ECONOMIC IMPORTANCE OF SWINE PRODUCTION OVER REARING OF OTHER DOMESTIC LIVESTOCK AMONG PEOPLE OF BENUE STATE NIGERIA.

BY

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DECLARATION

I hereby declare that this Thesis on "Economic Importance of Swine production over the Rearing of Other Domestic Livestock Among the People of Benue State and submitted for the award of Master in Agricultural Science Education Degree (M.Sc Ed.) has been written and compiled by me. The research is exclusively based on the report of the investigation conducted by me. All source of information derived from the literature have been duly acknowledged in the text by way of references. It has not been presented in any previous application for higher degree at any place.

_____ _____

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CERTIFICATION

This Thesis entitled "Economic Importance of pig Production over the Rearing of Other Domestic Livestock" Among the People of Benue State by Ochepo Emmanuel meets the regulations governing the award of degree of Masters in Agricultural Science Education of Ahmadu Bello University, Zaria, and it is approved for its contribution to knowledge and literacy presentation.

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DEDICATION

This work is dedicated to Ikwulono Philip Ochoche (Apa LGEA Cashier, Benue State) for his financial assistance that enabled me to complete this study successfully.

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Greatest thanks and adoration goes to the Almighty God for his guidance, protection and provision throughout the period of this studies, may His name forever be praised, Amen.

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ABSTRACT

The researcher has undertaken this study on "Economic Importance of Swine Production over the Rearing of other Domestic Livestocks" to proffer some solution to the problems hindering the rearing of swine in Benue State particularly Zone C Senatorial District (Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo). The researcher used descriptive survey design to carry out the study. The population for the study was 10,450 respondents drawn from twenty seven towns of Zone C Senatorial District of Benue State. 600 respondents were proportionally and randomly selected as sample size for the study. General objective was formulated from which five specific objectives were formulated. Among these – is to compare swine prolificacy over the prolificacy of other domestic livestocks. Five research questions were formulated to guide this study, among these is – what importance has the prolificacy of swine over other domestic livestocks like goats, sheep, horse and cattle? Five null hypotheses were formulated for the study among these is – there is no significant relationship between the prolificacy of swine over the prolificacy of other domestic livestock in Benue State. Pilot study was conducted at Samaru using 20 respondents that reared domestic livestocks. This area was not part of the study location. Questionnaires were used as a medium for data collection. One sample T-test was used to test five null hypotheses at 0.05 level of significance and all the null hypotheses were rejected meaning that there were significant differences between pig production over the production of other domestic livestocks. The analysis yielded the following results: swine production was accepted to be more prolific than other domestic livestocks like goats, sheep, horse and cattle. It was also agreed that swine were more adapted to wide varieties of feeds which made them to grow more quickly than other domestic livestocks. It was concluded that swine production was more economically important than the rearing of other domestic livestocks. It was recommended that National Poverty Eradication Programme (NAPEP) in Benue State should enlighten the respondents on the economic importance of swine production over the rearing of other domestic livstocks. Piglets should be made available to farmers who wish to embark on swine production at affordable price by Lower Benue River Basin Development Authority (LBRDA).

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OPERATIONAL DEFINITION OF TERMS

- **Calving**: act of giving birth to an offspring by cattle.
- **Culling:** separating the animals from each other.
- **Dairy cattle**: Cattle reared for milk production.
- **Ewe**: A mature female sheep that has once produced an offsprings.
- **Farrow**: Is the act of giving birth to young ones by sow (female pig).
- **Gilt**: is a matured female pigs that have never produced any offspring.
- **Insulin**: is a material or product produced by pancreatic product that controls the blood glucose level in animals.
- **Intensive system:** Complete housing of the livestock throughout and be bringing them feed.
- **Kidding**: Act of giving birth by goats.
- **Lambing**: Is act of giving birth by sheep.
- **Piglets**: Young immature pigs of both sex.
- **Pork:** Pig meat.
- **Prolificacy**: Is number of offsprings produced by living organisms.
- **Rearing:** Taking care of livestock from birth to market period.
- **Semi-intensive:** Restricts the movement to certain level.
- **Sow**: is a matured female pigs that have produced an offsprings.

CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Domestication of livestock started by the early hunters that go about in search of plants and animals for food. Adeleye and Falusi (1986) testified that some of these animals captured alive, especially the young ones were kept alive and reared for some times before killing them for food while some of them were kept to continue to produce young ones. This practice gave birth to the domestication of livestock that were in full practice today because of the economic importance attached to the animals and their by-products. However, economic importance of pig production over other domestic livestock (like poultry, sheep, goats, horses, cattle, rabbits, etcetera) in areas like pigs prolificacy, efficiency of pigs conversion of feed to useful products (pork meat, skin, hair and manure), the advantages of dressing percentage with nutrients values and part of pig meat (insulin) used in treating diabetic patients, rearing systems (extensive, semi-intensive and intensive) and finally financial benefits in terms of market demand and supply over other domestic livestock were so great. These have made it possible for pig production to become one of the lucrative business among other domestic livestocks in some countries like – Europe, China, India,

America, Cameroun, Ghana and other countries. This business involved the use of improved breeds with good feeding and management practices which included disease and parasites control measures (Eusebio, 1980). However, in poorer countries like Africa, improvement in pig production was slow compared to the improvement in other domestic livestock production for example; many tropical African countries like Cameroun, Ghana, Togo, Nigeria, Zimbabwe et-cetera, large number of domesticated native pigs were raised as scavengers (extensive system) or raised as backyard (intensive system) to be depended on kitchen and farm wastes are still in practice.

Inspite of the low levels of development, pig production continued to provide a significant amount of animal protein, energy, minerals, manure etc thereby improving the diet and social welfare of rural people. The productivity levels in terms of meat yield of cattle and pig differed from country to country. For example, pigs can yield 4-5 times more meat than cattle per tonne of live weight. This ratio varied from country to country and region to region. This variation in the level of meat production of cattle and pigs may be as a result of the use of different breeds of pigs and the level of management practices which included disease and parasites control measures (Eusebio, 1980).

Rogers, (1990) explained that like other domesticated livestock, that have their origin from wild species, all domesticated breeds of pigs were believed to have originated from three major wild species: 1st – Sus vittatus and/or Sus indicus – the wild pigs of China, Japan and southeast Asia, 2nd breed was called sus scrofa – the wild pig of Europe which was believed to have originated from Asiatic Continent along with other domestic livestock like poultry, sheep, goats, cattle and other livestock that were brought by the early settlers. Edipega (2005) postulated that in 18th Century, Chinese pigs were introduced to Australia, Britain, Caribbean, America while pigs species domesticated in India was called Sus crist citus which was believed to have originated from Southeast Asia.

The third breed of pigs found in Africa was called West African Dwarf – commonly found were the Bakosi of Cameroun and Ashanti of Ghana. Eusebio (1980) and Pond and Maner (1994) pointed out that the practice of improved breeds through selection and introduction as to produce high quality breeds of pigs resulted into multiple names of pigs found in the world today such as Berkshire, Chestwhite, Durco-Jersey, Hamshire, Landrace, large white, Poland, China, Tamworth et-cetera. Today, all these different breeds of pigs can be found everywhere in Nigeria

either through introduction and or selection through breeding practices carried out to boost pig production (Eusebio, 1980, Pond and Maner, 1994).

Admorson (2000) gave example of the factors that might militate the rearing of pigs in a particular place to be religion and custom and belief of the people. Admorson cited an example of Northern part of Sudan as one of African countries that was largely dominated by Muslim community and pointed out that pig production cannot be possible there. Admorson (2000) pointed out other factors like scarcity of food (grains, root and tubers crops) and long dry season (drought) can be militating factors to the production of pig business.

1.2 Statement of the Problem

Several factors such as religion, custom and belief, an area occupied by Muslim community, long dry season (drought) and scarcity of feeds like grains, tubers and root crops were the militating factors preventing the pig production business in any particular area (Admorson, 2000). The researcher now wondered why pig production as a business cannot take place in Benue State (Zone C Senatorial District) if these factors mentioned are not the militating factors to pig production in this zone. This has generated an inquisitive investigation on the side of the researcher that led the researcher to have an interactive discussion with some rural people from

the cross section of Benue State (Zone C Senatorial District such as Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo Local Government Areas) between July-December in 2009. The researcher later discovered that people of Benue State (Zone C Senatorial District) refused to rear pigs not because of religious custom and beliefs, Muslim community, long dry season (drought), scarcity of feeds like grains, tuber and root crops but because of pigs abnormal habit like toiling children's graveyard and removing the buried bodies thereby rewounding the healing minds of the parents concerned, lying down in a dirty environment and eating dirty feeds that have low nutrient values. Apart from these, pig meat (pork) was observed to contain only fat. Feeding and rearing of pig (extensive, semi-intensive and intensive) were observed to be more costly and labour involving and the value of pigs was not related to our culture, finally pig have no position in the public markets like other domestic livestock (poultry, goats, sheep, cattle).

In the process of carrying out these investigation, the following questions were put before the researcher by the rural people of Zone C Senatorial District (Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo).

1. Of what importance should we rear pigs when compared with other domestic livestocks like poultry, sheep, goats, cattle in terms of nutrients values?
2. Who has ever sacrificed pigs to his/her ancestral fathers or mother during our cultural festival (Eje-Alekwu).
3. Who has presented pigs as a sign of cultural gift to his/her visitors?
4. In which public market have you seen pigs been sold like other domestic livestock (cattle, goats, sheep, poultry etc)?

In trying to answer all these questions, the researcher took it as a task to carry out a study that will enable the researcher create more awareness to the people of Benue State (Zone C Senatorial District especially Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo) on the economic importance of pig production over other domestic livestock like goats, sheep, rabbit, cattle, poultry and horses. It is hoped that by doing this, the belief the people of Zone C Senatorial District have toward swine production will be reduced so that they will see pig rearing as one of the means of reducing poverty among the rural area.

1.3 Objectives of the Study

The major objective of this study is to find out the economic importance of swine production over other domestic livestock like poultry, sheep, goats, cattle, horse etcetera among the people of Benue State.

The specific objectives of the study are to:

1. compare pig prolificacy over the prolificacy of other domestic livestock such as cattle, goats, sheep and rabbits in Benue State.
2. examine the efficiency of pigs conversion of animal feeds to other useful products such as food (pork meat), skin, hair, manure etcetera over the efficiency of feed conversion by other domestic animals in Benue State.
3. assess swine dressing percentage with the chemical analysis of its nutrient values and part of pig meat (insulin) used as diabetic treatment.
4. identify the system of rearing pigs in Benue State.
5. compare the financial reward of pig production over other domestic livestock such as cattle, goats, and poultry in terms of market demand and supply in Benue State.

1.4 Research Questions

The following research questions were formulated for the study in Benue State.

1. Of what importance is the prolificacy of pigs production over the production of other domestic livestock such as cattle, goats, sheeps, rabbits in Benue State?
2. What are the major products acquired from pigs after feeding them with varieties of feed in Benue State?
3. To what extent is the dressing percentage of pigs meat with nutrient values and pigs insulin more important than other domestic livestock in Benue State?
4. To what extent is the rearing system of pig more easy and cheaper than the rearing of other domestic livestock in Benue State?
5. To what extent is pig production more financially rewarding and profitable to farmers than other domestic livestock such as cattle, goats, sheep, poultry in terms of market demand and supply?

1.5 **Research Hypotheses**

In the process of carrying out the research study, the researcher formulated the following Null hypotheses in relation to economic importance of pig production in Benue State: These hypotheses were formulated at 0.05 level of significance.

1. There is no significant relationship between the prolificacy of pig production over other domestic livestocks such as cattle, goats, sheep and rabbits in Benue State.
2. There is no significant relationship between pigs tolerant to wide varieties of feeds and its efficient conversion of these feeds to useful products like food for man (pork), skin, hair, manure
3. There is no significant relationship between the dressing percentage of pigs meat (pork) with the nutrient values and pigs insulin used as diabetic treatment over other domestic livestocks.
4. There is no significant relationship between the rearing system (extensive, semi-intensive and intensive) of pigs and rearing of other domestic livestocks such as cattle, goats, sheep, poultry.
5. There is no significant relationship between the financial benefits of pig production and that of other domestic animals in terms of market demand and supply.

1.6 **Significance of the Study**

The farmers in this area will no longer depend on inorganic manure (fertilizers) again if pig production is fully incorporated into business. That is manure (urine & feaces) collected from pigs can be applied to soil as

compost manure for crop production thereby reducing the cost of purchasing inorganic manure (fertilizers).

After the completion of this research work, it will create awareness to the people of Benue State that pig production will be one of the ways of reducing poverty as more piglets are farrowed, more will be sold.

