

ANALYSIS OF RABBIT PRODUCTION IN KWARA STATE.

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Abstract

The livestock industry is essential to the rural economy and way of life. However, due to the high cost of producing and consuming cattle meat, most Nigerians are gradually losing interest in cattle rearing. As a result of this, most Nigerians livestock farmers resorted to the production of substitute livestock that can be affordable in production and market. Literatures deduced that rabbit production is a perfect mix in terms of production and consumption because of the high-protein, affordability, social, economic, and nutritional benefits combination. Hence, this study examines rabbit production in Kwara state. The study's goals are to quantify the costs and revenues associated with producing rabbits, assess the technical effectiveness of rabbit production and identify constraint in rabbit production. Multistage sampling technique was adopted to collect 240 respondents used for data analysis. Descriptive statistics, gross margin analysis, and the stochastic frontier model were used to examine the data. Results revealed the mean age of the respondents as 46 years, this is an active range that can enhance competence and effectiveness. Most rabbit farmers had 10 years above (70.4%) in rabbit production. Cross tabulation analysis revealed that experience enhanced revenue in rabbit production and this was corroborated by the correlation analysis (0.89). Results indicated that selling of pregnant and mature female rabbits is more profitable than selling other types of rabbits. Moreover, cross-tabulation analysis indicated that responses having post-secondary education increased the profitability of rabbit enterprises as 28.49% of respondents with earnings of over 250,000 naira on rabbit enterprises and had completed post-secondary education. Technical efficiency analysis and results revealed that rabbit production in the area of study is operating at 0.95. This results thus implies that 95% of the rabbit farmers are operation on the frontier (that is operating on profitability and sustainability). Factors influencing this outcome are education, farming experience, breed of the rabbit, access to loan facilities among others. Rabbit production in the area of study significantly improved the economic status and enhancing standard of living of rabbit farming households. Hence, the study inferred that rabbit production is profitable and can be transformed as a means to substitute for cattle meat production and consumption.

Keywords: Rabbit production, economic efficiency, livelihood, Kwara State, Nigeria

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INTRODUCTION

Background of the study

Nigeria's agricultural industry revealed that more than 80% of the nation's rural residents depend on agriculture for their livelihood, either directly or indirectly. In the light of this, the cattle industry is essential to the rural economy as a way of life. In this industry, the impoverished directly contribute to growth rather than reaping the benefits of growth produced elsewhere. (Ayeni *et al*, 2023). For the majority of farmers, the industry is a vital source of income, providing essential inputs to agriculture, enhancing household health and nutrition, boosting earnings, creating job possibilities, and acting as a savings account during hard times. It serves as an additional and supportive endeavor. Additionally crucial to the diversification of agriculture and the augmentation of income is livestock. The nation's

entire economic development, as well as that of agricultural households, depends heavily on livestock. The Food and Agriculture Organization (FAO, 2022) projects that the growth rate of animal consumption will increase by 5% to 7%. Large animals find it difficult to keep up with this increase due to their slow production cycles. They may however be met by short life cycle animals like poultry, rabbits, pigs. Poultry and pigs require food sources which are serious competition with man (Akinola 2021).

FAO (2022) estimates that 854 million people, or 12.6% of the world's population, suffer from severe malnutrition. In order to address this, Ekpeyong and Biobaku (1986) suggested that it is necessary to investigate non-conventional meat sources that are appropriate for small-scale farmers. A rabbit is classified as a mini-livestock with strong reproductive capacity by Okoli, *et al* (2002). It possesses a certain quality that makes it a flexible financial reserve. It can reproduce rapidly after giving birth, mature swiftly, have a brief gestation period, and are extremely prolific. Short generation intervals are caused by these characteristics (Lebas *et al.*, 2007; Effiong 2005). The current Agricultural Transformation Agenda (ATA) includes value chain development for rabbit production as a micro-livestock (Ogunwande, 2023). This is due to the enormous potential for rabbit production to meet the demand for animal protein intake. Low capital expenditure and a good feed converter are two more of these potentials (Mukaila *et al*, 2022).

