International Journal of Agriculture, Food and Biodiversity IJAFAB

Structure, Conduct and Performance of Pig Marketing in Umuahia North Local Government Area of Abia State, Nigeria

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Abstract

The study examined the structure, conduct and performance of pig marketing in Abia State, Nigeria. The specific objectives were to determine the socioeconomic characteristics of the respondents, ascertain the market structure, conduct and market performance pig marketing, and determine the factors influencing marketing margins and efficiency among respondents in the study area. A purposive sampling technique was used in selecting three major markets involved in pig marketing in the study area (Umuahia North Local Government Area of Abia State). Sixty pig entrepreneurs involved in pig marketing were randomly selected for the study. Primary data were collected using a well-structured questionnaire. Data were analyzed using descriptive statistical tools such as frequency distributions, means, percentages, Gini coefficient, and regression models. The result showed that most of the respondents studied were male, married, educated, young, and well-experienced in pig marketing. More so, there was price discrimination within the markets and a high level of inefficiency in the market structure of the marketers, with a Gini coefficient of 0.539. This implies a high concentration of pig marketing in the hands of few marketers. In addition, 93% of the pig marketers indicated that their pricing behaviour was determined by forces of demand and supply, while 100% of the marketers indicated price bargaining and about 87% indicated marketing cost and margin. The result of the marketers' conduct was evidence of buyers' ability to bargain well in price determination and an incidence of price discrimination. The pig marketers made a marketing margin of N 500 per kg and a profit of N 276.02. The return on investment was 0.26 meaning that for every one naira invested 0.26 kobo is returned indicating that pig marketing is lucrative and worth undertaking in the study area. Cost of transportation, the amount spent on labour, and quantity of pigs sold were significant factors influencing marketing margin while age, years of experience, access to credit, and income were significant factors influencing marketing efficiency. The study therefore recommended that males, married, educated, and young with the necessary experience should be financially supported to go into pig marketing. Government and other stakeholders in the pig market should implement necessary policies that will encourage the right pricing behaviour among entrepreneurs involved in pig marketing.

Keywords: Structure, Conduct and Performance, Agro-entrepreneur

Introduction

Pig (*Sus scrofa*), is one of the sources of animal protein in Nigeria. The production which is both in the hands of government institutions and private individuals represents the fastest way of increasing animal protein since pigs grow at a faster rate and reproduce sooner with a larger number of offspring than cattle, sheep, or goats (Ajala and Sanni, 2012). Specific ways in which efficient marketing systems play a leading role in economic development have been widely documented (Ajala, 2013 and FAO, 2020). Essentially, it is within marketing systems that prices are generated and the allocation of resources, income distribution, and capital accumulation are determined.

Pig marketing in Nigeria is entirely in the hands of traditional middlemen. Government involvement is limited to the areas of disease surveillance, some information gathering and provision of public market infrastructures in a few major towns, with no direct participation or regulatory measures. Hence the Nigerian pig marketing system is essentially indigenous, with strong cultural control. Little is known about marketing functions, presence or absence of opportunities and incentives to market participants/agents to behave in a more market-oriented fashion. This rare (scarce) information is essential for objective and reliable assessments of market performance and the subsequent formulation of policy guidelines (Dipeolu *et al.*, 2019).

Pig entrepreneurs are encouraged to market collectively to benefit from economies of scale. In addition, producer associations are increasingly becoming important vehicles for transforming predominantly subsistent rural economies into

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commercial entities. Producer associations are viewed as prime targets for commercializing agriculture hence they should be equipped with appropriate skills and knowledge to accomplish this (Shaib *et al.*, 2018).

Pig marketers are the primary purchasers of pigs from farmers and play a crucial role in determining the performance of the value chain. The pig industry in Nigeria has not yet developed like the ruminants and poultry industries because pigs are not generally used for meat purposes by majority of the population (Ogundipe and Sanni, 2012). This is based on culture and religion which make it taboo for pigs to be eaten by some people.

