DETERMINANTS OF TRAINING NEEDS OF POULTRY FARMERS IN NORTHERN AGRICULTURAL ZONE OF PLATEAU STATE, NIGERIA

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Abstract
This study assessed the determinants of training needs of poultry farmers in the Northern Agricultural Zone of Plateau State, Nigeria. Primary data were collected from nineteen (119) respondents with the aid of structured questionnaires using multistage sampling techniques. Data were analyzed with descriptive statistics such as percentage and mean scores and logit regression model. Results showed that the mean age of the respondents was 43years while majority (72.3%) was married. Majority (98.3%) had one form of formal education or the other. The mean household size was 5 persons. The mean years of farming experience were 7years. The average amount of credit received was ₦190,420.17. The mean farm size was 671 birds and the mean annual farm income was ₦1,002,208.55. Majority (68.9%) sourced their information on poultry production from poultry farmers. The respondents expressed the need for more training. The coefficient of determination (R^2) value was 0.672. The variables level of education (P-value = 0.000) was positively significant at 1%, age and number of training attended (P-value=.0.042 and P-value =0.021) respectively were significant at 5%. The study recommends that. Extension efforts should be geared towards encouraging poultry farmers to sponsor training workshops and seminars by inviting resource persons to address their areas of poultry management training needs. Adequate, free and complete information on poultry training programmes should be made available to the respondents by the government.
Keywords: Training Needs, Poultry Farmers, Northern Agricultural Zone, Plateau State

Introduction

Poultry refers to all birds of economic value to man. Examples of poultry are chickens, pigeon, duck, quail, guinea fowl and ostrich. According to Adewole (2017) poultry has been on earth for over 150 million years dating back to the original mild jungle fowl. The scientific name for chicken is *Gallus Domestica (s)*. Poultry production provides food to a man in form of meat, egg, and manure which helps improve soil fertility. The interest in poultry and poultry products have grown tremendously in the last 20 years, almost every country in the world is involved in poultry production.

The poultry industry occupies a prominent position as a major source of animal protein. According to Farayola *et al*. (2013) in virtually all rural areas, poultry production is carried out on small scale under the extensive or traditional and semi-intensive system.

In modern agriculture, the need for efficiency in agricultural productivity is further multiplied by the fact that useful resources are extremely scarce and become scarcer every day as a result of natural depletion and effects of social pressure such as population urbanization. For agriculture to achieve optimal production levels evidence have pointed to services that develop farmers' abilities to manage available resources in a better way.

Training programmes in agriculture is designed to develop farmers to make them

better entrepreneurs and decision-makers and also to help them organize themselves into effective associations and institutions (Famuyiwa *et al.,* 2012). For training to be more effective, efficient and have a high impact there is a need to conduct a training need assessment. To conduct a training needs assessment is to pinpoint if training will make a difference in productivity, to decide what specific training each needs and what will improve their performances (Chukwu, 2013).

The role of training in the socio-economic development of a nation cannot be over-emphasized as it is the driver to the development of rural farmers. Training in any form is intrinsic to organizational effectiveness and efficiency. It is seen as a process of education for providing the individual with genuine professional competence. Its end product is the development of innate leadership and managerial ability, intellectual understanding of the substance, the know-how of the management profession and the ability to apply that understanding to actual management situations (Moreki and Keaikitse, 2013).

Training according to Ogunlade (2017) is a planned and systematic effort to modify or develop knowledge, skills or attitude through the learning experience, to achieve effective performance in an activity. A significant relationship has been found between training and competencies of the target population (Okwoche *et al* 2015). Livestock farmers' competencies could be enhanced through proper training programmes. Training consists largely of well-organized opportunities for participants to acquire the necessary understanding and skills. According to Arowolo (2017), farmers' training is directed towards improving their job efficiency in farming.

