PROFITABILITY ANALYSIS OF PIG PRODUCTION UNDER INTENSIVE MANAGEMENT SYSTEM IN NSUKKA LOCAL GOVERNMENT AREA OF ENUGU STATE, NIGERIA

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ABSTRACT

The study examined the profitability of pig production under intensive management system in Nsukka Local Government Area in the year 2009. Data were obtained from five notable intensive pig farmers and their employees through well structured questionnaire and oral interviews. Data were analyzed using profitability tools like Gross Margin, Net Revenue and Cost Benefit Ratio. Findings showed that under one production year, the gross margin was N1,182,000 while Net Revenue was N1,004,750 and the Cost Benefit Ratio (CBR) was 1.30 which indicates that the enterprise is profitable since BCR is greater than 1. The result also revealed that feed cost was the most expensive resource. It was recommended that feed cost should be reduced through the process of substituting feed with locally available by products. Better marketing channels should be established for increased sales of pork.

Keywords: *Profitability, Pig production, Intensive management, increased pork sales.*

INTRODUCTION

With ever increasing human population in Nigeria and virtually static agriculture productivity, the animal protein consumption among Nigerians has worsened in the past few years (Okpor, 1999). Many Nigerians feed on carbohydrate. This is because the average man cannot afford the cost of animal protein which is richer in amino acid. The deficiency of animal protein in the diet of so many people is often attributed to the low number of livestock (cattle, pigs, poultry, goats, sheep and their products), and the activities connected with their production which are not efficient (Morrison, 1991). Ugwu (1996) observed that animal protein apart from its palatability is essential for normal physical and mental development of man. He stated that its deficiency in the diet exerts adverse effects in terms of reduced human productivity due to abnormal development. Equally, he noted that animal protein energy deficiency causes high incidence of infant mortality, pronounced malnutrition and disease.

Livestock production in Nigeria is carried out under different systems broadly classified as extensive, semi intensive and intensive. The extensive system can also be called the free range system where the animal roam and look for food. It is unspecialized and traditional system which is most predominant among small scale

farmers. The semi intensive allows for good control of feeding and management and animals are more protected under this system than the free range. Intensive production system is the total confinement of animals. This system enables them to express fully their genetic potentials since adequate nutrients are provided to satisfy requirement for efficient feed conversion and growth (Devandra and Fuller 1989). The system has a lot of advantages over the extensive and semi intensive system in terms of disease and breeding control as well as adoption of improved technology in animal production. The system also avoids destruction of growing crops and animals becoming nuisance on the street.

The pig industry in Nigeria is an important arm of the livestock sub-sector in the overall agricultural sector. This assertion derives from the fact that porcine production, among other species has a high potential to contribute to high economic gain in three ways. First, the pigs have high fecundity, high feed conversion efficiency, early maturity, short generation interval and relatively small space requirement. Secondly, they are multipurpose animals providing about 40% of meat in the world market, cooking fats and bristles. Pig is equally important for agro-based industries like feed mills for provision of bone and blood which are used for production of bone meal and blood meal respectively, which are good source of calcium in animal nutrition. In addition, pig's manure is an excellent fertilizer for enriching poor soils and provision of biogas methane for cooking. Its skin is also useful for light leather production (Babatunde & Fetuga, 1990). Thirdly, it is produced under a variety of production systems ranging from simple backyard piggery, pigs living on garbage belts to family operated farms or large scale integrated pig industries with sophisticated biosafety measures.

Pig production has been ticked as a panacea to protein inadequacy due to certain attributes which pigs possess that are not in other domestic livestock. According to FAO (2001), pork is believe to be the most popular meat consumed in the world today. Forty four percent of world meat protein consumption is derived from pork and pork products (FAO, 2001). The people of Nsukka also have high value for pig because it is one of the requirements in their marriages and burial rites, many other feast and festivals have special provision for pork meat.

Unfortunately, pigs in most cases are left to the small scale native farmers who traditionally leave the animals to scavenge with minimal attention for their lives. This system is characterized by high mortality rate, absence or minimal healthcare and improper housing and feeding (Ugwu, 1996). This has led to poor production and improvement of the pigs in areas which encourage spread of disease, low fecundity and low meat yield. According to Karrol and Krider (2001), free ranging of pigs is considered as one of the risk factors for porcine cysticerosis. Therefore, it is imperative to find ways to keep pigs enclosed. Economic studies have shown that traditional production system is wasteful and unprofitable due to poor feed conversion, high mortality rates, low reproductive rates and final products (Verhulst, 1993).

It is in recognition of this that the study is carried out to obtain productivity

analysis as well as the profitability of piggery when kept under better management practices. This study will provide vital information to investors, serve as a guide to the farmers as well as reveal the importance, and advantages of modern piggery over the traditional method of keeping pigs and hence the profitability which will encourage farmers and investors to embark on piggery. It will help to reduce unemployment because the profitability of the enterprise will motivate unemployed citizens to embrace piggery as a means of livelihood.

