ANALYSIS OF ADOPTION OF IMPROVED RABBIT PRODUCTION TECHNOLOGY IN AKURE SOUTH LOCAL GOVERNMENT AREA OF ONDO STATE

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ABSTRACT
This research work was carried out to analyse level of adoption of improved rabbit production technology in Akure South Local Government Area of Ondo State. The objectives of the study were to ascertain the socio-economic characteristics of the rabbit farmers, determine the extent of adoption of improved rabbit production technology by small scale farmers, determine factors affecting the level of adoption of rabbit production technology by small scale farmers. A multi-stage sampling technique was used to select ninety six rabbit producers. Primary data was collected through the aid of a well-structured questionnaire. Data collected were analysed using descriptive statistical tools such as, frequency, percentage, adoption indexes and linear regression. The findings revealed that 52.1% of the respondents were female, 56.2% of the respondents were between the age range of 20-29 years, 59.4% of the respondents are single, 82.3% of the respondents are aware of improved rabbit technologies. Age (X_1), Training attended (X_3) and source of information (X_5) were significant factors affecting adoption, Routine management practice is one of the improved practices adopted. High cost of material is a major constraint affecting rabbit production. It was therefore recommended that Government should help the rabbit producers by providing materials at subsided rate.

Keywords: Adoption, Protein, Improved Technology, Akure South and Rabbit.

Background Information

Livestock production forms a major capital reserve of the rural households by increasing food provision and consumption, income generation and quick cash when emergencies and external shocks occur and also have a cultural and spiritual value (International Fund for Agricultural Development, 2015). Official statistics often underestimate the overall contribution of livestock and especially their multipurpose contributions to food and agricultural production in developing countries (FAO, 2015). Livestock productions among rural farm families reduce risk through diversification of production and income sources and there is therefore a much greater ability to deal with seasonal crop failures and other natural calamities. In Nigeria, consumption of animal protein remains low at about 6.0 – 8.4g/head/day which are far below the 13.5g/head/day prescribed by (Egbunike, 1997), thus, the search for more sources of protein to meet up this deficit in animal protein. Owen *et al.* (2008) opined that in order to maximize food production and meet protein requirements in Nigeria, viable options need to be explored and evaluated. Among such alternatives is the use of livestock species that are yet to play a major role in animal production within these countries. Rabbits possess a number of features that might be of advantage in the small holder subsistence-type integrated farming in developing countries (Mailafia *et al*., 2010). It is a veritable way of alleviating animal protein deficiency in Nigeria (Ajala and Balogun, 2014). Rabbit has immense potentials and good attributes which include high growth rate, high efficiency in converting forage to meat, short gestation period, and high prolificacy, relatively low cost of production, high nutritional quality of rabbit meat which includes low fat, sodium and cholesterol levels.

In the high-rainfall areas, there is immense potential to develop the rabbit industry. In the wake of the deteriorating global economy, the spread of Avian Flu, and the decline of natural resources, the role of the rabbit to provide a steady supply of quality protein and income under sustainable systems that utilize renewable resources at minimal costs, is presently recognized as a major livestock species in many parts of the world. Rabbits are useful for the poor because they require little start-up capital, are a relatively small financial risk, produce rapid returns on investment and allow for a flexible production process. Rabbits produce white meat that is high in protein, highly palatable and digestible, tender, low in fat and cholesterol. It is easy and cheap to rear rabbits since it has low production costs, easy handling, high growth and fecundity rates (Apata *et al*., 2012).

Methodology

Area of Study

This study was carried out in Akure South Local Government Area (LGA) of Ondo State, Nigeria. Akure South Local Government has a geographical area of 331 km square and a population estimation of 486, 300 inhabitants The area has annual rainfall of between 1,250mm and 1,500mm, relative humidity between 70%-98% with bimodal distribution between March– August and August– November. The temperature of the area is between 27ºC - 32ºC which is appropriate for farming activities. Over the years, the population of Akure has been increasing tremendously since it started to enjoy the status of both state capital and local government headquarters. The main profession of the people in the Local Government Area are farming and trading. The key food crops cultivated in the area are maize, yam, cassava, vegetables, cowpea, plantain among others and livestock production such as; poultry, piggery, rabbit, sheep and goat rearing.

