PROFITABILITY ANALYSIS OF CATTLE FATTENING IN SARDAUNA LOCAL

GOVERNMENT AREA OF TARABA STATE, NIGERIA.

AHMED, MUHAMMAD AUWAL

(M.Sc/AE/08/0195)

JULY, 2012.

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of Science (M.Sc.) Degree Agricultural Economics.

JULY, 2012.

DECLARATION

I hereby declare that this thesis entitled "Profitability Analysis of Cattle Fattening in Sardauna Local Government Area of Taraba State, Nigeria" is a record of own research work. It has not been presented before in any previous application for a higher degree. All references cited have been duly acknowledged.

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Ahmad, Muhammad Auwal   Date

DEDICATION

This thesis entitled "Profitability Analysis of Cattle Fattening in Sardauna Local Government Area of Taraba State, Nigeria" is dedicated to Almighty Allah in whose grace I was able to conduct and to my parents; Alh. Ahmadu Bello and Maryam Ahmadu Bello.

APPROVAL

This thesis entitled: "Profitability Analysis of Cattle Fattening in Sardauna Local Government Area of Taraba State, Nigeria." Was carried by Ahmad, Muhammad Auwal (M.Sc./AE/08/0195) meets the requirements for the award of Master of Science (M.Sc.) degree in Agricultural Economics of the Modibbo Adama University of Technology, Yola and approved for its contribution to knowledge and literary presentation.

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ABSTRACT

The study examined the profitability Analysis of Cattle Fattening in Sardauna Local Government Area of Taraba State, Nigeria. The specific objectives of the study were to: identify and describe the socio-economic characteristics of cattle fatteners, examine the costs and returns associated with cattle fattening, to determine the efficiency of resources used in cattle fattening and to identify the major constraints associated with cattle fattening in the study area. Primary data were collected through the administration of structured questionnaire to 64 randomly selected cattle fatteners. The data were analyzed using descriptive statistics; gross margin analysis, regression analysis and marginal analysis of input utilization. Results revealed that 92.19% of the respondents were male, 51.56% had no formal education, 87.50% were in their productive ages and 60.63% sourced their capital from personal savings. The gross margin analysis reveals that cattle fattening is a profitable venture with an average gross margin of ₦ 16,380.51 per head for a period of three months and ₦ 212,946.63 per farmer. Result of the regression analysis reveals that feeds, length of fattening, volume of water and labour were statistically significant at 1% and 5% levels respectively, while extension contact, age at purchase and farming experience were not statistically significant. The study identified high cost of feeds, lack of extension services and credit facilities as the major constraints to cattle fattening in the study area. The study recommends the training on feed formulations, improvement in extension services and that ranchers or farmers should form co-operative societies for easy access to credit facilities.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Livestock is an important component of agricultural production system. In the African farming system, there is hardly any farmer who does not keep one form of livestock or the other in addition to his crop production. This practice which has made peasant farming to be described as mixed farming, developed from the need to reduce the risk associated with crop farming (Jones, 1996). Livestock serves as a cash generation for seasonal requirements and agricultural activity. For instance, a good crop harvest, provide an important investment opportunity for surplus funds while in a poor crop production year; they are sold to buy food for the sustenance of the household. In addition, they are kept to compliment cropping activities by providing manure and draft power for cultivation and transportation (Ahmed, 2006).

Cattle accounts for more than 50 % of Nigeria's total meat supply and are the largest livestock enterprise in Nigeria's agricultural industry (Adamu, 1992). Apart from meat supply, the industry provides employment opportunities to about six million pastorals (Kalla, 1998), source of income, investment against failure of cash crops and the prestige inherent in their ownership among others. Zachariah (1992) reported that the greatest concentration of cattle in Nigeria is found in the northern part; with 89% of the total population managed by the traditional Fulanis and Shuwa Arabs men. They have the reputation of being good converters of roughages in to useful food for humans. Also, the production technology is simple and the manpower requirement is readily available.

Cattle industry as an economic activity is concerned with all stages of its operation from the point of initial production to its eventual consumption. It determines consumers demand for a product or service, motivating its sales and distributing to ultimate consumers at a profit. Profitable cattle fattening means producing the most profitable cattle, selling through the most profitable market outlet and pricing at the most profitable time. It is imperative to a fattener to recognize and evaluate the entire available

alternatives in the light of potential costs and returns and then selecting the most profitable rather than the most convenient alternative.

The conducive agro-climatic environment in Sardauna local government coupled with relatively easy management practices has stimulated high concentration of cattle in the area; Taraba agricultural development project (TADP, 2005). In view of the roles cattle industry play, there is a general lack of information about the costs and returns associated with the enterprise in the study area. Many marketers that are into small-scale fattening are always conscious of turnover on their operations, hence the viability or otherwise of the enterprise is determined largely by the corresponding profit margin. Also the need to tackle the problem of increase in demand for cattle products has stimulated increase in economic activity in the industry, and this is an incentive to cattle production which ensures stability in the flow of income to market participants and minimize risks and uncertainties inherent in Agri-business.

1.2 Problem Statement

The increase in human population especially in developing countries continue to put a lot of demand on animal protein supplies, hence the need for adequate human nutrition cannot be over emphasized (Adamu, 1992). The demand for animal protein in Nigeria like in other developing countries of the world is far from being met (Okuneye, 2002). It also serves as a major source of income, revenue generation and protein to the entire populace (Ahmed, 2006). In spite of this great importance of cattle in the area, the industry is still suffering from numerous constraints, notable among are lack of formal training on how to utilize inputs efficiently, lack of information about the profit derive by cattle fatteners who buy cattle and fattened them for resell after few months, source of capital, lack of extension services and credit facilities. In view of the above, the study examined the profitability analysis of cattle fattening in Sardauna Local Government Area of Taraba State. The study answered the following questions:-

1. What are the socio-economic characteristics of cattle fatteners?
2. What are the costs and returns used by the cattle fatteners?
3. Are the resources used efficiently in cattle fattening?
4. What are the constraints associated with cattle fattening

1.3 Objectives of the Study

The broad objective of the study was to examine the profitability of cattle fattening in Sardauna Local Government Area of Taraba State; while the specific objectives were to;

i. identify and describe the socio-economic characteristics of cattle fatteners in the study area;

ii. determine the costs and returns associated with cattle fattening;

iii. examine the efficiency of resources use in cattle fattening; and

iv. identify the major constraints of cattle fattening in the study area.

1.4 Hypotheses

The study proposed the null hypotheses as:-

H_{o1}: Socio-economic characteristics of cattle fatteners do not affect the output of cattle fattening in the study area.

1.5 Significance of the Study

A cattle marketing is an important economic activity in Sardauna Local Government Area of Taraba State. The industry play a vital role in improving the Socio-economic status of the participants and the government derives substantial amount of revenue (₦16, 897,055.04 millions) through tax collection (Board of internal revenue Gembu, 2008). It has however been recognized that beef consumption is a major source of protein in an average Nigerian family, moreover, it accounts for more than 80% of Nigeria's total meat supply, despite this, the ratio of human population to slaughtered cattle per head is 89:1.3 (Adebayo and Olayemi 2005).

The demand for beef is motivated by the nutritional value and palatability and its consumption cut across religion, tribe, culture and status (FAO, 1980). The indigenous beef Cattle producers have not been able to meet the demand because of a lot of constraints, so the local meat production has consistently been supplemented with local

inputs. Knowing fully that the kind of beef production in Taraba State is predominantly traditional; therefore, it is important to conduct a research on the profitability of cattle rearing and management practices in Order to meet up with the demand of our teeming population in respect to beef supply. The expected result will go a long way in assisting the farmers in taking rational decision in order to maximized profit. It can as well be used by the government and private sectors to enact new policies on cattle production and marketing. It will also serve as a guide to extension workers, researchers and students carrying out further study.

CHAPTER TWO

LITERATURE REVIEW

2.1   Origin of Cattle

Cattle were originally identified by Carolos Linnaeus as three separate species. These were *Bos taurus*, the European cattle, including similar types from Africa and Asia; *Bos indicus*, the Zebu and the extinct *Bos primigenius*, the aurochs is ancestral to both Zebu and European cattle. More recently these three have increasingly been grouped as one species with *Bos primigenious indicus* and *Bos premigenious* as the sub-species (Thompson, 1942). Modern cattle are divided in to two species: Bos Taurus, which originated in Europe and includes most modern breeds of dairy and beef cattle, and Bos indicus, which originated in India and is characterized by a hump at the withers (Aryan, 2011).

2.2   Domestication of Cattle

Cattle were first domesticated in South Eastern Europe and south eastern Asia during the new Stone Age, some (8,500) years ago, a probable second centre of domestication (WFS, 2004). Cattle belong to the family *Bovidae* which includes ruminants with hollow horns. Members of this family posses one or more enlargements for food storage along the esophagus and they chew their cuds (Simpson, 1945). The world cattle population was put together by Ranjhan (2001) revealed an estimated (100,280,600,000). He postulated that more than one-third is found in the tropics. High yielding breeds of Zebu cattle are found in the high rainfall areas: similarly in Nigerian context, the bigger and high yielding breeds such as White Fulani, Sokoto Gudali and Red Bororo are found in the Northern part of the country, while the smaller and low yielding breeds like Muturu and Ndama are typically found in Southern part of the country.

2.3   Cattle Breeds

Cattle breeds are widely distributed in the world. These include *Aberdeen Augus, Hereford, short horn, charolais, limousine, Braford, Waygu, Brahman, beef freisan, simbrah and santa gartrudis* (Newmann, 1977). The indigenous cattle population has been variously estimated to range from about eight to twelve (8-12) million (Oyenuga, 1982, Kaufman and Otchere, 1982). They are made up of atleast ten dual purpose breeds of Bunaji, Sokoto Gudali, Adamawa Gudali, Azaouak, Kuri, Ketuku and Muturu. There are also few Ndama breeds mostly found in institutional and governmental farms imported from neighboring West African countries. Most of the *Bos indicus* species are found in the Sudan and Northern Guinea Savannah Zones and are concentrated in Kano, Borno, Bauchi, Adamawa and Sokoto States. The *Bos taurus* species are found in the Southern States of the forest, Derived and Southern Guinea Savannah Zones. The later species are trypanotolerant to some extent and can withstand the menace of trypanosome infection prevalent in the forest belts (FAO; 1992 and FMA; 1981).

The indigenous cattle are thought of as being slow growing and unproductive. This is as a result of under nutrition due to over reliance on natural grazing land which is seasonal in productivity, lack of disease control, pasture development, supplementation and lack of herding the cattle (Pullan, 1979). However, production performances of the indigenous breed have greatly improved under good management practices and compares well with the local breeds. The wide variation in performance with and between the local breeds of cattle offers opportunity for selection (Lamurde and Franty, 1975).