The entire community will also benefit from pig production through the supply of protein, energy and mineral needed thereby reducing the problems of protein, minerals and energy deficiencies (food malnutrition).

This study will also enhance fishing industry when manure collected from pig pens will be used in the fishing ponds, it will promote the growth of algae that will serve as feeds to fish in the fishing ponds. Through this means, farmers financial problems have reduced as more fish caught will be sold.

The entire community will become more developed if pig production is fully put into practice, more revenue will be generated and these generated revenue will be used to meet other financial needs.

The people of Benue State will become more enlightened on the economic importance of pig production as a means of solving diabetic patients as more pigs will be produced to get more insulin that will be used to treat diabetes. This can be achieved when pig production have developed

into large scale enterprise where pharmaceutical company will either establish pharmaceutical industries or export the products to already established companies.

Pig production will also boost local craft like leather work from the skin for example ladies shining foot wear and hand bags were made from pig skin and or brush and rudge were made from hair of pigs products.

1.7 Basic Assumptions

The basic assumption of the study were:

pig production can play a great role in reducing poverty of the rural people through the sale of their products.

pig production is faced with a lot of problems such as cultural belief towards pigs abnormal behavior.

pig production can serve as the quickest means of bridging the gap between protein, energy and mineral deficiencies among the poor farmers in the rural area.

pig production can play a great role in the life of patient that have diabetic problems through the insulin they produced.

the availability of grains, tubers and root crops will determine the production of pig in any area where religious custom and belief and Muslim community will not be the militating factors.

pig production when fully incorporated into operation will enhance local industries and increase crop yields through their product such as skin, hair and manure.

1.8 Delimitation of the Study

The study was delimited to only the economic importance of pig production such as prolificacy of pig production over other domestic livestock, efficient conversion of varieties of feeds to useful products (food for man (pork meat), skin, hair, manure), dressing percentage with nutrient values and pig insulin used in treating diabetic patients, rearing system (extensive, semi-intensive and intensive) and financial benefits of pig production in area of market demand and supply over other domestic livestocks.

The study was also delimited to domestic livestocks like horse, cattle, goat, sheep poultry and rabbit and people that reared one or more of these livestocks.

The study was purposively delimited to nine (9) Local Government Areas namely: Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo that formed Zone C Senatorial District in Benue State because of common cultural belief towards the rearing of swine.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

The researcher reviewed a lot of books and journals that have connection with the topic for the research work. The review of related literature is presented in this order:

2.1 The concept of Economic Importance of Domestic Livestock.

2.2 Prolificacy of pigs

2.3 Efficiency of feed conversion of animal feeds to useful products like pork meat, skin, hair and manure.

2.4 Advantages of Dressing Percentage of Livestock meat with nutrient values and part of pig meat (insulin) used as treatment to patient with diabetes.

2.5 System of rearing pigs in terms of extensive, semi-intensive, intensive over other domestic livestock such as cattle, goats, sheep and poultry etc.

2.6 Efficiency of Pig financial rewarding in terms of market demand and supply over other domestic livestock such as cattle, goats, sheep and poultry.

2.7 Empirical Studies

2.8 Summary of Reviewed Related Literature

2.1 Conceptional Framework on economic importance of domestic livestocks

Many theories have been propounded by many authors on the economic importance of domestic livestock. Komolafe (2006) highlighted the importance of domestic livestocks by classifying these importance in the following ways:

1. As source of food, meat, milk, egg, blood and bone meals.
2. As source of income i.e farmers increase their income through the sale of farm animals and their products.
3. Clothing for example wool from sheep.
4. Transport – horses, mules and donkeys.
5. Power – cattle, horse and donkey used for ploughing.
6. As source of manure that helps in crop improvement.

In supporting the economic importance of domestic livestock, Anthony, Kaigama, Ogbazi and Adesiyan (2008) inferred that one of the major concern of livestock farmers is to make sure that his farm animals have enough right types of food throughout the year. The authors explained more that animals like human beings need balance ration that is required for the production of meat, milk, egg and also to provide energy for work.

Adeleye and Falusi (1986) in their own research findings on the economic importance of domestic livestocks postulated the following as economic importance of domestic livestock as:

1. Food and feed. The word food was specifically referring to the food meant for human beings in areas like essential nutrients e.g energy, proteins, vitamins and minerals while the word feed referred to the nutrient requirement by animals. The author pointed out more that the most important of farm animals is the provision of:

1. Protein
2. Employment.
3. Work – farm work through ploughing.
4. Manure – this can be locally and simply achieved through mixed farming.
5. Clothing – in temperate regions, apart from sheep meat (mutton). the wool are sheared (removed) and used as wool dresses, cardigans, pullovers and socks.
6. Pleasure and protection – some animals are kept mainly for pleasure, racing and protection of family e.g animals kept in zoo are for recreation and pleasure of the visitors. Horses are kept for

racing and riding during ceremonies, polo games, waging wars and hunting dogs are kept for protection against invaders and for hunting, cats used for pet etcetera

2.2 Pig Prolificacy

Pigs were more prolific (producing more offspring) than other domestic livestock based on their gestational period of 112-120 days.

Eusebio (1980) pointed out that a matured sow should be capable of producing 8-12 piglets at one farrowing period and should farrow twice in a year with the gestation period of 112-120 days and should wean 18-20 piglet per sow per year. In supporting these point, Macdonald and John (1995) inferred that gilts should be selected from the sow that farrowed 9-10 piglets per litter and should be capable of farrowing twice in a year with the gestation period of 112-120 days and should wean 18-20 piglet per year. Jacob and Patricia (1990) highlighted their own point that the average litter size be 10-12 piglets from the breeds of Yorkshire, Landrace and Tamworth. The two authors explained more by saying that the more piglets farrowed, the more piglets weaned compared to other domestic livestock such as cattle, goats, sheep, poultry.

Oyenuga (1999) on his own findings, why cattle production were very low said that the average age at first calving was 36 months, while the

average number of days in milk production (weaning period) was approximately 300 days. The author threw more light on the prolificacy of cattle by saying that the temperate breeds will have first calving at 24 months with only one calf produced per cow per year. The author explained more that the weaning period is about 300 days. The author summarized the reasons for low prolificacy in dairy cattle as

i. Slow growth rate

ii. Long calving intervals.

iii. Slow reproductive cycle

In supporting the low prolificacy of diary cattle, John (1998) carried out a study on beef cattle production and came out with his findings – that the gestation period was about 270-290 days which also depended on the species. The author summarized the gestation period of different species of beef cattle as in Table 2.1

Table 2.1. Gestation period of different breeds of beef cattle.

Breeds of cattle	Range in gestation (days)
(1) Angus	273 – 283
(2) Short horn	273 – 286
(3) Herford	273 – 287
(4) Charolais	278 - 288

Source: Summary information from many different sources.

In comparing the prolificacy of goat with pigs, Macdonald and John (1995) pointed out that goats may produce two kids per a year or three kids in every two years under extensive system of rearing animals. However, with intensive system where the plane of nutrition is observed, twins and triplets may be produced per nanny goat. The two authors highlighted that the age at first service of goat was about 1 - 1½ years with the gestation period of 150 days while the age at first service of pig was 7 – 8 months with the gestation period of 114 days (3 months, 3 weeks, 3 days). The two authors pointed out that the weaning period of goats was about 4 – 5 months while that of pigs was about 5 – 8 weeks.

Payne (1990) in his own study came out with the results that the age at first kidding be about 18 months under intensive system while under extensive system, the age at first kidding was about 10 – 12 months. The author emphasized more that the gestation period ranges from 145-148 days with two kids per a doe per year but the most common practice will be 3 kids in two (2) years per doe and twining may be possible with good feeding management. Thomas (1990) tried to compare the prolificacy of sheep with pigs, said that like other domestic livestock whose gestation periods tend to vary, so was it to that of sheep. The author pointed out that the gestation period was relatively short at about 147 days.

Spedding (1997) gave the gestation period to be about 155 days with the age at first service starting from 7 – 12 months which also depended on the species. The author pointed out that a matured ewe was capable of lambing twins or triplets at one lambing period and can lamb twice in a year. The weaning period is about 3 – 4 months. The author highlighted on those breeds that have regular lambing interval such as East Afican Black head sheep (234), Hamshire and Suffolk crossbreed ewe (150). On the other hand, Effiong (2001) gave the breakdown of the gestation period of rabbits as – mating is between 6-12 months depending on the species and the gestation period was about 31 – 32 days with the Doe having an average

kindle of 4-5 times per year and produces an average of 28 kitten per year per doe.

James (1999) in his own study about the prolificacy postulated that a broody hen was capable of incubating 8-12 eggs under extensive system of rearing and this figure depends on the body size of an animal. The author explained more that any thing more than this figure may result into poor hatchability since the broody hen will be unable to cover the whole eggs at the same time unless with the help of incubator (artificial heat generator).

2.3 Efficiency of Pigs Conversion of Feeds to Useful Products (pork meat), skin, hair and Manure.

Despite the fact that pigs eat all types of feed that have low nutrient values, they have the ability of converting these feeds to useful products more quickly than other domestic livestock.

Efficiency of pigs conversion of animals feeds to other useful products such as human food (pork meat), skin, hair, manure etc. The objective of any livestock breeders is to meet the demand of the consumers in terms of meat (pork meat), skin, hair, manure of which pig production will be the quickest way of achieving this objective because of their quick growth. Edward (1998) inferred that pig production have quicker and better

means of converting feeds consumed to meat (pork), skin, hair, manure than cattle, goats and sheep when they were provided with high quality feeds with the exception of rice bran, hay. Sandra (2003) pointed out that pigs have speedy mechanism in the conversion of feeds to meat (pork) for human consumption compared to other domestic livestock such as cattle, goats, sheep and poultry.

The author highlighted that kitchen wastes and Agro-industrial byproduct wastes that may not be suitable for any domestic livestock like cattle, goats, sheep, poultry can be used by pigs as feed. Oyenuga (1999) said that kitchen wastes and Agro-industrial by- products wastes were only important to newly born ruminants whose rumino-reticulum is small and non-functional. As the rumen papillae developed and absorptive ability increases, the short chain fatty acids (primarily – acetic, propionic and butric acids) which are the major product of rumen fermentation will no longer be functional on any feeds that will not be fermented. This may affect the general metabolism rate of these ruminant animal.

In supporting the above point, Becker (1996) carried out a study on feeding non-fermented materials as kitchen wastes and came out with his findings that it does not only affect the functional development of the rumen

but also influence the general metabolism which represent the source of energy available to the animals. The author emphasized that for the synthesis of body fat, energy from acetic is needed more than propionic and butric acids. A lower than normal acetate –propionate ratio in the rumen ingesta have been demonstrated to result in less – efficient synthesis of milk fat. In supporting less efficient synthesis of milk fat. Admorson (2000) postulated that cow fed on finely ground hay, low roughage or large amount of flake corn etc reduced milk fat percentage due to decrease in acetate propionate ratio in the rumen.

Hurghs (1998) emphasized that unlike cattle, goats and sheep, pigs can be fed on mouldy grains or other grains that have been damage by other livestock in the process of feeding. The author carried out a research study on mouldy grain feeding and explained the result that cattle fed on mouldy grain has high death rate while pig\s fed on the same have no negative effect. Thomas (2003), explained that pig manure will decompose more quickly into the soil than the manure gotten from cattle, goats and sheep because of the high fibre content of the feeds they consumed. Eusebio (1980), pointed out that pigs contributed considerable amount of fertilizing ingredients to the

soil through their manure. The author gave a good example of a matured pig to be capable of producing 600-730 kg of manure annually.

The author explained more that the nitrogen content of the fresh pig manure ranges from 0.55-0.6%, phosphate content was about 0.5% and potassium was about 0.4%. This organic manure were very useful for vegetable production and to some extent important in sugar producing area like Philippines and Columbia. In comparing pig manure with goat manure, Lois (1995), in his work propounded that while pigs eat wasted food materials like kitchen waste and agro-industrial by products waste and quickly converted them to human food (pork) and other products, goats on the other hand can eat leather, clothes, shoes, woods that have no food value and this have reduced their human food (meat and milk), skin and hair. The author pointed out more that this condition made healthy goats looked very lean due to colic disease.

Ensminger (1990) and Daniel (1999) carried out a research work on pigs, hygienic behavior in their respective studies, came out with their findings that pigs were the only domestic livestock that neither defecate nor urinate inside their feeds, water and their resting area unless when they were over crowded or stressed in another way and that their efficient conversion

of feeds to body weight was faster than other domestic livestock like cattle, goats and sheep. Thomas, (2003) in his work gave the example of pigs that were good converters of feeds to human food (pork) and other useful products as: Tamworth, Duroc, Hamshire etcetera.

