



Determinants of Profitability of Cattle Fattening Scheme in Song Local Government Area, Adamawa State, Nigeria

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ABSTRACT

The study assessed the determinants of profitability of cattle fattening enterprise in Song Local Government Area, Adamawa State, Nigeria. Two-stage sampling procedure was employed in selecting sixty (60) respondents for the study. Data were collected using structured interview schedule. Descriptive, inferential statistics as well as budgetary technique were used to analyze the data obtained. Results revealed that greater part of the respondents aged above 20 years, majority of them had one form of education or the other, and 50% were civil servants. It was observed that cost of feeder cattle accounts for 79% of Total Variable Cost (TVC), Feeds 10%, Labour, 7% while Drugs and Vaccines, 4%. On the average, respondents obtained about ₦30,500 per cattle as profit. Regression estimates of factors affecting Gross Margin (GM) of cattle fattening enterprise show that the coefficient of cost of feeds, number of cattle fattened were positive and significant ($p \leq 0.10$) to GM of the enterprise. The coefficient of cattle fattening experience, was also positive and significant ($p \leq 0.01$) to GM of the cattle fattening business. The study revealed that inadequate capital, scarcity of feeds and space for fattening were the major constraints to the enterprise. The study concluded that cattle fattening enterprise is profitable in the study area and various factors affect profit of cattle enterprise. The study recommends that capital should be provided in form of loan to cattle fatteners by government and Non-Governmental Organisations (NGOs). This will go a long way in improving cattle production and provide job opportunities for the teeming unemployed youth. Crop production should be encouraged in the study area as the by-products are used as feeds by cattle fatteners.

Keywords: Determinants, Profitability, Cattle Fattening, Nigeria

INTRODUCTION

Nigerian agriculture remained one of the most important sectors of the nation's economy despite its largely peasant nature. Apart from its contribution to Gross Domestic Product (GDP) and provision of employment, livestock is the major source of protein for human consumption (Jibril, 2004). Nigeria's livestock resources consist of 14 million Cattle, 34 million Goats, 22 million Sheep, 100 million Poultry, 1 million Horse and Donkey as well as negligible number of Camel (Ikhautua, 2000; Umar, 2007). Transhumance is the dominant system of cattle production. The herds are predominantly in the hands of the nomadic pastoralists who hold over 90% of the Nigeria's 15million cattle (Inuwa, 2013). These animals are kept for beef, hide, milk, traction, bones, and horns and even blood (Tukur and Maigandi, 1999), and to many, as symbol of status (Ikhautua, 2000). Conservatively, cattle population stands at 2.8 to 3.5 million in Adamawa State (Tukur and Ardo, 1999). Major cattle types found in the State are Adamawa Gudali and Sokoto Gudali (Bokoloji) (Polycarp and Joshua, 2004). Cattle command a prominent position in meat supply among livestock, where about 45% of total meat consumed in Nigeria is derived from their slaughter (Haruna and Murtala, 2005; David, 2012).

The nomadic system of production, however, is increasingly coming under pressure from rapidly changing social, economic and political situation as the country develops. For instance, the proliferation of States, the development of new cities, and the land use act which failed to recognize the rights of herdsmen to transient usage of land for grazing as well as the pressure on land for food crop production, all serve to make nomadism increasingly untenable as a method of cattle production. Ojo (1991) observed that production of livestock suffers mainly from poor management techniques. This is characterised mostly by free range scavenging and grazing on low quality pasture with no adequate water supply. Furthermore, production of livestock is undertaken mostly with traditional methods, which is often guided by cultural and ecological factors. Therefore, fattening could improve cattle production management thereby, increasing beef supply from existing stock of animals (Okaiyeto *et al.*, 2006) perhaps, by improving the annual off-take and carcass weight.

Cattle fattening involves procuring feeder cattle, putting the animal on concentrate feeds for 1-4 months and dispose for slaughter, after which it might have added weight. This process is considered as an economic venture and non-Fulani are increasingly involved into the business. Okaiyeto *et al.* (2006) examined that the inhabitants of Katsina State are admixture of Hausa and Fulani. The Hausa group are agrarian farmers who mainly own and manage animals jointly with cropping activities. They do so by procuring young male animals, train for animal traction, use it for up to three years, then fatten and sell for slaughter. Cattle fattening project is a profitable venture and has improved both the social and economic wellbeing of participants (Abdullahi and Ogunbameru, 1994; Oni, 2006; Umar *et al.*, 2008). This is because raw materials needed for the venture can be sourced at ease. Also, the production technology is simple and the man-power requirement can be met with family labour. However, there appears to be a major constraint to the improvement of the local cattle fattening enterprise and that is finance (Jean, 1993). Ali *et al.* (1998) observed that returns from sales of cattle is high, though varies from place to place. There are, however, limited documented studies on determinants of profitability of cattle fattening enterprise particularly, in Song Local Government Area, Adamawa State, Nigeria. Hence this study was designed to address the following objectives:

- a) examine the profitability of cattle fattening enterprise,
- b) investigate factors affecting profitability of cattle fattening enterprise and
- c) examine constraints to cattle fattening programme.