2.4 Beef Supply Situation.

According to Manay and Shadakshoraswamy (2001), beef is the term used to designate meat from different types of cattle; it usually applied to meat of cattle over one year old. Beef contains 15-20% protein of outstanding nutritive value. Nuru (1982) reported that Nigeria has never been self sufficient in beef production and the supply situation is very critical. Our British colonial masters recognized the economic importance of beef production early in the twentieth century and despite efforts by them to improve production, Nigeria had to import meat from Europe, America and Argentina, particularly during the second half of the 70's. Oyenuga (1982) revealed that the price of

beef has increased from an average of N2.50 in 1975 to N25.00 in 1992, a 90 percent increase. He further stated that the present rate of beef production is not coping with the demand of a rapidly changing Nigerian society. Bauer (1960 – 1964), postulated that 376,300 tones of the estimated total of 584,800 tones of meat was consumed in the Northern Nigeria which consequently recorded a daily per-capita consumption of protein units of 79.9 % from all sources as against only 33.2 % and 36.6 % for Eastern and Western states of the country. In terms of the provision of the much needed meat to average Nigerian, the performance of the livestock sub-sector has not been encouraging. For instance, less than 2kg of beef were available to an average Nigerian per year and just mere 4kg of egg annually could be supplied to each Nigerian between the year 1996 and 2000 (Okuneye, 2002). The British medical association (2009) recommends a minimum animal protein intake of 34g per-capita per day. Also, the Food and Agricultural Organization (FAO) of the United Nation recommends 20g of animal protein per-capita per day as the minimum for consumption for developing countries (Okuneye and Banwo, 1990), but 75kg as optimum for normal growth and development (FAO, 1990). However, the average animal protein intake per-capita per day in Nigeria was a mere 7.6 kg that is 38 percent of the FAO minimum requirement for developing countries and mere 10 percent for excellent growth and development (Olayemi et. al, 1986). According to Qadeer (2008) found out that in Jos modern abattoir alone, about 90 heads of Cattle are being slaughtered per day which amount to 630 weekly. Similarly in Adamawa state as at the year (2000) recorded 63,095 heads of Cattle were slaughtered (FOS, 2000), while in Taraba state, a total of 60,086 Cattle were estimated to be slaughtered as at the year 2007 out of which Sardauna Local Government recorded 5,523 heads of Cattle (Taraba state statistical year book, 2007). The size of the Cattle slaughtered were averagely 250 kg per head. Their ages ranged from two years and to about eight years and breeds were mainly White Fulani, Red Bororo and Sokoto Gudali.

Beef in Nigerian markets comes mainly from traditional production system and the small holder producer. Nuru (1982) in his findings revealed that in the year 1997, Nigeria imported about 8,494.6 metric tons of beef from Argentina, while Oyenuga (1982) in a similar development projected demand and supply of beef between 1990 and 2000 to be 9,020.37 and 2,728.90 metric tons of beef respectively. However, the average

beef consumption was declining due to the unfavorable price relations in comparison with other sorts of meat. The beef meat is therefore referred to as luxurious product since it belongs to the expensive category. The declining beef consumption is influenced mainly by the decreasing purchasing power and the occurrence of the BSE disease. According to the elasticity estimation result we can state that beef is price and income inelastic (Hupkova et.al, 2009).

2.5 Transportation of Cattle

A transport network is needed to move product from one farm to the markets in town or exports and to bring supplies and equipment to each farm. The location of each farm in relation to the market and the transport network has an important influence on farming system. Food and Agricultural Organization {(FAO), 1973} postulated that about 15 million Cattle, Sheep, Goat and Pig entered international trade in 1972. According to Fenn (1977), Cattle traders moved about 180,000 heads of Cattle from Northern to southern Nigeria by rail and much smaller number by roads (N30/Km). He further stated that it is cheaper to transport live animal than meat to consumers and that in most part of Africa and Latin America; it is common for Cattle to cover most of their long journey on foot. Sharafa and Yahya (2010) in their findings postulated that Cattle are brought on foot from neighboring countries like Chad and Cameroon, that at the borders, the owners of the Cattle obtain clearance and pay a tax of ₦5200 for each cow. Within the country, they pay N200 to the State Government and N100 to the Local Government for each cow. Once at the market, the owners keep them in custody of trusted associates who serves as middlemen. If the middlemen are able to offer them a profitable price for the Cattle, they just sell, if not they look for alternative in people who are willing to buy in tens, 20's or 30's. Dealers would then come and buy from these people and then form herds of 1oo's, 200's who own trailers but are represented by another set of middlemen called ''Yan Kwamishan'' who help them to transport their Cattle at discounted rates to the southern markets.

Daily trust News Papers (2010) learnt that the markets had been in existence for several decades and cattle are transported to markets in Port-Harcourt, Umuahia, Enugu, Owerri, Ibaban and Lagos. The most common types which are taken to the eastern

markets include Mbala and Brahman Bulls brought from Chad. The later is beef cattle originally found in North America. Other local breeds are Red Fulani, N'dama, Yelgore and Wadara. Babamodu Abubakar, a loader who sometimes serves as an escort maintained that not less than 100 trailer trucks of cattle are loaded from the market on a daily basis. Other days, between twenty and fifty trucks leaves the market for various aforementioned destinations and each trailer load contains relatively large sizes of thirty cows or thirty-five average sized cows. The trunk of the trailer is filled with dried guinea corn stalks and sand is poured in. this is to prevent the cows from falling down as they can fall resulting from the slippery nature of the metal when it comes in contact with their hoofs and this does not allow them stand on their feet. The proprietors say they are contented with the profit they make from the business despite the risk involved, but their greatest challenge is the continued arbitrary taxation and revenue collected by various states and local government officials through which the trailer trucks of cattle pass through. Right now, if any truck loaded with heads of cattle for any of the markets, the cattle owners spend nothing less than 45,000.00 naira (Daily trust, 2010). The check points are too many. The police, local and state government revenue collectors are everywhere. If you offer them something lower than their expectations, they just delay your journey, helping to increase your long hours on the road and increasing your chances of incurring losses because the longer the cows stay unfed (without food) or water, the weaker they become and more chances of deaths. You are just at their mercy, Mallam Isa; the cattle market spokesman commented (Daily trust, 2010).

2.6 Resource Use Efficiency

Upton (1996) defined efficiency as the relative performance of the process used in transferring a given input in output. Amaze (2000) stressed that productivity is the measure of the ratio of input which is utilized in the relevant production process. Furthermore, Onoja and Achike (2008) cited that technical efficiency in production is the ability of farmer to produce the maximum potential output (frontier production), given the quantities of inputs and production technology. Yusuf and Adenegan (2008) pointed out that efficiency studies is a significant area of research especially in a developing economy like Nigeria where resources are meager and opportunity for developing and adopting better technology are dwindling. They maintained that measurement of

efficiency of resource use becomes important for productivity growth. Such studies ascertain the extent to which it is possible to increase productivity by improving efficiency with the present resource base and the available technology. Thus by so doing, researchers could resolve whether to improve efficiency first or develop technology in the short run.

There are basically technical, allocative and economic efficiencies. Amaza and Maurice (2005) defined technical efficiency as the achievement of the maximum potential output from a given quantity of inputs under a given technology. In a similar view, Omotesho et.al (2008) reported that the efficiency of youth participation in agriculture in Ondo State is below frontier production. The estimated minimum efficiency of the youth was 32.62% while, maximum efficiency was 96.25% and the mean technical efficiency was 85.23%. This mean value indicates that if input usage is increased by 14.77%, the youth will be operating on the production frontier thus, opportunity still exist for increasing productivity and income through increased efficiency in resource utilization.

Ogundari and Ojo (2006) described allocative efficiency as the ability to choose optimum input levels for a given factor price i.e. when production occurs at a point where the marginal value product equals marginal factor cost. However, economic efficiency has been viewed by the authors as the product of technical and allocative efficiencies.

2.7 Profitability in Cattle Industry

Profitable cattle fattening means producing the most profitable cattle selling through the most profitable market outlet and pricing at the most profitable time (Mamman, 2005). He added that the first step in becoming a cattle fattener is to recognize all your alternatives and evaluate each in light of potential costs and returns, selecting the most profitable rather than the most convenient alternative. Profit in economics is initially incorporated in Total Revenue (price x quantity sold) exceeding total costs (TR>TC). Where it is equal to it, it is breakeven point and less than it, losses are incurred. Total Revenue includes only visible costs. There are other costs notably family labor and the supervisory man-hours expended by the head of households that will remain invisible. It can also include depreciation and importantly, bearing in mind the trends in inflation and interest rates movement (Okayeto et.al, 1998).

Hassan (2001) and Iheanacho (2002) revealed that costs and returns analysis is a useful tool in determining profitability. They maintained that the major problems associated with it as the basis for profitability assessment are;

1.   It does not indicate the relative importance of each of the resources used in cattle marketing.

2.   It is location bound and specific in applicability due to use of money as a common unit of measurement and prevailing price for estimates.

In another study conducted on cowpea farmers in the north eastern part of Adamawa State by Stephen et.al (2007) to determine costs and returns from the enterprise as well as benefit cost ratio to estimate returns on every naira invested. Results obtained showed that cowpea production is profitable with an average gross margin and net farm income of ₦ 14,455.26 per ha and ₦10, 109.2 per ha respectively. The benefit cost ratio was found to be ₦1.37 which according to them revealed a net return of 37 kobo on every naira invested in cowpea production which they say is worth doing than keeping money in savings account in the commercial banks. (Olukosi and Erabhor, 1998 and Mshelia et.al; 2005) Pointed out that the use of gross margin analysis was employed on the assumption that the fixed costs in cattle fattening were negligible. John (2000) stated that Gross Margin analysis involves evaluating the efficiency of an individual enterprise so that comparison can be made between enterprises or different farm plant. It is a very good planning tool in situation where fixed capital is a negligible portion of the farming enterprise as is the case in subsistence agriculture.

Ugwu (2006) worked out an enterprise budget to ascertain the viability of small holder pig farmers in Enugu State, Nigeria. The result showed that farmers made a profit of ₦102, 819.54 per annum per average farmer; he concluded that pig production in Enugu State is a profitable venture. In a related development, Okeke (2007) found out that cattle marketers in Jos metropolis of Plateau State had ₦4, 600.00 as profit margin per month.

2.8 Cattle Production Resources

Mulu (2009) reported that the major resources used in cattle fattening include land, labor, capital, water, management, time, crop-residue, stable grazing, natural pasture and hay which vary with seasons. Among crop residues, maize Stover accounted

for 64.88 percent and was followed by wheat, teft and millet with 16.82 percent, 6.92 percent and 4.30 percent respectively. Crotty (1995) and Kalla (1998) stated that Nigeria has a total land mass of 91.1 million hectares out of which 83.5 million hectares is considered arable land while pasture has 40.0 million hectares. Crotty maintained that efficient use of land for arable production contributes to the development of any nation through supplying of non-agricultural export sector with abundant low cost food, availability of raw materials and also creates domestic sale. Kalla (1998) defined labor as the human effort used in production and in cattle industry; it is required for tending, milking and restraining. A case study on cattle fattening among Fulani of Hanwa who are engaged in field cultivation, revealed that they obtained good output from their farms by the animals in spite of the low labor input (Frick, 1993). He further stated that under proper management condition, Heifer commences to breed at three years of age and will permit production of many calves over time even out meat supply and reduces replacement cost of the herd.

Success in management is achieved through efficient use of labor, land and capital among others to produce meat and milk (Crotty, 1995). Also, producers increase their net income through selling or buying stock, breeding or slaughtering stock or with holding when selecting for slaughter, for instance the target weight at specified ages should be used as the main criterion, young animals should be selected as they have high fats conversion efficiency and less maintenance required (Olayide and Heady, 1982). However, various management practices have been employed in order to improve productivity and income but for these to be achieved, emphasis has to be laid on high stocking density and good headmanship (Frick, 1993).

2.9 Importance of Cattle Industry to Nigeria Economy

Like other animals, cattle were first hunted and use as a source of food and other materials. As civilization advanced and man turned to tillage of the soil, it is probable that the domestication of cattle was first motivated because of their projected value for draft purposes (Dyer and Mary, 1978). Also, in the year 2008, Krailar found out that cattle account for about 177, 000kg of year domestic meat consumption in Thailand which represents 3kg per capita in 1999.

According to World Bank (1998), Agricultural sector remains the largest contributor to Nigerian economy accounting for over 38 percent of the non-oil foreign exchange earnings, employing about 70 percent of the active labor force of the population and livestock industry has a capital value of about 40 billion Naira which represents 40 percent of the agricultural Gross Domestic Product (GDP). Frick (1993) noted that about one million hides is being produced for export annually in Nigeria and additional 300,000 for domestic leather industries and other uses. Apart from meat supply, cattle also serve as source of income. Investment against failure of cash crops and the prestige inherent in their ownership, the industry provides employment opportunities to about six million pastorals. However, cattle rearing have been given the greatest prominence in discussions of Nigeria's livestock sector.