On the other hand, poultry which also belonged to monogastric like pigs required high quality feeds compared to low quality feeds consumed by pigs. Daniel (2004) viewed that apart from high quality feeds required by poultry, they also consumed more feeds than pigs and their body or carcass cannot be compared with pigs. The author explained more that feed restriction introduced for poultry might not be only to reduce fat or body weight and maturity on the side of broilers only but to reduce the cost of feeding as to maximize the profit. In supporting Daniel (2004), Journal of Animal Production (January/December 1994) postulated that if the steadily escalating cost of poultry feed ingredients in Nigeria were not checked immediately and effectively, poultry industry may not attain a position in the meat sector.

2.4 Advantages of dressing percentage with nutrient values of pig meat (pork) and pig insulin used in treating diabetic patient

If livestock breeding is to be taken as a business by any breeder, the main area of focus will be on dressing percentage. That is the animal should

have good body condition in terms of carcass to meet the consumer demand. In supporting the dressing percentage, Oyenuga (1999) viewed livestock as an organism utilized primarily for converting feed stuffs into saleable carcass and more nutritious materials in the form of meat, fish, milk and eggs which will be more easily assimilated by man than the vegetable proteins. Based on the dressing percentage, Eusebio (1980) in his work titled dressing percentage of different domestic livestock such as pigs, poultry, cattle (steer), goats, horse, rabbits in the University of Philippines at Les Banos summarized his findings on dressing percentage of these domestic livestock as shown in table 2.2.

Table 2.2. Dressing percentage of Domestic Livestock.

Animals	Dressing percentage (%)
(1) Pig (Hog 70-90%)	75.6
(2) Poultry	64.3
(3) Steer (cattle) 70-310kg)	52.2
(4) Horse	49.1
(5) Rabbits	48.1
(6) Goats	44.1

Source: (Department of Animal Husbandry University of Philippine College of Agriculture (1972)

Lois (1995) explained the reason why goats figure was very low because of being bonny due to eating all sorts of things like leather clothes, wood and shoes. that may not or have low in food value. Oyenuga (1999), in his findings highlighted the reason why cattle (steer) figure was low due

to consumption of high quality hay, silage and pasture as to stimulate rumen bacteria that will make fermentation to take place easily for future milk production. Apart from future milk production, hay, silage and pasture enhance early rumen development.

Loveth (1993) carried out a research work on the nutrient content values of different domestic livestock and came out with his findings as summarized in table 2.3:

Table 2.3: Food nutrient of various domestic livestock

Animals	Energy %	Protein %	Ca/mg	Fe (mg)	Na + Mg
Pig meat	20	5.2	3	0.8	1.4
Milk	15	5.7	2.56	0.9	0.2
Egg	7	5.7	24	1-2	0.04
Poultry meat	5	5.2	4.2	0.5	2.2
Beef	4	2.6	1.2	0.3	0.7

Source: (Loveth P. Unpublished Data)

Aaron (2001) in supporting the dressing percentage of domestic livestock carried out a research study on different types of feed fed to different domestic livestock like cattle, goats, sheep and pigs and came out with his findings that pigs of all classes except young piglets can tolerate to some extent low quality fibrous feeds. The author threw more light that it has become a practice in a developed and developing countries e.g America, China, India, Australia etc. to engage pregnant sow with freshly cut forage

or corn silage mixed with small amount of protein feed concentrates. The reason was to maintain good body condition that will help in efficiency in reproduction.

2.4.1 Part of Pig Meat (insulin) used as a Treatment for Patient with Diabetes

Diabetes which have gradual action is a deadly disease that have not gotten real drugs for its treatment. Later, pig insulin was discovered to be used in its treatment.

One of the most existing use of genetic engineering is that of making life saving protein. Loretta and Violetta (1985), pointed out that protein insulin (Ihn-suh-luhn) was produced by combining bacterial DNA (Deoxyribonucleic acid gene). They also pointed out that people with shortage of insulin suffers a diabetic problem. The authors classified the function of insulin into two groups:

a. It stimulates liver to remove sugar from blood and store it.

b. It also regulates the use of sugar by the cell of the body.

Furthermore, they explained that if the pancreas produces little insulin, the body will not be able to store and use sugar properly resulting into excess sugar built up in the body. The kidneys will only filter out the

extra sugar and eliminate it through urine and this condition is called diabetes.

Human islets of langerhans in the pancreas have been used to cure diabetes years ago of which there were so few to meet the percentage of the diabetic patients. In order to solve this shortage of islet donor, Hammerman (2010) carried out a research study at Washington University School of Medicine in St. Louis with 10 diabetic rats. In the study, embryonic pig pancreatic cells of immature pigs were transplanted on the 10 rats that could not produce any insulin on their own but had high glucose level. As the immature pancreatic developed, they began to produce insulin that helped to lower their blood glucose levels but not at normal level.

Second treatment: One rat was treated with islet cell from adult pigs while others were used as control group at eight weeks. The result of the findings showed that the rat treated with islet cell from adult pig and immature embryonic pig pancreatic cells after 12 weeks and several months had normal blood glucose level which was an indicator that pig islet cells were producing ample of insulin while those rats on control group continued to have higher than normal glucose levels. The same author carried out another research study using pig insulin on human with diabetic disease and came out with his findings result that pig insulin Can also be used to treat diabetes

in human beings. From this findings, economic importance of pig production in area of insulin products have been recommended by DNA technology and pharmaceutical companies to start manufacturing insulin as drugs for human diabetic treatment since the 1980's (Hammerman, 2010).

2.5 Rearing System of Pigs

Rearing system, a term used in livestock management production with the aim of achieving success at the end was a useful indicator in pig production like other domestic livestocks as to maximize the profits. However, the researcher has delimited the management of rearing to only extensive, semi-intensive and intensive system of rearing pigs as explained in the subsequent paragraphs.

Extensive system

This is a system of domestic livestock rearing by which animals were left to go about in search of food for themselves with or without control only to be held into a shelter at night or during rain fall and or they may not be provided. This system may not be favourable to some domestic livestock because of the negative effect on them.

Morgan (1988), viewed that pigs reared under extensive system thrived better than other domestic livestocks such as poultry, sheep, goats and cattle because of their adaptive to different feeds that may not be

consumed by other domestic animals. The author explained more that predators like snakes, rodents and kites that may be dangerous to cattle, goats, sheep and poultry were used as source of feeds to pigs except scorpions. The author highlighted more that the system was suitable for pig production provided the climatic condition is favourable. Eusebio (1980) viewed his points that pigs required small area or space in which to grow. Unlike beef, dairy cattle, goats and sheep that usually require one hectare of natural pasture per head, pigs can be raised in a small area either in a closed confinement within a building or a small area of pasture.

Oyenuga (1999) described the system of extensive practiced in African countries and Western Asia and pointed out that goats, sheep and cattle were grazed extensively together within the savanna belt while in arid, they were grazed together with camels. Admorson (2000) threw more light on extensive system by saying that pigs required small area of land when compared with cattle, goats and sheep. National Academy of Sciences – National Research Council (1349) highlighted on the demerits of extensive system of cattle, goats and sheep rearing that uncontrolled grazing will result into dominant growth of spear grass (imperata cylindrical) which was a clear manifestation of the infertility of soil. The association summarized some disadvantages of extensive system of rearing cattle, goats and sheep as – (1)

enhancement of water and wind erosion (2) soil infertility (3) low and poor quality of animal products (4) the system required large area of land (5) no incentive to undertake improvement programme.

Semi Intensive System

This refers to a system of rearing which involves restricting the movement of domestic livestock to a certain level or degree with the provision of supplementary feeds in addition to the available pasture found within its proximity. Admorson (2000) evaluated pig production under semi-intensive system and compared them with other domestic livestock like goats, sheep and cattle interms of feeds and said that pigs stood a better chance of utilizing the supplemental feeds like kitchen wastes, agro industrial by products waste than other domestic livestock because of their simple stomach that was adapted to almost all types of feeds when the animals were confined as semi intensive system either by fencing or tethering at the backyard.

Jackwel (1991), described the semi intensive system that was good for cattle by saying that beef cattle production on the Fulani system can not achieve any reasonable substantial production to meet the demand. This has resulted into the introduction of semi-intensive called ranches. This can be carried out where large hectares is required. The author viewed the system

to be better than extensive and inferred that the success of this scheme was as a result of a new system of production rather than a mere improvement to the existing system.

Oyenuga (1999) pointed out the problem of semi-intensive system under ranching management, that to establish a beef ranch, the investment of the land alone in the ranch country was approximately $2,000 to $3,000 per cow. The author said that it was because of this high cost that farmers in the mid west (Nigeria) have started the practice of keeping beef cow herd in dry lot. Finch (1991), identified that despite the fact that pigs and poultry belonged to the same family of monogastric, clarified that pigs have more advantage to forage crops when the two animals were fenced or tethered at the backyard. The author pointed out that the wastes of feeds from poultry can still be useful to pigs as feeds.

Intensive system

This involves keeping the livestock in the house completely throughout days and nights and be bringing them feeds. The construction of houses for these livestock differed from species to species and the production to which livestock are reared for. Dick (2004), described the structure of pig house under intensive to be simple. The author described more by saying that the house can be constructed with four solid tree trunks

with simple roofing. Julian (1992) pointed out that principles of constructing pig housing during hot climate to be an open type that will facilitate good ventilation and should be expensive. Eusebio (1980) supported simple structure that should be roofed with spear grass (imperata cylindrical) or palm leaves. The author said that housing should be made of locally cheap materials.

Ensminger (1990) and Julian (1995) propounded that pigs maintained good hygienic behavior more than other domestic livestock such as poultry, sheep, goats and cattle by not defecating on their feeds and water and resting area unless they were pressed by condition. This practice should be maintained by the breeder to prevent them from any disease that may occur as a result of deposition of this defecation that may add more cost to their production.

In comparing goat housing with pigs, Lois (1995) clarified that plastic materials that was strong enough to withstand pigs will be unsuitable to goats. The author recommended wooden wall because goats are active creatures that appear to think that speed of entry to their pens was necessary at all times.

Wilfred (1999), examined the behavior of goats and said that they like to jump and explore their surrounding. The author viewed goats as an

inquisitive animals that don't want confinement like other animals. In supporting the behavior of goats, Jennse (1998) described goats as destructive animals to trees, garden and crops. The author described them as notorious animals in a cultivated land and when confined to a yard, they tried to trespass on privacy and liberty by refusing to be silent out of her own company. The author explained more that all these negative behavior have resulted into solution found on their neck as tethering chain. Steinbach (1997) observed that the most difficulty in controlling goats arise out of the fact that goats psychology, her requirements and specification for fence that will control them were different from other domestic livestock.

In comparing poultry housing with pigs. Oluyemi and Roberts (2000) described the construction of battery cage system to be made of wire floor with each been confined to individual compartments constructed for laying birds. This will serve as lay nest with sloping floor. Feed and water troughs were provided individually to each cage. The author recommended asbestos roofing with litter materials spread on the floor. Oyenuga (1999) pointed out that it is important to remember that it is not the million of poultry roaming the street in the village and towns we see that can produce the eggs we see in the market or stall all over the state. The millions of the fresh eggs were produced by few thousands of birds that were specially bred, fed and housed

in the hands of few small, medium and large scale poultry producers who were sufficiently enterprising to invest in poultry production.

2.6 Efficiency of pigs: Financial rewarding in terms of market demand and supply

Every livestock farmer looks forward to see the financial benefit of the animals kept to enable him have good future management plans, this was why culling is used to remove any livestock that does not yield financial benefit to avoid wasting of feeds, money and time on them.

However, the capital invested on pig production can be realized as a rewards in relatively short period. This is because it will only take the breeder 6-7 months to raise a weaning pigs to market weight of 90kg under good average feeding and management condition in a humid tropical climate (Ronald 1998). The author inferred that pig production as an enterprise will help to solve the problem of the market demand and supply as more pigs weaned will be moved to the market very quickly.

Jean (1992) viewed the demand of any meat to depend on different factors such as : average revenue, availabilities of various commodities, relative price and eating tradition. Jean summarized the average proportion of different domestic livestock meat as follows: Beef and pig together formed three quarter (3/4) of the total meat produced while sheep

represented 4% and poultry 24%. The researcher presented these figures in a data form as shown in table 2.4.