Despite the overwhelmingly important role poultry production plays in the economy of Nigeria, it is unfortunate that Extension Agents or workers that are supposed to take innovations to the farmers seem to sidetrack poultry farmers. Pandey (2015) reported lack of adequate effective training of poultry farmers has been a major constraint that has resulted in a reduction of poultry production patterns resulting in a supply gap to meet the expanding population consumption demand. There is a lack of adequate training from extension workers about innovativeness and incentives for poultry production to achieve the desired change.

A lot of poultry production enterprises abound in Plateau State that can provide gainful employment opportunities for the teeming population, especially the youths. It is, however, not know the extent of training received by poultry farmers in the zone. It is not also certain the training needs of poultry and the constraints faced by these poultry farmers. This indeed provides the basis for this research.

The general objective of the study is to assess the determinants of training needs of poultry farmers in the Northern Agricultural Zone of Plateau State, Nigeria while the specific objectives are to:

i. describes the socio-economic characteristics of the poultry farmers in Northern Agricultural Zone of Plateau State;
ii. identify the sources of information on poultry production used by the respondent;
iii. identify the training needs of the respondents; and
iv. vi. assess the determinants of training needs of the respondents

Methodology

The study was conducted in the Northern agricultural zone of Plateau State, Nigeria. Plateau State is located in the Northern middle area of Nigeria. The State is mostly rocky and the area contains within its infractions chains of hills and many captivating rock formations. The name 'Plateau State was derived from the State's spectacular geographical landscape, with the

high lands rising from 1,200 meters above sea level at the low lands to speak of 1,829 meters above sea level. It shares a boundary to the West with the Kaduna State, to the North with Bauchi State, to the South part with Benue State and the East with Taraba and Nasarawa States. The State has seventeen Local Government Areas (LGAs) with Jos town as the headquarters. It lies between the latitude of 80^{o} 24^{1} and longitude 80^{o} 32^{1} east of the Greenwich Meridian. It is situated in the tropical zone, with a higher altitude ranging from 12 meters about 400 feet to a peak of 1829 meters above sea level. The State covers a total land area of 53,385 square kilometers. It has a population of 3'178.712 persons consisting of 1,593.033 males and 1,585,679 females with a population growth rate of 2.7 per annum (NPC, 2006).

The Plateau State is classified into three agricultural zones which are the northern, central and southern zones. The LGAs understudy in the northern zone includes Jos South and Jos Ease. The northern zone of the Plateau State falls within 500-1500metres above sea level. This zone has very rough terrain, mainly comprised of hills, steep slopes, bare rock surfaces and deep gullies. Soils which are mainly grey to red sandy ferric to gleyiccambisols have been severely eroded due to the steep slopes and heavy rains. Destruction of soils as a result of mining activities has further restricted agricultural activities to marginal crops like acha, tamba, millet sweet potato. Annual rain varies between 1140-1580mm distribute over 160-200 rain days. With adequate fertilizer supplements and the use of improved varieties, good crops of maize, Irish potato, upland rice, and vegetables are being produced. Livestock types include cows, sheep and goats, pigs and poultry. (Federal Information Service Centre (FISC 2016).

The target population for the study was all poultry farmers in the Northern Agricultural Zone of Plateau State. A multi-stage sampling procedure was used in the selection of the respondents. Stage one involved purposive selection of Two (2) LGAs namely Jos East and Jos South out of the six LGAs that make up the Northern Agricultural Zone of the State. This was due to the availability of intensive poultry farmers in the Local Government Areas. Stage two (2) involved a purposive selection of five (5) districts from the two LGAs one (1) from Jos East (Fobor) and 4 from Jos South LGA (Vwang, Du, Gyel and Kuru). The third stage involved a purposive selection of 2 villages from each of the 5 districts this gave a total of 10 villages namely Kerker, Laminga, K/Vom, Chaha, Rayfield, Loholgut, Sort, Raholkat, Kuru-Jenta and Trade-Centre. In the fourth (4) stage, a preliminary survey was conducted in each of the ten (10) villages to have a census of the poultry farmers (see Table 1) sixty percent (60%) of the identified poultry farmers in each of the 10 villages were selected to give a total of 119 respondents for the study.

