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DETERMINATION OF PROFITABILITY OF SHEEP FATTENING ENTERPRISE IN KEBBI STATE, NIGERIA

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ABSTRACT

This paper investigated the profitability of sheep fattening enterprises in Kebbi state, Nigeria. Data were generated from a sample of 160 fatteners between June 2010 and June 2011 usingmultistage random sampling technique. Descriptive statistics and Net Farm Income analysis were employed in analysis. The results revealed that a typical sheep fattener was 46 years old, with 8 years of fattening experience and household size of 8 members, with each of the fatteners attaining beyond primary level of education. Average number of livestock fattened per cycle was 3. The mean weight gain per animal was 18.9kg in a fattening cycle. Sheep fattening in the study area was found to be profitable, realizing #15,101.10 as net income per animal. Constraints affecting the fatteners are financial constraint, high cost of feeds, poor market conditions, weather and diseases, poor quality feeds among others.It is recommended that fatteners should buy feeds at cheaper rate during harvest season, form cooperative society and be granted accessible credit by Government in order to enhance their profitability.

Keywords: Profitability, Constraints, Sheep, Fattening Enterprise, Kebbi State.

1.0 INTRODUCTION

The problems of food insecurity and hunger have continued in recent years to attract the attention of experts and governments worldwide [1]. Animal protein especially meat is expensive, in short supply and is out of the reach of the majority of the population [2]. The production of animal protein in Nigeria has remained insufficient to meet nutritional requirements of the low income households. There is no doubt that animal protein requirements of the geometrically growing population in Nigeria will continue to increase. The need to increase animal production is an understatement if the already shortfall in protein intake of the average Nigerian and the continuous increase in the nation's population are considered [3]. The low level of livestock production in Nigeria has been attributed to a number of factors including the traditional nomadic pastoralists, poor nutrition of animals, the non-use of improved animal husbandry practices by the pastoralists and inefficiency of producers among other reasons [4 & 5].

In view of the inherent constraints posed by the traditional animal husbandry system practiced by the nomadic animal rearers, Kolo[4] asserted that the traditional livestock grazing system was faced with the problems of seasonal variations in forage availability, water, disease, social interactions with the arable crop farmers, government taxation demands (jangali) and the need to cater for his family. The resultant evolution has led to a range of husbandry practices geared towards overcoming these problems. One of such evolution is that the livestock rearers now think in the direction of livestock fattening.[6 & 7]have advocated that a shorter-term approach than a longer term range management to increase beef output under the prevailing socio-ecological conditions is the rearing of animals through fattening. Livestock fattening means feeding the animals in order to obtain fast live weight gains in relatively short time [8]. It involves the development and use of feedlot techniques for feeding the animals rather than grazing.Traditionally, livestock fattening is carried out in a yard within the farmers' domestic housing structure.[6 & 7] asserted that introduction of

industrial feedlots through livestock fattening on sufficiently large scale will normally make the beef industry more efficient due to higher daily weight gains, better feed conversion, shorter period involved and higher dressing percentage. Other advantages according to them include, the possibility of utilizing agro industrial by-products, ensuring greater homogeneity of finished product, earlier marketing of the fattened animal, reduced assembling costs, and rapid money turn over that will make the venture lucrative to private and external financing.

Given the assertion that livestock fattening in feedlot operation has substantial potential for output as well as appropriate economic returns, studying the physical and economic relationships between feed inputs and livestock output within the system, becomes highly important.In order to improve the nutrient status of foods, particularly protein level in the Nigerian diets therefore, livestock fattening research is not only feasible but offers a practical solution to arresting the gloomy inadequate protein supplies in the country. It then becomes imperative to quantitatively measure the level of profitability and constraints involved in sheep fattening with the hope that this study would provide information that will serve as a guide to both existing and prospective investors in sheep fattening enterprise in Kebbi State, and Nigeria as a whole.

The specific objectives of the study are to:

1. Examine the socio economic characteristics of sheep fattening enterprises in Kebbi State.
2. Determine the profitability of sheep fattening enterprises in the study area.
3. Identify the constraints involved in sheep fattening enterprises in the study area.