Pig is traditionally a scavenger, having been raised as a means of utilizing human food wastes in early domestication. However, current production involves the use of foodstuff or waste products of human food as feeds. The number of pigs in Nigeria increased from 872,000 thousand heads in 1973 to 9.51 million in 2022, growing at an average annual rate of 5.25% (WDA, 2022). Nigeria has the second-highest population of pigs in Africa. It accounts for 4.5% of the total meat supply of the country (Morgan, 2015). Nigeria has the second-highest population of pigs in Africa. It accounts for 4.5% of the total meat supply of the country (Morgan, 2015).

Pig marketing in Nigeria is dominated by live sales and largely controlled by middlemen (Okediji, 2013). Participation of any modern entrepreneurship in actual trade is limited to only very few governments owned limited liability companies which control a negligible proportion of the trade. Most of these firms are beset by poor performances. Essentially, it is within marketing systems that prices are generated and the allocation of resources, income distribution and capital accumulation are determined. It is therefore of great importance for researchers in developing countries to provide adequate information on the efficiency and constraints of the marketing systems on which effective policies and strategies can be based (Osuhor *et al.*, 2018)

Empirically, this is often done by comparing the characteristics of a given system with those of a perfectly competitive market model. Moreover, Pig marketing in Nigeria is entirely in the hands of traditional middlemen. Thus, the Nigerian pig marketing system is essentially indigenous, with strong cultural control. Okereke and Anthonio (2018) noted that indigenous marketing systems in developing countries are generally exploitative, collusive, and economically inefficient. The extent to which this assertion is true for pig marketing in Nigeria is uncertain, for the state of knowledge on livestock marketing largely comes from studies on cattle (Mellor, 2017), small ruminants – sheep, and goats (Morgan, 2015), and poultry (Balogun, 2018). There is a dearth of literature on pig marketing. This study on pig marketing was an attempt to evaluate the performance of entrepreneurs in pig marketing system in Abia State.

This study looked at the structure, conduct and performance of entrepreneurs involved in pig marketing in Umuahia North, Abia State, Nigeria. The specific objectives were to; determine the socio-economic characteristics of entrepreneurs involved in pig marketing in Umuahia North; determine the market structure and market conduct in pig marketing, determine the market performance of pig marketing in Umuahia North, determine factors influencing marketing margin and efficiency among entrepreneurs involved in pig marketing in the study area. The study hypothesized that there is no significant relationship between the marketing cost and gross earnings among entrepreneurs involved in pig marketing.

Literature review

Conceptual framework

Market structure can be defined as those characteristics of the organization of a market which seem to influence strategically the nature of competition and pricing within the market such as a Pig Market (Okereke and Antonio, 2018). Among the parameters considered important in determining market structure are (Olayemi, 2014): (i) the number, and relative size of buyers and sellers;
(ii) the degree of product differentiation (that is, nature of the product – whether products are standardized (homogenous) or differentiated; (iii) the ease of entry and exit of buyers and sellers into and out of the market (i.e. entry and exit conditions); factors that may influence entry or exit include absolute cost advantages held by existing participants (firms) or absolute entry costs that are prohibitive. An example of the latter is the substantial capital requirement associated with entry into some business ventures, that is size of operating capital (iv) the status of knowledge about costs, prices, and conditions among the participants in the market (that is, market information).

Market structure relates essentially to the following as stated by Olukosi and Isitor (2015):
(i) the degree of competition in a market; (ii) whether the number of firms producing pig/pork is large or whether the firms are of equal sizes or dominated by a group; (iii) whether entry for new market participants is easy or difficult; (iv) whether the purchases of pig/pork is in a competitive state or not. (v) degree of market information (knowledge) available to the participants, e.g. information concerning prices and the actions that competitors

take as well as information about future market conditions; (vi) degree of integration (whether vertical or horizontal integration). Vertical integration is defined as when a firm owns two or more levels of production or marketing, it is vertically integrated (Olayemi, 2014). Hence vertical integration simply means "ownership."

