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CONSTRAINTS TO THE PROFITABILITY OF PIG FARMING IN CROSS RIVER STATE, NIGERIA

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Abstract

The study determined the constraints to the profitability of pig farming in Cross River State, Nigeria.A research question and one hypotheses guided the study. The hypothesis was tested at p< 0.05 level of significance. Survey research design was used. The study was carried out in Cross River State. The population for the study was 744 participants made up of 456 and 288 registered pig farmers and agricultural extension officers respectively in the study area. The instrument for data collection was a structured questionnaire. The instrument was validated by three (3) experts, one (1) from the Department of Agricultural Education, and two (2) from the Department of Animal Science, all from University of Nigeria, Nsukka. The data was analyzed using Mean and t-test statistical tool. The sample for the study comprised 260participants made up of 150 registered pig farmers and 110 agricultural extension agents. The sample size for the registered farmers and extension agents was determined using the Taro Yamane formula. Finding indicated that pig farming is faced with constraints such as high cost of investment, expensive housing, and disease outbreak, sourcing for pig feeds, manure disposal, air and water pollution, cultural and religious taboo, among others. It was recommended among others that pig farmers should be educated on how to identify basic constraints that may threaten their productivity such as pest and diseases and report the same to appropriate authorities for assistance.

Keywords:*Pig Farming, Constraint, Profitability,*

Introduction

Pig is one of the farm animals that have long played important roles in the nutrition and economy of mankind. Pigs are domestic Swine, mammals of the Suidae family. According to Irekhore (2012), a pig is any of the animals in the Genus Sus, within the Suidae family of even toed ungulates. They are mammals with stocky bodies, small eyes, large ears, and flat snouts (Carlson, 2020). The word pig, hog and swine are all generic terms used synonymously without regard to gender, size or breed. The domestic pig (*Sus scrofa domesticus)* or *S. domesticus* have coats that are coarse and bristly. They are snout-bodied, short-legged, omnivorous mammals, with thick skin usually sparely coated with short bristles. There are four hoofed toes on each foot, with the two larger central toes bearing most of the weight but the outer two also being used in soft ground. Pigs were domesticated approximately 5,000 to 7,000 years ago and have become very important as a source of high-quality protein, playing crucial roles in the socio-economic life and wellbeing of farmers.

Pig is one of the most widely consumed animals accounting for about 36% of meat production in Nigeria (Food and Agriculture Organization FAO, 2018). Pork can be eaten both freshly cooked and preservedhile the pancreas is used in the production of insulin. Some materials that are produced using parts from a pig include antifreeze, fertilizers and adhesive, water fitter, insulation, rubber, certain plastics, floor waxes, crayons, and chalk adhesive (United State Department of Agriculture USDA, 2016). Similarly, pig manure is widely used as fertilizer, for crop production globally.Fat from pig abdomen (lard) is used in shaving creams, soaps, make-up, baked goods, and other foods. The skin of a pig can be used to produce footballs and clothing items for human consumption. Pig production provides a veritable source of income for farmers and the national economy. Irekhore (2012) observed

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that pig production contributes about 10% of the total annual revenue derived from animal production. Compared to other livestock, pigs possess qualities which endear them to farmers.

The outstanding qualities which grant Pig production potential advantages over other livestock and make them suitable for profit-based business venture in Nigeria are numerous. The National Agricultural Advising Services NAAS (2021) identified these advantages to include high feed conversion efficiency, utilization of a wide variety of feed stuffs into valuable nutritious meat, high prolificacy, little investment on buildings and equipment; and quick returns since the marketable weight of fatteners can be achieved within a period of 5 – 8 months. NAAS (2021) pointed out that there is good demand from domestic as well as export market for pigs' products such as pork, bacon, ham, sausages, and lardamong others. To harness the benefits from pig production, farmers rear different types of pig breeds.

There are several types of pigs breeds popularly raised in Nigeria. Each type varies in appearance, size, and biological characteristics. According to Akinbobola (2021), the popular breeds include, large white (Yorkshire), landrace, Duroc and Poland China. The large white is white in colour with black pigments, possess moderately long head with slight dished face and a broad snout, with fine neck, long and evenly full to shoulders with deep and broad chest, and have long, level, wide back. According to Turner (2021), the large white is known for its good carcass quality, high prolificacy, and efficient feed conversion ability. The Landrace is medium to large and has outstanding abilities when it comes to raising large litters and farrowing ability (Turner, 2021). The Landrace is known for its smoothness and lean carcass, high prolificacy, sturdy nature and mature early. The Duroc breed has an excellent weight gain rate, high feed conversion capacity early maturity, ability to farrow large litter and good mothering ability. The Poland China breed is black in colour with white patches on the face. It is prolific with excellent meat and good carcass quality, excellent feed conversion capacity, and early maturity (Brown, 2020). The large white (Yorkshire) breed is used in this study because of its starling qualities such as good carcass quality, high prolificacy, and efficient feed conversion, and its relative popularity among Nigerian livestock farmers. The pigs are reared using different enterprises.

