MARKETING CHANNEL EFFICIENCY AND CHOICE ANALYSIS OF BEEF IN IMO STATE, NIGERIA

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ABSTRACT

The study evaluated the marketing channel efficiency and choice analysis of beef in Imo state, identify the marketing channels, assess the determinants of choice of marketing channels and identify the constraints faced by small-holder beef traders in the study area. Purposive and simple random sampling techniques were employed to select thirty-two (32) wholesalers, seventy-five (75) retailers and thirteen (13) Speculators. Descriptive statistics, Multinomial logit regression. Results showed that majority of the beef traders 98% were males, with the mean age of 43 years and mean household size of 4 persons. The result further outlines the prominent marketing channels in area to include Ranches – Slaughterhouse 72.8%, Slaughterhouse – Retailers 70.8%, Retailers – Consumers 67.8% and Slaughter – Wholesalers 58.5%. The result of multinomial results on the determinants of choice of marketing channels shows that the combine effects of age and access to market information had a positive influence on choice of marketing channels while the combine effects of level of education, household size and cost storage facilities had a negative influence on their choice of market channels. High cost of transportation, price fluctuations, bad roads and high market charges are the predominant constraints to small-holder beef traders in the study area. The Government and policy makers should implement policies that will improve market infrastructure, construct good roads, and cut down some of the unnecessary charges which pose a constraint to beef marketing in the study area. Efforts to keep agricultural prices stable all year round through price stabilization policy, traders' co-operatives should dialog with government and market leaders to find possible ways to reduce the market charges and price fluctuations. Government should provide lasting solution to ensure the safe transportation of agricultural produces in Nigeria.

Keywords; Beef marketers, Market Margin, Marketing Channels and Market Efficiency

Introduction

The livestock sub-sector is central and vital to Nigerian ‘s agricultural economy as it boast of 31% of its gross domestic product (Statistica, 2023) and accounts to its global value in employment, food and nutrition security, fertilizer for farm families, (Milikias and Gebre, 2024). Nigeria is the leading livestock producer with 19.5 million heads over its regional neighbors, FAOSTAT,2017) far ahead of Niger 8.7 million, Mali 8.2 million and Chad 7 million, (Nwigwe et al 2016). The cattle herds are majorly reared by pastoralists (FAO,2018). Beef trading plays a vital role in the livestock sector in Nigeria, particularly in Imo state, where they constitute a significant proportion of the rural economy, Milikias and Gebre, 2024and Ma et al .2024. Many households rely on beef marketing for feeding and daily sustenance as well as source of livelihood, (Olagunju and Adesinyan,2017). They operate in local and regional markets, whereby they buy, sell and take both live and processed meat to meet the demand for beef products. Beef cattle production and marketing are some of the many areas which provide employment opportunities and foreign exchange earnings to the country. According to Gabre-madlin 2005, beef cattle accounts for 50% world meat needs, 95%, world’s milk needs and 85% leather needs. Beef is generally referred to as meat from cow, bull, bullock, or steer even as there is variation in their flavors and content Prasetyo and Khafidhatur 2024. It is rich in protein, lipids, vitamins, phosphorus, and other essential nutrients (Emokaro and Amadasun, 2012). Protein is a very important nutrient in the diet of humans and its need cannot be overemphasized as different categories of people need it for growth, development, ageing and repair of worn-out tissues Eyasmin and Ghosh,2024. In an average Nigerian family, beef is seen as the major source of animal protein among the various available sources of poultry and other small ruminants. This is because it is widely accepted by different religion or society and has limited socio- cultural constraints, (Oladejo, 2012). Due to population increase and weak market structure, the country is not meeting its beef demand, Kimann et al 2022, Lieue, 2023, Pesici et al 2023. The market structure is made up of marketing channels, the market channels are crucial decisions of small holder farmers influencing important aspect of operations Mdoda, Mvelase & Maziya 2024.