Market information refers to the information available to buyers and sellers that enables them to make decisions in the market environment in which they operate. It is believed that buyers and sellers will make more rational decisions if they have more information at their disposal about prices in different markets (Osuhor *et al.*, 2018) Parameters for assessing market information include (Osuhor *et al.*, 2018): (i) prices of pigs in the different markets; (ii) knowledge of the actions that competitors (other market participants) take; (iii) information about future market conditions. Market conduct refers to the actions that market participants can take out of their discretion or patterns of behavior that they follow in adopting or adjusting to the market in which they buy and sell (Olayemi, 2014). The most important parameters used in assessing the market according to Williams *et al.* (2016) include (i) exchange functions; (ii) methods of determining price (i.e. price determination); (iii) product differentiation. Market conduct is heavily influenced by market structure and is the link between market structure and performance (Shaib *et al*., 2017).

Market performance is related to structure and conduct. It is defined as the strategic result of market adjustment engaged in by buyers and sellers. Hence it is the appraisal of the extent to which the interactions of buyers and sellers in a market stimulate results that are consistent with social purposes (Osuhor *et al.*, 2018). The parameters used in assessing market performance in some studies are: (i) the marketing margin: (a) the level of profits; (b) marketing costs (ii) market efficiency.

Theoretical framework

The performance of a market is influenced by two major factors: (i) the structural characteristics of the market and (ii) the competitive behavior of actors/participants in the market chain (Ajala, 2013). Understanding how these factors work independently and together can provide a basis for identifying opportunities to be exploited and constraints that need to be removed. The market study involving analysis of competition and efficiency is useful for the formulation of interventions, particularly those aimed at lowering marketing costs and reducing the tendency for excessive profit-making (Osuhor *et al.*, 2018).

The study of markets and marketing has witnessed a lot of paradigm shifts (Bain, 1956 and Chamberlin, 1933). Theoretical and applied models of market analysis such as the Structure, Conduct and Performance (S.C.P.) paradigm (Ajala, 2013), the Commodity Chain Approach (Mellor, 2017), and Transaction Costs Economics (TCE) Approach (Aromolaran, 2019) have been proposed. The existence of a wide range of models suggests that there is hardly any single and adequate theoretical framework for studying markets, particularly in developing countries (Morgan, 2015). Any of these approaches can be used singly or combined. The choice of any or combination of the approaches is usually guided by considerations such as the nature of the problem, the complexity of the marketing systems, and the constraints involved (Mellor, 2017). Hence, in studying livestock markets, there is a need to marry useful elements of both the old and the contemporary models together to understand the structural and institutional factors influencing livestock marketing (Morgan, 2015).

METHODOLOGY

Study Area

The study was conducted in Umuahia North Local Government Area of Abia State, which is one of the seventeen Local Government Areas in the State. The marketing system for pigs is well-developed in the area. The entire population of persons in Umuahia North LGA of Abia State was 324,900 from the 2022 population estimate (NPC and NBS, 2022). First, the purpose sampling technique was used to select 3 pig market clusters in the study location namely Ahieke, Aba Road, and Amaeke pig markets. Secondly, 20 pig entrepreneurs were randomly selected from each of the selected pig market clusters. This gave a total sample size of 60 pig entrepreneurs/marketers. The list of pig entrepreneurs was obtained from the pig marketing association in each of the selected pig market clusters in the study area. This list formed the sampling frame for the selection of the pig entrepreneurs. A well-structured questionnaire was used for data collection. Data were analyzed using descriptive statistics such as means, frequency distribution and percentage, Gini coefficient technique, market margin and efficiency, ordinary least squares regression model and the Gini coefficient technique gives a more precise measure of the market structure (the level of buyers and sellers concentration in the market). The Gini coefficient is given by:

$$\text{Gini Coefficient} = 1-\sum XiYi \quad \ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Xi=Percentage of distribution of pig sellers/entrepreneurs per period of study
Yi=Cumulative percentage of all pig entrepreneurs/marketers' sales or revenue