2.10 Channels of Beef Cattle Marketing in Nigeria

The sequence of intermediaries or middlemen in marketing of cattle enroute from producers to consumers is known as marketing channels. Marketing channel for the same commodity may however vary from one part of the location to another. Fulani and Shuwa herdsmen usually bring between one and three animals to the market at a time. They have a spot in the market ground where all the animals are congregated and commission middlemen take over the business of selling the cattle from the farmers. Itinerant and intermediate buyers can make their selection from the assorted animals by visual and hand feel. Both itinerant and intermediate buyers sell to north cattle dealers and the north cattle dealers' in turn sell to local butchers north where the cattle purchased are either slaughtered their or carried to the public abattoir and sell to consumers. Local butchers north also sell to southern agent buyers and they as well sell to local butchers south and finally to consumers.

On the other hand, intermediate cattle buyers sometimes slaughter the animals and dry the beef and in turn sell it to whole seller and he therefore, sell to dried beef retailer where he in turn sell it to hawkers and food sellers and consequently to consumers for final consumption (fig. 1).

2.11 Cattle Marketing In Taraba State

According to Olukosi and Isitor (1990) Agricultural marketing is concerned with the performance of all business activities which direct the forward flow of goods and services to consumers in order to accomplish the producers' objectives. It involves packaging, storage, transportation, pricing, financing, risk bearing and even product design. Cattle usually have separate market centers as could be found in many places in Taraba state like Sardauna, Karim Lamido, Bali, Wukari among others. These markets are usually periodic and normally attract large cattle buyers from within and outside the country. Sharafa and Yahya (2010) reported that butchers slaughter their cattle in abattoir as mandated by government legislation where the meat is inspected before being transported to other markets. Therefore, stating the exact number of agents in the market cannot be possible by most of the butchers and merchants alone. Frick (1993) observed that pricing is done confidentially in low tones until a suitable price is arrived at and the highest bid accepted. The prices vary according to the animal age, sex, breed, and body size, location of the market and the occupation of the buyer.

In cattle marketing, consideration is given to the marketing function, agencies, channels, margins and efficiency. There are various ways of looking at the functions and services involved in marketing, one way will stress the successive phases of concentration and distribution, another is the state of assembly, whole sale and retail (Abbot and Mekehan, 1986). For efficient marketing therefore, there should be an appropriate marketing channels which is a sequence of intermediaries and markets through which goods pass enroute from producers to consumers (Adegeye and Dittoh, 1985). However, classes of middlemen have been identified in Nigeria, some of them with overlapping functions. They are the farm gate middlemen, the commission agents, the co-operative marketing agency, the wholesaler and retailer. However, from the figure below (fig. 2), Producers sell their cattle directly to middlemen, whole sellers and retailers. Middlemen take over the business of selling the cattle to middlemen transporters where they transport the cattle from one market center to another and in turn sell to both whole sellers and retailers where they display them for sell in forms convenient for distance and within consumers for final consumption.