MATERIALS AND METHODS

The study was carried out in Nsukka Local government Area of Enugu State, Nigeria. Nsukka L.G.A. is made up of sixteen towns, namely, Opi, Ibagwa Agu, Eha-Ndiagu, Alo-Uno, Okutu, Anuka, Okpuje, Nsukka, Obimo, Ede-Obala, Edem, Ibagwa Ani, Okpaligbo, Lejja, Obukpa and Ehalumona. (Nsukka L.G.A. Information Office Bulletin, 2004). Nsukka L.G.A. lies between latitudes 6^{o} 45^{l} and 7^{o} 00^{l}N and longitudes 7^{o} 15^{l} and 7^{o} 34^{l} of the Greenwich Meridian. The mean temperature falls between 27^{o}C and 28^{o}C. The two prominent climatic seasons in the area include the rainy season, lasting from April to October and the dry season lasting from November to March (Ofomata, 1976).

Out of sixteen towns in Nsukka L.G.A. five towns were purposively chosen because notable intensive pig farms were located there. They are Nsukka, Opi, Ibagwa ani, Edeoballa and Obukpa. One farm was selected from each of the towns and that gave 5 farms for the survey. Primary data were collected through structured questionnaire, personal observation, interviews and direct information from the pig farmers and their employees. The data obtained from the farms were analyzed using profitability tools such as Gross margin analysis, Benefit Cost Ratio and Net Revenue.

The management system adopted was intensive and the pigs were cross breeds. The pigs were confined in a good pen and a balanced food given to them at the right time. Also watering, veterinary services and skilled labour were also provided for the pigs. Morrison (1991) stated that the ultimate performance of measure in a livestock business is the amount of profit which is made and the level of profit made depends on management. Hans (2000) stated that profitability is not a function of investment only but management and husbandry play very important roles.

Three types of pig houses were mainly used namely: farrowing house, weaner house and fattening house. The floors of the pig houses were concrete and properly built. It sloped gently to one end of each row of the pen in order to facilitate the run off of urine and water when the pens are being washed. The wall was a dwarf wall constructed with blocks and half open sided building. The roof was strong, weather-proof, a bad conductor of heat and light . It was made of corrugated asbestos sheets. The housing was suitable with ample protection against environmental hazards, stress, good sanitation and good hygienic condition, sufficient space and minimal feed wastage. This agrees with Philips (1997) that adequate housing is necessary to provide good health and increase efficiency of feed utilization.

Apart from full commercialized concentrates, feed given to the pigs were made up of cassava peels, bambara nut waste , ground nut waste and other domestic wastes including vegetables, these form balanced rations . The ration for finishing pigs was quite different from that supplied to lactating and breeding pigs. According to Fuller (1991), pigs are fed with different types of ration at different ages.The feeding scale for the pigs is shown on table 1.

The pigs were given recommended ration of the two meals, one in the morning and the other in the evening. The water requirement was much higher per unit of body weight for young pigs than it was for adult pigs because younger pigs consumed more feed per unit body weight. Certain routine practices were done by the attendants to ensure high health conditions of the animals at all times. These included vaccination, deworming and proper sanitation. Cases of diseases were promptly attended to. This is in agreement with Okpor (1999) who reported that proper health care reduces risk of severe economic losses. The farmers were keeping up to date records. In the view of Fuller (1991) record keeping is the key to good business and management. He is also of the opinion that in order to increase the efficiency of performance of a herd and to produce figures from which margins can be calculated, an up to date record must be kept.

The tusk teeth of the piglets were trimmed in order to discourage fighting for a teat or biting into it for which the sow is very sensitive. From the study, the gilts mated when they were eight months old. Gestation period was 114 days. Pigs were marked or numbered for record purposes. Male pigs that were not required for breeding were castrated for good quality meat. Young pigs were weaned at six weeks of age. Those produced for pork were fattened to gain weight quickly and was sold at 45 to 65kg live weight.

RESULTS AND DISCUSSION

Inputs and values of inputs: The breeding animals were twenty one on the average comprising sixteen breeding sows and five breeding boars. The average inputs used in production are listed on Table 2. The depreciating values of equipment such as wheel barrow, weighing scale, knife, pincer, water tank and pig catcher), were calculated using the straight line method. The values of the houses and breeding stock were also calculated by the same method.

For one production year (2009) 1000 bags (25kg bag) of manufactured feed was consumed and each cost N1,800.00 giving a total of N1,800,000.00. The feeds were substituted with locally spent grain, cassava and hay. Total quantity of grain spent was 50,000kg at N750,000.00. Twenty five metric tones of cassava at N15,000.00 per tonne was also used and that gave N375,000.00. Bundles of hay cost N3,000.00. The salaries were N83,730.00. Medical cost incurred in vaccination, deworming treatment of pigs was N10,000.00. Transport was also N10,000.00.