The Gini coefficient varies from 0 to 1, where 0 implies perfect equality in the distribution (perfect market) and 1 implies perfect inequality (imperfect market). The closer the Gini coefficient is to zero, the greater the degree of equality, the lower the level of concentration, and the more competitive are the markets. Similarly, as the Gini coefficient approaches unity, the greater the degree of inequality, the higher the level of concentration, and the more imperfect the markets (high inefficiency in the market structure).

Market performance analysis
Cost and price information were used to construct marketing costs and margins. Anuebunwa (2006) determined the marketers' marketing margin as the difference between selling price and the buying price. This is expressed as follows:

MM = SP – BP …… (2)
Where,
MM= Marketing Margin in naira
SP = Selling price (Naira)
BP =Buying price (Naira)

Marketing profit was derived by the following model;
Profit= MM-MC…… (3)
Where
MM=Marketing margin
MC=marketing cost (cost of transportation and cost of labour -processing)
Markup analysis
Markup =SP-MC/MC*100 …… (4)
(Abbreviations as defined in equations 2 and 3)

The implicit form of the OLS regression model for marketing efficiency is shown as follows;
$Y=f(X_1,X_2,X_3,X_4,X_5,X_6,X_7)$…… (5)
Where,
Y=Marketing efficiency measured in percentage
X_1=Age of the pig agro-entrepreneurs measured in years
X_2=Pig marketing experience measured in years
X_3=Access to credit (access = 1, non-access = 0)
X_4=Transportation cost (naira)
X_5=Amount spent on labour (naira)
X_6=Income generated in naira

While the implicit form of the OLS regression model for marketing margin is presented as thus;
$Z= f(X_1,X_2,X_3,X_4,X_5,X_6,X_7)$…… (6)
Where,
Z= Marketing margin generated by entrepreneurs in pig marketing measured in percentage
X_1=Age of the entrepreneurs in pig marketing (years)
X_2=Pig marketing experience (years)
X_3=Access to credit (access = 1, non access = 0)
X_4=Transportation cost (naira)
X_5=Labour (naira)
X_6=Quantity of pig sold in number

RESULTS AND DISCUSSION

Socioeconomic characteristics of pig marketers in the study area
The socio-economic characteristics of entrepreneurs in pig marketing is presented in Table 1. The data from Table 1 indicates that 68% of the respondents were male, while 32% were female. This shows that the majority of the respondents were male. The higher representation of males in pig marketing may be attributed to their ability to handle the physical characteristics of pigs at the point of purchase or sale. Additionally, men may be better equipped to navigate the cultural aspects of pig marketing and consumption. Table 1 shows that 76.7% of the respondents were married while 23.3% of the respondents were single. This implies that most respondents involved in pig marketing in the study area were married.

Table 1: Socio-economic characteristics of pig entrepreneurs

Sex	**Frequency**	**Percent**
Male	41	68.3
Female	19	31.7
Total	**60**	**100.0**
Marital Status		
Married	46	76.7
Single	14	23.3
Total	**60**	**100.0**
Education		
No formal education	13	21.7
Primary	3	5.0
Secondary	11	18.3
Tertiary	33	55.0
Total	60	100.0
Age		
21-30	16	26.7
31-40	24	40.0
41-50	20	33.3
Total	**60**	**100.0**
Mean	40.7	
Experience		
1- 10	26	43.3
11-20	19	31.7
21-30	15	25.0
Total	**60**	**100.0**
Mean	**8.6**	

Source: Field survey, 2019

The high incidence of married individuals in pig marketing could be associated to the fact that married people have family members who can provide free service in the pig marketing business,

especially in the gathering of vital information that can help the respondents in making informed marketing decisions. Table 1 shows that about 78% of the respondents had one form of education or another. While about 22% had no formal education. This means that many of the pig marketers are educated. Being educated could imply that respondents could read, write, and give proper interpretation to marketing information available to them. In addition, educated persons could have the mental capacity to handle financial and non-financial issues with less difficulty.