Profitability indicates the overall success and sustainability of a business (Turner, 2021).It provides a knowledge of the economic state of the business and helps entrepreneurs to be efficient in their management decisions and not to be wasteful in their spending, their time and money thus yielding a positive economics of production. Economics of production refers to utilizing the minimum quantity of resources by the pig farmer to obtain maximum benefit. It entails wisely allocating the various inputs such as feeds, medication; utilities and litter among others which the pig farmer spends money on to avoid wastage of those resourcesto be profitable. Most often, pig farmers encounter several constraints which threaten the profitability of the business.

A preponderance of factors constraintspig farming in different parts of Nigeria including inadequate extension education, high cost of feed, diseases and parasite infestation, poor farm management, high cost of veterinary services, insufficient credit facilities and subsidies, and infant mortality and cannibalism (Uddin & Osasogi, 2016). Others are difficulty in securing institutional loans, cost of feed and feed ingredients, disease outbreak, and pilfering. Inadequate finance can restrict farmers from expanding their scale of production. Oguniyi and Omoteso (2014).and Bamiyi (2013) identified that the major constraint of the animal farm industry especially in developing countries like Nigeria is capital. These constraints vary depending on the geographical, climatic and policy environment under which the pig farmers operate, thus the need to investigate constraints specific to pig farmers in Cross River State.

Statement of the problem

Farmers venture into pig production with the aim of rearing piglets or mature pigs both for the market and supply of high-quality protein sources for the family. To achieve this, farmers adopt different pig production systems and enterprises, deploying different factors of production such as land, labour, capital, and management at varying levels of cost. Pig production enterprises adopted include farrow to finisher enterprises, farrow to wean enterprises, pig breeding enterprises, and pig finisher enterprise. In each of these enterprises, the farmer can sell pigs at any phase, and still make some profit. In the pig finisher enterprises for instance, the farmers purchase the weaned piglets and raise them to table size before disposing them through marketing. The pigs attain table size from about ten weeks and continue to grow thereafter as they remain on the farm till the age of about 20 – 25 weeks after weaning.

Within the rearing period, the farmer can sell the pigs either as live pigs or pork with the view to generate income to cover cost of investment with profit. In Cross River State, pig farmers sell their pigs at almost any stages of production (grower stage to the finishing stage) all to make profit. However, it is not certain which phase yields the highest returns on investment. Mostfarmers believe that the longer the pigs stay in the farm after the initial maturity, the higher the weight gain and the higher the price when disposed. Similarly, the longer the pigs stay in the farm, the more the resources spent on feeds and other variable costs, thus increasing cost of production. For the pig farmer to make profit, the income from the sale of the pig and its products must be higher than the cost of rearing.

Unfortunately, farmers most often focus on the profit which is an absolute number and think less or are unaware of the profitability of the farm business which is a broader concept that assesses how effective a farm business generates profit relative to the resources invested; and indicate overall success and sustainability of the pig farm enterprises. Most farmers do not really know the best age or stage of maturity to market their pigs for highest profitability. Consequently, pig farmers most often incur greater cost of production relative to the

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profit when they eventually dispose the pigs. This situation reduces the pig farmers' income and earnings, increases the cost of production, raises the rate of poverty, threatens the survival of the farms, and pose a threat to national food security, thus the need to determine the the constraints to pig production.

Purpose of the Study

The purpose of the study was to determine theconstraints to the profitability of pig farms in the area.

Research Question

This study answered this research question:What are the constraints encountered by pig farmers in Cross River State, Nigeria

Research Hypothesis

This null hypotheses guided the study:There is no significant difference in the mean rating of the opinion of pig farmers and agricultural extension personnel on constraints encountered by pig farmers in Cross River State, Nigeria.