Furthermore, rabbit farming has become profitable due to the animal's distinctive compact body, size, quick growth, and capacity to survive on forage. This is particularly true in certain parts of Nigeria where the meat is becoming increasingly popular. Trypanosomiasis has threatened the production of cattle and other animals in this alternative livestock. Due to its monogastric nature, rabbit meat has a different protein content than that of other animals (Aduku & Olukosi, 2000). In comparison to beef, pork, poultry, or lambs, the meat also has lower cholesterol, fewer calories, and a lower percentage of fat (Aduku and Olukosi, 2000). Additionally, the meat is moist and tender, making it appropriate for all age groups, young and old. In addition to being a great source of "pearly white" meat, rabbits can be used to make toys, wool (fur), skins, manure, and medications for heart patients. It is the only agricultural animal whose progenies yield meat at a rate of 10 to 15 times or more the animal's own weight annually. Given that it is a multiplier, pressure on the demand for chicken and mutton is anticipated to lessen. (Borter, K, and Wanza R, 2010, Houessou *et al*, 2022).

Past studies deduced that rabbit (*Oryctolagus cuniculus*) appears to be the most sustainable means of producing high quality animal protein for the expanding populations of the LDC's like Nigeria (Ayeni, *et al*, 2023). These attributes of rabbit's meat preferred for consumption include: among others include: price affordability, low-cost in management, small-bodied size, short-gestation period, fecundity, rapid growth rate, genetic diversity, ability to utilize forage and agricultural by-products, and productiveness, adaptability to any ecological environments. Past studies indicated that in Nigeria, past study deduced that up to 1.7 million rabbits are thought to be produced annually (Ozimba and Lukefahr. 2001).). Because eating meat is safe and widespread among the elderly, there has been a growth in rabbit production and knowledge of its consumption in recent times. Therefore, it is essential to investigate the variables affecting the production and use of rabbit meat.

Research has shown that Nigeria is one of the countries in the world that consumes the least animal protein (Mukaila *et al*, 2022). These research ascribed this shortcoming to an excessive focus on the consumption of cattle meat and a low degree of understanding regarding the nutrients included in rabbit meat. According to this study, the majority of Nigerians are gradually losing access to cow meat due to

cost, and this is reflected in the intake of replacements with significantly lower protein content. In Nigeria, this issue has resulted in low meat consumption across all age groups. According to literature, the manufacturing of rabbits and their products is special and has drawn attention because of their modern applications, affordability, and other uses of rabbit's product apart from consumption (Chah *et al.*, 2018). However, because most farmers have limited their livestock production to other livestock, the potential of rabbit production has not been completely realized (Trocino, *et al.*, 2019). According to earlier research, raising rabbits has positive effects on the economy, society, and nutrition (Agbede, 2019, Ogunwande, 2023). In Nigeria, one of the most promising ways to fill the animal protein deficit is through rabbit farming (Mukaila *et al.*, 2022). Despite the financial and social advantages of rabbit farming, there has been relatively little thorough research (Ayeeni, *et al.*, 2023). Therefore, there is still a great deal to learn and confirm regarding the effectiveness of rabbit farming in Nigeria.

According to studies, Kwara state has to put more effort into rabbit farming because the locations that have been identified offer a comparative advantage that should be taken advantage of (Daodu *et al.*, 2021; Mukaila *et al.*, 2022). Although Kwara State has made significant attempts to increase livestock output, little to no effort has been made to increase rabbit production (Modin *et al.*, 2021; Ogunwande, 2023). As a result, it is important to investigate the factors that can improve rabbit production as well as the obstacles to rabbit farming in the designated area. The productivity, profitability, and consumption of the livestock subsector of rabbit production have all been the subject of several studies; however, the efficiency of rabbit production has not been well studied. Thus, the purpose of this study is to evaluate the technological effectiveness of rabbit farming in Nigeria's Kwara state.

