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Constraints of Pig Production in Nigeria: A Case Study of Edo Central Agricultural Zone of Edo State

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Authors' contributions

This work was carried out in collaboration between both authors. Both authors read and approved the final manuscript.

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ABSTRACT

The study examined constraints of pig production in Edo Central Agricultural Zone of Edo State. Data were collected through interview schedule administered to forty one (41) private pig farmers in the study area. Descriptive statistics and multiple regression were used to analyse data for the study. Results showed that majority (85.4%) of the pig producers were male. The stock kept ranged between 1 and 50 pigs for small scale producers who formed 58.4% of surveyed farms, 51-100 pigs for medium scale producers (15%) and above 100 pigs for large scale producers (26.6%). Major obstacles identified among pig producers in the study area were difficulties in securing institutional loans (61.0%), high cost of feed and feed ingredients (46.3%). Flock size ($t = 3.313$; $p = 0.002$) had a significant effect on returns accruing to farmers in pig production. Institutional loan scheme to promote pig production should be established and properly managed by government and stakeholders in the livestock industry in Edo State.

Keywords: Pig financing; government assistance; livestock sector; pork.

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1. INTRODUCTION

Livestock contribute 40 percent of the global value of agricultural output and support the livelihoods and food security of almost a billion people. The livestock sector is one of the fastest growing parts of the agricultural economy, driven by income growth and supported by technological and structural change. The growth and transformation of the sector offer opportunities for agricultural development, poverty reduction and food security gains [1].

The pig industry in Nigeria is an important arm of the livestock sub-sector in the overall agricultural sector. Porcine production among other species has a high potential to contribute to high economic gains [2]. The swine has some unique advantages over all other animals, which make them a good species of animals to multiply extensively to combat protein shortages [3]. Among these advantages are their fast growth rate which is only slightly exceeded by the best, carefully managed broilers, their prolificacy which is unsurpassed by that of any other animals' species except the birds. Also, pigs are very efficient in feed utilization which brings better returns per unit of inputs than most other animals, the quality of their meat is tender and more nutritive in protein and the B-vitamins than those of other animals [3].

Pig production in Nigeria has not yet developed like ruminants and poultry production [4]. A study by [5] reveals that the neglect or slow growth of the swine industry can be attributed to acceptability and management problems. The management problems include problem of disease outbreak, feed efficiency and high cost of feedstuffs, which stems from lack of swine production knowledge [6], skill and often, the Nigerian stockman is ignorant of new techniques. The complications from these are, low ratios of stock keeping to humans, poor animal productivity, limited supplies and low intake of animal protein and thus malnutrition. Further, [7] identified some of the major constraints to piggery entrepreneurs output to include education level of the operators, total cost of production and access to research and extension services. The trend of some entrepreneurs leaving the business as result of one or more of the aforementioned problems highlighted cannot be ignored.

In light of the aforementioned, this study was undertaken with the aim to examine constraints of pig production in Edo Central Agricultural Zone of Edo State, Nigeria. Specifically, the study sought to:

a. Describe respondents' socioeconomic characteristics; and
b. Examine the constraints faced by pig farmers

The hypothesis for the study was there is no significant effect of socioeconomic variables on the monetary returns to farmers in pig production business.

2. MATERIALS AND METHODS

This study was carried out in Edo State southern Nigeria. The state is divided into three agricultural zones as follows: Edo Central, Edo North and Edo South. This research covered three local government areas (LGAs) in Edo Central agricultural zone because of their preponderance in pig production. These are; Esan West, Esan Central and Esan North East LGAs.

Stratified sampling technique was used in selecting respondents. From the records of pig farmers in Agricultural Development Programme (ADP) zonal office, 20, 10 and 11 pig farmers were randomly selected from Esan West, Esan Central and Esan North East Local Government Areas. Thus the total sample size for the study was forty one (41) respondents.

The data used were obtained using interview schedule. The data collected covered socioeconomic characteristics, management practices, land availability and use, labour use and availability, and the problems encountered by pig farmers. The data were analysed using descriptive statistics, %ages and multiple regression.

$$Y= \alpha +\beta_1X_1+\beta_2X_2+\beta_3X_3+\beta_4X_4+\beta_5X_5+\beta_6X_6+U$$

Where:

Y = Revenue
α = Constant term
$\beta_1 – \beta_6$ = regression coefficient
X_1 =Age
X_2 = Farming experience
X_3 = Flock size
X_4 = Cost of feed
X_5 = Labour cost
X_6 = Transportation
U= error term