Literature review

The piggery enterprise is faced with a myriad of constraints which contribute to negatively influence its profitability. Among these include inadequate extension education, high cost of feed, diseases and parasite infestation, poor farm management, high cost of veterinary services, insufficient credit facilities and subsidies, and infant mortality and cannibalism (Uddin & Osasogi, 2016). Others include difficulty in securing institutional loans, cost of feed ingredients, and pilfering. Inadequate finance can restrict farmers from expanding their scale of production. Oguniyi and Omoteso (2014).and Bamiyi (2013) identified the major constraints to the profitability of the animal production industry in developing countries like Nigeria as inadequate capital. Financial inadequacies have led to slow growing animal industries or moribund ones or even destroyed animal production industries. According to Adejoba, Adu, Meduna&, Adekunle, (2014), low-income earners who dominate the animal industry are not able to cope with the demands of the industry especially when production is not at its optimum level; arbitrary cost of feed and feed ingredients can hinder pork production.

Feed cost and the price of feed ingredients has substantial impact on profitability in pig production, as higher feed prices can quickly convert profits into losses (Hofstrand, 2014). Findings by Osondu, Ijioma, Anyiro, and Obike (2014) stressed that feed is a major operational cost item in a pig enterprise. According to the authors, Pigs require feed to meet biological needs for maintenance, growth, and reproduction.Osondu, Ijioma, Anyiro, and Obike (2014) noted that most meat consumed in Nigeria comes from the northern part of the country, but religious addicts constrain the optimum production of pigs in Northern Nigeria, as such pig production is mainly undertaken in the southern part of Nigeria.

This sole situation has made pig production not being as important as sheep, goat and cattle production in Nigeria. A study by Agada (2019) reveals that the neglect or slow growth of the swine industry can be attributed to reasons which include religion, acceptability and above all management. According to Umeh (2015), Nigeria has a large population of Muslims who constitute the majority of most States of the North-West and North-East zones as well as other zones in Nigeria and with the growth of Islamic fundamentalism, opposition to pig production is very significant and may not favour profitable pig production due to their religious belief.

Irekhore (2012) highlighted possible constraints to the profitability of the pig production enterprises to include: higher investments for permanent buildings, equipment, etc.; time consuming as th farmer has to work in a clockwise precision to be profitable; intensified disease problems, thus controlling diseases are more vital; diets must be adequate because of no access to other sources of nutrients; problems with manure disposal, odors, flies, etc.; environmental problem regulations such as air and water pollution; and animal welfare and (or) rights concerns. Other factors identified by Irekhore (2012) include disease outbreak, inadequate technical assistance in the form of extension services, inaccessibility of pig farmers to credit facilities, lack of adequate supply of genetically sound breeders, high cost of feed, poor infrastructure facilities, the fear of inadequate market for piggery products, the absence of pig product processing industry in Nigeria, and the belief that pigs are dirty and constitute a health hazard when consumed. Umeh, Ogbanje, and Adejo (2015); and Ogar (2019) identified constraintsto the profitability of the pig enterprise to include factors such as social factors, religious opposition to pig production and consumption, disease, inadequate technical assistance in the form of extension services, and inaccessibility of pig farmers to credit facilities. Social factors that could influence pig production according to the authors include the general preference for ruminant meat, and also the belief that pigs are dirty and constitute a health hazard.

Methodology

The study adoptedsurvey research design. The study was carried out in Cross River State. Nigeria. The population for the study was 744 participants made up of 456 and 288 registered pig farmers and agricultural extension officers respectively in the study area. The sample for the study comprised 260participants made up of 150 registered pig farmers and 110 agricultural extension agents. The sample size for the registered farmers and extension agents was determined using the Taro Yamane formula.

The instrument for data collection wasa structured questionnaire. The questionnaire is titled "Economics of Piggery Production for Farmers' Profitability Questionnaire (EPPFPQ). The questionnairehad two parts; Part one sought for the respondent personal information while Part 2 focused on the constraints to profitability of pig farmers in the study area. The instrument was based on a four-point response option of strongly agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) with values of 4, 3, 2, and 1 respectively. The instrument was validated by three experts,

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one from the Department of Agricultural Education, Faculty of Vocational and Technical Education, and two from the Department of Animal Science, Faculty of Agriculture, University of Nigeria, Nsukka. To test for reliability of the structured questionnaire, the Cronbach Alpha method was employed to test the internal consistency of the instrument. The reliability test result yielded coefficients of 0.85. The structured questionnaire was administered through direct contact with the help of the research assistants. The instruments were retrieved immediately after completion by the respondents. All the 280 copies of the structured questionnaire administered were retrieved and used for analysis, giving a 100% rate of return.