Table 2.4 World Proportion of Domestic Livestock Meat

Developing Countries			**Developed Countries**		
1962-1964	**1972-1974**	**1988**	**1962-1964**	**1972-1974**	**1988**
Meat 100	100	100	100	100	100
Beef 40	36	36.1	39	41	34.5
Pig meat 38	37	22.6	37	34	39.7
Poultry meat 11	18	30.2	15	21	24.0
Sheep/goat 11	9	8.1	9	4	3.8

Source: (FAO Quarterly Bulletin 1977)

Despite the fact that pig production were very small, the consumption was very high in areas where tradition do not interfere with. David (1998) stated that pigs were numerically fewer than other domestic livestock like cattle, goats, sheep, poultry and rabbit. More pig meats (pork) were produced than any other domestic livestock meat. The author summarized the breakdown of the figures as shown in table 2.5

Table 2.5: Comparison of the main livestock species in the world meat

Livestock	**Number in (million head)**	**Meat output (thousand metric tones per year)**
Cattle	1,253	50,098
Buffalo	137	
Sheep	1,174	8,801
Goats	521	
Poultry	10,050	11,495
Pigs	826	63,917

Source: FAO Quarterly Bulletin Statistic (1989).

Other researchers such as Ronald (1998), Finch (1996) and Jackson and Kolta (1994) viewed the way pig meat (pork) were sold in local areas and compared it with the meat of other domestic animals like cattle, goats, sheep and poultry in their respective findings in terms of number of days, weeks and atimes month taken before these meats can be completely sold out said this condition has resulted into preservative mechanism as a way of maintaining the meats as far as they were unsold and this will reduce the profit at the end of the business. The authors compared the sale of the pig meat (pork) with other domestic livestock meat and postulated that the local sale of cut meat of pig from a single animal was a common response to meet the need for the sudden major cash demand such as school fees and/or compensation payments.

Finch (1996) stated that pig meat (pork) have become the most commodities of average product with the regular small market offering pig meat (pork) for sale within the village level. Strawel (1998) in his study explained that many poor families in rural area in the less developed countries of south east Asia and south America raised one or two pigs as their 'saving banks". These families schedule the raising of pigs so that they can sell them at the beginning of the school year when they have to pay the school fees for their children. The author highlighted more that in suburban

areas, backyard pig production were raised with the left over food from their kitchen.

Oyenuga (1999) in his study about the consumption of various domestic animals came out with their findings by comparing the meat harvested from domestic animals in Nigeria and some selected countries in the world and came out with the figures as shown in table 2.6.

Table 2.6: Amount of meats harvested from slaughter in Nigeria compared with those of some other selected countries 1970 (kg)

Developed countries	Cattle	Sheep & Goats	Pigs
New Zealand	208	20	47
USA	278	23	70
United Kingdom	255	20	64
Netherland	272	26	82
Mean	253	22	66
Developing countries	Cattle	Sheep & Goats	Pigs
Nigeria	120.0	10.0	43.7
Tanzania	105.9	14.7	-
India	22.3	9.1	32.5
Ceylon	68.0	9.0	55.5
Mean	79.1	10.7	43.9

Source: (Oyenuga V.A. Unpublished Data 1999).

The researcher clarified his findings that domestic livestock were organism utilized primarily for converting feedstuffs into saleable carcass

and more nutritious materials in the form of meat, fish, milk and eggs which were more easily assimilated by man than the vegetable protein.

As indicated by Jean (1992) on factors that determined the demand and consumption of any meat, none of these factors was a hindrance to the consumption of pig meat (pork) in Zone C Senatorial District except that the people of in this district have shallow knowledge about the economic importance pig has over other domestic livestock like goats, sheep, cattle, horse, rabbits and poultry. They only consumed pig meat (pork) in place of other domestic livestock and cracked a joke by saying it was only better than chewing stick (oral tradition).

From the above points, people of Zone C Senatorial District will see and accept that pig production is a good indicator to financial rewards in terms of market demand and supply when pig production is fully incorporated into business.

2.7 **Empirical Studies**

The same and related works carried out by different authors were reviewed as follows:

Fola (1999) carried out a survey research study titled Economic importance of goat production. The location of the study was Ikare Local Government Area in Ekiti State. The population for the study was 1000,

while 400 people were randomly selected as study sample. The instruments used for data collection was structured questionnaire for those that were literates and the same questionnaire was used as oral interview on the illiterate respondents. Six null hypotheses were formulated and tested using chi-square (X^2) statistics at 0.05 level of significance. Six objectives and six research questions were structured.

The result of the findings showed that 80% of the respondents accepted to embark on goat production to improve their family income.

The present research study was the same with the work of Fola (1999) titled economic importance of goat production in Ikare Local Government Area in Ekiti. The present study used descriptive survey method like the past researcher. The present study is located in Benue State (Zone C Senatorial District), while the past study was located in Ikare Local Government in Ekiti State. The present study used 10,450 as population for the study and 600 respondents was randomly selected as sample for the study. The present study used five research objectives, question and five null hypotheses, while the past research study used six research objectives, questions and six null hypotheses. The present study used one sample t-test statistics at 0.05 level of significance to test the five null hypotheses like the past study. The present study used structured questionnaire for those

respondents that are literate and the same questionnaire was used as oral interview on those respondents that are not literate as instruments for data collection like the past study. The result showed that all null hypothesis were rejected meaning that there was significant differences between pig production over the production of other domestic livestock.

Yashim and Abdu (2002) conducted a survey research on goat and sheep: consumers preference in Kano Central Senatorial district of Kano State. The population for the study was 800, while 350 respondents were randomly selected for the study. Structured questionnaire were used on the literate respondents, while the same questionnaire used as oral interview on the illiterate respondents as instrument for data collection. Four research questions and objectives were formulated, four null hypotheses were stated. Pearsonman ranking order statistics and simple descriptive statistics were use to test the null hypotheses. The overall result showed that 59.38% of the consumers preferred sheep meat, while 40.62% preferred goat meat.

The present study was similar to the past research study – Yashim and Abdul (2002) titled goats and sheep: consumers preferences in Kano Central Senatorial district of Kano State. The present study used 10,450 as population for the study. 600 respondents was randomly selected for the study while the past study used 800 respondents as population for the study.

The present study used Zone C Senatorial District in Benue State as the study location, while the past study used Kano Central Senatorial District in Kano State. The present study used structured questionnaire on those respondents that are literate and as oral interview on illiterate respondents as instruments for data collection like the past researchers. The present study used five research objectives, questions and five null hypotheses, while the past study used four research objectives, question and four null hypotheses. The present study used one sample t-test statistics at 0.05 level of significance to test the null hypotheses while the past study used Pearman ranking order and descriptive statistics as tools to test the four null hypotheses. The result showed that pig production was more economically important than other domestic livestock.

Adida (2006), conducted a survey study research on ruminant animal production practiced by Agro-pastoral Fulanis. The area of study were Giwa, Zaria and Kaduna settlement of Northern Guinea Savannah region. The instrument for data collection was oral interview. The population for the study was 240 that is 60 respondents from Giwa, 80 respondents from Zaria and 100 respondents from Kaduan out of which 30, 50 and 65 respondents were randomly selected respectively as sample for the study. Five objectives and five research questions were formulated. Five null

hypotheses were also formulated. The results collected were analyzed using simple descriptive statistics. The results showed that Kaduna State location was favourable for cattle production by Agro-pastoral Fulanis.

The present study was similar to the work of Adida (2006) titled Ruminant animal production practiced by Agro-pastoral Fulani's in selected areas in Giwa, Zaria and Northern Kaduna in Kaduna State. While the present study was located in Benue State. The present study used descriptive survey design like the past study. The present study used 10,450 as population for the study and 600 respondents will be randomly selected for the study with the break down like this – Otukpo 170, Apa 240 and Agatu 190 while the past study used 240 respondents as population for the study with the breakdown like this- Giwa-60, Zaria-80 and Kaduna-100 out of which 30, 60 and 65 respondent was randomly selected respectively as sample for the study. The present study used five research objectives, questions and null hypotheses like the past study. The present study used one sample t-test statistics at 0.05 level of significance to test the five null hypotheses while the past study used simple descriptive statistics in analyzing the result collected. The present study used structured questionnaire and oral interview as instrument for data collection while the past study used structured oral interview as instrument for data collection.

The result showed that pigs were more economically important thatn the production of other domestic livestock.

Onimisi and Rufai (2008) conducted a survey study research to evaluate the contribution of local chicken production to poverty alleviation among the local chicken producer in Kaduna State. The specific area for the study were Zaria, Soba and Saminaka Local Government Areas of Kaduna state. The population for the study was 900 respondents. That is 300 respondents each from Zaria, Soba and Saminaka respectively. 20 respondents, 10 respondents and 15 respondents were randomly selected as sample for the study respectively. Structured questionnaire were used as an instrument for data collection. Three research questions, objectives and null hypotheses were formulated. Chi-Square (X^2) statistics was used to test the null hypotheses at 0.05 level of significance. The overall result showed that local chicken production though not for commercial status, the returns from the business was able to meet some necessary needs thereby alleviating poverty among the rural area of Kaduna State.

The present study was the same with Onimisi and Rufai (2008) titled contribution of Local chicken production to poverty alleviation among the local chicken producers in Kaduna State. The present study used descriptive survey design like the past study. The present study was purposively located

in Benue State while the past study was located in the three local government (Zaria, Soba and Saminaka) in Kaduna State. The present study used 10,450 as population for the study and 600 respondents was randomly selected as sample for the study while the past study used 900 as population for the study with the break down, Zaria 300, Soba- 300 and Saminaka 300. Twenty respondents, 10 respondent and 15 respondents were randomly selected as sample for the study respectively. The present study used structured questionnaire for those respondents that are literates and the same questionnaire was used as oral interview on the illiterate respondents as instruments for data collection while the past study used only structured questionnaire as instrument for data collection. The present study used five research objectives, questions and five null hypotheses while the past study used three research objectives, questions and three null hypotheses. The present study used one sample t-test at 0.05 level of significance as a statistical tool to test the null hypotheses like the past researchers. The tested five null hypothesis were rejected in favour of pig production meaning that pigs has economic importance more than other domestic livestock.

2.8 **Summary**

Foreign and indigenous authors agreed that pig was more prolific than other domestic livestock. Foreign and indigenous authors agreed that pig can eat

all varieties of feeds and they have the ability of converting these feeds to useful products like skin, hair and manure. Pigs also have the ability of growing more quickly than other domestic livestock. Many foreign and indigenous authors agreed that matured pig produced more meat than the meat of other domestic livestock. They also agreed that pig meat contained protein and minerals apart from fats. Many foreign and indigenous agreed that pig insulin was used to treat diabetes. They also agreed that rearing system of pig was easier and cheaper than the rearing system of other domestic livestock in terms of feeding, construction of housing and land requirement for grazing. Pig production was also seen by them to be more financially rewarding than other domestic livestock. Many foreign authors agreed that pig skin can be transformed into ladies shiny shoes and hand bags. They also agreed that pig manure when properly handled enhance fish and crop production. It was also agreed by them that pig hair was transformed into rudges and brushes.

CHAPTER THREE

RESEARCH DESIGN AND METHODOLOGY

This chapter on Research Design and Methodology has the following sub-headings :

3.1 Research Design

3.2 Population for the study

3.3 Sample size and sample procedure

3.4 Instrument for data collection

3.4.1 Validity of the instrument

3.4.2 Pilot study

3.4.3 Reliability of the instruments

3.5 Procedure for data collection

3.6 Procedure for data analysis.

3.1 Research Design

The researcher used descriptive survey design in the face of large and disperse population in the study location like this. The design is chosen because of its usefulness in collecting primary data from the target population. This helped the researcher in establishing relationship between the variable that were used to generalize the research results on the entire population. In order to support the above points, Olayiwola (2007) said that

it was an effective way of gathering data from different sources within the shortest possible time at relatively cheaper cost.

3.2 Population for the Study

The population for this study comprised 10,450 respondents that reared at least one or more domestic livestock in the nine (9) Local Government Areas that formed Zone C Senatorial District in Benue State. The breakdown of the population is stated in Table 3.1

Table 3.1: Population for the Study.

Zone C Senatorial District	No of target population	Percentage (%)
Ado	1140	10.91
Agatu	1190	11.39
Apa	1230	11.77
Obi	1145	10.96
Ogbadibo	1140	10.91
Ohimini	1130	10.81
Oju	1150	11.00
Okpokwu	1145	10.96
Otukpo	1180	11.29
Total: 9	10,450	100

Source: Local Government Civil Service Commission, 1991

3.3 Sample Size and Sampling Procedure

Manipulations of the whole subjects in educational research is not easy because of large scattered and distant of the population that may result into ambiguity. In order to reduce this ambiguity, sampling was used. In

view of this, Obe (2010) testified that if the representative is to be ensured, twenty percent should be drawn from the population of 1000, ten percent from the population of 5000 and five percent from the population of 10,000 and above were recommended. Using this as a yardstick, the sample size of 27 towns in Benue State with the population of 10,450 respondents that reared domestic livestock, five percent was used to draw the proportionate sample from the actual population for the study.