METHODOLOGY

Study Area

Kwara state served as the study's location. One of Nigeria's six States in the country's north and center is Kwara state. There are sixteen Local Government Areas (LGAs) in the State, making up 74,256 square kilometers (8%) of Nigeria's total area of 923,768 square kilometers. With 254, 1242 hectares of agricultural land, there are 247,975 farming families in the State. Between latitudes 7°45'N and 9°30'N and longitudes 2°30'E and 6°35'E, the State is located. Approximately 2.37 million people call this place home [National Population Census (NPC) 2006]. The State experiences high rainfall in May and June and September and October, with lowest rainfall of 1,500–1,600 mm occurring between April and October. November through February has almost no rainfall, with mean temperatures between 30°C and 35°C [Ministry of Agriculture and Natural Resources (MANR, 2004)] The state's boundaries with Kogi and Osun state are shared through the Ekiti Local Government. Additionally, the State's northern Baruten Local Government shares international borders with the Benin Republic. The State is known as the "gateway" between the Country's North and South because of its exceptional geographic location.

Over 80% of the state's population lives in rural areas, where agriculture is their primary source of income (National Bureau of Statistics, 2005). The State's main crops are sweet potatoes, cassava, yam, cowpea, groundnut, maize, sorghum, soya beans, melon, okra, pepper, and some leafy vegetables. Poultry, goats, sheep, and cattle are among the livestock raised there. Bush fallow and mixed cropping are the main agricultural practices, with a focus on subsistence farming. Some farmers also work in woodwork, welding, blacksmithing, and weaving. The population of Kwara State is diverse, drawing people from the Yoruba, Nupe, Baruba, Fulani, and Hausa ethnic groups. The Yoruba people make up the majority ethnic group in the state, and they speak a language that is widely used there.

Sampling Techniques and Sample Size

The study adopted a multi-stage sampling technique for data collection. The first stage was to identify areas where rabbit is produced and processed in the State. Hence, four local government areas were identified as a rabbit production area. In the second stage, three towns/villages were randomly chosen from each of these selected four local governments areas listed, to give a total of twelve (12) communities. The selected towns/villages are regarded as the top rabbit-producing areas. In the 3rd stage, twenty (25) rabbit farmers respondents were randomly selected from each towns/village, totaling three hundred (300). However, only two hundred and forty (240). respondents' data that were useful for data analysis, the remaining sixty (60) questionnaires contained missing information, questionnaire not properly filed among others.

Method of Data Collection

For the study, both primary and secondary data were employed. Structured questionnaires were used to collect primary data. Socioeconomic details of rabbit farmers, such as age, gender, marital status, and family size, are among the data gathered, educational levels and years of experience Also, data on technical efficiency of production, profitability of rabbit production as well as that of the likely constraints to production of rabbit were collected. Secondary data were obtained from relevant literature and books from annual reports, journals, internets and other unpublished materials.

Method of Data Analysis

The main analytical tools used for the research are, the descriptive statistics, gross margin analysis, stochastic frontier model and the likert scale.

Descriptive statistics analysis

In the analysis of data, simple descriptive statistics such as percentages, frequency distribution, mean, mode, and ratios were used to show the precise description of the socioeconomic characteristics of the respondents.

Gross Margin Analysis

The costs and benefits of rabbit farmers in the research region were examined using this. The gap between total variable costs and gross agricultural income is known as the gross margin. Gross Margin analysis is a model that is used to assess the costs, returns, profitability, or loss per production, (Egbo 2001).

GM is equal to TR-TVC, where TR is total revenue, TVC is total variable cost, and GM is gross margin. The profitability of farmers in the research region was indicated by the estimation of GM. Profitability may increase with increased GM and vice versa.

$$GM = TR - TVC$$

Where GM= Gross Margin; TR= Total Revenue; TVC= Total Variable Cost

The estimation of GM revealed farmers' profitability in the study area. Higher GM could mean higher profitability and vice versa.