The data aimed at answering research questions were analyzed using Mean. The hypotheses were tested using t-test statistic at the 0.05 level of significance. To take decision on the research question, the real limit of numbers was used. Any item with a mean rating of 3.50 – 4.00 was taken as strongly agree, 2.50 – 3.49 was taken as agree, while mean rating of 1.50 – 2.49 was taken as disagree. Mean rating less than 1.50 was taken as strongly disagree. A null hypothesis was upheld when the calculated value of p is equal or greater than the 0.05 level of significance ($p \geq 0.05$) and rejected if otherwise.

Results

Research Question: What are the constraints encountered by pig farmers?

Table1:

*Mean and Standard Deviation Analysis of the Constraints Encountered by Pig Farmers***N=260**

S/N	Items	$\overline{X}_G$	SDG	Dec
1	High cost of investment for permanent buildings, equipment, etc	3.26	0.75	A
2	High cost of maintaining the pig house	2.94	0.88	A
3	It is expensive in working to maintain the pigs	2.99	0.87	A
4	Outbreak of diseases	2.72	0.99	A
5	Difficulty in sourcing feeds for the pigs	3.17	0.83	A
6	Problems with waste disposal, odours, flies etc	2.86	0.98	A
7	Pig rearing causes air and water pollution	3.04	0.89	A
8	Cultural and religious taboo affect pig production	2.83	0.90	A
9	Inadequate technical assistance in the form of extension services	2.93	0.93	A
10	Poor access to credit facilities	2.87	0.96	A
11	Lack of adequate supply of genetically sound breeds	2.84	0.97	A
12	High cost of feeds	3.14	0.93	A
13	High cost of transportation	2.86	1.03	A
14	Inadequate market and market facilities for pig products	3.03	0.91	A
15	The absence of pig products processing industry in the zone	2.83	0.95	A
16	The belief that pigs are dirty and constitute a health hazard when consumed	2.87	1.03	A
17	Low quality feeds from the suppliers	2.97	0.92	A
18	High cost of labour	2.95	0.89	A
19	Inadequate modern technology	2.90	0.96	A
20	Inadequate communication channel	2.75	0.97	A

Key: X_G = Grand Mean; SD_G = Grand Standard deviation; A = Agree

Table 1 presents the results of the mean and standard deviation analysis of the responses of respondents on the constraints faced by pig farmers. The result shows that all the items had the mean rating ranging from 2.72-3.26 which are within the real number limit of 2.50 – 3.49 indicating agree. This implies that the respondents agree that the constraints faced by pig farmers include high cost of investment, expensive housing, expensive to maintain pigs, disease outbreak, sourcing for pig feeds, manure disposal, air and water pollution, cultural and religious taboo, inadequate technical assistance, poor access to credits, and poor supply of genetically sound breeds. Others include high cost of feeds, high cost of transportation, inadequate marketing and marketing facilities, absence of pig processing industry, misbelief that pigs are dirty animals, poor feed quality, high labour cost and poor communication channels among others.

Hypothesis : There is no significant difference in the mean ratings of pig farmers and agricultural extension personnel on the constraints face by pig farmers.

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Table2:

t-test Analysis of the mean ratings of pig farmers and agricultural extension personnel on the constraints encountered by pig farmers.

N_1 = 150; N_2 = 110

		Farmers		Extension			
S/N	**Items**	$\overline{X}_1$	**SD 1**	$\overline{X}_2$	**SD 2**	**p-value**	**Rem**
1	High cost of investment for permanent buildings, equipment, etc	3.35	0.69	3.16	0.81	0.06	NS
2	High cost of maintaining the pig house	3.04	0.81	2.84	0.94	0.06	NS
3	It is expensive in working to maintain the pigs	3.13	0.82	2.85	0.92	0.01	S
4	Outbreak of diseases	2.84	0.98	2.59	0.99	0.07	NS
5	Difficulty in sourcing feeds for the pigs	3.32	0.68	3.01	0.98	0.00	S
6	Problems with manure disposal, odours, flies etc.	2.99	0.97	2.72	0.99	0.04	S
7	Pig rearing causes air and water pollution	3.08	0.88	2.99	0.9	0.44	NS
8	Cultural and religious taboo affect pig production	3.02	0.88	2.63	0.91	0.00	S
9	Inadequate technical assistance in the form of extension services	3.06	0.9	2.8	0.95	0.03	S
10	Poor access to credit facilities	2.9	0.93	2.84	0.98	0.60	NS
11	Lack of adequate supply of genetically sound breeds	2.95	0.95	2.73	0.98	0.09	NS
12	High cost of feeds	3.15	0.94	3.13	0.91	0.86	NS
13	High cost of transportation	3.03	0.95	2.68	1.1	0.01	S
14	Inadequate market and market facilities for pig products	3.12	0.84	2.94	0.97	0.11	NS
15	The absence of pig products processing industry in the zone	3.01	0.89	2.65	1.01	0.00	S
16	The belief that pigs are dirty and constitute a health hazard when consumed	3.04	0.96	2.7	1.09	0.01	S