3. RESULTS AND DISCUSSION

3.1 Socioeconomic Characteristics of Respondents

Majority of the respondents were male. The reason for this may be attributed to the fact that males are more capable of handling tedious task, associated with farming than females [8]. This does not imply that females were not highly involved in pig production in the study area. Females in this study area were usually involved as helpers or suppliers of labour in light farm operations such as serving of feed, water or cleaning of the piggery. If old farmers are defined as those who are above 50 years of age, 17.1% of pig farmers can be said to be old. The mean age of farmers was 40 years. This is in contrast with the finding of [9] that the mean age of farming household in southern Nigeria is 49 years. By implication, farmers in the study were still within their economically active age and have the ability to synthesize and utilize information received on pig farming.

Most of the respondents were married, [10,11] revealed in their separate studies that majority of farmers in Nigeria are married. This shows that married people dominate pig production in the area. Married farmers could have more persons in the household to cater for and helping hands in taking care of pigs in their farms. Literacy level of the respondents is very high. Good educational background could be of help to farmers in the areas of farm record keeping, reading of vaccine prescription, adoption of innovations and other management functions to ensure productivity.

Most of the farmers had less than 5 years of farming experience an indication that the sample of farmers were still new in the business. This finding is in contrast to that of [3] who in their study had more than 70% of pig farmers above 5 years of experience. Furthermore, 31.7% sourced capital from thrift society, while 26.8% asserted that they got capital from personal savings. This could be because of low collateral requirements in assessing credit through non-institutional credit sources such as thrift society and personal savings which mostly comprised of retained profits made from previous earnings.

The study further reveal that the farmers are small scale farmers and as such generally have small flock size. Small-scale farmers operate at subsistent level, making them vulnerable and less able to own and manage large farms. Further, inability to secure capital from financial institutions constitute a major challenge to farmer's expansion of farms. Nonetheless, most of the farmers had alternative sources of income as they were engaged in the pig farming business on part-time. The average household size was 7 persons. The household size of the respondents could be considered as above average as it is above the national average of about 5 persons in rural Nigeria [12]. This large number of household size could be an advantage for use as family farm labour supply. Despite the advantage of larger household size, it could bring about intense competition for limited household resources e.g. household income and food resources.

Farmers stocked more of large white/Yorkshire in their farms. This is technically justified because large white/Yorkshire breeds are highly prolific, disease resistant and are widely used for upgrading local breeds [13].

3.2 Constraints Faced by Pig Farmers

The result of the study reveal the constraints encountered by respondents. Difficulty in securing institutional loans ranked top most accounting for 61.0% closely followed by cost of feed and feed ingredients (46.3%) among others. Disease outbreak (17.1%) and pilfering (14.6%) ranked lowest in the constraints faced by farmers in the study. Inadequate finance can restrict farmers from expanding their scale of production. This view was reported by [14,3] and corroborated by [15] that one of the major constraints of the animal industry especially in developing countries like Nigeria is capital. Financial inadequacies have led to slow growing animal industries or moribund ones or even destroyed animal production industries. 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 [16]. Also, feed cost and the price of feed ingredients has a substantial impact on profitability in pig production. Higher feed prices can quickly convert profits into losses [17]. Animal wastes include livestock and poultry manure, bedding and litter, waste water, feedlot runoff and even wasted feed [18]. Animal wastes abound when too much waste is produced by farm animals in a particular environment with no safe or cost-effective means to either use the wastes

productively or dispose-off overtime [19]. Proper waste management (effluence from animals) has an overall effect on the environment. These wastes can affect the air or water quality if proper practices are not followed [20]. Waste from animal concentrations which are not protected can wash into nearby streams. Animal waste should therefore be disposed properly and regularly to avoid wastes emitting pungent obnoxious odour and also prevent favourable breeding place for microbes, which could aid the spread of diseases [21].

3.3 Assistance Needed from Government

The result shows that all respondents needed government support financially through soft loans, 29.3% and 26.8% needed government assistance with regards to the provision of water and accessible roads. Electricity 12.2% ranked

Table 1. Distribution of respondents according to socio-economic characteristics (N=41)