3.7 Likert Type Scale

A four -point Likert type scale was used to analyze the identified constraints to rabbit production in the study area. Strongly agree (5), Agree (4), Undecided (3), disagree (2) and strongly disagree (1)

RESULTS AND DISCUSSIONS

Analyzing the study objectives

Description of the Socioeconomic and Demographic Characteristics of the Respondents

The results of the findings show that both males and females, young and old, Christians and Muslims engaged in rearing of rabbits. However, the number of male respondents is more than that of the female respondents as shown in table 1. A slight difference of 20% exists between the two. 60% 40% of respondents were women and 40% of respondents were men. The male's search for supplementary income to support their family may account for the small discrepancy. In the context of agricultural business, age is a significant socioeconomic element since it affects the availability and efficiency of labor for daily farm tasks. The respondents' mean age was 45.49 years, with a modal age group of 41–50 years. 83% of those surveyed fall into the active age range of 31 to 50 years. which can result in effectiveness and competency.

As indicated in the Table 1, 80 20% of respondents are unmarried, and the majority are married. One essential component of household welfare is education, which is measured by the human development index. Every respondent has had some sort of education. It is an indication of the caliber of labor and could possibly be the cause of the farmers' willingness to take risks given the adoption of rabbit production, which is still relatively new in the research field. The outcome further shows that 74.6% of the participants have completed postsecondary education, which influences their exposure to and degree of innovation adoption. It is demonstrated that 17.1% are secondary school leavers, 7.9% primary school leavers while less than 1% (0.4%) have Qur'anic education.

Meanwhile, the socio-economic characteristics of the respondents show that most of the Farmers (70.4%) practice rabbit production as minor occupation. It shows that rabbit production has not been fully taken as a major source of livelihood in the study area, this as a result of the fact that it was newly introduced and still under study. The respondents have their major occupations ranging from civil service, business, etc. A strong skill set for implementing innovation in the rabbit production industry is correlated with farming experience. Eighty-eight percent of the respondents had three to fifteen years of experience producing rabbits. The respondents had an average of five years of experience raising rabbits.

It is anticipated that association membership will have an impact on the adoption of rabbit production, facilitate knowledge sharing, and offer potential answers to a range of issues that farmers may encounter. One quarter of farmers—25.8%—do not participate in any agricultural societies. However, 70.2% are members of the Rabbit Producer Association or the Cooperative Society. There are fewer rabbit farmers in the research region as a result of the majority of farmers (87%) not having access to extension services, which suggests that they lack sufficient expertise in the production and marketing of rabbits and their products.

Table 1: Socioeconomic characteristics and Demographic characteristics of respondents

CHARACTERISTICS	FRQEQUENCY	PERCENTAGE
Gender		
Male	144	60
Female	96	40
Total	240	100
Age		
≤30	36	15
31-40	71	29.6
41-50	98	40.8
>50	35	14.6
Total	240	100
Mean age	39.9	
Standard deviation	9.8	
Marital status		
Single	48	20
Married	192	80
Total	240	100
Educational level		
Primary	19	7.9
Secondary	41	17.1
Tertiary	179	74.6
Quranic	1	0.4
Total	240	100
Experience		
≤3	46	19.2
3-5	85	35
6-9	29	12.1
>10	80	33
Total		
Mean	6.2	
Standard deviation	3.95	
Membership of association		
Yes	178	74.2
No	62	25.8
Total	240	100

Source: Field survey data, 2023

Table I displays the average data of rabbit growers. A typical rabbit farmer is 39.9 years old, has six years of experience producing rabbits, a tertiary education, and an average stock size of 14.6 animals. The typical household size was seven people, with an average yearly income of N48,620 and an average eight-month output of 320 rabbits.

Objective 2: Estimating the cost and revenue of rabbit production in the study area.

The study estimated cost and revenue of various enterprise rabbit production. The results of this outcome were presented from Table 3. Table 3 revealed that selling of matured rabbit female and pregnant ones

raked in the most revenue as the study depicts 22.08% and 9.58% for rabbit female and pregnant ones respectively (Table 2). These identified enterprises raked in over a million naira in a year. This thus suggest that rabbit female and pregnant one's enterprise is a high rewarding venture. However, selling of Rabbit matured male, Rabbit grower and weaner do not attract high revenue as these enterprises indicated a very low revenue (Table 2).