METHODOLOGY

Study area

The study was conducted in Song Local Government Area, Adamawa State, Nigeria. The study area lies between latitudes $9^{\circ} 53' 1''$ and $10^{\circ} 12' 1''$ N of equator and longitudes $12^{\circ} 00' 1''$ and $12^{\circ} 17' 1''$ E of the Greenwich meridian (Aponu *et al.*, 2011). The area has a projected population of about 240,231 people based on national population census (NPC, 2006) using 3.2% population growth rate. The area has tropical wet and dry seasons with a mean annual rainfall of 950mm. The vegetation of the area is mainly guinea savannah and deciduous forests. The vegetation favours the growth of cash and food crops such as groundnut, maize, cowpea, millet, bambaranut, among others. Animals like cattle, sheep, goats, pigs and poultry are reared for domestic and commercial purposes. Adamawa State is renowned for cattle production in Nigeria (Mohammed, 2009). Song local government area is one of the largest producers of cattle in the State evidenced by presence of one of the largest cattle markets in the State. The major occupation of the people is farming.

A two-stage sampling procedure was used to select respondents for the study. In the first stage, three (3) wards, where cattle fatteners are common were purposively selected. These include Song Gari, Gudu/Mboi and Dumne wards. In the second stage, twenty (20) respondents were randomly selected from each ward

making a total of sixty (60) respondents. Primary data were mainly used. Information was collected directly from respondents via structured interviewed schedule.

Descriptive statistics such as frequency and percentages were used to analyse the socio-economic characteristics of the respondents and constraints to cattle fattening. Budgetary technique such as Gross Margin (GM) was used to determine profitability of cattle fattening enterprise. The GM model is expressed as follows:

$$GM_i = \sum_{i=1} P_i Q_i - \sum_{j=1} C_j X_j \text{ ----- (i)}$$

Where;

- GM_i= Gross Margin of Cattle i (₦)
- P_i = Unit price of fattened cattle i (₦)
- Q_i = Number of cattle i fattened (No.)
- C_j= Unit cost of variable input j (₦)
- X_j = Quantity of variable input j used (Kg, Lt. and No.)
- ∑ = Summation

It is important to note that GM analysis was used on the assumption that:

- a) fixed cost of production is negligible
- b) all cattle were fattened for the average period of 2-4 months
- c) all fattened cattle used purchased inputs such as feeds, labour, drugs and vaccine.
- d) no cattle was lost either as a result of disease or theft.

In addition, quantitative analysis such as multiple regression was used to analyse factors affecting GM of cattle fattening enterprise.

The explicit form of regression model used was expressed, thus;

$$Y = b_0 + b_1 X_1 + b_2 X_2 + b_3 X_3 + b_4 X_4 + b_5 X_5 + b_6 X_6 + b_7 X_7 + U \text{ ----- (ii)}$$

Where,

- Y= GM (₦/acre)
- X₁= number of bulls fattened (No)
- X₂=cost of hired/self-labour (₦)
- X₃=cost of drugs and vaccine (₦)
- X₄=cost of feeds (₦)
- X₅=experience in cattle fattening (Yr)
- X₆=Education level (Yr)
- X₇=primary Occupation (1 farming, 0 otherwise)
- U=error term

The model was fitted in four functional forms; linear, double log, semi-log and exponential. The final choice of functional form was based on:

- a) highest value of adjusted r²
- b) significance of regression coefficients, and
- c) Significance of F- statistics

RESULTS AND DISCUSSION

Socio-economic Characteristics of Respondents

The result of the socio-economic characteristics of the respondents is presented in Table 1. The findings of the study revealed that majority (73%) of the respondents fell within the productive age bracket of 21- 60 years old. This may not be unconnected with the fact that bull fattening is laborious, therefore requires active individuals. Most (82%) of the respondents had one form of formal education or the other. It was revealed by the study that 33% of the respondents had fattening experience of 4- 6 years, 27% had less than or equal to 3 years and 22% had fattening experience of 7-9 years. Only 18% of the respondents had

experience of 10 and above years. Experience improves efficiency in resource-use of agricultural activities (Omonona *et al.*, 2010).