Socio-economic characteristics	Age (%)	Mean ($\bar{X}$)
Sex		
Male	85.4	
Female	14.6	
Age (years)		
21 – 30	2.4	
31 – 40	22.0	
41 – 50	58.5	40
Above 50	17.1	
Educational level		
No formal education	4.9	
Primary school completed	2.4	
Secondary school completed	39.0	
Tertiary education	53.7	
Years of experience		
Less than 5 years	61.0	
5-9 years	31.7	
10-14	4.9	
Above 15 years	2.4	
Source of capital		
Personal savings	26.8	
Commercial bank	7.3	
Microfinance bank	7.3	
Agricultural bank	7.3	
Thrift society	31.7	
Money lenders	9.8	
Non-Governmental Organizations	9.8	
Flock size		
1 – 50	58.4	
51 – 100	14.5	
More than 100	26.6	
Household size		
Less than 4	26.8	
5 – 8 Persons	53.7	7 persons
9 – 12 Persons	12.2	
More than 12 Persons	7.3	
Breed		
Duroc	-	
Hampshire	22.0	
Landrace	7.3	
Large White/Yorkshire	61.0	
Local breed	2.4	

lowest. Agricultural credit plays an important role in agricultural development [22]. Agricultural household models suggest that farm credit is not only necessitated by the limitations of self-finance, but also by uncertainty pertaining to the level of output and the time lag between inputs and output [23]. Distribution of water supplies is a critical issue, such that localized areas differ in the adequacy of their water supplies [24]. Unfortunately, in certain parts of Nigeria, the supply of water is a limitation to pork production making access to good-quality water a variable. Road infrastructure is very important to maintain the distribution of goods, both consumer and production goods, and factors of production from one region to another [25]. Rehabilitation of roads also could increase output prices received by pig farmers. In addition, the rehabilitation of roads also leads to an increase in the frequency of visit by extension workers to pig farmers, which in turn increases productivity [26]. Farmers in the study did not need much electricity to produce pigs.

3.4 Socioeconomic Variables Affecting Monetary Returns

Results of the multiple regression analysis is presented in Table 4. The overall regression model was significant ($F = 3.399$; $p \leq 0.05$ accounting for 26.5% adjusted R-squared) of the variance.

Variable that had significant effect on monetary returns (in naira) to farmers in pig production business was flock size ($t = 3.313$; $p = 0.002$). Meaning the larger the flock size, the more a farmer is likely to have better returns with regards pig production business. On the contrary, age ($t = 1.254$; $p = 0.219$), farming experience ($t = 0.233$; $p = 0.818$), cost of feed ($t = 1.258$; 0.217), labour cost ($t = 0.015$; $p = 0.988$) and transportation ($t = 0.536$; $p = 0.595$) had no significant effect on monetary return of farmers in the study area. These factors probably accounted for the large, relative operational inefficiency observed in production for small and medium scale producers as compared to large scale production in which all factors of production were relatively utilized.

Table 2. Constraints faced by pig farmers

Constraints	Age (%)
Difficulty in securing institutional loans	61.0
Cost of feed and feed ingredients	46.3
Waste disposal	36.6
Land	34.1
Marketing	31.7
Transportation	29.3
Lack of piglets	26.9
Taste/preferences	26.8
Disease	17.1
Pilfering	14.6

**Multiple response*

Table 3. Assistance needed from government

Assistance needed	Age (%)
Soft loan	100.00
Water	29.3
Access road	26.8
Electricity	12.2

**Multiple response*

Table 4. Socioeconomic variables affecting monetary returns

Model	Unstandardized coefficients		Standardized coefficients	T	Sig.
	B	Std. error	Beta		
(Constant)	122.674	42988.554		0.003	0.998
Age	1371.862	1094.269	0.189	1.254	0.219
Farming experience	566.574	2436.789	0.035	0.233	0.818
Flock size	259.132	78.224	0.569	3.313	0.002*
Cost of feed	7.162	5.691	0.185	1.258	0.217
Labour cost	0.006	0.427	0.003	0.015	0.988
Transportation	0.229	0.427	0.074	0.536	0.595

*Dependent variable: Revenue; R. Square = 0.375; Adjusted R. Square = 0.265; F-value = 3.399; p≤0.05, * significant*

4. CONCLUSION

There is ample potential for growth in commercial pig production in the study area. These potentials will be tapped if problems facing pig farmers in the area are properly handled by government and stakeholders in the livestock sector in Edo State. From findings in the study, institutional loan scheme to promote pig production should be established and properly managed by state government and stakeholders in the livestock industry. The piggery entrepreneurs could do better if an enabling environment that improve their value of stock, farm size and access to credit is created. These would enhance their capitalization capacity, imbue stability in the business operation, thus alleviating poverty. Furthermore, government and stakeholders should sensitize the citizens on the need to consume pork to meet up with daily protein requirement. Good roads and other social infrastructures should be provided to improve linkage between farm and market.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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