Table 2: Revenue accrued to Rabbit Enterprises

s/n	Revenue Grouping	Rabbit Weaner	Rabbit Grower	Rabbit Matured (Male)	Rabbit Matured (Female)	Rabbit Pregnant	Rabbit Processed	Rabbit Fur/Skin
1	-100,000 – 002.	00	23	11	11	34	144	227
2.	01 – 20,000	61	61	84	25	37	13	13
3.	20,001 – 50,000	59	48	49	48	36	12	00
4.	50,001 – 100,000	48	49	37	72	37	12	00
5.	100,001 – 250,000	13	00	34	25	37	41	00
6.	250,001 – 500,000	12	18	25	00	00	11	00
7.	500,001 – 1,000,000	36	41	00	6	36	07	00
8.	1,000,001 – 10,000,000	00	00	00	53	23	00	00
	Total	240	240	240	240	240	240	240

Source: Author's compilation from Data Analysis results

Moreover, on the computation of the profit and loss of accrued to Rabbit enterprise, the results of this analysis are presented from Table 3. Table 3 indicated that selling the matured rabbit raked in millions of naira annually, closely followed by selling of processed rabbit (Table 3). However, rabbit weaner and grower do not attract a high profit. This finding thus suggests that selling rabbit that have not of age in not a profitable venture. As the study deduced that selling of processed and matured rabbit is more profitable (Table 3).

Table 3: Profit and Loss accrued to Rabbit Enterprises

S/N	Revenue Grouping	Rabbit Weaner	Rabbit Grower	Rabbit Matured	Rabbit Processed	Rabbit Fur/Skin	Rabbit Profit/Loss	Sex Male	Sex Female
1	-100,000 – 002.	00	03	06	15	05	29	27	02
2.	01 – 20,000	00	00	00	00	00	00	00	00
3.	20,001 – 50,000	28	17	09	00	00	54	12	42
4.	50,001 – 100,000	18	08	11	21	01	59	19	40
5.	100,001 – 250,000	07	00	11	12	00	30	18	12
6.	250,001 – 500,000	08	13	39	03	00	63	63	0
7.	500,001 – 1,000,000	00	00	00	03	00	03	03	00
8.	1,000,001 – 10,000,000	00	00	02	00	00	02	02	00
	Total	61	41	78	54	06	240	144	96

Source: Author's compilation from Data Analysis results

The study also cross tab education to the outcome of the profit accrues to rabbit production. The results of this analysis are presented from Table 4. Table 4 indicated that having a tertiary education enhanced the profitability of rabbit enterprise as 28.49% of the respondents that made over 250,000 naira on rabbit

enterprise had tertiary education. This thus suggest that having a degree does enhance profitability of rabbit enterprise.

Table 4: Rabbit Profit/Loss Grouping * Educational level Crosstabulation

		Educational level				
		Qur'anic education	Primary education	Secondary education	Tertiary education	Total
Rabbit Profit/Loss Grouping	-1000000-00	0	1	1	27	29
	20001-50000	0	13	13	28	54
	50001-100000	1	4	12	42	59
	100001-250000	0	1	3	26	30
	250001-500000	0	0	12	51	63
	500001-1000000	0	0	0	3	3
	1000001-100000000	0	0	0	2	2
Total		1	19	41	179	240

Source: Author's compilation from Data Analysis results.

The study also examined the influence and benefits derived by joining an association the results of this outcome is presented from Table 5. The study revealed that joining an association by the respondents played a significant role in enhancing high revenue accrue to respondents and also enhance the profitability of rabbit enterprise. Table 5 indicated that those respondents that joined an association-based fare better than those respondents who did not participate in any form of association. This finding was corroborated by the work of Ayeni *et al*, 2023 that revealed that joining an association by the rabbit farmers has a significant value on profitability.