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  │                    Consumers                        │
  └───────────────────────────────────────────────────┘
```
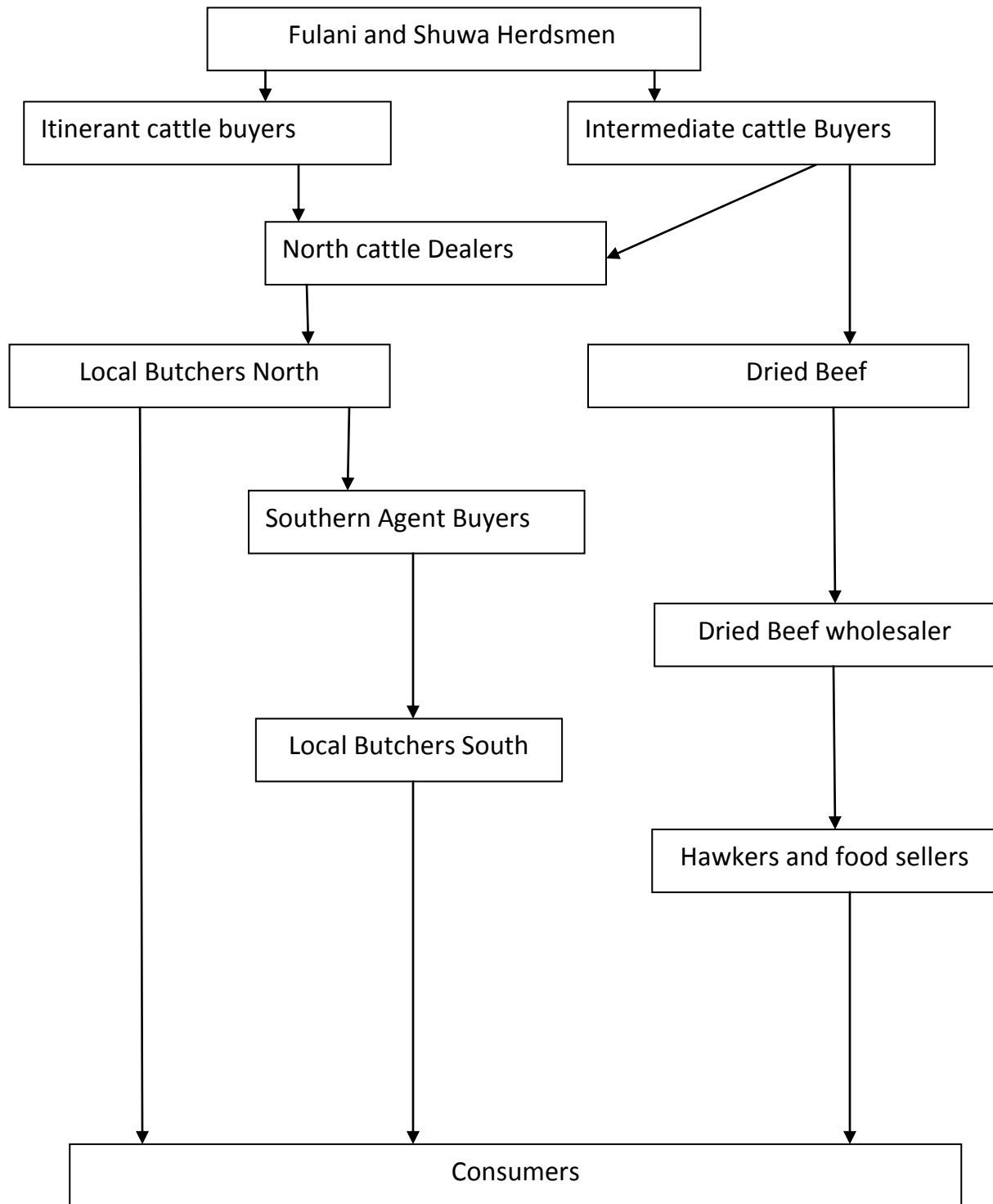
Fig 1: Beef Cattle Marketing in Nigeria.
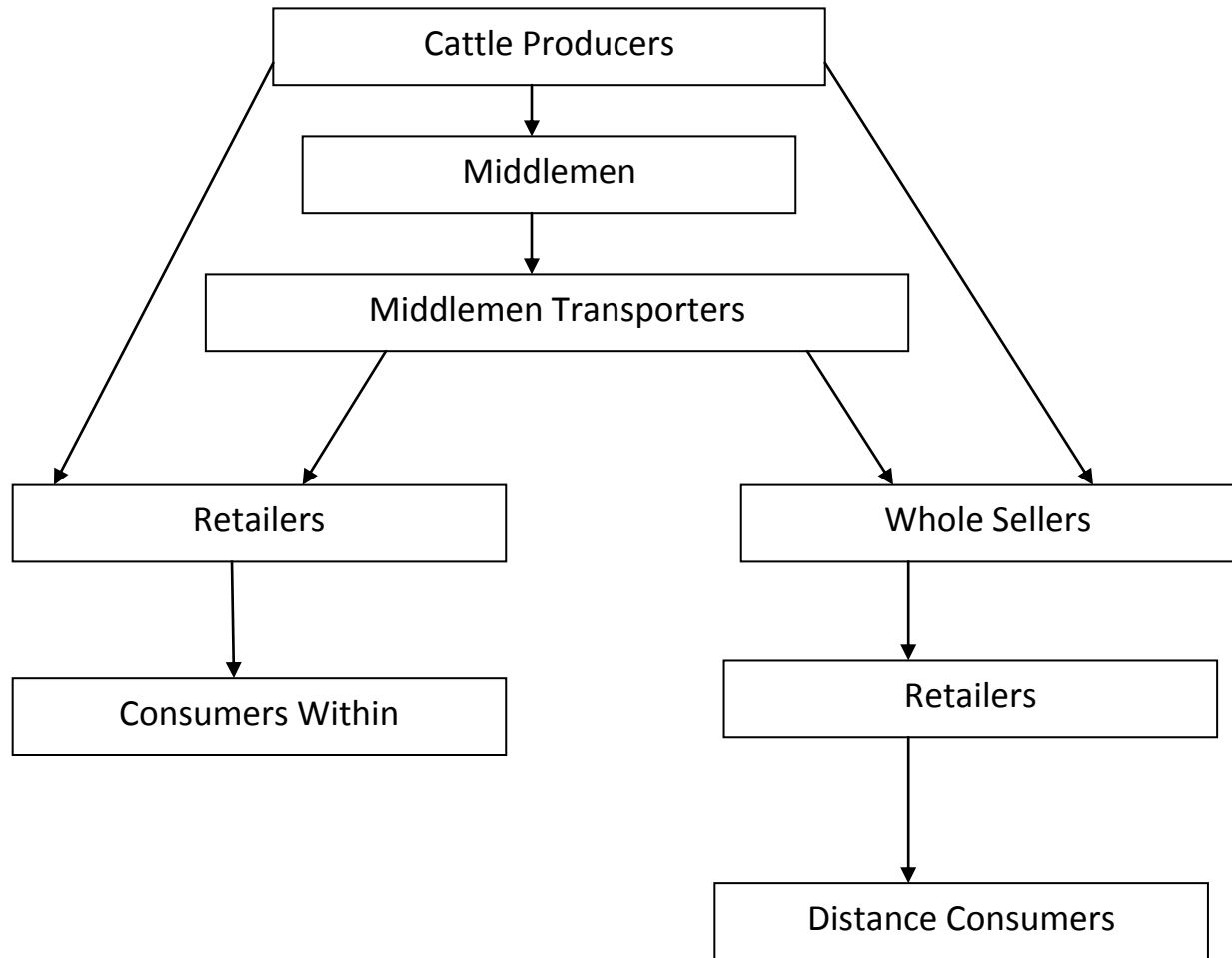
Source: Adegeye and Dittoh (1985).

Fig 2: Channels of cattle marketing in Taraba state.

Source: Taraba Agricultural Development project, 2007.

2.12   Constraints of Cattle Production in Nigeria

The constraints limiting Cattle production are many and varied; they include lack of defined government policy on beef production, inadequate management practices (under nutrition, disease control and animal selection) land, finance and marketing (Adamu, 1992). According to him, Government policy on beef production falls within the general frame work of the livestock sub-sector. Such matters as land, finance, insurance, marketing and management are discussed in general terms as they relate to livestock production. He maintained that under the traditional pastoral system, there is hardly any improved management practice. Under - nutrition due to over reliance on natural grazing land which are seasonal in productivity and quality has led to low productivity. Also, the traditional mode of production is based on low input and therefore low output. He added that some of the other features of the traditional system are lack of disease control, pasture development, supplementation and lack of herding the Cattle. Adamu further stated that any attempt to improve beef production in Nigeria should still be primarily targeted at the traditional Cattle fatteners in whose hand are over 80 percent of the cattle herd. He stressed that small livestock production should be viewed as short term measure. In his opinion therefore, large scale Livestock ventures will make more impact on cattle production in Nigeria. However, it is not contributing much to cattle supply because of improper management.

Apagu (2001) stated that there is no organized market system and market information on supply and demand of beef. Marketing is based on visual appraisal and bargaining which results in unstable prices and exploitation. Other marketing functions

which include transportation, slaughtering and processing facilities are not efficient and non existence in some parts of the country.

2.13   Theoretical Frame Work on Resource Use Efficiency

To determine resource use efficiency, you can employ the use of regression model. Olayemi (1998) defined Regression as the amount of change in the value of one variable associated with a unit change in the value of another variable. Gordon (1998) said that the main purpose of regression analysis is to calculate the values of the slope (β) often interpreted as the overall effect of X. that in statistical usage, Regression refers in the simplest case (bivariate linear regression) to fitting a line to the plot of data from two variables in order to represent the trend between them and that the dependent variable (Y) is determined by the independent variable (X) in a linear relationship.

2.14   Multiple Linear Regressions

Ruey (2008) wrote that multiple linear regressions are a set of assumptions mainly on the conditional distribution of error term given: $X_1, X_2, X_3, X_{4.....} X_k$. He added that the model is appropriate in many practical situations and is the starting point for the use of mathematical statistical reference to measure economic relations. It consists of a single response variable with multiple predictions and assumes the form;

$$Y = a + b_1x_1 + b_2 x_2 + b_3x_3$$

Where:

Y = the value of the dependent variable (Y), what is being predicted.

a = (Alpha) the constant or intercept

b_1 = the slope (Beta coefficient) for x_1

x_1 = first independent variable that is explaining the variance in Y

b_2 = the slope (Beta coefficient) for x_2

x_2 = second independent variable that is explaining the variance in Y

b_3 = the slope (Beta coefficient) for x_3

x_3 = third independent variable that is explaining the variance in Y

2.15   Linear production function: This is also known as the first degree polynomial function. It is the simplest form of all agricultural production functions for one, two and n variable inputs. It mathematical forms are given respectively by;

$$Y = a_0 + a_1x_1$$

$$Y = a_o + a_1x_1 + a_2x_2$$

Where: a_0 and a_1 are the y- intercept and slope of the production function (Sankhayan, 1988).

2.16   Exponential function: This is one in which the logarithmic operator is attached to the dependent variable alone. The function can be expressed as follows:

$$Y_t = e^{b_o + b_1x_1 + e_t}$$

$e_{t=}$ the usual error term which should not be confused with the other e, an irrational number that constitute the base of natural logarithm.

2.17   Cobb- Douglas production function: this is characterized by an elasticity of substitution which is not only constant but is also equal to unity. This function can be specified as follows:

$$Q_{t=} b_{ol_t b^1 k_t 1 - b^1}$$

Where:

$Q_{t} =$ Output in period t

$L_{t} =$ labor input in period t

$K_{t} =$ Capital input in period t

One unique feature of this function is that the sum of regression coefficients, b_1 and (1-b_1) is unity. Since b_1 and (1-b_1) are also elasticity coefficients, the function assumes that if all inputs, L and k are increased by a certain percentage, output also increases by that same percentage (Olayemi, 1998).

2.18   Semi- logarithmic functions: the logarithmic function is one of the most widely used in empirical studies, especially in approximating demand and production function. It is also referred to as the double logarithmic function, apparently because the transformation involves both dependent and explanatory variables. They are also called log linear functions as can be seen below:

(a)   log- linear relation

$$Lny = \beta_1 + \beta_2 \, lnx + \Sigma$$

Define: $x_1 = 1$, $x_2 = lnx$

$$B_2 = \frac{dlny}{dlnx}$$

$B_2 =$ elasticity of Y with respect to x

(b)   Semi – log relation

$$Lny = \beta_1 + \beta_2 x + \Sigma$$

Also, $\beta_2 = \frac{dlny}{dx} = \frac{dy/y}{dx}$

This is semi- elasticity.

(Olayemi, 1998., Cobb and Doulas, 1928).

CHAPTER THREE

METHODOLOGY

3.1. Study Area

The study area is Sardauna Local Government Area of Taraba State. The State has 16 Local Government Areas with Gembu as administrative headquarters which came in to existence in 1976. The area is a plateau which is situated in south-eastern corner of Taraba and has a total population of 224,437 (NPC, 2006). It is bordered in the north by Gashaka, to the southeast by Cameroun Republic and to the west by Kurmi local government area. Sardauna lies between latitude 6^0 30North and longitude 11^0 15East of the equator and covers an estimated land area of 3,885km^2 (TSADP, 2008).

Sardauna has an abundant arable land for farming and grazing of animals and therefore, many of the inhabitants are predominantly farmers. Apart from cattle production, sheep, goats and other animals are being reared in large number. Apart from cattle production, sheep, goats and other animals are being reared in large number. The area has two main seasons. The rainy season starts from March and ends in November, while the dry season starts from December and ends in March. It has an average height of 1830m above sea level; the area has manmade exotic forest and a mountainous climate which is dominated by grass land. The chiefdom is inhabited by three main tribes namely Fulani, Mambilla and Kaka. Mambilla and Kaka are mainly farmers, while Fulani remains pastorals. The available social amenities in the area include electricity, pipe borne water, schools, hospitals, postal and telephone services (Taraba State Diary, 2007). Below is Map of Taraba State showing Sardauna Local Government Area (Fig. 5), and Map of Sardauna Local Government Area showing the study area (Fig. 6).

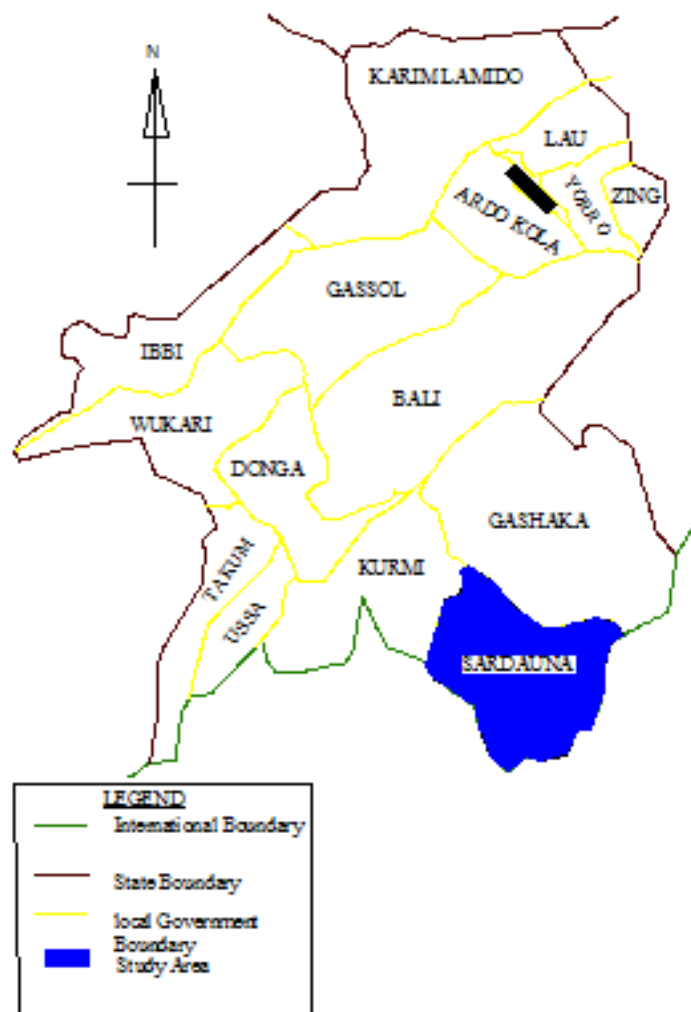FIG. 2: MAP OF TARABA STATE SHOWING STUDY AREA.
SOURCE: DEPT. OF WORKS AND HOUSING, LAND AND
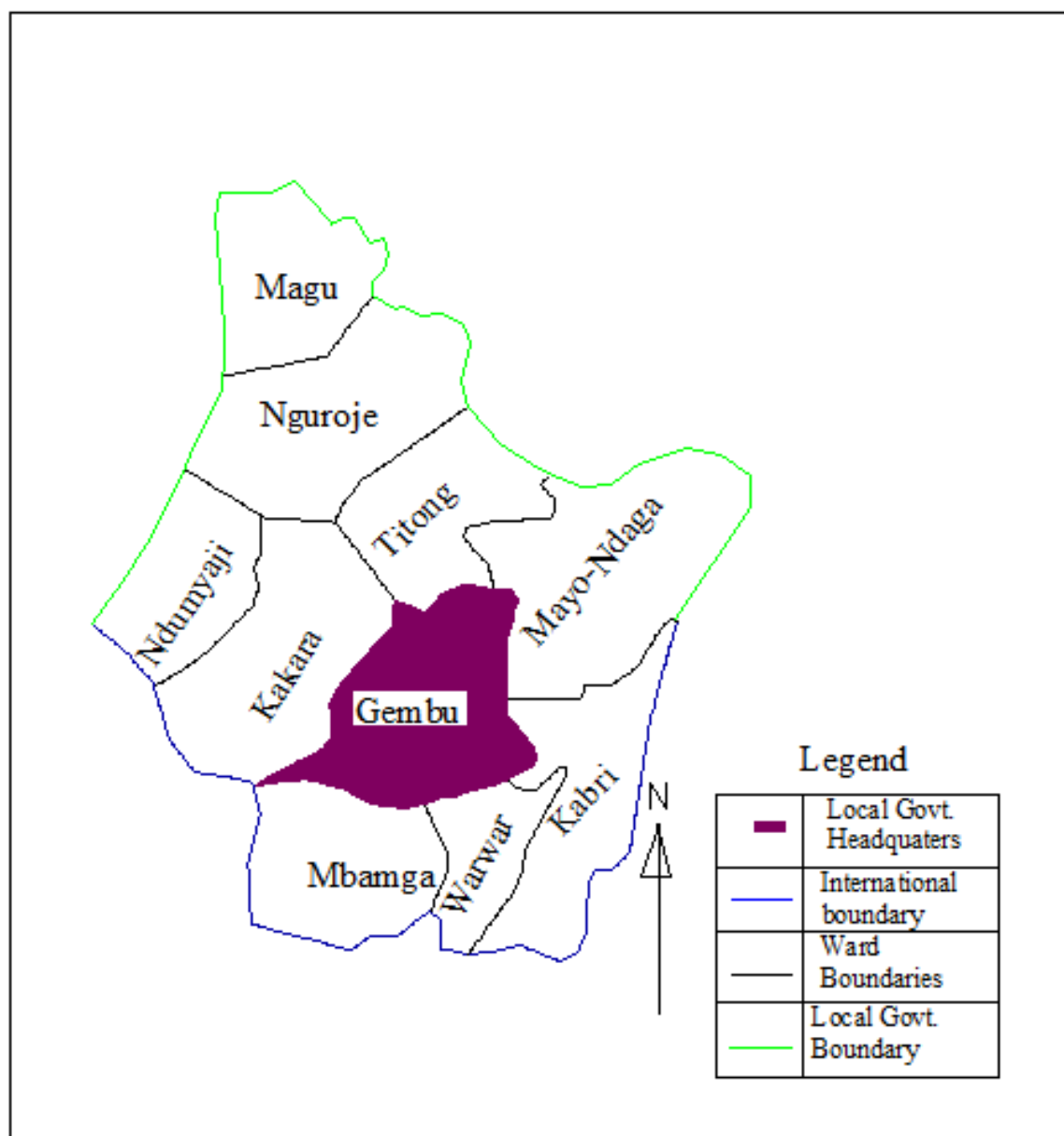SURVEY SECTION, SARDAUNA L.G.A (2010).

FIG. 3: MAP OF SARDAUNA L.G.A. SHOWING THE STUDY AREA.
SOURCE: DEPT. OF WORKS AND HOUSING, LAND AND SURVEY SECTION.

3.2 Method of Data Collection

The data for the study was obtained from both primary and secondary sources. The primary data was collected with the aid of structured questionnaires that was administered to cattle fatteners in the study area, while the secondary sources of data included information from journals, text books, statistical publications, thesis, paper presentations and news papers respectively.

3.3 Sampling Procedure

The combination of purposive and snow ball sampling techniques were used in the selection of the respondents. The study area comprises of one local government area which is made up of eleventh wards. Ten (10) wards were purposively selected because of their fattening activities and eight (8) fatteners were sampled by the use of snow ball technique from each of the wards, this represented the sample frame of the cattle fatteners in the study area proportional to the population. Finally, a total of 80 structured questionnaires were distributed to respondents in Nguroje, Mayo-Ndaga, Ndumyaji, Kakara, Gembu A and Gembu B, Mbamga, Titong and Kabri respectively. At the end, a total of sixty four (64) questionnaires were correctly completed and used for the analysis.

Data collected included Socio-economic Characteristics of the respondents such as marital status, age, sex, level of education, household size, sources of capital, farming experience, costs and returns, inputs and outputs relationship and constraints of cattle fatteners were collected.

3.4 Analytical Tools

3.4.1 Descriptive Statistics: this was employed to describe the socio-economic characteristics as well as constraints faced by the respondents in the study area (objectives i and iv).

2.4.2 Gross Margin Analysis: this tool was used to determine the costs and returns associated with cattle fattening (objective ii). It is mathematically expressed as;

GM = GI – TVC…………………………………………………………………. (1)

Where;

     GM = Gross Margin (₦)

     GI = Gross Income (₦)

     TVC = Total Variable Costs (₦)

     NFI = TGM – FC

     Gross Margin: is the difference between the Total Revenue (TR) and the Total Variable Cost (TVC) incurred or the difference between Gross Farm Income (GFI) and the Total Variable Cost (TVC).

     Total Revenue: is the total value of production or total output i.e. the amount of product sold multiplied by the product unit price.

     Total Variable Cost: is the cost of variable inputs used in the production process and is obtained by multiplying the amount of variable inputs used by the unit price. This is also the same as total cost incurred in the marketing process.

     Fixed Cost: this is the summation of all the costs incurred on fixed inputs, which cannot be used up during one production process.

     Net Income: this is the difference between the Gross Margin and the Total Fixed Cost. Net Income is equivalent to profit or return to investment.

     3.4.3 Multiple Regressions: This technique was employed to determine the effect of independent variables on the farmer's income and the outcome was used to examine resource use efficiency (objective iii). Four functional forms were tried; these include linear, exponential, semi-log and double log functions. The general forms of the equations are expressed as follows;

The specific functions are;

(a) Linear Function