In selecting the sample size for the study, stratified random technique was adopted. Later, a squeezed piece of papers with "yes" and "No" written inside were used on the respondents. This was done by allowing each respondents played their (that randomization principle of giving equal chance of being selected at the time of selection) for example, Agatu with the sample population for the study of 73-Oshugbudu with sample size of twenty three have squeezed papers of thirty five and twenty three (23) were written "yes" and twelve "No". Ogbangede with sample size of twenty (20) have twenty eight (28) folded paper with twenty (20) written "yes" and eight was written "No" and finally Enugba with the sample size of twenty seven (27) have forty folded piece of papers with twenty seven written "yes" and thirteen (13) were written "No". The same procedure was carried in the remaining local Government Areas that formed Zonal C Senatorial District.

At the end, those respondents that picked “yes” formed the part of the study and those that picked “No” will not formed part of the study. The same procedure was adopted in selecting sample size for study area. For example, three towns were also randomly selected from each Local Government that formed the Zone C Senatorial District. This was carried out by writing the names of six (6) towns with the name of three towns written with “yes” and the remaining three towns written with “No”. The same thing was done in all the Local Government that formed this zone. At the end, those towns that picked “yes” formed the study location and those that picked “No” will not be part of the study location. The breakdown of sample size for the study is given in table 3.2.

Table 3.2. **Sample size for the study**

S/N	Zone C Senatorial District	Population	Sample Towns	Sample size	Percentage (%)
1	Ado	1,144	Igumale Ulayi Agila	59	9.83
2	Agatu	1,195	Ogbangede Enugba Oshugbudu	73	12.13
3	Apa	1,180	Iga-Okpaya Ofoke Edikwu	70	11.36
4	Obi	1,146	Ito Ogbodo Owokwu	63	10.5
5	Ogbadibo	1,150	Otukpa Orokam Owukpa	60	10.97
6	Ohimini	1,130	Okpiko Agadagba Eboya	57	9.5
7	Okpokwu	1,160	Okpoga Ichama Eke	72	12.0
8	Oju	1,153	Ikachi Ainu Ogege	71	11.45
9	Otukpo	1,232	Ipom Ugah Onipi	75	12.5
10	**Total**	**10,450**	**27**	**600**	**100%**

Source: Local Government Civil Service Commission, 1991.

3.4 **Instrument for Data Collection**

The researcher used questionnaire as well as oral interviews schedule as instruments for data collection. In the case of the oral interview schedule, the researcher used the same questionnaire on the illiterate respondents as an instrument for data collection. The questionnaire was divided into two sections. Section 'A' contained personal bio-data of the respondents such as names, age, gender, marital status, qualification, domestic animals reared other than swine and years of experience. The section B contained twenty five (25) questions (items) based on the research questions for example:

Question 1	Items	1-5
Question 2	Items	6-10
Question 3	Items	11-15
Question 4	Items	16-20
Question 5	Items	21-25

The questionnaire were clearly structured for the respondents to choose one answer to each number, four alternatives answers were provided such as:

1. - SD (Strongly Disagreed)
2. - D (Disagreed)
3. - A (Agreed)
4. - S A (Strongly Agreed)

3.4.1 **Validity for the Instrument**

The validity of the instruments in terms of content and face was determined by experts from the Division of Agricultural Colleges, (DAC) Ahmadu Bello University, Zaria. The experts examined the quality of these instruments with respect to the research questions, objectives and hypotheses. All critics and comments made by these experts were finally used to improve the quality of the measuring instruments.

3.4.2 **Pilot Study**

After necessary correction and validation of the instruments, a Pilot study was conducted at Samaru New Extension with twenty (20) respondents that reared domestic livestocks to test the reliability of the instruments. This town was not part of the study location but has equal characteristics with the study area.

3.4.3 **Reliability of the Instrument**

The data collected from the pilot study were analysed using inferential statistics (mean and standard deviation) and descriptive statistics (percentage and frequencies) in order to determine the internal consistency of the instruments, Pearman Product Movement Correlation Coefficient was used to calculate the reliability. The results of the computed correlation coefficient was 0.75. This showed that the instrument for testing the

reliability was stable and reliable. This was in line with Osuola, (2007) who said that an approximation of 0.60 to 0.80 was ideal to be used as an instrument for data collection.

3.5 Procedure for Data Collection

The researcher selected one research assistant from each of the towns selected and gave them one day training on how to answer the questionnaire. The researcher sought for permission from the clan heads of each selected study area. The researcher keeps strictly to the right and privacy of the respondents. The literate respondents were requested to fill the questionnaire and return them within seven (7) days through the research assistants of each zone, while those that were illiterate, oral interview was conducted for them by the researcher using interview schedule with the same questions as contained in the questionnaire on the spot to avoid misinterpretation of the information.

3.6 Procedure for Data Analysis

The data collected were analyzed using frequencies, percentage and means to answer Research Questions. One sample t-test was used to test the null hypotheses. All the null hypotheses were tested at 0.05 level of significance. A mean score of 2.50 and above was considered as 'Agreed' while a mean score of below 2.50 was considered as 'Disagreed'. 'Strongly

agreed' and 'agreed' was treated as 'agreed' while 'disagreed' and 'strongly disagreed' were treated as 'disagreed'.

Decision rule: if the calculated value is greater than critical value, the null hypothesis was rejected meaning that there was significant difference otherwise the null hypothesis was retained.

CHAPTER FOUR

PRESENTATION, AND ANALYSIS OF DATA

This chapter gives the report of the research findings based on the data collected from the respondents. The first part of the data collected consisted of demographic variables of the respondents which are presented below:

4.1 Analysis of Demographic Variables of the Respondents.

The analysis of demographic variables are shown in Tables 4.1.1 to 4.1.7

Table 4.1.1**: Percentage distribution of Respondents by Gender**

Gender	Frequency	Percentage
Male	178	32.19
Female	375	67.81
Total	553	100

Table 4.1.1 showed the distribution of the respondents by gender, it revealed that 178 representing 32.19% were males while 375 (67.81%) were females. This indicated that there were more females that rear domestic livestock than men in Benue State (Zone C Senatorial Disrict).

Table 4.1.2**: Percentage Distribution of Respondents by Marital status**

Marital status	Frequency	Percentage
Married	391	70.71
Single	162	29.29
Total	553	100

Table 4.1.2 showed the distribution of respondents by marital status which revealed that 162 (29.29%) were single while 391 (70.71%) were married men and women. This figure showed that married men and women were highly engaged in the rearing of domestic livestocks than those that were single as to reduce their family responsibilities.

Table 4.1.3**: Percentage Distribution of Respondents by age at which domestic livestocks were reared**

Age (in years)	Frequency	Percentage
25-30	103	18.62
31-60	385	69.62
Above 60	65	11.75
Total	553	100

Table 4.1.3 showed the distribution of the respondents by age that rear the domestic livestocks. The table revealed that 65 (11.75%) were the respondents whose age was above 60 years, 103 (18.62%) respondents were those whose ages were between 25-30 while the ages between 31-60 years were those respondents 385 (69.62%) that were highly engaged in the

rearing of domestic livestocks. The table 4.1.3 showed that rearing as secondary occupation in Benue State (Zone C Senatorial District) started gradually from the ages of 25-30 years with 103 respondents involved and grew very high as the respondents reached the age of 31-60, 385 (69.62%) which was their active period but started to decline at above 60 years when the respondents were less active.

Table 4.1.4**: Percentage Distribution of Respondents by level of qualification**

Qualifications	**Frequency**	**Percentage**
Illiterate –class 6	267	48.28
O. level	191	34.54
Above O. level	95	17.18
Total	553	100

Table 4.1.4 showed that rearing of domestic livestock was very common with those respondents 267 (48.28%) that were between illiterate to class six. The respondents with 'O'. level 191 (34.54%) saw rearing as alternative to other business while above 'O' level was very low with 95 (17.18%). The high figure of about 267 (48.28%) of the respondents was that, they saw rearing of these domestic livestocks as the only alternative means of solving their immediate problems.

Table 4.1.5**: Percentage Distribution of Respondents by domestic livestocks mostly preferred**

Domestic livestocks	Frequency	Percentage
Goats	211	38.68
Sheep	87	15.73
Poultry	225	64.19
Total	553	100

Table 4.1.5 revealed the domestic livestocks reared based on likeness. It can be seen that 255 (64.19%) respondents preferred to rear poultry to other domestic livestocks. 211 (28.16%) preferred to rear goats while 87 (15.73%) respondents preferred to rear sheep. This has clearly shown that people in Benue State (Zone C Senatorial District) preferred to rear poultry and goats to sheep because the value of sheep in their culture was not much compared to poultry and goats since Islam was not predominantly observed in the study area like other religions (Christianity and Traditional worship).

Table 4.1.6**: Percentage Distribution of respondents by domestic livestock that produced less meat**

Domestic livestocks	Frequency	Percentage
Goats	121	21.88
Sheep	97	17.54
Poultry	335	60.58
Total	553	100

Table 4.1.6 revealed those domestic livestocks that produced high and low quantity of meat. The figure 121 (21.88%) revealed the respondents

that agreed that goat meat was smaller than sheep and poultry. Figure 97 (17.54%) revealed those respondents that agreed that sheep meat was smaller than goats and poultry, while 335 (60.58%) respondents agreed that poultry meat was smaller than goats and sheep. The high figure of respondents that agreed that poultry meat was the smallest was only done on mere observation of the animals without considering the amount of bones contained in these domestic livestock-goats, sheep and poultry.

Table 4.1.7**: Percentage Distribution of the respondents by methods adapted in rearing domestic livestocks**

Method adapted	**Frequency**	**Percentage (%)**
Extensive rearing	412	74.51
Intensive rearing	141	25.49
Total	553	100

Table 4.1.7 revealed that method adapted by the respondents in rearing domestic livestocks in Benue State (Zone C Senatorial District), 412 (74.51%) respondents adapted extensive system of rearing of their domestic livestocks while, 141 (25.49%) practiced intensive system of rearing domestic livestocks. The high figure of 412 (74.51%) showed that extensive system of rearing domestic livstocks in Benue State (Zone C Senatorial District) was a common and accepted practice adapted by the respondents in

rearing their livestocks. This was because the respondents agreed to be the cheapest means of rearing domestic livestocks.

The second part of the chapter was made up of the analysis of the main variables relating to economic importance of swine production over the rearing of other domestic livestock among the people of Benue State (Zone C Senatorial District, Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo) which was presented on tables 4.2.1-4.2.5. This section was analysed in line with the research objectives, research questions and Null hypothesis. The analyses were summarized into agreed and disagreed. Decision on each of the item were based on the opinions of the respondents in which mean score calculated was based on the four point interval used in the study. It was calculated thus:

$$\frac{4+3+2+1}{4} = \frac{10}{4} = 2.50$$

A total of six hundred (600) copies of questionnaire were administered but five hundred and fifty three (553) were returned. Forty seven (47) questionnaire were not returned. The percentage of the returned questionnaire was 92.13% which was high enough to carryout the analysis.

The last part of the chapter was made up of the test of Null hypotheses which was presented on tables 4.3.1-4.3.5 and discussion of the major findings from the data analysis.

4.2 **Analyses of Data to Answer Research Questions**

Research Question One: Of what importance is the prolificacy of pig production over the rearing of other domestic livestocks such as cattle, goats, sheep and rabbits?

The findings of responses to the research question one is presented in Table 4.2.1

Table 4.2.1 **Opinions of Respondents on the prolificacy of pig production over the rearing of other domestic livestocks**

S/N	Item Statement	Agreed		Disagreed		Mean score	Remark
		F	%	F	%		
1.	Pigs are capable of farrowing twice a year based on their gestational period	495	89.51	58	10.49	3.36	Agreed
2.	Pigs can farrow 8-10 piglets at a time and wean 18-20 piglets in a year compared to other domestic livestock	4.77	86.26	76	13.74	3.29	Agreed
3.	Goats/cow can kid/calf twice in a year	227	41.05	326	58.95	2.32	Disagreed
4.	Goats/sheep/cattle will mature seven to eight months based on their gestational period	263	47.56	290	52.44	2.46	Disagreed
5.	It takes goats, sheep and cattle 4-8 weeks to wean their young ones	133	24.05	420	75.95	1.95	Disagreed
	Aggregate mean score					2.67	Agreed

From Table 4.2.1, item one gave a means score of 3.36 which indicated that majority 495 representing 89.51% of respondents agreed that pigs were capable of farrowing twice a year based on their gestational period, as against 58 (10.49%) that 'disagreed'. 477 (86.26%) of the respondents agreed to item two which stated that pigs can farrow 8-10 piglets at a time and can wean 18-20 piglets in a year compared to other domestic livestock as against 76 (13.74%) that 'disagreed'. This was supported with a means score of 3.29. item three had a mean score of 2.32 which indicated that 227 (41.05%) of the respondents agreed that goats/cow can kid/calf twice in a year while majority 326 (58.95%) of the respondents disagreed.