Table 1 shows that about 73% of the respondents had ages ranging between 31-50 years. The mean age of the respondents was about 41 years. This means that majority of the respondents were still in their active working age. According to Ogbe and Igwemadu (2021) stated that individuals in their active working age are energetic and innovative and have the willingness to adapt financial innovations. This corroborates the work of Ogbe and Ejim (2019) that willingness to adopt financial innovation could position the respondents to access more financial intervention to execute any business activity.

Table 1 shows that 75% of the respondents had years of experience ranging between 1-20 years. The mean of years of experience of the respondents was about 9. This means that the respondents were experienced pig marketers. Being experienced could mean strong abilities by the respondents to resolve current challenges faced in pig marketing by using previous knowledge.

Market Structure of Pig Marketing among respondents

Market structure of pig marketing among respondents in the study area is presented in Table 2. Table 2 shows the distribution of pig marketers in the study area. The result shows that the gini-coefficient value was 0.539 which is tilted towards 1 meaning that there is inequality in the pig market in the study area. This implies a high concentration of pig marketing in the hands of few marketers. In other words, there is high inefficiency in the pig market structure. This study supports the findings of Ajala and Adesehinwa (2008), who discovered that the pig market is oligopolistic, with only a few businesses handling a majority of the trade. The computed Gini coefficients for wholesalers and retailers were 0.59 and 0.66, respectively. This could be linked to the collusive practices in buying and selling as well as the differences in the degree of risk associated with sourcing for supplies by the different categories of marketers.

Market Conduct Analysis

The actions taken as well as the tactics used by marketers out of their discretion to adopt or adjust to the market in which they buy and sell concerning price determination is presented in Table 3. The data in Table 3 indicates that approximately 93% of the marketers stated that their pricing decisions were influenced by demand and supply factors. Additionally, 100% of the marketers mentioned price bargaining, while about 87% cited marketing costs and margins as contributing to their pricing behaviour. The result on the marketers' conduct was the evidence of buyers' ability to bargain well in price determination and an incidence of price discrimination.

Table 2: The distribution of pig marketers in the study area

Sales	No of sellers	% of sellers (Xi)	Cummul ative (%)	Total value per month	% of Total value/month	Cumulative % (Yi)	ΣXiYi
101000-400000	30	50	50	8850000	26.4	26.4	0.132
401000-700000	16	26.6	76.6	8900000	26.5	52.9	0.141
701000-1000000	7	11.7	88.3	5600000	16.7	69.6	0.081
1001000-1300000	-	-	-	-	-	69.6	0
1301000-1600000	7	11.7	100	10200000	30.4	100.0	0.117
Total	60			33500000	100.0		0.471

Source; Field survey, 2019 1-0.471=0.529

Marketing Performance of pig marketers in Umuahia North Local Government Area.

Marketing margin, profitability, rate of return and efficiency were used to determine the performance of pig marketers as presented in Table 4. Table 4 shows the performance of pig marketers in the study area. From Table 4, ₦ 1000 per kg of pig was used to estimate profits from pig marketing. The marketing margin of ₦500 per kg and profit of ₦276.02 was made by the pig marketers. The return on investment was 0.26 means that for every one naira invested 0.26 kobo is returned. Since the RNI was positive it can be deduced that pig marketing is

lucrative and worth undertaking in the study area. The result further shows that the efficiency for the pig marketers was 223.23. This means that value addition through marketing was 23.23 more than the cost incurred in the process of marketing. Furthermore, the markup price for marketers was 5.69% indicating that pigs were reasonably priced and profitable in the study area, given supply coming from different sources and locations.