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + \ldots\ldots + b_7X_7 + u_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(2)}$$

(b) Exponential function

$$Lyn = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + \ldots\ldots + b_7X_7 + u_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(3)}$$

(c) Cob-Douglas function

$$Logy = b_0 + b_1logX_1 + b_2logX_2 + b_3logX_3 + \ldots\ldots + b_7logX_7 + u_i \ldots\ldots\ldots\ldots\ldots\ldots\ldots \text{(4)}$$

(d) Semi-logarithmic function

$$Y = lnb_0 + b_1lnX_1 + b_2lnX_2 + b_3lnX_3 + b_4lnX_4 + \ldots\ldots + b_7lnX_7 + ui \ldots\ldots\ldots\ldots\ldots \text{(5)}$$

Where;

Y = Final weight (Kg)

X_1 = Quantity of Feed Consumed (Kg)

X_2 = Rearing Length (Months)

X_3 = Age at Purchase (Years)

X_4 = Access to Extension Services (Dummy)

X_5 = Volume of Water Consumed (Litres)

X_6 = Producers Fattening Experience (Years)

X_7 = Man-days of Labour

3.5 Operational Definition of Variables

To determine the quantity of feeds (X_1), 25 m^2 of land was measured and the grasses were cut. These grasses were packaged in bags which gave an average weight of 16kg per bag. On the other hand, a number of cattle were sampled from various respondents' herds and were placed on the feeds. The result showed that an average of 8.3kg of feeds was consumed by cattle per day. In the case of fattening length (X_7), months were used to measure the period that was spent in fattening the cattle i.e. from the time of purchased to final disposal. Age at purchase (X_3) was measured in years and refers to the age of the

cattle which the farmer bought for fattening. In measuring access to extension contact (X_4), dummy variable was used where respondents that had any form of contact with extension workers in the last one year were given '1', while '0' otherwise. Also, for the volume of water (X_5), an average of 15.3 liters was taken by cattle per day. Producers fattening experience (X_6) refers to the period in which a farmer has been in to the fattening business which was measured in years. To determine man-days of labour (X_7), number of respondents engaged, number of hours worked per day and number of days worked for the period of fattening were identified. Number of hours worked per day was multiplied by the number of days spent on fattening activities and then converted to the estimated standard number of hours worked per day by the various respondents.

3.6 Hypotheses Testing

Chi-square test statistic at 5% probability level was used to test the relationship between output and selected socio-economic characteristics of respondents in the study area.

The Chi-square test is given by:-

$$X^2{}_{cal.} = (0 - E)^2 \div E$$

Where;

0 = observed frequency

df = (C − 1) (R - 1)

If X^2 calculated is greater than tabulated X^2, reject null hypotheses (H_o)

and accept the alternative hypothesis (H_i).

3.7 Marginal Analysis of Input Utilization

The efficiency of resource use was determined by computing the ratio between the marginal value product and the marginal factor cost of the variable inputs that was used in production. The ratio for determining the relative efficiency of resource was calculated as follows;

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r = MVP/MFC …………………………………………………………………. (7)

Where:

MVP = Marginal Value Product of the Variable Inputs.

MFC = Marginal Factor Costs (Price of a Unit Input)

r = Efficiency Ratio.

From the estimated regression result of best production function equation,

The values of MVP and MFC were estimated as;

MVP = MPP. Py …………………………………………………… (8)

Where:

MPP = dy/dx …………………………………………………. (9)

Where:

MPP = Marginal Physical Product of Input

MVP = Marginal Value Product of Input

Py = Price per Unit of Output.

When:

MVP/MFC = 1, Indicates efficiency in resource use. This is the point   where firm maximizes profit.

MVP/MFC > 1, Shows resource is under utilized by a firm and increasing the rate of use of that input will increase the level of profit.

MVP/MFC <1, Indicate resource is over utilized by a firm and profit will be increased by decreasing the quantity of that input   (Kay, 1986 and Iheanacho, 2000) respectively.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Socio-economic characteristics of the respondents

4.1.1 Gender of respondents

The study reveals that 92.19 % of the respondents were male, while female constituted only about 7.81 %. This study has revealed that men mostly undertake cattle fattening activities in the study area (Table 4.1). The implication of this on agricultural production is that male farmers are strong and more active, and have the potential to work for longer hours, given that majority of them were in their middle ages as shown in table 4.2. Their productivity is expected to be higher because of their tendency to operate more efficiently. This assertion supports Norman's (1973) view, who estimated a standard-day equivalent of male adult to be 1.00, while female adult of 15 years and above to be 0.5.

Table 4.1: Distribution of respondents according to gender

Gender type	No. of respondents	Percentages
Male	59	92.19
Female	5	7.81
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.2 Age of respondents

The results of age distribution reveals that 10.93 % of the respondents were between the ages of 20-29 years, 48.44 % of the respondents ranges between 30-39 years and those within the age range of 40-49 years recorded about 28.13 %. The age range of 50 years and above accounted for only 12.50 % of the respondents; while no respondent was below 20 years of age. This indicates that majority (87.50 %) of the respondents were in their productive ages and could put in their best in their agricultural activities. The mean age of the respondents is about 35 years which shows a youthful age and

hence, agreed with the finding of Ogumbameru (2001), who reported that farmers at their youthful ages are more productive and easily adopts agricultural innovations.

Table 4.2: Age distribution of respondents

Age range	No. of respondents	Percentages
20-29	7	10.93
30-39	31	48.44
40-49	18	28.13
50 and above	8	12.50
Total	**64**	**100.00**
Mean	35	

Source: Field Survey, 2011.

4.1.3 Marital status of the respondents

The study shows that 76.56 % of the respondents are married, 17.19 % are single and the remaining 6.25 % are Widow/Widower (Table 4.3).

Table 4.3: Distribution of respondents according to their marital status

Marital status	No. of respondents	Percentages
Married	49	76.56
Single	11	17.19
Widow/Widower	4	6.25
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.4 Educational levels of respondents

Results in Table 4.4 shows that 51.56 % of the respondents have no formal education at all, while 48.44 % attained one form of education or another. This indicates that education may not be a barrier to any prospective farmer who desires to patronize cattle industry. The mean age of educational background of the respondents is 6 years which reflect primary educational level among the cattle fatteners. This however indicates a very low level of formal education of the respondents.

Table 4.4: Distribution of respondents based on their levels of education

Educational level	No. of respondents	Percentages
Non-formal	33	51.56
Primary	17	26.56
Secondary	11	17.19
Tertiary	3	4.69
Total	**64**	**100.00**
Mean 6.00		

Source: Field Survey, 2011.

4.1.5 Occupation of the respondents

The result in Table 4.5 indicates that about 76.56 % of the respondents are gainfully employed in cattle fattening activities as a primary occupation, while the remaining 23.44 % were involved in one form of activity or another. This implies that respondents participate in other business activities as a complementary source of revenue. This corroborates with the findings of Kalla (1998), where he pointed out that apart from meat supply, cattle industry provides employment opportunities to about six million pastorals.

Table 4.5: Distribution of respondents on occupational basis

Type of occupation	No. of respondents	Percentages
Cattle fattening	49	76.56
Trading/fattening	5	7.81
Crop farming/fattening	7	10.94
Civil service/fattening	3	4.69
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.6 Years of experience in cattle fattening

Majority (64.06 %) of the respondents have been in the fattening business for more than six years. This signifies that fatteners with more years of experience may tend to be more efficient than those with less experience. The result also conformed to Igben (1994), who reported that farming experience brings about increase in productivity as well as specialization. The mean years of experience is about 15 years which is high indicating that these cattle fatteners are experienced in the business and might know the good practices involved.

Table 4.6: Distribution of respondents according to years of experience

Years of experience	No. of respondents	Percentages
1-5	23	35.94
6-10	19	29.68
11-15	11	17.19
16-20	6	9.38
21 and above	5	7.81
Total	**64**	**100.00**
Mean 15.00		

Source: Field Survey, 2011.

4.1.7 Household size of the respondents

The study reveals that 17.19 % of the respondents had 1-5 people in their household, 78.13 % had 6-15 family members, while only 4.68 % had 16 and above. This indicates that a lot of pressure are exerted on the family finances, hence the need to explore other sources of income in the form of fattening (Table 4.7). The mean household size is nine (9) persons which is on the average a wide family size and this could indicate availability of family labour for the cattle fatteners in the area.

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Table 4.7: Distribution of respondents based on household size

Household size	No. of respondents	Percentages
1-5	11	17.19
6-10	31	48.44
11-15	19	29.69
16 and above	3	4.68
Total	**64**	**100.00**
Mean 9.00		

Source: Field Survey, 2011.

4.1.8 Sources of cattle to markets

The findings portray that about 37.50 % of the cattle fattened in the study area were bought from Nguroje cattle market, 26.56 % from Gembu and 20.31 % from Mayo-Ndaga cattle markets respectively, while only 15.63 % of the cattle were sourced from breeders (Table 4.8). This outcome is in conformity with the findings of Billa and Bulama (2004) who reported that about 30 percent of the total cattle sold in Maiduguri cattle market were Red mbororo and are characterized by red skin, tall height, heavy weight, and strong body conformation.

Table 4.8: Distribution of respondents according to their sources of cattle

Cattle markets	Frequencies	Percentages
Nguroje	24	37.50
Gembu	17	26.56
Mayo-Ndaga	13	20.31
Cattle breeders	10	15.63
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.9 Cattle breeds

Cattle breeds' distribution reveals that Red mbororo accounted for 60.93 % of the fattened animals in the study area, while White fulani (25.00 %), Adamawa gudali (9.38 %) and Sokoto gudali (4.69 %) respectively (Table 4.9).

Table 4.9: Cattle breeds' distribution

Cattle breeds	Frequencies	Percentages
Red mbororo	39	60.93
White Fulani	16	25.00
Adamawa gudali	6	9.38
Sokoto gudali	3	4.69
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.10 Sources of capital of respondents

The study indicates that 65.63 % of the respondents' sourced their capital from personal savings and 17.18 % obtained loans from commercial banks. Consequently 12.50 % collects loans from friends and relatives while 4.69 % from governmental institutions. This shows that majority of the respondents (65.63 %) used personal savings to finance their agricultural activities, and this might not be adequate enough to expand cattle production in the study area (Table 4.10). This corresponds with the findings of Alimi (2000), where he postulated that inadequate financial capital could impede the performance of farming activities and also affect the use of some agricultural inputs.