Item four had a means score of 2.46 which indicated that majority 290 (52.44%) of the respondents disagreed that goats/sheep/cattle will mature 7-8 months based on their gestational period, while 263 (47.56%) of the respondents agreed. Item five which stated that it took goats, sheep and cattle 4-8 weeks to wean their young ones. This tem had a mean score of 1.95 which showed that majority 420 representing 75.95% of the respondents disagreed as against only 133 (24.05%) of the respondents that agreed.

On the overall, Table 4.2.1 had an aggregate mean score of 2.67 which indicated that the respondents agreed that prolificacy of pig production was of importance over the rearing of other domestic livestock such as cattle, goats, sheep and horse.

Research Question Two: What are the major products acquired from pigs after feeding them with varieties of feeds?

The findings of responses to the research question two is presented in Table 4.2.2.

Table 4.2.2 **Opinions of Respondents on the major products acquired from pigs after feeding them with varieties of feeds**

S/N	Item Statement	Agreed		Disagreed		Mean score	Remark
		F	%	F	%		
6.	Swine can eat all types of feeds better than other domestic livestock	349	63.11	204	36.89	2.77	Agreed
7.	Based on adaptation to varieties of feeds, pigs grow more quickly than sheep, goats, cattle and horse	528	95.48	25	4.52	3.49	Agreed
8.	Ladies shiny foot wears and bags, rudges and brushes are made from swine skin and hair respectively.	182	32.91	371	67.09	2.14	Disagreed
9.	Swine manure enhance fish production when it is properly handled	241	43.58	312	56.42	2.37	Disagreed
10.	Pigs manure can be applied to soil to enhance crop production	313	56.60	240	43.40	2.65	Agreed
	Aggregate mean score					2.68	Agreed

From Table 4.2.2, majority of the respondents 349 (63.11%) agreed with item six which stated that swine can eat all types of feeds better than other domestic livestocks as against 204 (36.89%) of the respondents that disagreed. The item had a mean score of 2.77. Item seven had a mean score of 3.49 which indicated more respondents 528 representing 95.48% agreed that pigs grow more quickly then sheep, goats, cattle and horse based on the adaptation to varieties of feeds compared with only 25 (4.52%) of the respondents who disagreed. More respondents 371 (67.09%) disagreed with the notion in item 8 that ladies shiny foot wear and hand bags were made from the skin, while rudges and brushes are made from swine hair compared with 182 (32.91%) of the respondents that agreed. In line with this differences, item eight had a mean score of 2.14. Item 9 of Table 4.2.2 had a means score of 2.37 which revealed that 241 (43.58%) of the respondents agreed that swine manure enhance fish production when it is properly handled as against 312 (56.42%) of the respondents that disagreed. In item ten has 313 (56.60%) of the respondents agreed that pigs manure can be applied to soil to enhance crop production as against 240 representing 43.40% that disagreed. Based on the number that agreed, the item had a means score of 2.65.

On overall, Table 4.2.2 had an aggregate mean score of 2.68 which indicated that majority (63.11%) of the respondents agreed that swine can eat varieties of feeds and grow more quickly than other domestic livestocks like goats, sheep, cattle and horses. While majority of the respondents (56.42%) disagreed that manure cannot enhance fish production and that ladies shiny footwear, hand bags, brushes and rudges cannot be made from swine skin and hair.

Research Question three: To what extent is the dressing percentage of pig meat with nutrient values and pig insulin more important than other domestic livestock?

The findings of responses to the research question three is presented in Table 4.2.3

Table 4.2.3 **Opinions of Respondents on the importance of dressing percentage with nutrient values and part of pig meat (insulin) used in treating diabetes over other domestic livestocks.**

S/N	Item Statement	Agreed		Disagreed		Mean score	Remark
		F	%	F	%		
11.	Matured pigs produced more meat than other domestic livestocks like poultry, cattle, horse, goats, sheep, rabbit and poultry	387	69.98	166	30.02	2.94	Agreed
12.	Pig meat contains nutrient value like meats of other domestic livestocks like cattle, goat and sheep	175	31.65	378	68.35	2.18	Disagreed
13.	Pig production is the quickest means of bridging the gap between protein, energy and mineral deficiency like other domestic livestocks	154	27.85	399	72.15	2.13	Disagreed
14.	Among the domestic livestock, only pigs insulin can be used to treat diabetic patients	423	76.49	130	23.51	3.06	Agreed
15.	Domestic livestocks like cattle, goats, sheep, poultry and rabbit insulin will be used to treat diabetes	180	32.55	373	67.45	2.21	Disagreed
	Aggregate mean score					2.50	Agreed

From Table 4.2.3, respondents agreed that matured pigs produced more meat than other domestic livestocks like cattle, horse, goats, sheep, rabbit and poultry. The mean score of the respondents on item 11 was 2.94 which indicated that 387 (69.98%) agreed as against 166 (30.02%) that disagreed. Item 12 had a mean score 2.18 which indicated that only 175 (31.65%) of the respondents agreed that pig meat contains nutrient values like the meats of other domestic livestocks like cattle, goats and sheep as against 378(68.35%) that disagreed. Only 154(23.51%) of the respondents agreed to the notion that pig production could be used as the quickest means of bridging the gap between protein, energy and mineral deficiencies like other domestic livestocks (item 13) as against 399 (72.15%) of the respondents that disagreed. This indicated that more respondents disagreed therefore; the item had a mean score of 2.13. Item 14 had a mean score of 3.06 which indicated that more respondents 423 (76.49%) agreed that among the domestic livestocks, only pig insulin can be used to treat diabetic patients compared with 130 (23.51%) who disagreed. Item 15 had a means score of 2.21 which indicated that majority 373 (67.45%) of the respondents disagreed to the notion that domestic livestock like cattle, goats, sheep, poultry and rabbit insulin were also used to treat diabetes as against 180 (32.55%^) of the respondents that agreed.

On the overall, Table 4.2.3 had an aggregate mean score of 2.50 which indicated that more respondents agreed that mature pig produce more meat than poultry, goats, sheep, rabbits, horse and cattle. Majority also agreed that pig insulin can be used to treat diabetic patient. However, majority of the respondents (68.35%) disagreed with notion that pig meat contained nutrients like protein, energy and mineral like other domestic livestocks and they also disagreed with the saying that swine production was the quickest means of bridging the gap between protein deficiencies like other domestic livestocks. Finally, majority of the respondents disagreed that other domestic livestocks like poultry, rabbits, sheep, goats, horse and cattle insulin cannot be used in treating diabetes. This disagreement on pig nutrient contents was due to lack of proper awareness that was not acquired by the people of Benue State (Zone C Senatorial District- Ado, Agatu, Apa, Obi, Ogbadibo, Ohimini, Oju, Okpokwu and Otukpo). However, the overall results was positive.

Research Question Four: To what extent is the rearing system of pig easier and cheaper than the rearing of other domestic animals?

The findings of responses to the research question four is presented in Table 4.2.4.

Table 4.2.4 **Opinions of Respondents on the extent to which the rearing system pig is easier and cheaper than the rearing of other domestic livestocks.**

S/N	Item Statement	Agreed		Disagreed		Mean score	Remark
		F	%	F	%		
16.	People of Benue State (Zone C) prefer to rear poultry, sheep, goats and cattle to swine	371	67.09	182	32.91	2.86	Agreed
17.	Goats, sheep and cattle require more hectare of natural land to rear than swine	486	87.88	67	12.12	3.33	Agreed
18.	Production of pig in Benue State (Zone C) can be hindered by any of the following factors: area occupied by Muslim Community, long dry season (drought), scarcity of feed, religious belief	90	16.27	463	83.73	1.76	Disagreed
19.	Pig production in Benue State (Zone C) is hindered because of abnormal behavior of pigs	390	70.52	163	29.48	2.93	Agreed
20.	It is cheaper to construct pig pen than poultry, goats and sheep pens	518	93.67	35	6.33	3.45	Agreed
	Aggregate mean score					2.87	Agreed

From table 4.2.4, only 371 (67.09%) of the respondents agreed that people of Benue State (Zone C Senatorial District) prefer to rear other domestic livestocks to swine (Item 16) as against 182 representing 32.91% of the respondents that disagreed. The item had a mean score of 2.87. Item 17 sought to find out whether goat, sheep and cattle requires more hectare of natural land to rear than swine. In response to this item, 486 representing 87.88% agreed as against 67(12.12%) of the respondent that disagreed. The item had a mean score of 3.33. Item 18 of the table had a mean score of 1.76 which indicated that respondents 90(16.27%) agreed that production of pig can be hindered in Benue State (Zone C Senatorial District) by factors like long dry season, religions beliefs and others as against 463 (83.73%) of the respondents that disagreed. The majority (83.73%) of the respondents disagreed with the idea that swine production in Benue State (Zone C Senatorial District) was hindered by Muslim community, long dry season, lack of feeds, religious belief and custom. Majority 390 (70.52%) of the respondents agreed that swine production in Benue State (Zone C Senatorial District) was hindered by abnormal behavior of swine like toiling children grave yard, removing the buried bodies thereby rewounding the healing minds of the affected parents, lying down in a dirty environment and eating dirty feeds that have low nutrient value, while only 163 (29.48%) of the

respondents disagreed with the item. The item had a mean score of 2.93. Item twenty had a means score of 3.45which indicated that more respondents 518 (93.67%) agreed that it is easier and cheaper to construct swine pen than poultry, goats, sheep and rabbit as compared with just 35 (6.33%) of the respondents that disagreed to the item.

On the overall, Table 4.2.4 had an aggregate mean score of 2.87 which signified that more respondents agreed that it is easier and cheaper to rear pig than other domestic livestocks in term of land requirement for grazing and construction of domestic livestock housing and feeding.

Research Question Five: To what extent is pig production more financially rewarding and profitable to farmers than other domestic livestocks such as cattle, goat, sheep, poultry in terms of market demand and supply?

The findings of responses to the research question five is presented in Table 4.2.5

Table 4.2.5 **Opinions of Respondents on the profitability of pig over other domestic livestocks.**

S/N	Item Statement	Agreed		Disagreed		Mean score	Remark
		F	%	F	%		
21.	Pigs cannot be found in every market unlike goat, sheep and poultry	336	60.76	217	39.24	2.72	Agreed
22.	It is very difficult and costly to get pig meat (pork) everyday compared to goat, cattle sheep and poultry meats	443	80.11	110	19.89	3.14	Agreed
23.	It is easy to sell 8-10 piglets every year than selling 4-6 kid, lamb and calves	460	83.18	93	16.82	3.23	Agreed
24.	The demand for pig meat (pork) is higher than the demand for other domestic animals	50	9.06	503	90.96	3.39	Disagreed
25.	More money is spent in preserving pig meat (pork) than the meat of goats, sheep and cow	243	42.31	319	57.69	2.34	Disagreed
	Aggregate mean score					2.96	Agreed

From table 4.2.5, item 21 had a mean score of 2.72 which indicated that more respondents 336 (60.76%) agreed that pig cannot be found in every market unlike goat, sheep and poultry as compared with 217 (39.24%) of the respondents who disagreed to this notion. Item 22 had a mean score of 3.14 which also indicated that more respondents 443 representing 80.11% agreed that it is very difficult and costly to get pig meat everyday as compared with goat, sheep and poultry meat as compared with 110 (19.89%) of the respondents that disagreed to the notion. Item 23 of table showed that 460 (83.18%) of the respondents agreed that it is easy to sell 8-10 piglets every year than selling 4-6 kids, lamb and calves as against 93 (16.93%) of the respondents that disagreed. The item had a mean score of 3.23 to support this notion. Item 24 had a mean score of 3.39 which indicated that 503 representing 90.96% disagreed that demand for pork is higher than the demand for the meat of other domestic livestocks while only 50(9.04%) of the respondents agreed with the notion. Item 25 of the table had a mean of 2.34 which indicated that 243(42.31%) respondents agreed that more money is spend in preserving pork than the meat of goat, poultry, rabbit sheep and cow as against 319 (57.69%) respondents that disagreed with the notion.