Table 5: Rabbit Profit/Loss Grouping * yes, which association Crosstabulation

		yes, which association			
		0	poultry association	rabbit producer association	Total
Rabbit Profit/Loss Grouping	-1000000-00	1	15	13	29
	20001-50000	13	0	41	54
	50001-100000	24	6	29	59
	100001-250000	12	18	0	30
	250001-500000	12	27	24	63
	500001-1000000	0	3	0	3
	1000001-100000000	0	2	0	2
Total		62	71	107	240

Source: Author's compilation from Data Analysis results

Objective 3: Examine factors influencing rabbit production in the study area.

The study deduced the lead equation for the multiple determinations' coefficient of determination (R^2). This analysis's outcome is shown in Table 6. The regression's dependent variable is explained by 55% of the function, according to the R^2 of 0.550. Thus, it may be inferred that rabbit income will fluctuate in proportion to changes in the annual household income of small-scale rabbit farmers while the household head's age, education level, and level of farming experience will also change. Moreover, the magnitude of rabbit stock, pen cost, farm inputs such as pen, shovel and drinker significantly influence the farm profit (Table 6). However, if other factors do change (at constant value), a 1% increase in rabbit stock, pen cost, farm inputs such as pen, shovel and drinker will result in a 0.039, 0.032, 1.152 and 2.2298 respectfully. Table 6 also revealed that the household head's age was also important and had a positive coefficient, indicating that growing older may aid in the acquisition of skills that result in increased productivity and incomes.

Concerning overall profit level, membership of association indicates a strong significant level, this thus indicates that members of the association had a beneficial access to huge credit will then influence profit. This outcome thus explains due to the increased capital spent in their farming activities, farmers that grow rabbits benefit financially from having access to loans. This outcome is consistent with earlier research by Ogunwande (2023) and Ayeni *et al.* (2023). Furthermore, with a positive coefficient, extension contact was also significant. This is to be expected since farmers will become more knowledgeable about efficient production through extension contacts, which will boost their earnings. This outcome corroborated the study of Mukaila *et al.*, (2022).

Table 6: Multiple regression results and Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	T	Sig.
1	(Constant)	-1.110E6	3.462E6		-.321	.749
	Age	42989.373	12618.303	.019	3.406	.000
	Marital Status	-188563.267	323487.543	-.153	-.583	.561
	Educational level	82688.936	43060.893	.016	1.921	.092
	Production capacity of Rabbit production	604559.427	1.295E6	.556	.467	.641
	Rabbit farming experience	8222.023	3344.552	.033	2.459	.042
	Rabbit stock number	5729.876	2313.330	-.998	2.477	.014
	extension contact received	177871.418	210736.685	.107	.844	.400
	yes, which association	87716.152	135348.717	.212	.648	.518
	Depreciation on cage/pen	.102	8.099	.032	.013	.990
	Medications	229.726	111.777	1.152	2.055	.041
	Feeding	503.342	250.912	2.298	2.006	.028
	Depreciation on bucket and bowl	-22.950	37.756	-.190	-.608	.544
	others total cost	-790.073	909.684	-3.626	-.869	.386
	Household Size	172733.607	249815.568	.784	.691	.490
	Rabbit Farm Experience Grouping	-216606.228	341577.065	-.498	-.634	.527
	Rabbit Stock Number Grouping	185243.754	107017.072	.385	1.731	.094
	Water Supply Cost	8203.201	3168.028	2.032	2.589	.004
	Rabbit Stock Cost	-1.294	1.947	-.869	-.664	.507
	Hired Labour Cost Male	481.203	108.552	.164	.443	0.003
	Hired Labour Cost Female	-86.962	185.820	-1.203	-.468	.640
	Family Labour Cost Male	1435.652	559.886	.087	2.564	.039
	Family Labour Cost Female	-1.025	736.889	-.002	-.001	.999