Table 4.10: Distribution of respondents according to their sources of capital

Sources of capital	Frequencies	Percentages
Personal savings	42	65.63
Loan from banks	11	17.18
Loan from friends/relatives	8	12.50
Loan from government/financial institutions	3	4.69
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.1.11 Type of labour used by respondents

The results portrays that 70.31 % of the respondents embarked on family labour and 26.56 % used hired labour while only 3.13 % patronized both family and hired labour. This takes care of the low cost of labour in the study area. This means that family labour is vital for cattle fattening in the area (Table 4.11).

Table 4.11: Distribution of respondents according to the labour type

Variables	Frequencies	Percentages
Family labour	45	70.31
Hired labour	17	26.56
Both	2	3.13
Total	**64**	**100.00**

Source: Field Survey, 2011.

4.2 The Average costs and returns analysis associated with cattle fattening

The estimated average total variable costs were ₦ 76,649.69. The average buying price of each animal was depicted to be ₦ 59,189.92 and the average selling price per cattle accounted for ₦ 93,030.20 while, average returns per head was ₦16,380.51 and the average returns per farmer was ₦ 212,946.63 as at the time of the study. This indicated that cattle fattening in the study area were highly profitable. The number of fattened animals was 843 with a total number of 64 respondents. However, cost of feeds and labour revealed to be higher than that of transportation and medication (Table 4.12).

4.3 Production functions analysis.

Four functional forms (Linear, exponential, semi-log and double log) were tried. Double-log was selected based on economic, econometric and statistical criteria.

The coefficients of determination (R^2) is 0.748 indicating that 74.8 % of the variation in weight gain (dependent variable) of fattened animals is explained by the inputs (independent variables) used in the model. The coefficient of feeds (X_1) is statistically significant at 1% level, implying that an increase in feeds supplied to animals would increase their weight gain. A 1% increase in the quantity of feeds supplied will bring about an increase in weight gain by about 0.74 %. Feed is therefore an important determinant of weight gain during fattening period. Sanni, et.al (1998) postulated that feeding forms the largest component of production in livestock and that the choice of feedstuffs depends on its availability and cost.

It has been observed that in Sardauna Local Government Area, cattle are grazing freely on grasses and herbage. This corroborates with the findings of Blessing (2008) who reported that in most parts of the tropics, animals are produced entirely on grasses, roughages and legumes. The result of the study maintained that most feeds are natural substances voluntarily taken by animals to provide nutrients in the body for growth and maintenance which could results to weight gain as well as profitability. The coefficients of fattening length (X_2) is also significant at 1% level and positively related to weight gain by animals, this implies that as the length of fattening period is increase, ceteris paribus, weight gain increases. A one percent increase in the duration of fattening period would result in weight gain by 0.31 %. When animals are properly fed, there is going to be a corresponding increase in the eventual weight gain viz-a-viz duration of the fattening period. Volume of water consumed is also significant at 5% level and positively related to weight gain by the animals. This implies that as the volume of water intake is increased, weight gained by cattle increases. A 5% increase in the volume of water supplied to cattle will bring about 0.23% increase in weight gain. Gabdo et.al (2005) found out that the intake of water depends on the temperature, humidity, moisture content of roughages and salt content of feed nutrients. For increased productivity, cattle could be given clean water ad libitum.

The coefficient of labour is positive and significant at 5%. The positive sign shows that increasing labour will lead to an increase in weight gain. A 5% increase in labour will bring about 0.45% increase in output of fattened cattle. Labour in its simplest term describes the effort of human beings. Jhingan (1999) defined labour as both physical and mental work under taken for some monetary reword. The coefficients (X_3, X_4 and X_6) i.e. age at purchase, access to extension services and experience respectively were statistically insignificant and hence, negatively related to weight gain by the animals. The returns to scale (RTS) analysis shows 0.169, indicating decreasing returns to scale. This shows that a 1% increase in the amount of resources ploughed in to the enterprise would bring about less than proportionate increase in weight gain. Thus, cattle fatteners in the study area in stage 2 of the production surface (rational region of production) where resources are efficiently utilized. However, necessary adjustments in terms of resource allocation would lead to optimum weight gain by the animals.

Table 4.13: Summary of regression production functions

	Linear function (Y)	Exponential function (LnY)	Semi-log function (Y)	+Double-log function (LnY)
Variables				
Constant	10102.855 (3.301)*	4.097 (16.986)*	-2897.601 (-7.603)^{NS}	2.632 (3.901)*
X_1	0.265 (4.814)*	1.55E-005 (3.574)*	8140.269 (4.351)*	0.743 (6.816)*
X_2	-76.477 (-3.025)*	-0.007 (-3.303)*	-13758.504 (-2.596)**	0.309 (2.748)*
X_3	-272.318 (-0.418)	-0.084 (-1.639)***	-597.388 (0.552)^{NS}	-1.429 (0.134)^{NS}
X_4	-1336.733 (-1.180)	-0.169 (-1.897)	25.987 (0.169)^{NS}	-0.053 (-1.587)^{NS}
X_5	0.081(2.210)**	1.16E-005 (-4.048)*	30.047 (0.079)^{NS}	0.229 (0.040)**
X_6	-44.714 (-0.661)	-0.001 (-0.123)	-3005.459 (-1.895)*	-0.081 (0.382)^{NS}
X_7	-2.482 (-0.513)	0.000 (-0.561)	179.335 (0.073)^{NS}	0.451 (0.036)**
R^2	0.49	0.54	4.93	0.75
Adjusted R	0.43	0.49	4.30	0.72
F-ratio	7.91	9.47	7.79	23.74

Source: Computed output of regression analysis, 2011.

 Figures in parenthesis are calculated t-values

*Significant at 1%

**Significant at 5%

***Significant at 10%

NS = Not significant

$R^2 = 0.75$

F-ratio = 23.74

$R^2 (adj) = 7.16$

+ Lead equation

4.4 Efficiency of Resource Use in Cattle Fattening

The Marginal Physical Product (MPP) of variable inputs used in cattle fattening were examined using the arithmetic mean values of output and inputs and the Marginal Value Product (MVP) for each input was calculated as a product of its Marginal Physical Product and unit price of output (Table 4.16) these figures were calculated from the estimated regression coefficients of significant independent variables selected. The Marginal Value Productivity formed the basis for measuring the resource use efficiency at a given level of technology and also provided a frame work for policy decision on resource adjustment. The Marginal Value Product for feeds was 3.81, which implied that feeds were over-utilized by the respondents and profit will be increased by decreasing the quantity of feeds given to the animals. On the other hand, Labour was also over-utilized with ratio of its Marginal Value Product to Marginal Factor Cost as 0.04. This result revealed that ratio is below unity and by implication, the resource is over-utilized.

In view of the results therefore, the quantity of feeds and use of labour for the fattening cycle be regulated in order to increase the weight gain by the animals and consequently maximize profit.

Table 4.14: The marginal analysis of inputs utilization

Resource	MVP	MFC	MVP/MFC
Feeds	3.81	15,720.38	0.002
Labour	3.87	880.55	0.04

Source: Field survey, 2011.

4.5 Constraints faced by cattle fatteners in the study area

Analysis of the results indicates that the major constraints faced by cattle fatteners in the study area were High cost of feeds (33.33 %), The high cost of feeds could be attributed to inflation; drought and seasonal change, which may consequently leads to scarcity and also makes it difficult for farmers to expand their agricultural activities. Farmers' access to effective extension services is an important determinant of efficiency in their production activities. However, inefficient extension services may be as a result of inadequate motivation and transport facilities on the part of the extension agents as reported by 16.67% of the farmers. About 15.63 % of the respondents complained of an insufficient credit facility which is militating against effective performance of the industry in the study area. Farmers reported that lenders are also reluctant to lend to an individual farmer unless owners personal net worth can guarantee the loan.

Prevalence of diseases was a problem for only (12.50 %) of the participants, and could be attributed to fewer incidences of diseases since the study area is less vulnerable to cattle diseases. As weight measurement accounted for (11.98 %), some of the respondents said that they sell their cattle in terms of size by visual observation, and they buy it with high bargaining ability from speculative middlemen and commission agents. Instability in prices (9.89%) of cattle could be associated to the economy of the country. Also, the non availability of weighing device that would replace the pricing problems could partly be responsible for the prevailing prices (Table 4.17). These identified constraints may not be severe but their combine effect would have a multiplier effect on fattened cattle output, leading to loss of weight gain and profit.

Table 4.15: Constraints faced by cattle fatteners in the study area

Constraints	Frequencies	Percentages
High cost of feeds	64	33.33
Lack of extension services	32	16.67
Lack of credit facilities	30	15.63
Prevalence of diseases	24	12.50
Lack of weighing scale	23	11.98
Price fluctuations	19	9.89
Total	**192***	**100.00**

Source: Field survey, 2011.

*Multiple responses used.

N = 64

4.7 The result of hypothesis tested on inputs

Based on the hypotheses tested, the result shows that, experience and education were statistically significant at 5% level implying that, they significantly affect output level of respondents in the study area. Therefore, the null hypotheses (H_o) was rejected while the alternative hypotheses (H_o) was up held. However, there is no relationship between gender of the respondents and output level, and hence the null hypotheses (H_o) was rejected while the alternative hypotheses (H_i) was accepted.

Table 4.16: Chi-square test results of the relationship between selected socio -economic characteristics and output levels of respondents

Inputs	df	X^2 cal	$X^2_{0.95}$	Decision
Gender	1	2.23	3.84	Accept (H_o)
Education	6	21.33	12.60	Reject (H_o)
Experience	8	18.62	15.50	Reject (H_o)

Source: Data Analysis, 2011.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study examined Profitability Analysis of cattle fattening in Sardauna Local Government Area of Taraba State, Nigeria. Primary data formed the basis for the study and were collected through the use of structured questionnaires administered to cattle fatteners in the study area. The study used simple descriptive statistics to examine the socio-economic characteristics of cattle fatteners as well as the constraints faced by them. The data were analyzed using gross margin analysis, regression analysis and marginal analysis of input utilization.