On the overall, Table 4.2.5 had an aggregate mean score of 2.96 which indicated that more respondents agreed that swine production is more

financially rewarding and profitable to farmers than other domestic livestocks such as cattle, goats, sheep, poultry in terms of market demand and supply since swine (pork meat) cannot be seen in every market day. The idea that a sow can farrow 8-10 piglets at a time and can farrow twice a year and wean 18-20 piglets in a year is a clear testimony of how swine production is financially beneficial and profitable more than other domestic livestock. A swine farmer can sell 8-10 piglets in a year compared to other domestic livestocks like sheep that lamb 1-2 at a time and can lamb twice in a year base on its gestational period while goats can kid 1-3 at a time and can only kid once a year, cattle can calf one calf at a time and only once in a year. Preservation of meat in the meat industries in Nigeria is a problem today subjecting many meat dealers to huge loss of capital. This was not common to swine (pork meat) because of its non availability in every market day. This made the demand to be more by the consumer than the supply within that sport thereby reducing the cost of preservation when compared with other domestic livestocks.

4.3 Test of the Null Hypotheses

The five Null Hypotheses of the study were tested using chi-square since they are test of independence (relationships)

Null Hypothesis 1: There is no significance difference between the mean responses of the respondents on the prolificacy of pig production over other domestic livestock such as cattle, goats, sheep and horses.

The result of null hypothesis one is presented in Table 4.3.1

Table 4.3.1 **One sample t-test result on relationship between pig production and other domestic livestock**

Variable	**N**	**Mean**	**t^2cal**	**DF**	**P Decision**
Pig production	553	2.68	5.52	552	0.001 S
Other domestic livestock	553				

t^2 –critical = 1.96 at 0.05

From the Table 4.3.1, the result of the chi-square revealed that the calculated value of (t^2) was 5.52 which was greater than critical value of 1.9 calculated at 0.05 level of significance. The observed probability of 0.001 was less than the fixed value of 0.05.

The result of the tested null hypothesis revealed that there was significant difference between prolificacy of swine production over the production of other domestic livestocks in Benue State (Zone C Senatorial District. Therefore, the Null hypothesis was rejected, meaning that there was significant different between the prolificacy of pig product over other domestic livestock.

Null Hypothesis 2: There is no significant difference among the mean responses of the respondents on the efficiency of pigs conversion of animal feeds to other useful products over the efficiency of feed conversion by other domestic animals.

The result of the tested null hypothesis 2 is presented in Table 4.3.2

Table 4.3.2 **One sample t-test result on the difference between efficiency of pig conversion of animal feeds and efficiency of other domestic livestocks.**

Variable	**N**	**Mean**	**t^2cal**	**DF**	**P**	**Decision**
Efficiency of pig conversion	553	2.58	5.60	552	0.006	S
Efficiency of other domestic livestock						

t^2 –critical = 1.96 at 0.05

From Table 4.3.2, the result of the chi-square revealed that the calculated value of t-test was 5.60 which was greater than the critical value of 1.96. the observed probability value was 0.006 which was less than the fixed probability value of 0.05. Therefore, the null hypothesis that stated there is no significant difference between the efficiency of pigs conversion of animal feeds to other useful products and the efficiency of feed conversion by other domestic animals was rejected in favour of pig production, that is there was significant differences between the efficacy of swine conversion of feeds to useful products over other domestic livestocks.

Null Hypothesis 3: There is no significant relationship between the dressing percentage of pig meat, nutrient values and insulin and other domestic livestock.

The result of the tested null hypothesis 3 is presented in table 4.3.3

Table 4.3.3 **One sample t-test result on the difference between quantity of meat produced and insulin of pig and other domestic livestocks.**

Variable	**N**	**Mean**	**t^2cal**	**DF**	**P**	**Decision**
Meat quantity of pig	553	2.88	6.52	552	0.002	S
Meat quantity of other domestic livestocks						

t^2 –critical = 1.96 at 0.05

Table 4.3.3 : the result of the tested hypothesis three (3) showed that t^2 was 6.52 while the critical value calculated was 1.96 at 0.05 level of significance, the observed probability of 0.002 was less than the fixed value of 0.05, therefore, the null hypothesis that stated that there is no significant difference between pig dressing percentage with nutrient values and pig meat insulin used in treating diabetes was rejected in favour of pig production.

Null Hypothesis 4: There is no significant difference between the rearing system of pigs and rearing system of other domestic livestocks such as cattle, goats, sheep and poultry.

The result of the null hypothesis 4 is presented in Table 4.3.4

Table 4.3.4 **One sample t-test result on the difference between rearing system of pigs and rearing system of other domestic livestocks.**

Variable	**N**	**Mean**	**t^2cal**	**DF**	**P**	**Decision**
Rearing system of pig	553	2.85	4.59	552	0.000	S
Rearing system of other domestic livestocks						

t^2 –critical = 1.96 at 0.05

Table 4.3.4: the result of the chi-square calculated revealed that the calculated t-test was 4.59 and the critical value was 1.96 at 0.05 level of significant. The observed probability value of 0.000 was less than the fixed value of 0.05. therefore the null hypothesis that stated that there was no significant difference between the rearing of pig and other domestic livestock was rejected in favour of pig production. Meaning that pig production was cheaper and easier in rearing than other domestic livestock.

Null Hypothesis 5: There is no significant difference between the financial benefits of pig production and production of other domestic animals in terms of market demand and supply.

The result of the test null hypothesis 5 is presented in Table 4.3.5

Table 4.3.5 **One sample t-test result on the difference between the financial benefit of pig production and the production of other livestocks.**

Variable	**N**	**Mean**	**t^2cal**	**DF**	**P**	**Decision**
Pig production	553	2.62	5.06	552	0.002	S
Production of other domestic livestocks						

t^2 –critical = 1.96 at 0.05

From the Table 4.3.5, the observed t-test of 5.06 was greater than the critical value of 1.96. The observed probability value of 0.002 was less than the fixed probability level of 0.05 ($p<0.05$). Therefore, the null hypothesis that stated that there was no significant difference between the financial benefit of pig production over the production of other domestic livestocks in terms of market demand and supply was rejected. This implied that the financial benefits of pig production was significantly different from the financial benefits of the production of other domestic livestocks.

4.4 Summary of Major Findings

The major findings of this study are summarized as follows.

Pigs were capable of farrowing 8-10 piglets at atime and can farrow twice and wean 18-20 piglets in a year. The pigs weaned their young ones (piglets) between 4-5 weeks and young ones matured within 7 months based on their gestation period of 112-120 day. On other hand, sheep can lamb 1-2 at a time and lamb twice a year based on their gestation period of 147 days and matured within 10 months. Goats can kid 1-3 kids at a time and can kid once in year based on gestational period of 150 days and their young ones mature within one year. Cattle on the other hand calf one at a time and can calf once in a year based on their gestational period of 273-288 days and they weaned their young ones within 300 days and matured between 3-4 years.

Pigs are capable of converting varieties of feeds consumed to useful products (pork, hair, skin and manure) unlike other domestic livestock, and have the advantage of growing more quickly than other domestic livestock.

Matured pig produces more meat than other matured domestic livestock. Pig insulin was used to treat a disease called diabetes and finally, pig meat contain not only fat, but protein and minerals.

Rearing system of pig production was easier and cheaper than the rearing system of other domestic livestock in terms of land requirements for grazing, feeding and construction of housing since pigs are capable of eating

varieties of food that have low nutrient values and their housing can be constructed with tree trunks and thatch grass.

Pigs are more financially rewarding than other domestic livestock since one sow was capable of farrowing 8-10 piglets at a time and can farrow twice and weaned 18-20 piglets in a year, meaning that pig farmer can sell 8-10 piglets in a year compared to other domestic livestock such as goats, sheep, cattle and horse farmers that cannot sell 4-6 kids, ram, and calves respectively in a year. Finally, the fact that pigs can not be found in the public market like other domestic livestock made its demand to be more than the supply by its consumers which was an indication of pig production to be more financially rewarding than other domestic livestocks.

4.5 Discussion and Major Findings

The result obtained for the study revealed that respondents agreed to items in Table 4.2.1 which revealed that pigs were more prolific than other domestic livestocks like goats, sheep, horse and cattle. Respondents agreed with a mean score of 3.36 that pigs farrowed more frequently than other domestic livestocks. These findings was inline with Eusebio (1980) who inferred that swine can farrow 8-10 piglets at a time and can farrow twice in a year and wean 18-20 piglets based in their gestational period of 112-120 days, while other domestic livestocks had longer gestation period. For

example, cattle have a gestation period of about 270-290 days which also depended on the species. It was also found that pig were capable of producing more offsprings than other domestic livestock. Eusebio (1980), observed in line with this that a matured sow was capable of producing 8-10 piglets at one farrowing period, while according to Oyenuga (1999), cattle were capable of producing only one calf per year.

Another findings of this study was that swine were capable of eating wide varieties of feeds and converting them to useful products like skin, hair and manure for example, lady shiny footwear and handbags were made from the skin of swine while rudges and brushes were made from swine hair and that manure derived from pig enhanced fish production. This finding was in line with Edward (1998) who stated that pig production have quicker and better means of converting feeds consumed to meat, skin, hair, manure than cattle, goats and sheep when they were provided with high quality feeds with the exception of rice bran and hay. Buttressing this view Sandra (2006), pointed that pigs had speedy mechanism in the conversion of feeds to meat for human consumption compared to other domestic livestocks. The respondents agreed with a mean score of 2.77 that pigs adapt to varieties of feed and as such they grow more quickly than other domestic livestocks. In agreement with this view, Hurghs (1998), opined that unlike cattle, sheep

and goats, pigs can feed on mouldy grains or other grains that have been damaged by other livestocks in the processing of feeds.

The study also found that the dressing percentage and pig insulin is more important than that of other domestic livestocks in the treatment of diabetic patients. The respondents disagreed with a mean score of 2.40 that pig meat contains some nutrient values like the meat of other domestic livestocks like poultry, rabbit, horse, cattle, goat and sheep. However, the finding of dressing percentage was supported by Eusebio (1980), who found out that the dressing percentage of pig (Hog 70-90%) was higher than the other domestic animals. That pigs have 76.6% while others like poultry 64.3%, cattle 52.2% horse 49.1%, rabbits 48.1% and goats 44./1%. Lois (1995), gave reasons why goat's figure was very low because of being bonny due to eating all sorts of things like leather, clothes, wood and shoes, that may or may be low in food value. On the other hand, Oyenuga (1999), in his findings highlighted the reason why cattle figure was low due to consumption of high quality hay, silage and pasture as to stimulate rumen bacteria that will make fermentation to take place easily for future milk production. Apart from future milk production, hay, silage and pasture enhance early rumen development.

Hammerman, et.al. (2010), carried out a research findings on the important of pig insulin to the health of diabetic patient at Washington University School of Medicine in St. Louis with 10 rats that could not produce any insulin on their own but have high glucose level. The author used pancreatic cell of immature pigs by transplanting on the 10 rats. As the immature pancreatic cell developed, the rats began to produce insulin that helped to lower their blood glucose level but was not at normal level. Later one rat was treated with islet cell from the adult pig while the nine (9) rats were used as control group. After 12 weeks and several months, the result showed that one rat treated separately had normal blood glucose level while the nine (9) rats that were put as control group continued to produce high blood glucose. This showed that pig insulin was very good in controlling diabetes.

The study also found out that the rearing system of pig was easy and cheaper compared to that of other domestic livestocks like cattle, goats and sheep. Respondents agreed with a mean score of 3.33 (87.88%) against the rearing of other domestic livestock that requires more hectare of land. This findings agreed with Eusebio (1980) who stated that pigs require small area or space in which to grow. The author said that pigs can be raised in a small area either in a closed confinement within a building or a small area of

pasture unlike cattle, sheep and goats that usually required one hectare of natural pasture per head. Also Lios (1995), clarified that in rearing pigs; plastic materials that were strong enough to withstand pigs was not suitable to goats because goats were active creatures that appeared to think that speed of entry to their pens was necessary at all times. Wilfred (1999), said that goats behavior made them to jump and explore their surroundings. The author viewed goats as an inquisitive animals that did not want confinement like other domestic livestocks. In supporting the behavior of goats, Jennse (1998), described goats as destructive to trees, gardens and crops. The author described goats as notorious animals in a cultivated land and when confined to yard, they tried to trespass on privacy and liberty by refusing to be silent out of her own company. The author pointed out that this negative behavior resulted into solution found on their neck as tethering chain.

The study found that pig was more financially rewarding than other domestic livestock. This was because pigs grow quickly and also produce more piglets than other domestic livestock. This findings coincides with Jean (1992), who pointed out that the demand for the consumption of pork was very high in areas where traditions do not interfere with it. However, the case became different in Benue State since pork meat can not be seen in every market day, it became a clear evidence of good financial rewarding as

the demand was moderately higher than the supply by the consumer. This will not create room for the preservation of meat any longer like the meat of other domestic livestocks that may stay three to six days or more before been sold.