Marketing channels are intermediaries such as agencies, bodies or institutions that carry out the marketing function of distributing goods and services from production to consumers and earn the rewards of margins. The channels can be short, simple and efficient, or long, complicated, and inefficient due to its structure, (Jimoh et al 2023). Beef cattle marketing in Nigeria are usually marred by inefficiency due to poor regulation, inadequate market facilities, poor leadership skill, inadequate market information which usually results to higher margins and cost that disrupt market efficiency and create unfair and unhealthy market competition Eyasmin and Ghosh,2024.

Although beef marketing is lucrative and profitable, the mystery of sufficient marketing channels with involvement of several intermediaries and limited studies on factors influencing choice of marketing channels has not been fully addressed hence this study.

The objective of this study therefore was to bridge the gap by analyzing the choice of marketing channels of beef marketers in lmo State with the following specific objectives: examine the

socioeconomic characteristics, identify the market channels, and estimate the determinants of choice of marketing channels used by smallholder beef traders in Imo State.

METHODOLOGY

The study was carried out in Imo state, Nigeria. The State has a population estimate of 4,927,563 people. Multistage random sampling technique was used to select 120 beef marketers in Imo state which comprises of Owerri, Orlu and Okigwe agricultural zones. The first stage was the purposive selection of two Agricultural zones (Owerri zone and Okigwe zone) from the three agricultural zones in the State. This is due to the high concentration of modern markets with beef marketing activities in these areas. The second stage involved the random selection of two Local Government Areas from each zone, giving a total of four LGAs. In the third stage, three markets with the highest number of small holder beef marketers will be purposively selected from each of the Local Government Areas, making it a total of twelve markets, The fourth and final stage involved the random selection of 9 beef marketers from the list of marketers in each of the twelve markets giving a total of 120 beef marketers. Interview schedule and structured questionnaires were randomly distributed to small holder beef marketers among the contacts list collected from beef marketers' union. The questionnaire captured information such as socio-economic characteristics, marketing channels used by these marketers and the factors affecting their choice of marketing channels. Descriptive statistics, gross margin techniques and logit regression model were used to analyze the data.

The logit regression model is expressed as follows:

$Y = \log (p/1-p) = F(Xi,b) + e$ ---------- equation 1

Ie The logit of a number p between 0 and 1 is given by.

$(p) = \log(p/1-p) = \log (p) = \log(1-p)$ ---------- equation 2

Where:

P is the probability, 1-P is the corresponding odds, and the logit of the probability is the logarithm of the odds.

F = logistic cumulative distribution function.

B = Vector of estimated parameter

Y = indexes the marketing channels used by small-holder beef traders

Y0 is the choice of wholesaler marketing channel (y=0)

Y1 is the choice of retailer marketing channel (y=1)

Y2 is the choice of speculator marketing channel (y=2).

The explanatory variables are

X_1-X_9 indexes variables which are the factors that determine the choice of market channels.

$X_{i=}$ Independent variables considered, which include.

X_1= Age of respondents (years)

X_2= Educational level of respondents (No of years spent in school)

X_3= Household size (No of persons)

X_4= Marketing experience (years)

X_5= Cost of storage facilities

X_6= Distance to the market

X_7= Access to marketing price information (Access = 1, no access = 0)

X_8= Product price

X_9= Group membership

e= error term.

RESULTS AND DISCUSSION

Table 1: Socioeconomic characteristics of beef marketers in Imo State.

Variables	Mean
Age	43 years
Household	4
Years' Spent in School	11year
Experience	11 y

Variables	Frequency	Percent
Gender		
Males	118	98.3
Female	2	1.7
Marital Status		
Single	10	15.8
Married	101	84.2
Occupation		
Beef Trading	108	90.0
Others	12	10

Source: Field survey, 2023

Socio-Economic Characteristics of the beef traders

From Table 1.0 Socioeconomic characteristics of beef Traders in Imo

Majority of the beef traders are males, which indicates that it is basically the business of men as it requires more time and labor as women are already choked with overwhelming household chores and care- giving demands in the family, this agrees with the result of Jimoh et al 2023. Domination of married traders indicates a sense of responsibility, planning and fresh perspectives discussed by two individuals, which implies that valuable insights, financial and business decisions can be well harnessed by farmers and their spouses, this is in consonance with the findings of Holmes et al 2020. Majority of the respondents' occupation is beef trading, this means that they are full time in their occupation, this increases focus and drive to achieve increased income in their venture. A mean age of 43 years implies that the trader, is young, active, and productive, he would be able to manage the stress and tedious demand of the nature of beef trading business, young traders are risk savvy, easy adopters of innovation which can improve their productivity this agrees with Mohamed et al, 2015. A mean of 11 years spent in school suggest that majority of the beef traders are lettered in the sense that they can make decisions that can impact positively in their beef trading businesses, that is because education enlightens and empowers you with the ability to meet your needs, this agrees with Osuji et al 2024. The average household size