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17	Low quality feeds from the suppliers	3.03	0.93	2.9	0.91	0.29	NS
18	High cost of labour	3.06	0.89	2.84	0.88	0.05	NS
19	Inadequate modern technology	3.02	0.95	2.78	0.97	0.07	NS
20	Lack of proper communication channel	2.83	0.92	2.67	1.01	0.20	NS

Key: X_1 = Mean of Farmers; SD_1 = Standard Deviation of Farmers; X_2 = Mean of Extension Agents; SD_2 = Standard Deviation; S – Significant; NS = Not Significant

Table 2 presents the result of the t-test analysis of the mean responses of pig farmers and agricultural extension personnel on the constraints faced by pig farmers. The results show that items 3, 5, 6, 8, 9, 13, 15 and 16 with the corresponding p-values ranging from 0.00 – 0.03 are less than the 0.05 level of significance. This implies that there is a statistically significant difference ($p<0.05$) in the opinions of extension personnel and pig farmers on those items. The null hypothesis is therefore rejected for those items. Further, items 1, 2, 4, 7, 10, 11, 12, 14, 17, 18, 19 and 20 had the p-values ranging from 0.05-0.86 which are equal or greater than 0.05 level of significance implying that there is no statistically significant difference ($p\geq0.05$) in the mean responses of extension personnel and pig farmers on those items. The null hypothesis is therefore upheld on those items.

Findings of the Study

The findings on this aspect of the study revealed that pig farming is faced with high cost of investment, expensive housing, and disease outbreak, sourcing for pig feeds, manure disposal, air and water pollution, cultural and religious taboo, among others.

Discussion of findings

The findings on the constraints faced by pig farmers revealed that high cost of investment, expensive housing, disease outbreak, sourcing for pig feeds, manure disposal, air and water pollution, cultural and religious taboo, among others are the constraints faced by pig farmers. These findings are in consonance with those of Uddin and Osasogi (2016), Oguniyi and Omoteso (2014).and Bamiyi (2013) who in their different studies identified extension education, high cost of feed, diseases and parasite infestation, poor farm management, high cost of veterinary services, insufficient credit facilities and subsidies, and infant mortality and cannibalism and difficulty in securing institutional loans as constraints. Also, Adejoba, Adu, Meduna & Adekunle (2014) identified arbitrary cost of feed and feed ingredients as hindrance in pork production as found in this study.

Implications of the Findings

The findings from this study have far reaching implications for profitability and sustainability of pig farms, wellbeing of pig farmers, poverty reduction, food security,

For the profitability and sustainability of pig farms,the findings of the study if implemented, would make pig farms to become more profitable and sustainable. Famers will make more profit when they sell their pigs either live or slaughtered at the appropriate phase of production. This will minimize the waste of feeds and other production resources, maximize profit, and encourage the farmers to stay in business; reduce the rate of attrition of pig farms and promote their sustainability.

For poverty reduction and national economic development: The findings of this study if implemented will lead to a more vibrant and profitable pig production sub sector, enhances the income of rural pig farmers, and reduce poverty. When farmers earn more from their farm businesses, they contribute not only to their rural economies, but to the national economic development.

For Food security: food security exists when food is available, accessible, and utilized by the people on a sustainable basis. The findings of this study if implemented will ensure an increase in the production of pigs and pig products and their ready availability on a sustained and affordable basis. An increase in the production of pigs because of the implementation of the strategies identified in this study will raise the intake of animal protein and reduce the prevalence of malnutrition related diseases, especially among rural dwellers.

Conclusion

Pig production is a highly profitable enterprise and contribute to reducing poverty and promote food security. However, farmers are faced with a numerous constraint in the pig production businesses. Some of the constraints include high cost of investment, expensive housing, and disease outbreak, sourcing for pig feeds, manure disposal, air and water pollution, cultural and religious taboo, among others, which need be addressed.

Recommendations

Based on the finding and the conclusion of the study, it is recommended that pig farmers should be educated on how to identify basic constraints that may threaten their productivity such as pest and diseases and report the same to appropriate authorities for assistance. This can be achieved by educating providing them with dedicated lines to report cases of disease outbreak and other constraints on their farms.

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