Table 3: Price determination among pig marketers in the study area

Factors	Frequency	Percent
Forces of demand and supply	56	93.3
Price bargaining (higgle and haggle)	60	100
Marketing cost and margin	52	86.7

Source: Field survey, 2019

Ajala and Adesehinwa (2008) found that the average marketing margin in their study on the Analysis of Pig Marketing in Zango Kataf Local Government Area of Kaduna State, Nigeria, was about 39%. The authors concluded that pig markets are highly integrated across space, which may be attributed to the availability of sufficient market information. Additionally, Ajala and Adesehinwa (2008) also calculated profit and marketing efficiency among pig marketers in Zango Kataf Local Government Area of Kaduna State to be approximately ₦1800 and 180%, respectively as profit and marketing efficiency among pig marketers in Zango Kataf Local Government Area of Kaduna State.

Table 4: Marketing margin and efficiency of pig marketing among respondents (₦1000/kg)

Marketing variables	Values (₦)
Buying price (A)	1000
Marketing cost (B)	223.98
Selling price (C)	1500
Marketing margin (D=C-A)	500
Profit (E=D-B)	276.02
Rate of return (F=E/A+B)	0.26
Efficiency (G=D/B*100/1)	223.23
Markup (F=C-B/B*100)	5.69

Source; Field survey (2019)

Factors influencing marketing margin among Pig marketers

Exponential functional form was chosen as the lead equation based on the value of R^2 (Coefficient of multiple determination). F-ratio and the conformity of regression coefficients with *apriori* expectation. The value of R^2 (0.758) indicates that about 76% of the total variation observed in the dependent variable is accounted for by the independent variables included in the Model. The F-ratio of 22.988 signifies that the model is significant at 1%. The cost of transportation was significant at 5% and positively related to the marketing margin. This means that as transportation costs increased, the marketing margin also increased. The rise in transportation costs could be linked to the efforts made by the entrepreneurs involved in pig marketing to reach out to new clients in new locations to increase sales. The more they strive to reach new clients and increase sales, the higher the marketing margin.

The amount spent on labor was significant at 10% and positively related to the marketing margin. This means that as the amount spent on labor increased, the marketing margin also increased. The amount spent on labor could indicate a deliberate effort to improve the human capacity of the workforce and motivate them to provide higher-quality service. The greater the improvement in the human capacity of the labor force, the higher the productivity of the workforce, and the higher the productivity, the greater the sales and consequently the marketing margin. The quantity of pigs sold was significant at 1% and positively related to the marketing margin. This means that as the quantity of pigs sold increased, the marketing margin also increased. The quantity of pigs sold could signify a high tendency for high gross earnings. The higher the tendency for high gross earnings, the higher the gross margin.

Factors influencing marketing efficiency among pig marketers

Factors influencing marketing efficiency among pig marketers is presented in Table 6. The double log was chosen as the lead equation based on the value of R^2 (coefficient of multiple determination), F-ratio, and the conformity of regression coefficients with *apriori* expectation. The value of R^2 which is 0.556 indicates that there is about 56% in the total variations observed in the dependent variable. In addition, the F ratio of 6.309 signifies that the model is statistically significant at 1%.

Age was significant at 1% and positively related to marketing efficiency. This means that as the age of the pig entrepreneurs increased marketing efficiency also increased. This could be associated with the fact that mature individual is open to new and or confirming revelations that provide new insights and informed decisions. This further corroborates the findings of Nwaekpe *et al*. (2021) and Nelson *et al* (2020) that matured enterprise owners are likely to adopt ideas that support business growth and prosperity.

The number of years of experience was found to have a significant positive relationship with marketing efficiency, with a correlation of 5%.