2.0 MATERIALS AND METHODS

2.1 Sampling Procedure and Sample Size

The study was conducted in Kebbi State of Nigeria. This was purposively selected due to its importance in livestock fattening. The sampling method used was multi-stage random sampling technique. The State was divided in to four according to Kebbi State Agricultural Development Project (ADP) zones, namely Argungu, Bunza, Yauri and Zuru Zones. In the first stage, two Local Government Areas (LGAs) were randomly selected in each zone through lottery method (drawing lots), givinga total of eight LGAs for the study. These include Argungu and Dandi LGAs in Argungu zone, Jega and Bunza LGAs in Bunza zone, Yauri and Ngaski LGAs in Yauri zone and Danko-Wasagu and Zuru LGAs in Zuru zone. Secondly, from each of the LGAs, two leading villages noted insheep fattening were purposively selected giving a total of sixteen villages and from each village ten sheep fatteners were randomly selected through snow ball technique giving a total of 160 fatteners that were interviewed for the study.

2.2 Data and the Model

Data were collected at fortnight intervals from June 2010 to June 2011 using cost route approach. Information on primary data collected includes socio economic characteristics of the fatteners, input – output data and constraints involved in fattening.

2.3 Analytical Technique

2.3.1 Net farm income analysis

This tool was used to determine the costs and returns (profitability) of the enterprise. The Net Farm Income (NFI) model was used to achieve (objective 2.) Model for Net Farm Income was specified as follows:

Net Farm Income (NFI) is the difference between gross income and total costs of production. Notationally, NFI is specified as follows:

$$NFI = GFI - TVC - TFC \quad \ldots\ldots\ldots\ldots (1)$$

$$= \sum_{j=1}^{m} P_j Q_j - \sum_{k=1}^{n} -P_k Q_k - \sum_{i=1}^{1} FL \quad \ldots\ldots\ldots\ldots (2)$$

Where:

P_j = Price of a unit of j^{th} output(₦)
Q_j = Quantity of j^{th} output
P_k = Price of a unit of k^{th} input(₦)
Q_k = Quantity of k^{th} input
FL = Cost of fixed inputs(₦)
Σ = Summation sign
NFI = Net Farm Income (₦)
GFI = Gross Farm Income (₦), it is the total monetary value oflivestock output

TVC = Total variable cost (₦); this include, expenses on feeds, medication and veterinary services, family labour, water, expenses on fattening animals purchased, transportation etc. Factors of production were valued at the prevailing market prices at the period of survey in the study area. Cost items identified were classified into fixed and variable costs. The fixed cost items include depreciation on tools and equipment such as water basin, feeders, buckets, fence/building, rope, knife etc. and interest on borrowed capital. The variable cost items include labour (both family and hired), medication and veterinary services, feeds and supplements, fattening animals, water,

transportation. The straight-line-method of depreciation was used in the study, and it was assumed that the salvage value of the fixed cost items used in production was zero.Cost of feeds and supplements include cost of cereal bran, cowpea husks, cereal stalk, grasses, cotton seed lint etc. Cost of fattening animals was determined by the prevailing market price. The revenue from the sale of fattened livestock output was obtained by multiplying the total number of fattened livestock by the unit price.

Other profitability ratios were estimated to measure the economic performance of sheepfattening enterprise. The models are specified below.

Net Farm Income (NFI) = GI-TC .....(4)
Profitability Index (PI) = NFI/GI .....(5)

Rate of Return on Investment (RRI) (%) = NFI/TC x 100 .....(6)

Operating Ratio (OR) = TVC/TR .....(7)

3.0 RESULTS AND DISCUSION

3.1 Socioeconomic Characteristics of the Fatteners.

Results of the socioeconomic characteristics of sheep fatteners is presented in Table 3.1

Table 3.1: Distribution of sheep fatteners according to socioeconomic characteristics in Kebbi State, Nigeria.

Variable	Frequency	Percentage
Age		
26-30	1	0.6
31-35	3	1.9
36-40	26	16.3
41-45	34	21.2
46.-50	58	36.2
> 50	38	23.8
Total	160	100.0
Fattening Experience		
< 3 years	4	2.5
3-7 years	75	46.8
8-11 years	46	28.8
12-15 years	21	13.1
> 15 years	14	8.8
Total	160	100.0
Household size		
< 3 members	7	4.4
4-7 members	38	23.8
8-11 members	85	53.0
12-15 members	27	16.9
> 15 members	3	1.9
Total	160	100.0
Educational Level		
Quo'ranic	49	30.6
Primary	35	21.9
Secondary	28	17.5
Tertiary	17	10.6
Adult	31	19.4
Total	160	100.0

Results in Table 3.1 reveals that a greater proportion of the sheep fatteners that is 57.4 percent fall within 41-50 years age bracket having a mean age of 46. This suggests that fatteners are generally within their active age, and could possess strength required to cope with the rigorous demand of the fattening activities. This supports the findings of [9] who opined that fattening can be practiced by people within certain age limit and that better performance and productivity in fattening is enhanced by people that are not old.