of 4 people and average marketing experience of 11 years indicates that the beef trader has family assistance and adequate know-how to manage the intricacies associated with beef trading. This is because long experience comes with grit and effective business skills which lead to profitable ventures.

Fig1.1: Market Channel Used in the Imo State

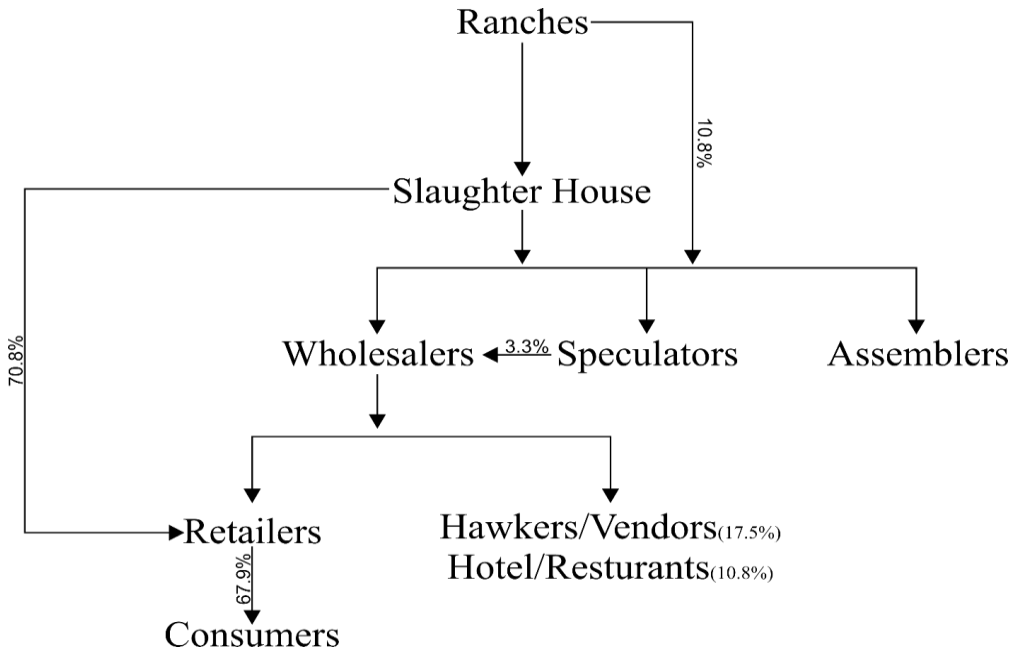

Fig 1: Distribution Based on Market Channels in the Imo State

The diagram in fig 1 above shows the detailed distribution channels involving the different players in beef marketing in Imo State. The slaughterhouses and the wholesalers take advantage of the difference in prices provided by place and time utilities to break bulk and create storage for the product. 70.8% of the slaughterhouse's sells to the retail traders and 67.8% of the retailer's sell to the consumers. There are Hawkers/Vendors 17.5% and the Hotelier's/Restaurants 10.8% both from the wholesalers and provide direct sales to the ultimate consumers in the markets in the area.

Market Margins of Beef Traders

Table 2.0 Estimates of Marketing margins of beef in the study area.