Output and value of outputs: Each sow produced twice in the survey year with average litter of 16 piglets. Total piglets produced were 256 on the average. Sixteen died before weaning so total piglets weaned in the year was 240. Sixty piglets were

sold at weaning age at the price of N5,000.00 each that gave N300,000.00. One hundred and eighty pigs were fattened and sold at N20,000.00 each at average weight of 50kg each. Hence, sales of 180 pigs was N3,600,000.00. Five culled sows were sold at N22,000.00 each that gave N110,000.00. Seven hundred bags of manure were sold at N400.00 per bag that gave N280,000.00. Two thousand empty bags were also sold at N30.00 each which gave N60,000.00. The outputs are summarized on Table 2. The result shows that under one production year, the variable cost was N3,168,000.00, the gross margin was N1,182,000.00 whereas Net Revenue was N1,004,750.00 while the Benefit Cost Ratio (BCR) was 1.30 which shows that the enterprise is profitable since the BCR is greater than 1. This agrees with Olorinde, Ajao and Ajetombu (2003) in their comparable study of small scale poultry and piggery farms, it was revealed that piggery generates better profit margins.

The profitability of the enterprise was also as a result of the high demand of pork in the area. The people in the study area are Christians and there was no limit to the acceptance of pork. They also demand pig as one of the major items to be presented during marriage or burial ceremonies. The result further shows that cost of feed was the most expensive resource in pig production enterprise. This is in agreement with Westernbrink (1995) that cost of feed is higher when pigs are kept under intensive management system. Devandra and Fuller (1979) also reported that the high cost of feed is one of the major problems in pig production enterprise. However, it is profitable to feed pigs on commercial fully balanced concentrates.

CONCLUSION AND RECOMMENDATIONS

The study revealed that pig production under the intensive management system is profitable and economically viable. It equally shows that feed is the most expensive resources when pigs are enclosed and are fed with commercial full concentrates. In view to increase production and profitability in pig enterprise, it is recommended that feed cost should be reduced through the process of substituting feed with locally available by-products like banana, maize residues, sugar cane residues, cassava, fish waste, over ripe fruits etc. Such diet may be supplemented with small quantities of protein concentrates. There should be an enlightenment campaign to the neighbouring states through extension services and home economics programme to make people aware of the nutritional and economic advantage of eating pork. Better marketing channels should be utilized like local established supermarkets with facilities, transportation and personnel for marketing pork. Farmers should form cooperative societies especially in the rural areas and inter State trading should be encouraged. The mortality rate for piglets should be reduced through the use of farrowing crates so as to minimize accidental death of the piglets.

Table 1: Feeding Scale for Pigs

Animals	Age (Days)	Body Weight (Kg)	Protein Content In Feed	Types of Ration	Amount of act Feed Needed Per pig/day Kg
Piglet	7 - 21	2 - 5	24	Pre-starter	0.50
	21 -35	5 - 11	18	Starter	0.80
	35 - 56	11 - 23	16	Grower	1.2
Weaners	56 - 182	23 - 57	18	Grower	2.0
Fatteners	182 - 242	57 - 90	13 - 16	Finisher	2.8
Flushing Sows	-	57 & over	13	Flushing	0.9
Lactating Sows	-	100 & over	18.5	Lactation	2.0
Boars	-	90 & over	14	Maintenance	2.8

Source: Field Survey, 2009

Table 2: Average Cost and Returns of pig production in one year

Output and values of output	Unit cost (N)	
Income		
60 weaned piglets	5,000	300,000
180 fattened piglets	20,000	3,600,000
5 culled sows	22,000	110,000
2000 empty bags	30	60,000
700 bags of manure	400	280,000
Sub total		4,350,000
Input and values of input		
Variable cost		
Feed (1000 bags)	1800	1,800,000
Spent grain (50,000kg)	15	950,000
Bundles of Hay		3000
Cassava (25 tons)	15,000	375,000
Labour		220,000
Medication		10,000
Transportation		10,000
Sub total		3,168,000
Fixed Cost		
Salaries		83,730
Maintenance		3,000
Depreciation		90,520
Sub total		177,250

Source: Field Survey, 2009.

Profitability of pig production.

Net Revenue (NR) = Total Revenue (TR) - Total cost (TC)

Total cost = Total variable cost (TVC) + Total fixed cost (TFC)

(i.e. TC = TVC + TFC)

NR = N4,350,000 - (N3,168,000 + N177250)

= N4,350,000 - N3,345,250 NR = N1,004,750

Gross Margin (GM) = TR - TVC

GM = N4,350,000 - N3,168,000 GM = N1,182,000

Benefit Cost Ratio (BCR) = TR/TC

$$= \frac{4350000}{3345250} = 1.30$$

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