Table 1: Sampling frame for selected Poultry farmers in the study area

LGAs	Districts	Villages	Sampling Frame	Proportional Selection (60%)
Jos East	Fobor	Kerker	15	9
		Laminga	23	14
Jos South	Vwang	K/Vom	18	11
		Chaha	21	12
	Du	Shen	22	13
		Rayfiel	20	12
	Gyel	Sort	19	11
		Raholkat	24	14
	Kuru	Kuru Jenta	18	10
		Trade Centre	22	13
Total	5	10	202	119

Methods of data collection

Primary data were used for this study and were collected through the use of a structured questionnaire. Data were collected on socio-economic characteristics of the poultry farmers, sources of information on poultry management, training needs of the respondents and determinants of training needs.

Descriptive statistics like percentage and mean scores were used to achieve objectives i and ii while objective iv was achieved using the Logit regression model. A 3-point Likert-type scale was used to measure objective iii.

The Logit model has the following functional form following the Pindyck and Rubifield (1981).

Ln (Pi/ (1-Pj)) = Zi = βo+ βiXi +e ……. (1)

The Logit model is based on the cumulative logistic probability function. The dependent variable Zi is the Logarithm of odds that a particular choice will be made. It is an index reflecting the combined effect of Xi factors that promote or prevent the training needs of poultry farmers. The importance of each factor is influenced by the coefficient of probabilities within a (1, 0) range interval to the problem of predicting odds of events occurring within the range of a real line. The Logistic model is estimated using the maximum likelihood estimator (MLE).

The estimated model is specified as follow.

Li = In (P/(1-P)) = β_o + $\beta_1 X_1$ + ...+ $\beta_9 X_9$ +e (2)

Where

Li + Logit or log of odds ratio

Z = Training needs of Poultry farmers (1= needed, 0= not needed)

X_1 = Age of respondents (years)

X_2 = Years of poultry farming experience (years)

X_3 = Level of education (years of formal schooling)

X_4 = Extension contact (No of visit)

X_5 = Years of cooperative membership (years)

X_6 = number of birds kept

X_7 = Membership of cooperative (Yes=1, No= 0)

X_8 = Amount of credit obtained in the last 3 years in naira

$b_1 – b_4$ = Regression coefficients

e = error term.

While a 3-point Likert type scale was used to measure objective iii. Nineteen (119) training needs were listed on a 3-point Likert type scale of highly needed, needed and not needed and assigned a weight of 3, 2 and 1 respectively. The weighted sum for each source was obtained by multiplying the points scale by the number of respondents in each scale. The weighted mean score of less than 2.0 implies training is needed while the weighted mean of 2.0 and above implies training is not needed.

Results and Discussion

Poultry farmer's socio-economic characteristics

The socio-economic characteristic of the respondents is presented in Table 2. The result showed that 51.3% of the respondents were males while 48.7% were female. This suggests that women were less involved in poultry farming activities in the study area. This may be attributed to the fact that poultry enterprise is a highly risky venture, labour intensive and characterized by uncertainties which in most cases can only be handled by men. The results concur with the findings of Babatunde *et al* (2012); Babalola (2014) who reported that the majority of the poultry farmers in Nigeria were male. Ibitoye and Omisimi (2013) also reported that more men were found in poultry farming in Kogi State than women.

The result in Table 1 also reveals that 52.1% of the respondents were within the age range of 41-60 years. The minimum age was 20 years and the maximum was 65 years with a mean age of 43years. This means that most of the respondents were still in their active and productive age; an economic active age can make a positive contribution to poultry production and agriculture in general.

Majority (58.8%) of the respondents acquired secondary education, 24.4% had primary education, and 15.1% had tertiary education while only 1.7% had no formal education. This shows that most of the respondents in the study area are educated. This agrees with the findings of Farayola (2013) who reported that formal education helps to enhance farmers' abilities to understand and evaluate new agricultural production techniques. Imonikhe (2010) noted that education increases farmers' ability to make positive and meaningful farm management decisions.

