nov	15	12.5
Total	120	100
Flock size		
<201	20	16.67
201 - 400	27	22.5
401 - 600	25	20.83
601 - 800	48	40
Total	120	100
Major Occupation		
Full time farmers	89	74.17
Part time farmers	31	25.83
Total	120	100
Source of Labour		
		0
Hired	88	73.33
Family	32	26.67
Total	120	100
Membership of social organization		
Yes	78	65
No	42	35
Total	120	100
Extension Visitation		
Once in fortnight	43	35.83
Once in a month	28	23.33
Once in 2 month	14	11.67
Once in 3 month	7	5.83
Once in 6 month	7	5.83
Once in a year	21	17.5
	120	100

Source: Field Survey Data, 2015.

The mean age spent at school by the respondents was 14.2 years, which indicated that they could read and write; in favour with the findings of Basu [3] that adoption rate is significantly related to the educational level of the farmers. The level of education would enhance their adoption rate. Majority of the farmers (25.83%) had 6-10 years of farming experience, while the mean farming experience was 11.5 years. Tanko and Opara (2010) stated that the farming experience enable farmers to set realistic goals. Majority (46.67%) of the respondents has household size of 1-5 persons, while the mean household size was 6 persons. This result implies that the respondents have moderately large household size which is a source of farm labour for their agricultural and poultry activities [4-8].

They had a mean flock size of 469 birds, majority (40) has flock size of 601-800 birds, while the least (2.09) of the farmers had flock size of 401-600 birds. Majority 74.17% had farming as their major

occupation. However, 25.83% were engaged in other occupations, but had farming as a part time enterprise. The dominance of farming could be a function of its being synonymous with rural life, because agriculture is the basic engagement of rural people inspite of their other source of livelihood, Tanko and Opara (2010). Major source of labour was hired (73.33%) while family labour provided just (26.67%) of needed labour supply on the farm. However, with an increased level of production, hired labour become cost effective. About 65% of them belonged to one social organization or the other, while 35% did not belong to any.

It was indicated in Table 2 that extension agents, fellow farmers and radio were the most effective sources of information available to the farmers, with mean effectiveness of 2.7, 2.6 and 2.5 respectively. Majority of the farmers (35.83%) were visited fort nightly, this is an indication of regular visitation by the extension agents which will in-turn facilitate the rate of adoption of improved innovation by the

farmers. other hand, the use of posters, newspapers and newsletters were not important sources of information to the farmers, this could be due to the low literate level of the respondents. As shown in Table 3, the farmers were very much aware and adopted highly in the use of improved breeds, regular vaccination programme and

regular litter replacement in their poultry farming practices with a weighed mean of 2.8. On the other hand, they were not aware of the use of artificial brooder in poultry management which led to the failure to adopt it [9-11].

Table 2: Source of Information available to the Farmers.

Sources of Information	Very Effective (3)		Effective (2)		Non effective (1)		Weighted Mean	Remark	Rank
	F	score	F	score	F	score			
Extension agent	85	255	29	58	6	6	2.7	very effective	1 st
Newspaper	5	15	29	58	86	86	1.3	not effective	
Cooperative	58	174	52	104	10	10	2.4	effective	4 th
Fellow farmers	80	240	32	64	8	8	2.6	very effective	2 nd
Agric Show	48	144	57	114	15	15	2.3	effective	5 th
Newsletter	3	9	11	22	106	106	1.19	not effective	
Television	51	153	32	64	37	37	2.1	effective	6 th
Radio	81	243	17	34	22	22	2.5	effective	3 rd
Posters	7	21	12	24	101	101	1.2	not effective	

Source: Field Survey, 2017

Table 3: Level of adoption of improved technologies.

Level of Adoption of Improved Technologies	Very High (3)		High (2)		Low (1)		Weighted Mean	Remark	Rank
	F	score	F	score	F	score			
Use of improved breed	98	294	15	30	7	7	2.8	very high	1 st
Regular vaccination Programme	101	303	10	20	9	9	2.8	very high	1 st
Brooding of chick	11	33	109	218	3	3	2.1	high	4 th
Feeding milling and mixing	75	225	32	64	3	3	2.4	high	2 nd
Debeaking method	65	195	27	54	28	28	2.3	high	3 rd
Feed supplementation	49	147	36	72	35	35	2.1	high	4 th
Use of artificial brooders	40	120	5	10	75	75	1.7	low	
Regular litter replacement	101	303	9	18	10	10	2.8	very high	1 st

Source: Field Survey Data, 2015

In the Table 4, the financial incapacitation and high cost of livestock feeds were the major constraints to farmers' adoption of improved technologies, with a mean of 2.8. On the other hand,

irrelevant natures of extension package, unavailability of extension agents were perceived by the respondents not to be a constraint to their adoption of improved technologies.

Table 4: Constraints to farmers' adoption of technologies.