On the number of cattle fattened by respondents in a season, it was revealed that 35% of respondents fattened 4-6 cattle, 30% reported less than or equal 3 and 18% indicated 7-9 cattle. Only 17% of the respondents reported 10 and above cattle fattened per season. This could be as a result of huge capital required by the business. Higher number of cattle fattened could improve profitability of the enterprise as a result of economies of scale in feeds and drugs used. It was observed in the study that 50% of the respondents were in civil service, 32% reported business activities, 10% and 8% indicated farming and housewives as their primary occupation, respectively. It was deduced from the foregoing that cattle fattening was regarded as secondary occupation perhaps because it was not an all-year-round activity and requires capital that could be obtained through primary occupation.

Table 1: Distribution of Respondents based on Socio-economic Characteristics (n=60)

Variable	Frequency	Percentage (%)
Age		
≤ 20	10	17
21-40	26	43
41-60	18	30
61 and above	06	10
Education Level		
No formal Education	11	18
Primary Education	10	17
Secondary School	13	22
NCE/Diploma	20	33
Degree	06	10
Fattening Experience		
≤ 3	16	27
4-6	20	33
7-9	13	22
10 and above	11	18
No. of Cattle Fattened		
≤ 3	18	30
4-6	21	35
7-9	11	18
10 and above	10	17
Pry. Occupation		
Civil Service	30	50
Business Activities	19	32
Housewife	05	08
Farming	06	10

Source: Field Survey, 2014

Profitability of cattle fattening

The result on profitability of cattle fattening is shown in Table 2. It was revealed that 33% of the respondents had average profit of between ₦21,000- ₦30,000 per cattle, 30% had between ₦11,000- ₦20,000 and 18% had less than or equal to ₦10,000 per cattle. Only 12% and 7% of the respondents had average profit of between ₦31,000- ₦40,000 and ₦41,000 and above, respectively. It could be deduced

from the result that cattle fattening is a lucrative business in the study area particularly during May/June. This period according to the respondents, the price of feeder cattle is less as a result of unavailability of feeds fed to cattle in the bush and fresh forage is yet to be established.

Table 2: Distribution of Respondents based on Average Profit of Cattle Fattening Enterprises

Profit Range (₦)	Frequency (F)	Percentage (%)
≤ 10,000	11	18
11,000- 20,000	18	30
21,000- 30,000	20	33
31,000- 40,000	07	12
41,000 and above	04	07

Source: Field Study, 2014

The average costs and returns of cattle fattening in the study area is presented in Table 3. It was revealed that cost of feeder cattle accounted for about 79% (₦85,000) of the Total Variable Cost (TVC) of cattle fattening business. Respondents revealed that if a cattle has good body structure and aged 2-3 years (determined by length of horn) it cost ₦70,000- ₦80,000. Furthermore, if the age exceeds 3 years, perhaps 4-5 years, it cost ₦110,000- ₦150,000. Feeds accounted for about 10% (₦11,000), labour 7% (₦8,000) and Drugs and vaccines accounted for about 4% (₦4,000) of TVC. The average Gross Revenue (GR) stood at ₦138,000 while the TVC stood at ₦108,000. On the average, cattle fatteners obtained ₦30,500 as profit for a head of cattle fattened. Respondents reported that with good management, cattle could be disposed- off after 1- 2 months of fattening period. If the period extends beyond two months, however, the profit could be reduced as a result of cattle consuming too much feeds without proportionate weight gain (diminishing return). Feeds such as ground-nut haulms, cowpea husk, sorghum straw, chaff and bran were mostly used for fattening cattle.

Drugs mostly given to fattening cattle included de-wormers and anti-biotic for treatment of all kind of diseases parasites as discovered by the study. De-wormers such as Albendazole, Levamisole, Oxydoxamide and Fenbendazole were mostly used. Others such as Nitroxylnil and Tuarmectine could also be administered to fattening cattle. Broad spectrum anti-biotics such as Oxytetracycline, Sulphadimidine and Peni-strep (Penicillin and Streptomycin) are given to fattening cattle at appropriate doses as reported by respondents. In addition, appetite stimulants such as multivitamin injection and Yakrifit are mostly used in order to stimulate feed intake of cattle.

Table 3: Distribution of Average Cost and Return (₦) per Head of Cattle Fattened

Item	Amount
Gross Revenue (GR)	138,500
Feeder Cattle	85,000 (79)*
Drugs/Vaccines	4,000 (4)
Labour	8,000 (7)
Feeds	11, 000 (10)
TVC	108,000 (100)
GM (GR- TVC)	30, 500

Source: Field Survey, 2014. *Figure in parenthesis are percentage contribution to Total Variable Cost (TVC)

Factors affecting profitability of cattle fattening enterprise

Table 4 shows the factors affecting profitability of cattle fattening enterprise in the study area. The R^2 was significant with a value of 0.74. This implies that 74% of the total variation of profit of cattle fattening is explained by combined influence of all the explanatory variables in the regression equation.