Sampling Technique and Procedure

A two-stage sampling procedure was used for the study. The first stage involves random sampling technique used to select four communities where rabbit production is pronounced. The second stage involves the purposive selection of twenty-five rabbit farmers in each of the areas selected. This gives a total of one hundred respondents selected from the population of rabbit farmers. However, 96 responses were find suitable for analysis. Primary data were used for this study and was collected with the aid of a well-structured questionnaire administered to the selected farmers.

METHOD OF DATA ANALYSIS

Descriptive statistical tools such as mean, frequency distribution and percentages were used to analyze the socio-economic characteristics of rabbit farmers; the adoption index was constructed using four point likert scales to determine the level of adoption on improved rabbit production technologies. The four point likert scale was weighed in order of importance from Very high = 4, High = 3, Low = 2 and Very = 1. The adoption index of individual farmers following the suggestion of Maddalla (1997) was calculated using the formula:

$AL_i = \sum_{1=1}^{n} \frac{(ATi)}{RTi} = NP$

Where

AL*i* = is adoption index of *i*th farmer; *i* = 1, 2, 3…,

n; *n* is total number of farmers;

AT = is the level or quantity of input the farmer actually applied;

RT = is the recommended level or quantity of an input he/she ought to apply, and

NP = is the number of practice.

Linear Regression

Linear regression analysis was used to analyze factors affecting the level of adoption of rabbit production technology by small scale farmers. The regression model is shown below

$Y= X_1+X_2+X_3+X_4+X_5+X_6+X_7+ X_8 + U$

Where:

Y = Adoption index

X_1 = age of farmer (years)

X_2 = formal education (years of formal schooling)

X_3 = training (yes or no)

X_4 = farmers experience (number of years in rabbit production)

X_5 = source of information (yes or no)

X_6 = extension visit (number of times)

X_7 = herd size (number)

X_8 = Social organization membership (yes or no)

RESULTS AND DISCUSSION

Table 1 present socio-economic characteristic of the respondents. The table reveals that, 52.1% of the respondents were female and the remaining 47.9% were male. This implies that rabbit production is more practiced by female folks in the study area .This result is in support of the findings of Ozor and Madukwe, (2007) where they observed that female engaged most in rabbit production due to less physical strength involved in rabbit production activities. 56.2% of the respondents were between the age range of 20-29

years, 14.6% were between age ranges of 30-39 years and 40-49 years respectively This implies that respondents in age class 20-29 years are still economically active, adaptive and energetic which help them to carry out the husbandry activities involved in rabbit production. The study further revealed that 59.4% of the respondents are single, 39.6% were married. The result implies that majority of the respondents are single. It can be inferred that marital status is not a barrier to involvement in rabbit business. Furthermore 53.1% of the rabbit farmers had tertiary education, 28.1% had secondary education. This implies that the majority (99%) of the respondents are literate. The role of education in increasing the adoption of improved agricultural technologies as was observed by Madukwe (2004). 69.8% of the respondents had years of experience of 1-5 years, 27.1 % of them had years of experience of 6-10 years. This is an indication that rabbit farmers are gradually gaining experience in the rabbit production enterprise.

Table 1: Socio-Economic Characteristics of Respondents

Characteristics	Frequency	Percentage (%)
Gender		
Male	46	47.9
Female	50	52.1
Age (Years)		
Less than 20	7	7.3
20-29	54	56.2
30-39	14	14.6
40-49	14	14.6
50 and Above	7	7.3
Marital Status		
Single	57	59.4
Married	38	36.6
Widow	1	1.0
Educational Level		
No Formal Education	1	1.0
Primary Education	12	12.5
Secondary Education	27	28.1
Tertiary Education	51	53.1
Adult Literacy	5	5.2
Farming Experience		
1-5	67	69.8
6-10	26	27.1
Above 10	13	13.5
Total	96	100.0

Source: Field Survey, 2022.