The study has revealed that male (92.19%) dominated the business. Majority of the respondents (76.56%) were married and had one form of education or the other (48.44%). The finding shows that average total variable costs were ₦76, 649.69, the average buying price of each cattle was depicted to be ₦59, 189.92 and the average selling price per cattle accounted for ₦93, 030.20. However, Cattle fattening enterprise was found to be profitable as illustrated by the positive gross margin of ₦ 16,380.51 per head and 212,946.63 per farmer.

The production function analysis has revealed that double-log function gave the "best fit" and hence was chosen as the lead equation. The coefficient of feeds (X_1), length of fattening period (X_2), volume of water consumed (X5) and man days of labour were found to be statistically significant at varying levels while, age at purchase (X_3), access to extension services (X_4) and experience (X_6) were statically insignificant. The return to scale was found to be 0.17 hence falling in stage two of the production function (rational region) implying that, necessary adjustments in terms of resource allocation would lead to optimum weight gain by the cattle. Furthermore, there is over-utilization of feeds by the respondents as revealed by the efficiency ratio. The cattle fatteners in the study area were faced with the constraints of high cost of feeds (32.84%), lack of extension services (18.15%) and credit facilities (15.20%) respectively.

5.2 Conclusion

The study has revealed that a cattle fattening is a profitable venture despite the constraints faced by the participants in the study area. However, profitability could be improved by addressing the identified problems confronting the respondents. Moreover, fatteners in the study area are not maximizing their profit due to over-utilization of feeds: hence decreasing the quantity of feeds would attract higher profit margin to the fatteners.

5.3 Recommendations

Based on the findings of this research, the following recommendations were proffered.

1) Cattle fatteners should be educated on how to formulate feeds through organizing of workshops and seminars as this will reduce the expenditure on feeds.
2) Extension agents should be encourage visiting cattle fatteners in their farming centers so that they can benefit from improved technology and new innovations, and as well relate farmers' problems to researchers for solutions.
3) More credit facilities should be made available by both government and non-governmental agencies to the farmers at lowest possible interest rate, so as to encourage them to boost their business.
4) Veterinary inspection of cattle and meat should be encouraged by the farmers in order to avert the vulnerable diseases. Similarly, animal research institutes should also gear their findings to proffer lasting solutions to disease outbreak and;
5) Instability in cattle prices can be controlled by introducing weighing scales in both urban and rural markets. This will aid in transforming the markets from the current traditional system to modern marketing system and also provide a solution to pricing problems which is usually done by visual observation and hand feeling methods.

REFERENCES

Abbot, J. C (1981). *Agricultural Marketing Enterprise for Development World,* Macmillan London. Pp.1

Abbot, J. C and Makeham (1986). *Agricultural Economics and Marketing in the Tropics*, Longman Group Limited Hongkong, pp.26.

Adebayo, E. F (2003). Trends and Variability in the Number of Cattle Slaughtered and Cattle Population in Adamawa State, Nigeria. Term Paper Presented to the Department of Agricultural Economics, University of Ibadan, Oyo State, Nigeria.

Adebayo, E. F and Olayemi, J. K (2005). Application of Goal Programming to Resource Allocation Behavior of Dairy Producers in Adamawa State, Nigeria. *Journal of Sustainable Development in Agriculture and Environment*. Vol.1. pp. 60-75.

Adamu, A.M (1992). Livestock Planning, Marketing, Evaluation and coordinating Unit Abuja, Nigeria. Pp. 16-19.

Adegeye, A.J and Dittoh, J.S (1985). *Essentials of Agricultural Economics*. Impact Publishers, Ibadan, Nigeria, pp.251.

Ahmed, M. A (2006). Profitability of Cattle Marketing in Sardauna Local Government Area, Taraba State. Unpublished Student Final Year Project Presented to the Department of Agricultural Economics, University of Maiduguri, Borno State, Nigeria.

Amaze, P.S. (2000). Resource Use Efficiency in Food Crop Production in Gombe State, Nigeria. Unpublished PhD Thesis Submitted to the Department of Agric Economics, University of Ibadan Nigeria.

Amaza, P. S and Maurice, D. C (2005). Identification of Factors that Influence Technical Efficiency in Rice-based Production System in Nigeria. Paper Presented at Workshop on Policies and Strategies for Promoting Rice Production and Food Security in Sub-Saharan Africa Cotonou (Benin). 7th-9th November, 2005.

Annon, (1981). Livestock Production in Nigeria. Federal Ministry of Rural Development Lagos, Nigeria.

Apagu, M.D (2000). Economics of Pastoral Cattle Production in Girei Local Government Area of Adamawa State, Unpublished Undergraduate Project, Depatment of Agricultural Economics and Extension, Federal University of technology, Yola.

Apezteguia, B. I and Garate, M.R (1997). '' Technical Efficiency in Spanish Agro-food Industry". *Agricultural Economics* 17: 179-189.

Ajibefun, J.A and Daramola, A.G (1999). Measurement and Sources of Technical Efficiency in Poultry Egg Production in Ondo State, Nigeria. *Journal of Rural Economics and Development* pp. 85-94.

Ali M. (2000). Resource Use Efficiency in Food Crop Production in Oyo State, Nigeria. *Journal of Agriculture and Environment*. Vol. 1. Pp.75-82.

Aryan, K. (2011). Genetic Diversity, Structure, and Breed Relationships in Iberian Cattle.

Journal of Animal Science vol.89 no.4893-906.

(http://www.healthboards.com/boards/achive/index.php/t-117190.html).

Bauer, M. J (1980). Marketing and Introduction Test.

Board of Internal Revenue Gembu (2008). *Revenue Record Book.* Office of the Inspector of Tax, Board of Internal Revenue, Sardauna Local Gvernment Area Gembu, Taraba State.

Blessing, M. B. (2008). Economic Importance of Beef Cattle Production in Jalingo Local Government Area of Taraba State, Nigeria. Unpublished Student Final Year Project Presented to the Department of Agricultural Education, College for Education, Jalingo. Pp. 9-10.

Corbis, F and Malvin, F (2004). Cattle at Livestock Market, Encarta interactive World Atlas, Encarta Premium Suite.

Cobb, C. W and Douglas, P. H (1928). *A Theory of Production*. American Economic Review, Vol. 18. Pp. 139-165.

Crotty, P (1995); *Cattle Economics and Development*. Union and Bros London. Pp.68-70.

Cole H. H. and Magner, R. (1974). Animal Agriculture. The Biology of Domestic Animals and their use by Man. W. H. Freman and Company San Francisco. Pp. 549-50.

Daily Trust Nigeria Plc (April, 2010).

Dyer, I. A and Mary, C.C.O (1978). *Commercial Beef Cattle Production*, Second Edition, Lea and Febiger, Philadelphia, Penn., 1978.

Federal Office of Statistics (FOS) 1996. Abstract of Statistics, Federal Ministry of agriculture.

Farrel, M. J (1957). "The Measurement of Productive Efficiency". *Journal of the Royal Statistical Society-series A*, CXX (Part three, 1957). 253-290.

Food and Agricultural Organisation (1992). FAO Production Year Book, Vol 45, FAO, Rome. Food and Agricultural Organisation Trade Year Book, 1973.

FAO (1980). Trypanotolerant Livestock of West and Central African. FAO. Rome Italy.

F M A (1981). Livestock Production in Nigeria, Federal Ministry of Agriculture,Lagos. P. 20-21.

F M A (2007). *Nigeria's Agricultural Sector*. Federal Ministry of Agriculture and

Rural Development. Block A, FCDA Secretariat Complex, Garki Area 11, P.M.B 135, Garki Abuja.

Fenn, C. (1977). A Conceptual Frame Work for the Evaluation of Livestock Production, Development Project and Programme in Sub-Saharan West Africa. Ann Avbos, University of Michigan, CRED.

Frick, W. (1993). *Cattle Husbandry in Nigeria*. Ebie Akwe Ventures Limited, IkotEkpene, Nigeria. Pp. 120-122.

Gordon, M (1998). "Regression". A Dictionary of Sociology. Encyclopedia. Com. 9[th] October, 2010. http://www.encyclopedia.com.

Hupkova, D., Bielik, P. and Turcekova, N. (2009). Structural Changes in the Beef Meat Demand in Slovakia and Demand Elasticity Estimation. Agricultural Economics – Czech, Vol. 55, No. 8: pp. 361-367.

Hassan, I (2001). Farm Organisation and Resource use Efficiency. A case study of Cotton Production in Katsina State, Unpublished M.Sc Thesis, Amadu Bello University, Zaria Nigeria.

Iheanacho, A. C., Olukosi, J. O and Ogungbile, A. O (2000). Economic Efficiency of Resources use in Millet Based Cropping System in Borno State of Nigeria. *Nigerian Journal of Tropical Agriculture*, 2: 18-30.

Jones, M. P (1996). *Food Marketing in Developing Countries*: Food Studies Group Working Paper No. 8, Oxford.

John, S. (2000). *Background to Supply, Costs and Returns Economics.* 4[th] edition. University of the West England. Basig Publisher. P 25.

Kalla, M. S (1998). Background to Grazing Resource Development in Nigeria and Its Importance to National Economy. *The Journal of Nomadic Studies* Vol. 2

National Commission for Nomadic Education, Kaduna, Nigeria. P 50-53.

Kaufman, R. V. and Otchere, E. O. (1982). A Semi Intensive Approach to Increasing Nigeria's Beef Production. Proceedings of the National Conference on Beef Production in Nigeria, Kaduna. Pp. 13-14.

Kay, R. D (1986). *Farm Management Planning, Control and Implementation*. Mc Grow-Hill book Company, New York, p. 350.

Lamurde, A and Franty, G. E (1975). Nomadism and Cattle Production in Nigeria. Annual Conference of Nigeria Society for Animal Production, Enugu State, Nigeria. Pp. 23- 27.

Manay, N. S. and Shadakshoraswamy, M. (2001). Foods, Facts and Principles. New Age International Publishers. Second Edition: Pp. 384-402.

Mamman, A. B. (2005). "Economics of Resources use in Small Scale Agricultural Production". A Case Study of Cattle Marketing in Sokoto State. Unpublished M.Sc Thesis Presented to the Department of Agricultural Economics, Usman Danfodio University Sokoto, Nigeria.

Mshelia, S. I., Iheanacho, A. C and Iliyasu, A (2005). Economic Analysis of Paddy Rice Processing in Adamawa State, Nigeria. *Journal of Agriculture and Environment* Vol. 1. pp. 19-23.

Mijindadi, N. B (1981). Production Efficiency on Farms in Northern Nigeria. Unpublished P.hd Thesis, Cornel University, U.S.A.

Mulu, S. B (2009). Feed Resources Availability, Cattle Fattening Practices and Marketing in Bure Woreda, Ambara Region, Ethiopia. "Unpublished M.Sc. Thesis" (Livestock Production and Pastoral). Mekelle University. P.105.

Neumann, A. L (1977). *Beef Cattle Production.* Seventh Edition, John Wiley and Sons, Inc., New York, N. Y., 1977.

Nigeria's National Population Commission, 2006.

Nuru, S. (1982). Problems and Prospects of the Nigerian Beef Industry. Proceedings National Conference on beef production, Kaduna State, Nigeria, 1982.

Ogundari, K. and Ojo, S.O. (2006). "An Examination of Technical, Economic and Allocative Efficiency of Small Farms: The Case Study of Cassava Farmers in Osun State of Nigeria" J. Cent. Eur. Agric 7(3): 423-432: In: Ometesho O.A; Muhammad-Lawal, A. and Falola A. (eds.) technical Efficiency of Youth Participation in Agriculture Programme in Ondo State Nigeria. 10[th] Annual National Conference of Nigerian Association of Agricultural Economics (NAAE) Held at 750 lecture Theatre, University of Abuja, Nigeria.