Table 3.1 also reveals that majority of the fatteners' years of experience span between 3 to 11 years in

the business (75 percent). The mean years of fattening experience among the fatteners was 8. The result shows that a large number of the fatteners had enough experience to become highly efficient. Experience enables the entrepreneur set realistic targets. [10]reported that age in correlation with farming experience, has a significant influence on the decision-making process of farmers with respect to risk aversion, adoption of improved agricultural technologies and other production related decisions

Table 3.1 shows further that majority of the fatteners (93.7 percent) had household size of between 4 and 15 persons with a mean of 8 persons per household. The implication of this finding is that with mean household size of 8 per household, one might expect that the relatively large household size will enhance the availability of family labour. However, [11] cited in [12] reported that labour availability through large household size, may not be a guarantee for increased efficiency since most of the time family labour may be underutilized given the small scale nature of food production activities.

More so, results in Table 3.1 indicate that(30.6 percent) of the sheep fatteners had Quoranic, 21.9 percent had primary 19.4 percent had adult, 17.5 percent had secondary and 10.6 percent had tertiary education. It can be seen that sheep fatteners had attained one level of education or the other. Farmers with formal education tend to be more efficient in food production, due presumably to their enhanced technical competence, which enables them to produce close to the frontier output [13]. Also, farmers with education respond readily to the use of improved technology and tend to cope more with complexities associated with improved technology of sheep fattening.

3.2 Costs and Returns Structure of Sheep Fattening Enterprise.

An analysis of costs and returns was done in order to determine the profitability of the sheep fattening enterprise. This is one of the measures of success indicators for any farm business. The aim is to determine whether the business is viable or not. Results of costs and returns for thesheep fattening enterprise in the study area are presented in Table 3.2.

Table 3.2: Costs and returns analysis per animal in sheep fattening enterprise, Kebbi state, Nigeria

Items	Total Amount (₦)	Amount per Fattener (₦)	Amount Per Animal (₦)	%
A. Revenue (₦)	17,702,000.00	110,637.50	36,879.17	
B. Variable Costs(₦)				
Labour	320,025.00	2,000.16	666.72	3.06
Medication and Vet Services	141,844.00	886.52	295.51	1.36
Feeds and Supplements	3,028,840.00	18,930.25	6,310.08	28.98
Fattening Animals	6,287,000.00	39,293.75	13,097.92	60.14
Water	422,132.00	2,638.33	879.44	4.04
Transport/commission/tax	204,083.00	1,275.52	425.17	1.95
Total Variable Cost (TVC)	**10,403,924.00**	**65,024.53**	**21,674.84**	
C. Fixed Costs (₦)				
Water basin	2,960.00	18.50	6.17	
Feeders	3,392.00	21.20	7.07	
Buckets	3,040.00	19.00	6.33	
Building/Fence	32,534.00	203.34	67.78	
Rope	2,000.00	12.50	4.17	
Knife	2,128.00	13.30	4.43	
Rake	2,800.00	17.50	5.83	
Broom	688.00	4.30	1.43	
Total Fixed Cost (TFC)	**49,543.00**	**309.64**	**103.21**	0.47
D. Total Cost	**10,453,467.00**	**65,334.17**	**21,778.06**	**100.00**
E. Net Farm Income (A-D)	**7,248,533.00**	**45,303.33**	**15,101.11**	

Source: Survey Data 2010/2011

The results in Table 3.2 indicated that the total variable cost for the sheep fatteners was ₦10,403,924.00 while the average variable cost was ₦65,024.53 for a typical fattener. The results also show that cost of fattening animals accounted for 60.14 percent of the total variable cost of production for sheep fatteners. This was followed by feeds and supplements accounting for 28.98 percent and water accounting for 4.04 percent. About ₦15,101.0 was realized as profit per animal.A typical sheep fattener realized an average net farm income per cycle of ₦45,303.33

indicating that sheep fattening is profitable. Return on every naira invested was ₦0.69.This implies that fatteners in the study area realized a profit of about ₦0.69 on every naira invested.This consolidates the findings of [9& 14] who found that bull fattening is profitable with average profit of ₦20,664.60 and ₦37,870.24, respectively.