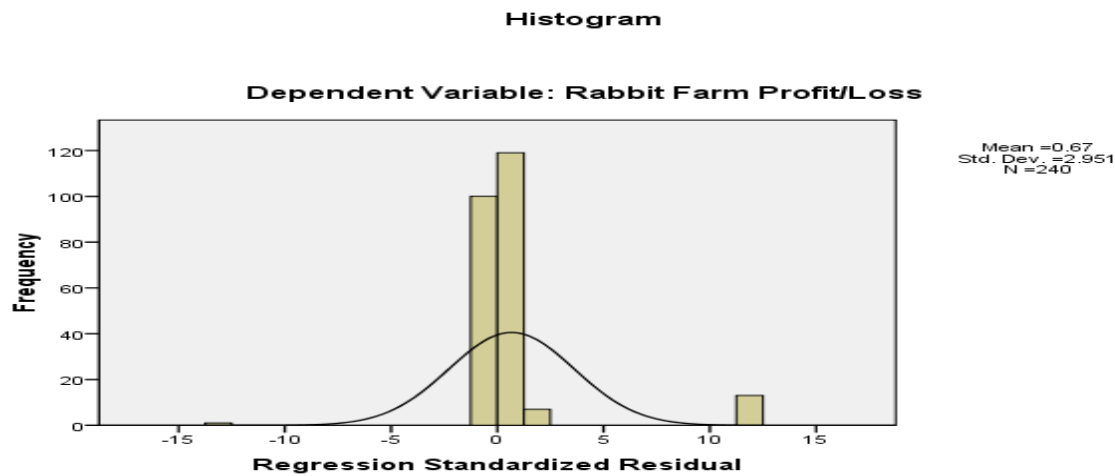
a. Dependent Variable: Rabbit Farm Profit/Loss

Table 7: Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. Change	F Durbin-Watson
1	.742 ^a	.550	.501	4.90184E5	.150	1.631	22	204	.042	1.995

a. Predictors: (Constant), Family Labour Cost Female, Cage/Pen Total cost, extension contact received, Water Supply Cost, Educational level, Rabbit farming experience, yes, which association, Marital Status, Hired Labour Cost Male, Bucket and bowl total cost, Age, Rabbit stock number, Production capacity of Rabbit production, Shovel total cost, Rabbit Farm Experience Grouping, Rabbit Stock Number Grouping, Household Size, Family Labour Cost Male, Rabbit Stock Cost, Drinker total cost, Hired Labour Cost Female, others total cost

b. Dependent Variable: Rabbit Farm Profit/Loss



Objective 4: Identify the constraints limiting rabbit production in the study area

The study deduced the constraints facing rabbit production in the study area. The result of this finding is presented from Table 8. Table 8 shows the distribution of constraints faced by farmers in Rabbit production. The constraints were ranked according to their impacts as follows: high mortality, difficulty in managing rabbit with other livestock, poor weight gain, non-conductive weather, high cost of rabbit inputs, scarcity of vaccination or medication, rabbitry quality breeds no access, pest attack management. These constraints were also reported as the major constraints faced by rabbit farmers by a previous study of Daodu *et al*, 2021, Mondina *et al*, 2021, Mukaila *et al*, 2022, Ayeni, *et al*, (2021) and Oguwande (2023).

Table 8: Constraints limiting rabbit production in the study area

Constraints	Strongly agree	Agree	Undecided	Disagree	Strongly disagree	Mean	Ranking
1 High Mortality	13	13		214		3.84	1 st
2 Difficulty in Managing Rabbit with other livestock	59	13		164		3.44	2 nd
3 Poor weight gain	13	49		178		3.43	3 rd
4 Non conducive weather	84			156		3.30	4 th
5 High cost of Rabbit inputs	13	74		153		3.22	5 th
6. Scarcity of vaccination or medication		132		108		2.90	6 th
7 Rabbitry quality breed no access	13	168		59		2.44	7 th
8 Pest attack management	23	191		26		2.12	8 th
9 Variation in quality feed	34	193		13		1.97	9 th
10 Fluctuation if feed price	11	229		00		1.95	10 th
11 Poor access to quality feed	11	229		00		1.95	11 th
12 Marketing	24	134		82		1.81	12 th
13 Poor access to extension	69	159		12		1.81	13 th