In addition, the study also found that there was significant differences between the economic importance of swine production and production of other domestic livestock on variable like prolificacy, efficiency of feed conversion, dressing percentage of meat and insulin used in treating diabetic patients, rearing system and financial benefit.

In conclusion, when all findings are compared, swine have greater economic importance over other domestic livestocks like poultry, rabbits, goats, sheep, horse and cattle.

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Summary

The study on Economic Importance of Swine Production over the Rearing of other Domestic Livestocks in Benue State was carried out using descriptive survey design. The researcher used 10,450 respondents as population for the study while 600 respondents were randomly selected as samples size for the study using the principle of randomization (equal chance of being selected). Twenty seven towns were randomly selected as study locations from Zone C Senatorial District in Benue State.

General objectives was formulated from which five specific objectives, research questions and five null hypotheses were formulated to guide this study.

Questionnaire was used on the literate respondent while oral interview was conducted for the illiterate respondents as a means of collecting data. Research Assistants were used to distribute and collect the questionnaire from the literate respondents while oral interview was conducted by the researcher on the illiterate respondents to avoid misinterpretation of information.

Pilot study was conducted at Samaru using 20 respondents that reared domestic livestocks. This area was not part of the study location but has equal characteristics. One sample T-test was used to test the Null Hypotheses at 0.05 level of significance. The result showed that the five Null Hypotheses were rejected meaning that there was significant differences between the Economic Importance of Swine Production over the rearing of other domestic livestocks in Benue State.

5.2 Conclusion

Based on the findings of this study, it was concluded that pigs have economic importance more than other domestic livestocks since one sow can farrow 8-10 piglets at a time and can farrow twice and wean 18-20 piglets in a year based on their gestational period of 112-120 days compared to sheep that can lamb 1-2 rams at a time and can lamb twice in a year based on their gestational period of 147 days, while goats can kid 1-3 at a time and can kid once in a year based on the gestational period of 150 days and on the other hand, cattle can calf one calf at a time and can calf once in a year based on their gestational period of 273-288 days. Pigs can wean the young ones within 4-5 weeks and they matured within 7 months. On the other hand, sheep matured within 10 months, while goats matured within one year and finally cattle wean their young ones within 300 days and matured within three to four years.

Pigs are capable of eating varieties of feeds and convert them to useful products like pork, skin, hair and manure. This made them to grow more quickly than other domestic livestocks. Example ladies shiny foot wears and handbags can be made from the skin of pigs while pig hair was used in making rudges and brushes, despite the fact that pigs eat dirty feeds that have low nutrient values. Finally, pig manure was used to enhance fish and crop production.

Matured pigs produced more meat than the meats of other matured domestic livestock. Pig meat also contained protein and minerals apart from fats. Part of pig meat insulin was used in controlling disease called diabetes.

Rearing system of pig production was easier and cheaper in terms of feeding and land requirement for grazing since pigs are capable of eating varieties of feeds thereby reducing the cost of feeding. Construction of pig housing can be made of tree trunks with thatch grass compared to housing of other domestic livestock that cannot be made from tree trunks with thatched grass.

Studies also reviewed that based on the number of offspring farrowed at a time and number of times one sow can farrow and number of weaned piglets in a year enable the pig farmer to sell 8-10 piglets in a year compared

to goats, sheep and cattle farmers that cannot sell 4-6 kids, rams and calves respectively in a year.

The fact that pig were not found in public market and its meat were not found everyday like other domestic livestock made their demand to be higher than supply by the consumers of pig meat thereby resulting into instability of the price.

5.3 Recommendations

Among the problems that prompted this study consequent upon the preceding conclusion, the following recommendations were made:

1. Since pigs were more prolific and can produce more offspring, Benue Lower River Basin Development Authority should make piggery available at subsidized rates as to boost pig farming since pigs were not commonly sold in public market.
2. Private organization like Young Farmers Club (YFC) and Farmers Cooperative (FC) should educate their members on the importance of pig by-products such as pig skin, hair and manure as to improve pig production in Benue State.
3. Medical doctors or an experienced person should be invited by Non-Governmental Organizations to go to rural areas and educate people of Benue State on the importance of pig insulin used in controlling diabetes.

They should be educated that pig meat contained not only fats but also protein and minerals.

4. Animal husbandry Officer should be invited by Young Farmers Club (YFC) to educate people of Benue State on the method of rearing pigs at reduced cost that will reduce pig abnormal behavior.
5. Government of Benue State should mobilize the extension workers to go closer to rural populace and educate them based on the sale of pigs in public markets like other domestic livestocks in Benue State.

5.4 Suggestions for Further Studies

Due to the limited time and funds available to the researcher, other possible areas that could be investigated were left out. Hence, the researcher suggests the following areas for further studies:

1. This study is restricted to Benue State (Zone C Senatorial District) with only twenty seven towns used, it was therefore suggested that similar studies be carried out in other parts of the towns (Zone C Senatorial District).
2. Research should also be carried out to investigate respondents attitude towards swine nutrients values as was compared with other domestic livestocks and important products like manure that could be used to enhance fish and crop production when properly handled.

3. This study concentrated on the economic importance of swine production over the rearing of other domestic livestocks like poultry, rabbits, goats, sheep, horse and cattle. Other domestic livestocks like camel, fish, and buffalo etc should also be researched into so as to see whether swine production supersedes all the domestic livestocks in terms of economic importance.
4. Research should also be carried out to investigate the negative side like disease transmission and control as to see whether swine production was really more economically important than other domestic livestock.

5.5 Contribution to Knowledge Advancement

This study has contributed to knowledge advancement in the following ways:

1. The study has made people of Benue State to know that pigs can farrow 8-10 piglets at a time and can farrow twice and wean 18-20 piglets in ayear. On the other hand, sheep can lamb 1-2 rams at a time and can lamb twice in a year. Goats kid 1-3 at a time and kid once in a year while cattle calf one calf at a time and can calf once in a year. It takes pig to wean their piglets 4-5 weeks and the piglets matured within 7 months. On the other hand, young sheep matured within 10 months, young goats

(kids) matured within one year and finally, cattle wean their young ones within 300 days while they matured between 3-4 years.

2. The findings also made people of Benue State understand that pigs can eat varieties of feed which made them grow more quickly than other domestic livestock. The studies also have shown that pig products such as skin and hair are good for local craft e.g leather from pig skin was used in making ladies shiny foot wears and hand bags, pig hair was used in making brushes and rugs and pig manure was used to enhance fish and crop production.
3. The study have shown that matured pigs produced more meat thena matured rabbit, poultry, goats, sheep, horse and cattle. Pig insulin can be used to control diabetes and pig meat contain protein and minerals apart from fat.
4. The study have also shown to the people of Benue State that rearingof pigs in areas like feeding, construction of housing and natural grass land required for grazing was easier and cheaper than other domestic livestock.
5. The findings have made people of Benue State to know that only pig farmers was capable of selling 8-10 piglets in a year meaning that a pig

farmer is more financially rewarding than other domestic livestock farmers.

5.6 Limitation of the study

The following are the limitation of this study:

1. This study was limited by inter-village land dispute between Ologba and Egba in Agatu Local Government of Benue State making the researcher to change the study location from Aila to Ogbangede.
2. The study was limited by over flooding of the rivers removing the linking bridge thereby preventing the researcher from reaching the study location on that day. However, the researcher has repeated the journey the next day.
3. The towns used for the studies were only 27. Other towns within Benue State that did not have the opportunity of being included may affect the scope of generalization made on the findings as it affects the population of the study.

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APPENDIX 1

Vocational & Tech. Department,
Faculty of Education,
Ahmadu Bello University,
Zaria.

Dear Respondents,

Request to Fill Questionnaire

I am, Ochepo Emmanuel, Postgraduate student in the Department of Vocational and Technical Education, Faculty of Education, Ahmadu Bello University, Zaria undertaking a research work on Economic importance of Pig Production over the rearing of other Domestic Livestock among the people of Apa Local Government Area in Benue State. I will appreciate your support and effort in the collection of data for this research topic by filling the attached questionnaire.

All the information provided shall be used for academic purpose only and shall be treated confidentially.

Thanks.

Yours faithfully,

Ochepo, Emmanuel

SECTION A: RESPONDENTS BIO DATA

INSTRUCTION:
Tick (√) the appropriate boxes provided

1. Name_____
2. Name of town_____L.G.A_____
3. Sex:
   Male ( )
   Female ( )
4. Marital Status:
   Single ( )
   Married ( )
5. Age (in years) at which these domestic livestock were reared:
   28-40 ( )
   41-60 ( )
   Above 49 ( )
6. Qualification of the respondents that reared these animals.
   Illiterate ( )
   Class 6 ( )
   Secondary Level ( )
   Above Secondary Level ( )
7. Livestock mostly preferred to rear
   Goats ( )
   Sheep ( )
   Poultry ( )
8. Domestic livestock that produced less meat
   Goats ( )
   Sheep ( )
   Poultry ( )
9. Methods adapted in rearing these domestic livestock
   Intensive system ( )
   Extensive system ( )

Section B

Instruction: Tick ( ) the appropriate boxes provided only.
Key:

SD: Strongly Disagreed
D: Disagreed
A: Agreed
SA: Strongly Agreed

Will be used for questionnaire No. 1-25

		SA	A	D	SD
	Prolificacy				
1.	Pigs are capable of farrowing twice a year based on their gestation period.				
2.	Pigs can farrow 8-10 piglets at a time				
3.	Goats and cow can kid/calf twice in a year				
4.	Goat/sheep/cattle will mature seven to eight months based on their gestation period				
5.	It takes goats, sheep and cattle 4-8 weeks to wean their young ones				
	Efficiency of Nutrient Conversion of pigs to useful products				
6.	Swine can eat all types of feeds better than other domestic livestock				
7.	Based on adaptation to varieties of feeds, pigs grow more quickly than sheep, goats, cattle and horse				
8.	Ladies shiny foot wears and bags are made from swine skin and rudges and brushes are made from swine hair.				
9.	Swine manure can enhance fish production when it is properly handled				
10	Pigs manure can be applied to soil to enhance crop production				
	Dressing percentage with nutrient values and part of pig meat (insulin) used as treatment for diabetic patients				
11	Matured pigs produced more meat than other domestic livestock like cattle, horse, goats, sheep, rabbit and poultry				
12.	Pig meat contains nutrient values like the meats of other domestic				

		SA	A	D	SD
	livestock like cattle, goat and sheep				
13.	Pig production is the quickest means of bridging the gap between protein, energy and mineral deficiencies than other domestic livestock				
14	Among the domestic livestock, only pigs insulin can be used to treat diabetic patients.				
15.	Domestic livestock like cattle, goats, sheep, poultry and rabbit insulin will be used to treat diabetes.				
	Rearing system (Extensive, semi-intensive and intensive system				
16.	The people of Benue State (Zone C Senatorial District) prefer to rear swine to poultry, rabbits, sheep, goats and cattle.				
17.	In rearing, (extensive and semi-intensive) cattle, goats and sheep require more hectare of natural land than swine				
18.	Production of pig in Zone C Senatorial District can be hindered by any of the following factors – area occupied by Muslims community, long dry season (drought) availability of feeds, religious customs/beliefs.				
19.	Pig production in Benue State (Zone C Senatorial District) was hindered because of abnormal behaviour of pigs like lying down in a dirty environment, eating dirty feeds that have low nutrient values.				
20.	It will be cheaper to construct poultry, goats and sheep pens than swine pens				
	Financial Rewarding interm of market demand and				
21.	Pigs can be found in every market unlike goats, sheep, poultry in Benue State (Zone C Senatorial District)				
22	It will be very difficult and costly to get pig meat (pork) everyday compared to goat, sheep, poultry meats.				
23	It will be easy to sell 8-10 piglets every year than selling 4-6 kids, lambs and calves.				
24	The demand for pig meat (pork) is higher than the demand of other domestic livestock in Benue State (Zone C Senatorial District).				
25.	More money is spent in preserving pig meat than other domestic livestock				

APPENDIX II

List of distributed population of the respondents according to geopolitical areas

Zone C Senatorial District	No of respondents	Percentage (%)
Ado	1140	10.91
Agatu	1190	11.39
Apa	1230	11.77
Obi	1145	10.96
Ogbadibo	1140	10.91
Ohimini	1130	10.81
Okpokwu	1150	11.00
Oju	1145	10.96
Otukpo	1180	11.29
Total	10,450	100

Source: Survey carried out in 2010-2011