

ANALYSIS OF THE PROFITABILITY OF SMALL RUMINANT PRODUCTION IN KADUNA STATE, NIGERIA

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ABSTRACT

The paper analyzes the profitability and constraints of small ruminant production in Kaduna State. Multi-stage sampling procedure was employed to select 320 small ruminant farming households. The study made use of primary data collected with the aid of structured questionnaire and analyzed using descriptive statistics and return per naira invested (RNI) Model. The result revealed that the total cost incurred in rearing a goat was ₦4,125.15 while that of a sheep was ₦7,631.12, the total revenue obtained from the sale of a goat was ₦6,350.19 while that of a sheep was ₦18,865.94. The study further revealed that goat and sheep production is profitable in the study with a Gross margin of ₦2,225.04 and ₦11,172.82 realized from rearing a goat and a sheep respectively. The Return per Naira Investment (RNI) was ₦1.54 and ₦2.45 for a goat and a sheep respectively. High incidence of disease, late maturing breeds, high transportation cost, unavailability of inputs and high cost of feed were the major problem encountered by the farming households in small ruminant production in the study area. The study suggested that extension services should be provided to the small ruminant farming household by governmental agency like ADP. In addition, training should be conducted for them in the areas of disease management and animal husbandry in order to increase their income.

KEYWORDS: Small Ruminant Production, Profitability, Constraints

Introduction

Small ruminant production is highly practiced in rural, semi urban and urban areas representing about 63.7 % of total grazing by domestic animals in Nigeria (Olabisi and Rasheed, 2017). Small ruminants like sheep and goats form a major component of animal production in most rural communities and serves as a resource for poor people. Their economic significance is primarily associated with their small size which involves low investments, less risk of loss and usually preferred over large ruminants for their food and reproductive efficiency (Olabisi and Rasheed, 2017). Furthermore, sheep and goats play a significant role in the food chain and overall livelihoods of Nigerian households (Yusuf, Aruwayo and Muhammad, 2018). According to Mayberry *et al.* (2018), the potential returns from sheep and goat production are high because of their lower feed requirement. It has been documented that sheep and goats are the principal domesticated small ruminants in terms of total numbers and production of food and fiber products (Akinmoladun, Muchenje, Fon and Mpendulo, 2019). There are many breeds of sheep and goats, which are found in different regions of the world. In the northern region of Nigeria, there are predominantly three indigenous breeds of sheep (Balami, Uda and Yankasa), two indigenous breed of goats are Sahelian and Red Sokoto. In South, West Africa dwarf breeds of sheep and goat are predominate. In Nigeria, sheep and goats are kept primarily for meat however, their milk is consumed in some areas while the skin is known for its high quality leather which has domestic and export value. Traditionally, sheep and goats have served as means of ready cash and a reserve against economic and agricultural production hardship (Enwelu *et al.*, (2015). Hence, there is need to analyze the profitability of small ruminant production in Kaduna State. The study analyzes the profitability of small ruminant production and described the constraints associated with the production of small ruminant.

METHODOLOGY

Study area

The study was conducted in Kaduna State, Nigeria. The State is located between Latitude 09° 02' N and 11° 32' N and Longitude 06° 15' E and 08° 38' E. Kaduna state lies in the northwest Nigeria and has a total of 23 Local Government Areas (LGAs). It occupies a total land mass of about 46,053 km.

Using 3.2 % annual growth rate, the population was projected to 9.1 million persons in 2019 (National Bureau of Statistics, 2016).

Multi-stage sampling procedure was used in selecting households for this study. Kaduna State is divided into four Agricultural zones namely: Maigana, Lere, Samaru-Kataf and Birnin- Gwari. The first stage involved selection of all the four agricultural zones. The second stage involved random selection of two LGAs from each of the four agricultural zones using a simple ballot system to give a total of eight LGAs. The third stage involved the random selection of two villages from each of the selected LGAs to make a total of 16 villages. Using a Slovin's formula (1967) adopted by (Oladimeji *et al.* (2017), given as $n = \frac{N}{1+N(e^2)}$, Where; n = Sample size, N= Sampling frame, e = Level of significance desired, 320 small ruminant farming households were selected from the Kaduna Agricultural Development Agency list of registered small ruminant producing households for the study. Data were collected from primary source with the aid of structured questionnaires and field observations and analyzed using descriptive statistics and Return Per Naira Invested (RNI)