Constraints	Very Serious (3)		Serious (2)		Not Serious (1)		Weighted Mean	Remark
	F	score	F	score	F	score		
Financial incapacity of farmers	101	303	18	36	1	1	2.8	very serious
Lack of knowledgeable extension agents	22	66	80	160	18	18	2	serious
Distance from extension office	65	195	40	80	15	15	2.4	serious
High cost of improved technologies	35	105	78	156	7	7	2.2	serious
Difficulty in triability	46	138	60	120	14	14	2.3	serious
Irrelevant nature of extension package	0	0	7	14	113	113	1.1	not serious
I have no problem with what I am currently doing	0	0	15	30	105	105	1.1	not serious
Conduct of extension staff	32	96	70	140	18	18	2.1	serious
Comfortable with existing practice	5	15	27	54	88	88	1.3	not serious
Unavailability of livestock feeding	28	84	52	104	40	40	1.9	not serious
High cost of livestock feeding	98	294	22	44	0	0	2.8	very serious

Source: Field Survey Data. 2015

Table 5: Multiple regression analysis on the relationship between farmers; socio-economic characteristics and Level of adoption.

Explanatory Variable	Linear	Semi-log	Exponential	Double log
Sex	16.0964	3.9214	0,0094	0.0792
	1.0824	1.3654	1.1899	1.2899
Marital Status	13.1304	2.1183	0.0071	0.0844
	2.4811	1.0516	1.1094	1.1837
Age	-14.1174	-7.0822	-0.0094	-0.0665
	-1.0728	-1.1604	-3.2411	-3.2126
Education	18.2903	2.7913	0.0081	0.0817
	1.0829	1.3393	2.8929	2.6875
Farming experience	18.4023	1.3015	0.0059	0.0526
	1.0751	1.1213	4.5385	2.8122
Household size	-16.0914	-4.1904	-0.0082	-0.0819
	-1.0593	-2.1481	-1.1884	-2.7199
Flock size	16.4429	2.4667	0.0093	0.0722
	3.8242	1.1561	3.3201	1.2202
Major occupation	16.0364	1.8921	0.0083	0.0859
	1.0439	2.9091	3.3201	1.2202
Social organization Membership	15.3912	2.1144	0.0064	0.0554
	1.0977	1.0659	3.3201	3.2023
Extension visit	13.3304	3.1174	0.0088	0.0677
	3.3109	1.0514	2.8387	1.3594
R2	0.4933	0.4126	0.7344	0.6438
F-cal	10.7239	7.6407	30.6001	19.5001
N	120	120	120	120

Source: Field survey data, 2015

In the multiple regression presented in Table 5, the exponential function was chosen as the lead equation from the four different functional forms of analysis. This is because the exponential function has the highest F value, highest number of significant variables and highest coefficient of multiple determinants (R²) of (0.7344). This result implies that 73 percent of farmers level of adoption of improved technologies was brought about by the combined effects of the socio-economic variables. The result also showed that Education, farming experience, flock size, major occupation, social organizational membership and extension visitation were statistically significant at 1% level of significant and had direct relationship to adoption, while age, though significant at 1% had negative relationship to adoption, implying that the older the farmers were, the less they were willing to adopt innovation [12-16].

Conversely, sex, marital status and household size were not significant at both 1% and 5% levels of significance. This means that they do not have any impact on the farmers adoption level of improved poultry technologies.

Summary, conclusion and recommendation

The main purpose of this work is to ascertain farmers response to poultry extension service in Owerri agricultural zone of Imo

state Nigeria. The objective of the study includes: to investigate the farmers socio-economic characteristics, determine the source of information available to the farmers, determine their level of adoption of improved technologies and to analyze constraints to farmers adoption of improved technologies. The hypothesis was that there is no significant relationship between the socio-economic characteristic of farmers and their levels of adoption of improved livestock technologies. Data were collected from 120 randomly sampled farmers using semi structured questionnaire. Data were collected on the socioeconomic characteristics of farmers, the source of information available to the farmers, their level of adoption of improved technologies and their constraints to adoption of improved technologies. The result showed that the farmers were mainly married men with mean age of 33 .95 years and mean farming experience of 11.5 years. Their mean household size was six persons per household. Their major source of information was through extension personnel and from fellow farmers. Majority of them adopted the use of improved breeds, regular litter replacement and regular vaccination with a mean of 2.8 respectively. Their major constraints to adoption were finance and high cost of livestock feeds [17].

In conclusion, this work assessed farmers' response to poultry extension services in Owerri Agricultural zone of Imo State

Nigeria. The result showed that the socio-economic characteristics of the farmers played important roles in farmers' adoption of innovations. The result also revealed that the farmers adopted the use of improved breeds, regular litter replacement and regular vaccination of their breeds. They however did not adopt the use of artificial brooders. Their major constraint to adoption were finance and high cost of livestock feeds.

Recommendations

Based on the findings of the study, the following recommendations were made:

- Farmers should be encouraged to form co-operative societies to enable them access loans from financial institutions.
- Continuous training programmes should be further organized for poultry farmers in the area in order to keep them abreast of the latest technologies in the business and also provide ways of removing most of the identified constraints.
- Young farmers should be encouraged to practice modern poultry farming, by ensuring that technical information on better management practices are made available to young farmers by extension agents.
- Since one of the major problems to adoption in the study area was financial incapacitation of farmers, financial institutions should provide soft loans at one-digit interest to poultry farmers to enable them to diversify in their area of operation.

Acknowledgement

None.

Conflicts of Interest

None.

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