Olukosi, J. O and Isitor, S. U (1990). *Introduction to Agricultural Marketing and Price; Principles and Application*. Third Edition, G. U Publishers, Abuja, Nigeria. Pp 45-47.

Olukosi, J. O and Erhabor, P. O (1998). *Introduction to Farm Management Economics: Principles and Applications*, AGITAB Publishers, Zaria, Kaduna State. P.69.

Omotesho, O. A., Muhammad –Lawan, A. and Falola, A. (2008). Technical Efficiency of Youth Participation in Agriculture: A Case Study of the Youth in Agriculture Programme in Ondo State: 10[th] Annual National Conference of the National Association of Agricultural Economics (NAAE), Held at 750 Seater Lecture Theater Main Campus, University of Abuja, Nigeria. Pp. 98-105.

Onoja, A.O. and Achike, A.J. (2008). Technical Efficiency of Rice Production Under Small-Scale Farmer-Managed Irrigation Schemes (FMIS) and Rainfed System in Kogi State, Nigeria. In 10[th] Proceedings of the National Association in Agricultural Economics (NAAE), Held at 750 Seater Lecture Theater, Main Campus University of Abuja, Nigeria.

Okayeto, P. O., Mohammed, I. R and Abubakar-ADEE, A (1998). the Structures of Cattle fattening and Marketing in Katsina State, Nigeria. NAPRI/NARP Approved Project Technical Report: 1998: 1-16.

Olayemi, J. K (1998). *Elements of Applied Econometrics*. Centre for Agriculture and Rural Development Centre for Agriculture and Rural Development (CARD), Ibadan, Nigeria.

Oyenuga, V. A (1982). Future of Beef Industry in Nigeria. Proc. National Conference on Beef Production, Kaduna State, Nigeria.

Okuneye, P. A and Banwo, P. A (1990). Blood Meal in Agricultural Marketing Longman, Ibadan pp 12-22, *International Journal of Poultry Science*. Retrieved on 27[th] November, 2008.

Olayide, S. O and Heady, E. O (1982). *Introduction to Agricultural Production Economics*, University Press Publishing House, University of Ibadan, Nigeria.

Onyenwaku, E. C and Ukaegbu, P. I (1987). Resource Productivity and Efficiency in Food Production Among Settlers of Ulona North Farm Settlement Umuahia, Imo State, Paper Presented at the 4[th] Annual National Conference of Farm Management Association of Nigeria, Federal University of Technology, Owerri August, 23-26.

Okuneye, B (2002). Livestock Sub-sector in Nigeria, Challenges and Prospects. Proceeding 10[th] Annual National Conference.

Okeke, K.I. (2007). Economics of Cattle Marketing in Jos Metropolis of Plateau State: Implication for Efficient Market Development and Sustenance in Nigeria, 9[th] Proceedings of Annual Conference of National Association of Agric Economics November 5-8 Zaria. Pp. 48-49.

Pullan, N.N (1979). Productivity of White Fulani Cattle in Jos Plateau, Nigeria. Herd Structure and Performance, Tropical Animal Health Production. 11: 231-238.

Qadeer, M. A (2008). Prevalence of Bovine Cysticercosis in Jos Abattoir, Nigeria. *Animal Research International.* Pp. 777-779.

Ruey, S. T (2008). *Multivariate Linear Regression*. Booth School of Business, Business 41912, Spring Quarter 2008. Pp. 39-41.

Sharafa, D and Yahya, I (2010). Analysis of Nigeria's North East Cattle Hub. PhD. Thesis Presented to the Department of Agricultural Economics, University of Maiduguri, Borno State, Nigeria.

Sankhayan, P. L (1988). *Introduction to the Economics of Agricultural Production*. Printice-Hall of India Private Ltd, New Delhi, India.

Sanni, B. D., Gyang, E. O. and Osinowo, O. A. (1998). Polythene Bag Induced Rumen Impaction in Small Ruminants: An Environmental Hazard. Proceedings of the Silver Anniversary Conference of the Nigerian Society for Animal Production and the Inaugural Conference of the West African Society for Animal Production (WASAP). Gateway Hotel, Abeokuta, Nigeria. Pp. 97-98.

Simpson, G.G (1945). Principles and Classification of Mammals, Vol. 85. American Museum of Natural History, New York, U.S.A.

Stephen, J., Mshelia, S.I. and Kwaga, B.T. (2006). Resource Use Efficiency in Cowpea Production in the Northeast Zone of Adamawa State, Nigeria. Journal of Sustainable Development in Agriculture and Environment Vol. 2; Pp. 33-40.

Taraba State Dairy (2007). Ministry of Education, Taraba State.

Taraba State Profile (2008). *Responding to the Challenges of Climate Change*; NSK Prime Services Konsults Ltd Abuja, Nigeria.

Taraba Agricultural Development Project (2005). Livestock Production Recommendation for Taraba State, TADP Printer, Jalingo. Pp.31-39.

Torkamani, J and Hardaker, J. B (1996). Economic Aspects of Efficiency Analysis in Iranian Agriculture; The case of farmers in Ramjerd Distric. PhD Thesis, University of New England, Armidale.

Thompson, J. W (1942). History of Livestock Rising in the United State of America. US Department of Agriculture, Washington D.C., 1942.

Ugwu, D.S. (2006). Economics of Swine Production by Small Holder Farmers in Enugu State, Nigeria. Journal of Agricultural Research and Policies. Vol 1, No. 1. Pp. 7-12.

Upton, M. (1996). *The Economics of Tropical Farming System.* Cambridge University Press London. Pp. 248.

World Bank (1998). Poverty and Welfare in Nigeria. A Report by the African Writing Corporation, Washington D. C. U.S.A. P.25.

W. F. S (2004). Animal Husbandry, World Food Supply, Encarta Interactive World Atlas, Encarta Premium Suite, 2004.

Yusufu, T.M and Adenegan, K.O. (2008). Technical Efficiency Among Women Farmers in Kogi State. Data Envelopment Approach (DEA) 10[th] Annual National Conference of National Association of Agricultural Economics Held at 750 Seater Lecture Theater Main Campus, University of Abuja, Nigeria. Pp. 106-119.

Zacchariah, J. T (1992). Cattle Production in the Tropics, Review Dairy Science Abstract. Pp. 69-77.

APPENDIX I

QUESTIONNAIRE FOR CATTLE FARMERS

Department of Agricultural Economics and Extension

Modibbo Adama University of Technology, Yola,

Adamawa State.

Dear Sir/Madam,

I am an **M.Sc** student in the above named Department undertaken a research study on the topic entitled: **"Profitability Analysis of Cattle Fattening in Sardauna Local Government Area of Taraba State."**

You are please requested to carefully fill in the questionnaire. Your responses will be taken in great confidence and will be used for the purpose intended.

Thank you.

Yours faithfully,

Ahmed, Muhammad Auwal

M.Sc/AE/08/0195

INSTRUCTION:

Please tick in the appropriate boxes or write the correct information in the spaces provided.

SECTION A

Socio-Economic Characteristics of Cattle Fatteners

1. Name of the village or town ……………………………………..……………………
2. Gender   a. Male [   ]   b. [   ]
3. Age …………………………………………………. Years
4. Marital status: a. Married [   ]   b. single [   ] c. Divorced [   ]
5. d. Widow [   ] e. Widower [   ]
6. Educational status:
7. a. Non formal education [   ] b. Primary education [   ]   c. Secondary education [   ]
8. d.   Tertiary   education   [   ]   e.   Others,   specify   (if   any) ………………………………………………………………….…
9. What is the number of people in your household? ………………………………
10. What is your major occupation? ....
11. Do you have other occupation apart from farming? …………………………
    a. Yes [   ]   b. No [   ] if yes (specify)…………..……………….……………………..
12. Do you think this occupation is best for you? ………………………………………
    a. Yes [   ]   b. No [   ] if yes, give reason…………….……………………………

SECTION B

Fattening Activities

10.   How long have you been in to the business of cattle fattening? ………………
11.   Which breeds of cattle do you keep?
    a.   White Fulani [   ] b. Sokoto gudali [   ] c. Adamawa gudali [   ] d. Red Mbororo [   ]
12.   How long do you keep the animals before taking to the market?
    a.   9-12 weeks [   ]   b. 13-15 weeks [   ]   c. 16-18 weeks [   ]
13.   How do you acquire your cattle?
    a.   From Nguroje cattle market [   ]   b. Gembu cattle market [   ]
         c. Mayo-Ndaga cattle market [   ]   d. Cattle breeders [   ]
14.   What was the age at purchase?………………………………………… years
15.   What is the number of cattle fattened per farmer? ………………………..

16. Given available space, what number do you think you can have for fattening?
    …………………….……………………………………………………

17. What is the cost of the animal before fattening? ₦………………………………

18. How much does it cost after fattening? ₦……………………………………….……..
    a. Calves ₦…………………………………………..
    b. Cows ₦ …………………………………………..
    c. Bulls₦…………………………………………
       others specify (if any)..............…………

19. How do you finance your cattle fattening? ………………………………………..
    a. Personal savings [ ] b. Loan from banks [ ] c. Loan from friends/relatives [ ]
       d. Loan from government institutions [ ] e. Others, specify (if
       any)…………………………………………………………………

20. Which management system do you practice?
    a. Extensive [   ]   b. Semi-intensive [   ] c. Intensive [   ] e. others (if any) [   ]

SECTION C

Inputs and Outputs Data:

21. What type of labour did you use in fattening your cattle? ……….………....
    a. Family labour [   ] b. Hired labour [   ]

    c. both family and hired labour   [   ]

    Information on family labour

	No. of persons engaged	No. of hours worked/day	No. of days worked
Male			
Female			
Children			

Information on hired labour

	No. of persons engaged	No. of hours worked/day	No. of days worked
Male			
Female			
Children			

22. If hired labour, what is the cost of hiring a man per day? ₦…………………..………..
23. How much do you spend on hired labour per fattening period? ₦………………
24. How much do you spend on family labour per fattening period? ₦……..........

25. How did you source water for the animals?
    a. Borehole water [ ] b. Pipe born water [ ] c. Buying from water vendors [ ] c. Others, specify (if any)………………………………………………
26. What is the volume of water used per fattening period? …………………………
27. What is the cost of water used per fattening period? ………………………
28. What is the quantity of feeds used in feeding an animal during the fattening period (kg/month)? ……………………………………………………………
29. How much does it cost to feed an animal in kg/month? ₦………………………..
30. What is the average weight of an animal before fattening?…………………….kg
31. What is the average weight of an animal after fattening?……………………….kg
32. How much do you spend on medication and veterinary services per month? ₦…………………………………………………………………………………
33. What is the average selling price of an animal after fattening period? ₦.........
34. Do you think you are making profit after all these expenses?
    a. Yes [ ] b. No [ ]
35. If yes, how much?
    a. Very high [ ] b. Moderate [ ] c. Low [ ]
       d. Below the purchase price [ ]
36. Have you been patronizing veterinary services?
    a. Yes [ ] b. [ ]
37. If yes, how much did you pay for the services within this period? ₦……….
38. What is the cost of transportation per animal? ₦………………………………….
39. How many animals do you fattened at a time? ……………………………………
40. What is the size of your grazing area? …………………………………………..
41. Do you think you are making profit after all these expenses? …………
    a. Yes [ ] b. No [ ]

SECTION D

Constraints in Cattle Fattening:

42. Do you have access to extension services? A. Yes [   ]   b. No [   ]
43. How often do they visit you? ....
44. Do you think their services are beneficial to you? …………………………………
45. Tick appropriately where applicable, the problems encountered in cattle fattening;
    a. High cost of feeds [   ]
    b. High cost of medication and veterinary services [   ]
    c. High cost of transportation [   ]
    d. High cost of labour [   ]
    e. Poor pricing system [   ]
    f. Prevalence of diseases [   ]
    g. Others, specify (if any)…………………………………………………………

Thanks for the response.