Analytical Framework

Return Per Naira Invested (RNI) Model

Return per naira invested (RNI) is obtained by dividing the Total Revenue (TR) by the Total Cost (TC). It is given by the formula below

$$RNI = \frac{TR}{TC} \dots \dots \dots (1)$$

Where,

RNI= Return per Naira Invested (₦)

TR = Total revenue in naira (₦)

TC = Total cost of small ruminant production in naira (₦)

RESULT AND DISCUSSION

Profitability of Small Ruminant Farming

The result as presented in Table 1 showed that the total cost incurred in rearing a goat was ₦4, 125.15 while the total cost incurred in rearing a sheep was ₦7, 631.12, the total cost incurred in rearing a sheep was higher than that of a goat. Also, the total revenue obtained from the sale of a goat was ₦6, 350.19 while that of a sheep was ₦18, 865.94. The Gross margin realized from the sale of a goat was ₦2, 225.04 and that of a sheep was ₦11, 172.82. This shows that goat and sheep production are profitable in the study area. The Return per Naira Investment (RNI) was ₦1.54 and ₦2.45 for a goat and a sheep respectively. This implies that for every one naira (₦1.00) invested by the small ruminant farming households in rearing a goat, a profit of ₦0.54 were realized while for every one naira (₦1.00) invested by the small ruminant farming households in rearing a sheep, a profit of ₦1.45 were realized, implying that goat and sheep production is profitable in the study area. This finding is in line with Adinya *et al.*, (2011) who reported a net returns of ₦1, 942, 400.00 and ₦3.72 made on every naira invested in sheep production. Also, Offor *et al.*, (2018) in their work reported a gross margin and net income of ₦77, 500 and ₦66, 000 respectively and ₦0.58 made on every Naira invested in small ruminant production.

Table 1: Profitability of Small Ruminant Farming

Variable	Goats		Sheep	
	Total	Average	Total	Average
Variable cost/small ruminant				
Cost of purchase (₦)	6030.72	1005.12	19062.4	1906.24
Feeding cost(₦)	6065.94	1010.99	28116.7	2811.67
Vaccine cost(₦)	5432.94	905.49	14537.5	1453.75
Transport cost(₦)	1811.70	301.95	5110.00	511.00
Labour cost(₦)	5409.48	901.58	10104.6	1010.46
Total variable cost/small ruminant (₦)	24750.90	4125.15	76931.2	7693.12
Total revenue/small ruminant (₦)	38101.14	6350.19	188659.4	18865.94
Gross margin(₦)	13350.24	2225.04	111728.2	11,172.82
RNI (₦)	1.54	1.54	2.45	2.45

Constraints Faced by Small Ruminant Farming Households

The constraints as identified by the small ruminant households in the study area are presented in Table 2. From the study high incidences of disease (96.25%) were the major constraint identified by small ruminant farming households in the study area. Also Late maturing breeds (94.69%), High transportation cost (88.75%), unavailability of inputs (70.63%), high cost of feed (70.00%) adulteration of drug (68.44%) and limited accessibility to credit facilities (68.13%) were constraints encountered in small ruminant production respectively. This is in line with the report of Enwelu, Ezeuko and Machebe, (2015) in their work on challenges of smallholder sheep and goat keeping in rural communities of Aguata Agricultural Zone of Anambra State, Nigeria who reported that the major constraints in small ruminant production in the area were outbreak of diseases.

Table 3: Constraints Faced by Small Ruminant Farming Households

Variables	Frequency	Percentage	Rank
Inadequate/inaccessibility of credit facilities	218	68.13	7 th
Market price instability	207	64.69	9 th
Poor/lack of extension service	212	66.25	8 th
Inadequate/unavailability of inputs	226	70.63	4 th
Fake/ adulteration of drug	219	68.44	6 th
Inadequate/ high feed cost	224	70.00	5 th
High transportation cost	284	88.75	3 rd
Poor producing breed	206	64.38	10 th
High incidence of disease	308	96.25	1 st
Late maturing breed	303	94.69	2 nd

Multiple responses recorded.

CONCLUSION AND RECOMMENDATION

The work which centered on the analysis of profitability and constraints of small ruminant production in Kaduna State. concluded that small ruminant production is profitable in the study area. Also, the study established that high incidence of disease, late maturing breeds, high transportation cost, unavailability of inputs and high cost of feed were the major problem encountered by the farming households in small ruminant production in the study area. The study suggested that extension services should be provided to the small ruminant farming household by governmental agency like

ADP. In addition, training should be conducted for them in the areas of disease management and animal husbandry in order to increase their income.

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