3.3 Profitability Analysis.

Financial and profitability ratios were estimated to measure the economic performance of sheep fattening enterprises in the study area. The results are presented in Table 3.3.

Table 3.3: Profitability analysis of sheep fattening enterprises in Kebbi State, Nigeria.

Ratio per fattener	Sheep
Profitability Index (PT)	0.41
Rate of Return on Investment (RRI)	69.34%
Operating Ratio (OR)	0.59

Source: Survey Data, 2010/2011

Result from Table 3.4 shows that profitability index (PI) was 0.41.This indicated that out of every ₦100.00 earned ₦41.00 is returned to the fatteners as net income. The rate of return on investment (RRI) is shown to be 69.34 percent, indicating that the fatteners earn₦69.34 profit in every ₦100.00 invested.

An operating ratio (OR) of less than 1 suggests a successful and profitable business, hence operating ratio of 0.59 showed a higher revenue over variable costs. Computation of results of the various constraints encountered by the sheep fatteners is presented in Table 3.4.

Table 3.4: Distribution of sheep fatteners according to the nature of constraints in Kebbi State, Nigeria

Constraints	*Frequency	Percentage	Rank
Financial constraint	120	75.0	1
High cost of feeds	112	70.0	2
Poor market conditions	106	66.3	3
Weather and diseases	104	65.0	4
Poor quality feeds	81	50.6	5
Inaccessibility to agric.Credit	74	46.3	6
Poor genetic quality	37	23.1	7

Source: Field Survey, 2010/2011.* Multiple responses were recorded

Results in Table 3.4 shows that financial constraint was the most pressing problem faced by majority(75.0 percent) of the sheep fatteners. The implication of this is that the fatteners have little investment capital for expanding their scale of operation. Agricultural credit according to [15] relaxes the constraints of production by facilitating the timely procurement of inputs and adoption of improved technology and hence increasing the efficiency of farmers. Smallholder farmers over rely on household resources. This should necessitate the introduction of subsidized credit.

High cost of feeds was ranked second. This was reported by 112 respondents representing (70.0 percent). This is likely because most of the feeds utilized were purchased. This means that a lot of money is spent on feeding the animals, before the fattening cycle ends. This finding agrees with that of [9& 16] who reported that high cost of feed was the most pressing pfoblem faced by fatteners in their various investigations.

Table 3.4 also reveals that the third most pressing constraint faced by the fatteners in their operation is that of poor market conditions. This was reported by 106 respondents representing (66.3percent). Poor market conditions as being reported by the respondents is attributable to the fact that Prices of animals keep fluctuating across the markets either due to the activities of marketing intermediaries or lack of market integration at different market locations.

Another important problem that was reported by 105fatteners representing (65.0 percent) is that of

weather and diseases. Due to constant variation or fluctuations of weather, probably as a result of seasonal variations, the adverse change in weather tends to affect the health of the animals and that constitute a challenge to the fatteners. This causes the animals to be susceptible to other ailments and diseases that can lead to death. Seasonal variation also affects pasture availability for the animals.

About 81 fatteners representing (50.6 percent) reported poor quality feeds as one of the constraints faced by sheep fatteners in the study area. Most of the feeds available do not seem to contain all the necessary nutrients that are supposed to enhance the rapid growth of the animals. That becomes a problem particularly in the study area where majority of the fatteners are small-scale farmers who do not have enough resources to go into backward integration that would have made them to formulate their feeds. Less than 5.0 percent of the fatteners formulate their feeds.

Another problem that was reported by the respondent sheep fatteners in the study area was poor genetic quality of the animals reported by 37respondents representing (23.1 percent). Poor genetic quality of the animals has to do with not having indigenous breeds of animals that can grow rapidly like the case of broiler breeds in poultry industry. Most indigenous breeds of these animals take a long time before they can attain market size.

4.0 CONCLUSION AND RECOMMENDATION

The results revealed that a typical fattener was 46 years old, with 8 years of fattening experience, and household size of 8 with each of the fatteners attaining beyond primary level of education. Average number of livestock fattened per cycle was 3. The mean weight gain per animal was 18.9kg in a fattening cycle. Sheep fattening in the study area was found to be profitable, realizing #15,101.10 as net income per animal. Constraints affecting the fatteners are financial constraints high cost of feeds, poor market conditions,weather and diseases poor quality feeds among others. It is recommended that fattenersshould buy feeds at cheaper rate during harvest season, form cooperative society and be granted accessible credit by Government in order to enhance their profitability.

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