The result in Table 2 shows the various improved rabbit technologies the farmers adopted, the improve rabbit technologies were ranked according to their mean values. Cleaning of housing, and routine management practices were ranked first with the mean value of 1.76, diseases control was ranked third with mean value of 1.74, management system fourth with mean value of 1.70, pathology and hygiene technology was ranked fifth with mean value of 1.67, medication and vaccination was ranked sixth with mean value of 1.65, feed supplementation seventh with mean value of 1.62, reproduction technology was ranked eight with mean value of 1.61, flushing and steaming up was ranked ninth with mean value of 1.47, and automated water system was ranked tenth with mean value of 1.36.The overall adoption rate for all the technologies is high. The reasons farmers gave for adoption of improved technologies are; to prevent diseases and make the animals' healthier, faster growth and increase in weight gain of animals, increased stock numbers and increased revenue from small ruminant production.

Table 2: Improved Rabbit Technologies Adopted

SN	Improved Technologies	Adopted F (%)	Not Adopted F (%)	Mean	Rank
1	Management system	68 (70.8)	28 (29.2)	1.70	4th
2	Feed supplementation	60 (62.5)	36 (37.5)	1.62	7th

3	Automated system of water	35 (36.5)	61 (63.5)	1.36	10th
4	Pathology and hygiene technology	65 (67.7)	31 (32.3)	1.67	5th
5	Disease control	71 (74.0)	25 (26.0)	1.74	3rd
6	Reproduction technology	59 (61.5)	37 (38.5)	1.61	8th
7	Routine management practices	73 (76.0)	23 (24.0)	1.76	1st
8	Flushing and steaming up	46 (47.9)	50 (52.1)	1.47	9th
9	Cleaning of housing	73 (76.0)	23 (24.0)	1.76	1st
10	Medication and Vaccination	63 (65.6)	33 (34.4)	1.65	6th

Source: Field Survey, 2022

Result from Table 3 showed that the R^2 for the specified model is 0.516 implying that 51.6% variation in the dependent variable is being accounted for by the independent variables in the specified model. Variables such as Age (X_1),Training attended (X_3) and source of information (X_5) are significant at 10% level implying that they are the major factors determining adoption of improved rabbit production technology. The positive sign associated with variables such as level of education (X_2), training attended (X_3), years of experience (X_4), source of information (X_5), time of extension agent visit (X_7) and cooperative membership (X_8) implies that there is a positive relationship between the variables and the adoption index of the producers. The coefficient of level of education (X_2) was positive which implies that an educated farmer tends to adopt innovation faster than illiterate farmers. On the other hand the coefficient of age (X_2) and average size of rabbit (X_6) are negative implying an inverse relationship which indicates that the older a farmer is, the more it will be difficult to adopt innovations.

Table 3: Result of the Regression Analysis

Model	**Unstandardized B**	**Coefficients Std Error**	**T**
Constant	-2.152	2.144	-1.004
Age (X_1)	-0.066	0.029	-2.306*
Level of education (X_2)	0.607	0.320	1.895
Training Attended (X_3)	0.672	0.520	1.291*
Years of Experience (X_4)	0.103	0.092	1.117
Source of Information (X_5)	0.320	0.199	1.612*
Average size of Rabbit (X_6)	-0.003	0.008	-0.393
Time of extension visit (X_7)	0.168	0.141	1.188
Cooperative Membership (X_8)	0.205	0.566	0.363

Source: Field Survey, 2022

Dependent Variables: Adoption Index

$R^2 = 0.516$

$R^{-2} = 0.241$

F – Value = 1.287

* Significant level @ 10%

CONCLUSION AND RECOMMENDATIONS

The overall level of awareness and adoption of the selected improved rabbit production technologies is very high. There is high level of awareness on housing system, clean of housing, and routine management practices. Government should employ more extension workers to intensify efforts on improved rabbit production technologies in the study area by offering services especially in aspects that show low adoption. Moreover, information sources are very important in creating awareness of agricultural technologies in general and improved rabbit production technologies in particular.

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