The result further revealed that the majority (72.3%) of the respondents were married, (60.5%) had household sizes ranging from 1-5 persons with a mean of 5 persons. (Table1). The data showed that 83.2% of the respondents had 1-10 years of working experience with a mean of 7 years with only 30.3% belonging to cooperative societies while only 33.6% had access to credit. About 59% of the respondents used their savings as capital for poultry production and the average amount of credit received per annum was ₦190,420.17. The mean number of extension visits per annum was one (1). The mean number of training attended per annum was two (2). The mean number of birds kept was 761 while the mean annual gross income of the respondents was ₦1,002,208.55.

Table 2. Socio-economic Characteristics of Respondents (n=119)

Variables	Frequency	Percentage	Mean
Sex			
Male	61	51.3	
Female	58	48.7	
Age (years)			
1-20	1	0.84	
21-40	50	42.02	
41-60	62	52.10	
43years			
>60	6	5.0	
Level of education			
Nonformula education	2	1.7	
Primary	29	24.4	
Secondary	70	58.8	
Tertiary	18	15.1	
Marital status			
Single	23	19.3	
Married	86	72.3	
Widower	10	8.4	
House hold size (persons)			
1-5	72	60.5	
6-10	47	39.5	5.0
Poultry Farming Experience (years)			
1-10	99	83.2	
11-20	18	15.1	7.0
>20	2	1.7	
Cooperative membership			
Yes	36	30.3	
No	83	69.7	
Amount of Credit Received per annum(naira)			
₦1,000-200,000	11	27.5	
₦201,000-400,000	16	40.0	
₦190,420.17			
>₦401,000	13	32.5	

No of extension visit (per annum)			
0	82	68.0	
1-5	17	31.1	
Number of Training Attended			
1-5	72	97.3	
6-10	2	2.7	1.85
Farm Size (Number of birds)			
1-500	78	65.3	
501-1000	26	21.8	761
Above 1000	13	12.6	
Annual Income (naira			
₦10000-500000	68	57.1	
₦5001-1,000,000	37	31.1	
>₦1000,000	14	11.8	₦ 1,002,208.55

Source: Field survey, 2019
n=sample size

Sources of information of the respondents on poultry production

The result in Table3 showed that the majority (68.9%) of the respondents sourced information on poultry production from fellow farmers. Saleh *et al.* (2016) reported that farmers used more non-professional interpersonal sources of information such as friends/neighbours and other farmers than professional interpersonal sources of information. Agbamu (2006) noted that the sources of the information mostly used by developing countries are influenced by the farmer's age, level of education, available sources of modernization in the locality.

Table 3. Distribution of respondents according to sources of information

Sources	*Frequency	Percentage (%)	Rank
Fellow poultry farmers	82	68.9	1st
Radio	68	57.1	2nd
Personal observation	67	56.3	3rd
Veterinarians	65	54.6	4th
Family/Neighbors	49	41.2	5th
Television programme	49	41.2	5th
Internet	46	38.7	6th
Workshops	42	35.3	7th
Poultry Product dealers	37	31.1	8th
Research Institutes	36	30.3	9th
Print media	33	27.7	10th
Poultry Association of Nigeria (PAN)	25	21.0	11th
Extension workers	18	15.1	12th
Inputs dealers	18	15.1	12th

Source: Field survey, 2019
*Multiple responses allowed

Training Needs of the Respondents

The result in Table 4 showed that poultry farmers in the study area needed training in the areas of selection of eggs for hatching($\bar{x} = 1.2$), identification of fertile egg ($\bar{x}$=1.4), Care and management of hatching egg, Control of ectoparasite, Formulation of poultry ration and Compounding of feed using locally available ingredients ($\bar{x}$=1.5), De-beaking practice and Sexing of chicks ($\bar{x}$=1.6), Identification of poultry breeds ($\bar{x}$=1.7), Optimal feeding of

beds ($\bar{x}$= 1.9). This type of result is expected since they were neither knowledgeable nor skilled in them. Training could also help them improve their capabilities, but more importantly, boost their morale and motivation that contributing to their positive performance level. This result corroborates Nwaobiala *et al*. (2018) who asserted that when farmers are given appropriate and required training on their farm business, it helps them acquire information and develop abilities and attitudes which will result in greater competence in the performance of their work and improve productivity.