Item	Wholesale(N/kg)			Retailer(N/kg)			Speculator(N/kg)		
	Min	**Max**	**Mean**	**Min**	**Max**	**Mean**	**Min**	**Max**	**Mean**
Selling Price: Sp	2000	6500	3900	2800	7200	3766.67	3000	5000	3707.69
Purchase Price: Pp	1500	4400	2344	1000	4000	3033	2000	3000	2823
Gross Margin: GM = Sp – Pp	**500**	**2100**	**1556**	**1800**	**3200**	**733.67**	**1000**	**2000**	**884.69**
Total Cost: TC	376	1500	820	700	2177	430	615	1410	500.6
Net Margin = GM – TMC	124	600	736	1100	1029	303.67	385	590	384.09
%TC of GM	75.2	71.42	52.70	38.88	68.03	58.61	61.5	70.5	56.58
%N of GM	24.8	28.59	47.30	61.11	32.15	41.39	38.5	29.5	39.35
%NM of Pp	8.26	13.64	31.40	11.0	25.73	10.01	19.25	19.66	13.61
%TC of Pp	25.07	34.09	34.98	70.0	54.43	14.18	30.75	47.0	17.73

Source: Field Survey, 2023

Table 2.0 examines the performance of three key marketing channels—wholesalers, retailers, and speculators. The analysis reveals that wholesalers achieved a higher percentage of net margins relative to their gross margins compared to retailers. This outcome is attributed to the wholesalers' ability to purchase and sell in larger quantities, particularly in the far northern markets, which allows them to leverage economies of scale. Despite higher operational costs, wholesalers managed to secure greater profits. Their net earnings significantly outpaced those of retailers, a disparity driven by the wholesalers' higher capital investment and their willingness to undertake more substantial marketing risks. This finding aligns with the results obtained by Ani et al. (2017) in their study on soybean marketing in Benue and Enugu States, and is further corroborated by Nwaigwe et al. (2019).

Table 3.0 Marketing Efficiency for Beef Marketing among Wholesalers, Retailers and Speculators.

Items	Wholesalers (N/kg)	Retailers (N/kg)	Speculators(N/kg)
Selling Price: Sp	3,900	3,766.67	3,707.69
Purchase Price: Pp	2,344	3,033	2,823
GM: GM = Sp – Pp	**1,556**	**733.67**	**884.69**
Total Cost: TC	820	430	500.60
Marketing Efficiency: (GM/TC)*100% - 100	89.76	70.62	76.72

Source: Field Survey, 2023

The table above estimates the marketing efficiencies of beef marketing among wholesalers, retailers, and speculators in the study area, revealing efficiency ratios of 89.76%, 70.62%, and 76.72%, respectively. These ratios, all below 100%, indicate inefficiency across all marketing channels. This inefficiency suggests that marketers are incurring higher costs on services such as purchase, transportation, rent, market levies, and depreciation of fixed assets compared to the revenue gained from value addition. As a result, the profit margins are diminished, highlighting the need for more effective cost management strategies within these channels.

Determinants of choice of marketing channels for beef traders

The result of the multinomial logit regression analysis to estimate the determinants of choice of marketing channels for beef traders in the study area is presented in this sub-section.

Table 4: Result of multinomial logit estimation analysis of the determinants of choice of marketing channels for beef traders.

Variables	**Wholesalers**		**Retailers**		**Speculators**	
Constant	Coefficient	T-value	Coefficient	T-value	Coefficient	T-value
Age (SE)	0.756 (0.646)	1.369	0.995* (0.537)	3.429	1.035* (0.749)	1.908
Education (SE)	-2.931*** (0.952)	9.479	-2.225** (0.894)	6.190	-2.658*** (0.989)	7.228
HH Size (SE)	-1.826** (1.242)	2.162	1.631** (1.019)	2.561	-1.418* (1.412)	1.008
Mkt. Experience (SE)	0.146 (0.567)	0.067	-0.655 (0.481)	1.856	-0.547 (0.726)	0.569
Cost of storage facilities (SE)	-2.790*** (1.294)	4.647	-2.916*** (1.119)	6.791	-2.329** (1.468)	2.517
Distance to Mkt (SE)	-0.020 (0.019)	1.070	-0.062 (0.031)	4.167	-0.061 (0.086)	0.510
Access to Mkt info. (SE)	1.518* (1.560)	0.947	1.791* (1.427)	1.575	1.203* (1.736)	0.480
Product price (SE)	0.002 (.001)	3.395	0.001 (0.001)	0.875	0.000 (0.001)	0.016
Intercept	6.517 (5.757)	1.282	9.867 (5.323)	3.436	10.397 (6.259)	2.759
Log likelihood	156.850					
Chi-square	62.401					
PseudoR-square	**0.405**					
Observation	**120**					