Table 5: Factors influencing marketing margin among Pig marketers

Variable	Linear	Exponential	Semi log	Double log +
Constant	- 206295.2	13.956	- 1.2E + 008	-1.995
	(-0.042)	(27.365)***	(- 4.072)***	(-0.619)
Age	-21250.717	0.004	-1097820	- 0.142
	(-0.185)	(0.339)	(-0.240)	-(0.319)
Experience	234081.88	0.019	-2992011	0.168
	(2.103)**	(6.333)***	(-1.944)**	(0.900)
Access credit	-2530017	0.658	2082596.8	-0.492
	(-1.474)	(3.458)***	(1.109)	(-0.013)
Cost of transport	09.582	2.02E-005	15596940	0331
	(1.736)*	(4.420)***	(1.018)	(2.077)**
Labour	127.720	5.17E -006	5415743.3	0.317
	(3.989)***	(1.621)*	(2.630)**	(1.662)*
Quantity of pigs sold	143.476	2.65E.005	6.447881.7	1.073
	(2.945)***	(4.936)***	(2.734)***	(4.071)***
R^2	0.497	0.749	0.425	0.758
R^{-2}	0.440	0.714	0.360	0.125
F-ratio	8.715***	21.850***	6.520	22.988***

Source: Field survey, 2018 Note: *** significant @ 1% ,** significant @ 5% , * Significant @ 10%, + = lead equation

Table 6: Factors influencing marketing efficiency among pig marketers

Variable	Linear	Exponential	Semi-log	Double log +
Constant	12327.327	9.962	-107955.2	5.971
	(0.893)	(30.891)***	(-1.669)*	(4.083)***
Age	482.213	0.010	15409.619	0.507
	(1.553)*	(3.333)**	(2.498)**	(3.314)***
Experience	950.259	0.018	9854.043	0.216
	(2.248)**	(2.350)**	(2.616)**	(2.530)**
Access to credit	3989.684	- 0.224	-3926.253	0.213
	(0.715)	(-1.721)*	(-0.769)	(1.840)*
Transportation cost	-0.157	-1.24E-006	-3538.150	-0.015
	(-1.260)	(-0.427)	(-0.914)	(-0.169)
Labour cost	0.014	1.44E-007	-71.640	0.051
	(0.130)	(0.055)	(- 0.013)	(0.397)
Income	0.017	4.43E- 007	8498.758	0.214
	(1.707)*	(1.878)**	(1.861)*	(2.073)**
R^2	0.232	0.331	0.285	0.556
R^{-2}	0.145	0.256	0.204	0.351
F-ratio	2.667**	4.376 ***	3.523**	6.309***

Source: Field survey, 2019. Note *** significant @ 1% ,** significant @ 5% , * Significant @ 10%, + = lead equation

This means that as the number of years of experience increased, marketing efficiency also increased. Experience in this context refers to a strong understanding of the specific conditions associated with the pig market, particularly in the study location. This also includes the ease of accessing usable market information that can support pig marketing, consequently leading to the enhancement of marketing efficiency.

Access to credit is significant at 10% and positively related to marketing efficiency. This means that as access to credit increased marketing efficiency also increased. Access to credit could mean the availability of capital on affordable terms that enhance the income-generating capacity of the pig entrepreneurs. The more the availability of capital on affordable terms that enhance the income-generating capacity of the pig entrepreneurs the more the marketing efficiency. In addition, Nelson *et al* (2020) stated that entrepreneurs with access to credit tend to be efficient in their agricultural enterprises.

Income was significant at 5% and positively related to marketing efficiency. This means as income increased, marketing efficiency also increased. Increased income could mean increased sales which aid in the purchase of vital marketing inputs and entering new markets. The more pig entrepreneurs can purchase vital marketing inputs and enter new markets the more the marketing efficiency.

Conclusion and Recommendations

The potential for pig marketing to boost employment and income, while also serving as a sustainable livelihood, suggests that the government should promote this opportunity, especially to educated and married young individuals. Additionally, it's important for the government and other stakeholders to implement policies that encourage fair pricing and to introduce marketing programs that reduce costs and improve access to credit. These measures will enhance the efficiency of pig marketing in the area.

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