Table 3 Distribution of Respondents according to Training Needs

Poultry Management Practices	Level of competency (Mean)
Selection of eggs for hatching	**1.2***
Identification of fertile eggs	**1.4***
Care and management of hatching eggs	**1.5***
Control of ectoparasite	**1.5***
Formulation of poultry ration	**1.5***
Compounding of feed using locally available ingredient	**1.5***
De-beaking practice	**1.6***
Sexing of chicks	**1.6***
Identification of poultry breeds	**1.7***
Optimal feeding of bids	**1.9***
Feeds and feeding knowledge	**2.0**
Poultry record keeping	**2.0**
Marketing of poultry products	**2.1**
Disease prevention and control	**2.1**
Deworming	**2.1**
Administration of vaccine	**2.1**
Identification of sick birds	**2.2**
Brooding of chicks	**2.3**
Care of poultry equipment	**2.3**

Source: Field survey, 2019
***Training needs**
Note: Any mean score < 2.0 implies training needed while mean score ≥ 2.0 implies training not needed

Determinant of Training Needs

Table 5 showed the result of the logit regression analysis on determinants of training needs of respondents. The result showed that the coefficient of determination R Square (R^2) value was 0.672. This indicates that the independent variables explain 67.2% of the variability of the dependent variable. The variable of education was positive and significant at 1% level of probability; age and number of training attended respectively were significant at 5%.

The level of education was positively significant at .000. This implies that an increase in the level of education of respondents will increase the probability of training needs of the farmers Education frees the farmer from ignorance and improves his knowledge and experience. The more educated farmers are the more they are likely to find solutions to their poultry farming business. Education will help poultry farmers to adopt improved poultry farming management practices thereby improving poultry product supply. The coefficient of age was significant at .042. This implies that as the respondents are advance in age there is

probability and likelihood they will be exposed to seminars, workshops and other training.

The variable for the number of training attended was positive and significant at .021. The result implies an increase in the number of training will increase the probability of attending more training by poultry farmers. The result implies that the number of training in poultry farming will have a positive impact on the poultry farmers' business. It could help them to adopt improved poultry business management practices thereby improving poultry product supply and ensuring food availability for men. This corroborates the work of Lanre (2016) in a study "Socio-economic characteristics of small scale poultry farmers in "Enugu State, Nigeria. The results of the correlation coefficient show that poultry farmers' training helped adopt improved poultry management practices thereby improving poultry meat supply and ensuring food security.

Table 4 Determinants of Training Needs of Poultry Farmers in the Study Area

Constant	B	Std. Err.	Wald	P-value
Age	.086	.042	4.143	.042**
Level of education	.473	.105	20.198	.000***
Farming experience	.142	.098	2.093	.148
Amount of credit received	.000	.000	3.226	.072
Extension visit	.521	.288	3.283	.070
Number of training attended	.168	.073	5.303	.021**
Number of birds kept	.000	.000	.765	.382
Constant	-11.069	2.540	18.988	.000

Source: Field Survey, 2019

Note: ***, ** variable is Significant at 1% and 5% respectively

$\mathbf{R^2}$ = 0672 (67.2%)

Dependent variable (Training need of poultry farmers).

Conclusion and Recommendation

Poultry farmers in the study area lack the adequate training required to ensure efficient and profitable poultry production. Due to this conclusion; the study recommends that Extension efforts should be geared towards encouraging poultry farmers to sponsor training workshops and seminars by inviting the resource person to address their areas of poultry management training needs. Adequate, free and complete information on poultry training programs should be made available by the government to poultry farmers.

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