Result revealed that the coefficient of feeds used was positive and significant ($p \leq 0.10$) to GM obtained from cattle fattening in the study area. The implication of this result is that the higher the cost of feeds (quantity of feeds) given to fattening cattle, the higher the GM. This is obvious because feeds could transform into weight gain which attracts good price. This is possible when the fattening period is limited to 1-2 months. Beyond this period law of diminishing return could set in. This result concurred with that of Babale *et al.* (2012) who observed that cost of feed had positive effects on cattle fattening in the study area. The coefficient of number of cattle fattened at a time was also significant ($p \leq 0.10$) and positively related to GM of cattle fattening enterprise. Major implication is that respondents enjoyed economies of scale (spent less per unit cattle) by fattening more cattle at a time, thereby, leading to higher GM. The coefficient of experience in cattle fattening business was also positive and significant ($p \leq 0.01$) to GM of cattle fattening enterprise. This result implies that the higher the level of cattle fattening experience, the higher the profit of the business. Experience improves managerial skill of business, hence leads to high profit.

Table 4: Regression Estimates of Factors Affecting GM of Cattle Fattening

Variable	Coefficient	Z	P
Education Level	0.0504	0.921	
Pry. Occupation	0.6401	0.620	
Cost of Feed	0.0674	1.7950	0.073*
Drugs and Vaccine Used	0.0227	0.6059	0.542
Fattening Experience	0.1248	2.5820	0.010***
No. of Cattle Fattened	0.9455	1.8310	0.961*
Labour Used	0.0279	0.1310	0.849
Constant	2.0325	1.652	0.000
R^2 0.74			

Source: Regression Extract, 2014. ***Significant at 1% level. *Significant at 10% level

Constraints to cattle fattening enterprise

Table 5 shows the constraints encountered by respondents in cattle fattening exercise. The finding reveals that 75% of the respondents reported inadequate capital as their problem in cattle fattening business, 50% complained scarcity of feeds while 42% of the respondents indicated inadequate space for fattening. Only 18% and 13% of the respondents reported labour and market, respectively as their problems.

Table 5: Distribution of Respondents based on Constraints to Cattle Fattening (n=60)

Constraint	*Frequency (F)	Percentage (%)
Capital	45	75
Scarcity of Feed	30	50
Market	08	13
Scarcity of Labour	11	18
Space	25	42

Source: Field Survey, 2014. *Multiple responses existed, therefore total frequency greater than 60

All the respondents reported the use of their small savings as a start-up capital for the business. It is already known that cattle fattening business requires substantial start-up capital for procuring particularly feeder

cattle and the feeds which are the basis for the business. Scarcity of feeds was also a constraint because nowadays people are getting involved in the business, this led to competition for feeds during harvest. In fact, respondents reported travelling long distances, sometime in the villages to look for feeds. Sometimes the feeds are expensive as a result of high demand. Fattening business requires space for the cattle and the feeds. Respondents reported that the business is constrained by inadequate space. Some respondents fattened cattle in all the available space in the house with no opportunity for expansion. Scarcity of labour is also a hindrance to cattle fattening because youths that could be employed in feeding may not be interested in the job because of its tediousness.

Conclusion and recommendations

The study was carried out to assess the determinants of profitability of cattle fattening enterprise in Song Local Government Area, Adamawa State, Nigeria. The study concluded that cattle fatteners used feeder cattle, labour, feeds, drugs and vaccines as inputs of the enterprise. The enterprise is profitable in the study area. Cost of feeds given to cattle, fattening experience and number of cattle fattened at a time affect profit of the business. Inadequate capital, scarcity of feeds and insufficient space were identified as the major constraints to the enterprise in the study area. Based on the findings, the following recommendations are proffered:

- i. Capital should be provided in form of loan to cattle fatteners by government/NGOs. This will go a long way in improving cattle production and provide job opportunities for the teeming unemployed youths.
- ii. Crop production generally should be encouraged and supported in the study area as the by-products are used as feeds by cattle fatteners.
- iii. Cattle fatteners should be encouraged to fatten more than one cattle at a time so as to enjoy economies of scale in inputs use and ensure higher profit

Acknowledgement

We would like to appreciate the contribution of Dr. Jibril Aliyu and Dr. B. G. Shettima of the Departments of Animal Science and Agricultural Economics, Faculty of Agriculture, University of Maiduguri, respectively for going through the manuscript and offered constructive criticism and intellectual inputs. May God reward you abundantly.

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