CONCLUSION

This study was conducted in the state of Kwara to look at the economics of producing rabbits and the difficulties farmers experienced in raising cattle from their crop. Education increased the amount of rabbits produced in the research area since the study shows that tertiary education influences an individual's exposure to and degree of acceptance of innovation. Even while the study region has not fully adopted rabbit production as a major source of income, those who do, particularly those who engage in the business of selling mature female and pregnant rabbits, make the most money. According to the study's findings, a big rabbit production capacity significantly improves technological efficiency. The technical efficiency of rabbit farmers was directly correlated with education, experience in rabbit farming, and loan availability at a 95% confidence range. These findings were consistent with those of Mukaila *et al.* (2022) about the status of rabbit production and marketing tactics.

According to the study, the average efficiency of rabbit farmers was 57%, suggesting that there was a significant opportunity to increase rabbit production by 43% through the adoption of the methods and tools used by the most successful rabbit farmers. According to the study, farmers classified as frontier farmers were those whose efficiency values were higher than the mean score, while non-frontier farmers were those whose values were lower. The function coefficient for production elasticity, or the return to scales, is 1.4782. This suggests that the production schedule of farmers who raise rabbits is flexible. Based on the results of the regression model, the study deduced that the dependent variable is explained by 55% of the function.

The study deduced the constraints facing rabbit production as high mortality, difficulty in managing rabbit with other livestock, poor weight gain, non-conductive weather, high cost of rabbit inputs, scarcity

of vaccination or medication, rabbitry quality breeds no access, pest attack management. These constraints were also reported as the major constraints faced by rabbit farmers by a previous study of Daodu *et al*, 2021, Mondina *et al*, 2021, Mukaila *et al*, 2022, Ayeni, *et al*, (2021) and Oguwande (2023). Even if the performance is still not ideal, the study's findings indicated that rabbit production is a viable endeavor in Lorin, Kwara state. However, among other things, the distribution and sales of the goods, changes in feed prices, variations in feed quality, and low product prices limit the efficiency of production. But there's still room to grow in terms of income and productivity by using resources more effectively.

The study revealed that timely asses to fund and extension services does improve profitability and efficiency of rabbit production the study area. Hence, the study recommends that timely intervention is suggested to assist the expansion of rabbit production as part of the policy of government in ensuring a healthy eating quality and safe beef. Ayemi *et al* (2023) indicated that eating rabbit beef is safe and very healthy. The research therefore calls for necessary policy that will enhance attention particularly the young one's rabbit production by making funds available to interested farmers and also through the veterinary research institutes to produce extremely prolific and disease-resistant rabbit breads. The study discovered that raising rabbits is expensive, particularly when it comes to feed. As a result, it suggests policies that will lower production costs for things like feed and stock. Therefore, building a standard feed mill in each location where rabbit production is most concentrated will enable farmers to get feed more easily, at a lower cost, and with greater efficiency. The study deduced that consuming rabbit beef is safe and healthy, hence, the study recommends enlightened the public about the health, nutritional, and commercial benefits of this crucial rabbit in order to boost product usage and consumption, which will open up a ready market and boost output.

Better contributions of rabbit income to household income will result from addressing the production constraints highlighted by the producers. It is therefore advised that credit-lending organizations, such as commercial banks and microfinance institutions, provide reasonable and accessible credit to rabbit farmers in order to strengthen their capacity to meet expenses related to the production and marketing of rabbits. The study found that credit access by the farmers increased the contributions of rabbit income to the household income. The study revealed that interactions with extension agents had a good impact on the economic contributions of rabbits to households. Therefore, we strongly recommend that additional extension agents be deployed to support training initiatives across all aspects of rabbit farming. Since there aren't enough veterinarians to go around, rabbit growers should also obtain training from animal health professionals on how to address common rabbit diseases. The farmers will be able to treat the common ailments by doing this. All of the above-mentioned recommendations will enhance rural farmers' livelihoods and general well-being, both in the short and long terms, for their household members.

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