Source: Field Survey, 2023
Base category: 3.00
*** = sign. @ 1%, ** = sign @ 5% and * = sign @ 10%

From table 4, choosing any of the channels is explained by beef traders socioeconomic, transaction costs or institutional characteristics and these were tested at 1% , 5% and 10% significant levels. As indicated in Table 2, The different marketing channels are Wholesaler (Channel1), Retailer (channel2) and Speculators (channel3). Some predictor variables influenced market channel choices significantly, Of the 8 independent variables used in the model, two variables in the wholesale, one variable in retailer and one variable in speculator is statistically significant at 1% level. However, only one variable of each of the three marketing channels is statistically significant at the 5% level.

From the table, the age of beef marketers revealed an increased likelihood of participating in any of the marketing channels and positively significant at 10% for choice of retailer and speculator channels. The educational level of respondents was highly significant at 1% for choice of wholesaler and speculator and 5% significance for choice of retailer.

The table shows that household size is positively related to the coefficient of the retail channel at 5% but negatively related to the coefficient of wholesale and speculator channels at 5% and 10% respectively. This implies that an addition to the household size of beef traders will result in their choice of retail channel as against the choice of speculator and wholesale channels. This could be traced to the fact that a higher household size provides more marketing force who can reach out directly to the consumers at the retail level when actively involved.

The table shows a 1% significance of the cost of storage across all channels but a negative relationship. This implies that beef marketers would want to switch in between channels just to shy away from the cost of storage. The result agrees with the literature on the effects of storage costs on market participation which revealed that with lower storage costs, marketers tend to increase market participation and recover production and marketing cost and access desirable marketing channel Fafchamps and Gabre-Madhin 2006; Baltenweck et al 2018; Barret, 2008; Dorward, Kydd and Poulton, 2010.

Furthermore, access to market information on beef trade shows positive and significance at 10% across all channels underscores the importance of timely and adequate information which has the potential to increase output, productivity and income through effective decision making of temporal and spatial utilities, Magesa et al. (2014), Mmbando et al. 2015 Fan and Salas Garcia (2018), and Pham et al. (2019).

Constraints faced by small- holder beef traders.

Table 5.: Major Constraints faced by small-holder beef traders in the study area.

Constraints	Frequency*	Percentage
Poor Access to Credit	66	55%
Bad Roads	106	88.3%
High cost of Transportation	111	92.5%
High Market Charges	86	71.67%
Poor Storage Facilities	65	54.17%
Lack of Standard Unit of Measurement	50	41.67%
Price Fluctuation	117	97.5%
Poor Market Infrastructure	48	40%
Perishability of Beef	22	18.33%
TOTAL	671*	

Source: Field survey, 2023

Table 3 indicates that constraints such as Price Fluctuation (97.5%), High cost of Transportation (92.5%), Bad Roads (88.3%) and High Market Charges (71.67%) are the major constraints encountered by the beef traders , these constraints collaborates with the findings of Milikas and Gebre 2024, who states that the major constraints might be the same in most localities but variances may exist due to climatic influences and urbanization. Therefore, urgent attention from the government, Market Unions and the co-operative society needs to corroborate to enhance small-holder beef marketing in the study area.

CONCLUSION AND RECOMMENDATION

The study concludes that beef marketing in the study area was dominated by males in their active age and most of them attained secondary education. The various market channels used by beef marketers include Ranches, slaughterhouses, Assemblers, Speculators, Wholesalers, Retailers, Hawkers, and Vendors. The study also indicates that factors such as

Age, Education, Household size, cost of storage facilities and access to market information were significant for choice of marketing channels.

Based on the findings of this study, the following recommendation is that Government and policy makers should implement policies that will improve market infrastructure, construct good roads, reduce market levies, and cut down some of the unnecessary charges which pose a constraint to beef marketing in the study area.

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