

Analysis of Conduct and Performance of Dried Fish Market in Maiduguri Metropolis of Borno State, Nigeria

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ABSTRACT

The study analyzed conduct and performance of dried fish markets in Maiduguri Metropolis of Borno State, Nigeria. Data were obtained using structured questionnaire. Three (3) major dried fish markets were purposely selected out of the seven (7) markets in the study area to reflect areas where dried fish is predominantly sold. A total of 100 respondents from the three (3) markets were randomly selected for the study. Descriptive statistics and budgetary techniques were used as analytical tools. The finding of the study reveals that (44.82%) and (33.33%) were obtained as market margin from sales of Grade C and Grade A dried fish respectively. The result of marketing cost and returns also reveals that capital invested constitutes (96.08%) of the total fixed cost, while transportation accounts for (30.55%) of the total variable cost. The result of market return (net returns) reveals that ₦25, 013,440.04 was obtained as net returns per week. The finding on marketing efficiency reveals (67.33%) was obtained per cartoons of dried fish sold. The result further indicates the efficiency ratio of 95.54 which is positive. The result of the market conduct reveals that about (40%) of the marketers get information on market situation through personal contact, (72%) price haggling, while (56%) said prices were set by both the sellers and the agents. It was recommended that local fish marketers should be organized into cooperative groups and government should adequately provide infrastructural facilities such as good roads and market facilities to dried fish marketers in the study area.

Key words: Market Conduct, Market Performance, Dried Fish Market, Borno State, Nigeria

INTRODUCTION

Market conduct is concern with the behaviour of firms in the market towards achieving their overall objective (Gona et. al., 2004). Thus, how prices were set by the operatives and the marketing strategy employed while market performance could be viewed as the assessment of the market in terms of efficiency, progressiveness and innovation and employment generation (Yusuf et. al., 2003). The fish marketing enterprise is therefore an important agricultural domain. Roheim and Sutinem (2006) reported that sea food is one of the most extensively traded commodities in the world and export of fish produce from developing countries, comprise 20% of agriculture and food processing exports and is likely to increase as demand for fish produce continues to increase. Neiland et. al. (2005) revealed that in 2004, the fishery sub-sector contributed to the food and nutritional security of 200 million Africans and provided for the 10 million engaged in fish production, processing and trade.

Nigeria is blessed with a vast expanse of inland fresh waters and marine brackish ecosystem, which are very rich in aquatic life. Tall (2004), however, observed that Nigeria's fish production volume of 0.5 million tones cannot meet the annual demand of 1.3 million tone. Average annual fish consumption in the country has therefore stagnated at 9.2kg per capita, which is quite below the world average of 13kg per capita, a situation that resulted in a huge supply and consumption gap.

Fish and fish products contributed 6% to the gross domestic product (GDP) of the country in 2006 (Kainga and Adeyemo, 2012). About 90% of fish produced in Nigeria is sold in the local market as a cheap source of protein to the growing population and fish is made up 40% of dietary protein consumption in the country (Kainga and Adeyemo, 2012). Nigerian fish market is characterized by indigenous mechanism depending on season, ability of buyer to bargain and of course the concept of demand and supply. Fisheries development depends on improved production and processing technology and also on effective marketing system. The Inter Academy Council has also reported that future projections indicate a wider supply-demand gap (IAC, 2004). Over 90% of domestic fish supply in Nigeria comes from artisan capture. The process of transferring the produce from the landing point to the end-users, introduces the concept of marketing. In rural and fishing communities in Nigeria, fish is known to play a significant role in the diet, providing up to 75% of the total animal protein intake (Department for International Development-Food and Agriculture Organization, 2002). In many developing countries, the dependency on fish remains high as substitutes in the form of other animal foods are inaccessible to the poor (Kent, 1987).

The provision of marketing information is of utmost importance in the fishery industry, especially with regard to the prevailing problem of post-harvest losses, which according to Bolorunduro, (1996) may affect about 50% of estimated daily harvests. Neiland and Bene (2004); and Tall (2004) have proffered various reasons for the trend, including the lack of targeted extension service and illiteracy of operators, leading to inability to access information on resources and market opportunities. This study, therefore, analyzed the conduct and performance of dried fish markets in Maiduguri Metropolis of Borno State, Nigeria towards bridging the gap in dried fish marketing research in the study area.

The study attempts to provide answers to the following questions:

- i) what is the market performance of dried fish market?
- ii) what is the market conduct, in terms of buying, selling and pricing behaviour?

Objectives of the Study

The main objective of the study was to analyze the conduct and performance of dried fish markets in Maiduguri Metropolis of Borno State, Nigeria. Specific objectives are to:

- i) assess the market performance of dried fish by use of market margin analysis, marketing efficiency and pricing efficiency; and
- ii) assess the market conduct of dried fish, in terms of buying, selling and pricing behaviour.

THEORETICAL FRAMEWORK

Marketing involves all the legal, physical and economic service which are necessary to move product from the farm and make them available to the consumers (Olukosi, et. al., 2005). Marketing therefore, leads to the creation of form, place, time and possession of utilities. The relevance of marketing is to ensure the flow of goods and services, while the sellers need to improve their socio-economic development. It does not only link the seller and buyers but also stimulate output and consumption. It guides the producers towards new production opportunities and encourages innovation and improvement in response to demand and prices (Olukosi et. al., 2005). The Market conduct is centered on the behaviour of firms in the market towards achieving their overall objective (Gona et al., 2004). Based on the microeconomic theory of marketing, market conduct show how prices were set by the operatives and the marketing strategy employed while cost and returns analysis reveal the marketing efficiency and profitability of enterprise.

Market performance could be viewed as the assessment of the market in terms of efficiency, progressiveness and innovation and employment generation (Yusuf et. al., 2003). In determining market performance some researchers used marketing margin, market efficiency and index number. The pricing efficiency is concerned with improving the operation of buying, selling and other connected aspects of marketing process so that it will remain responsive to consumer direction. Several studies that examined the marketing system of fish and its implication for agricultural and economic development in Nigeria have employed the relationship between costs and selling prices of fish (Ali et. al., 2008). According to Gona et. al. (2004) prices are set in markets through three major ways, these are: menu, customers order the amount he /she demand and the operator. Marketing efficiency is centered on four marketing mix, that is nature of the product, pricing, placement and promotional activities employed by marketers in order to capture more customers. Market margin is an important indicator of market performance (Olukosi and Isitor, 1990).

According to Vanessa and Jonathan (1992), marketing margin is the difference between producer and consumer prices of an equivalent quantity and quality of a given commodity. In his study Adekanye (1988), reported that small margin can be regarded as proof that distribution or marketing is efficient but Vanessa and Jonathan (1992) maintained that gross marketing margin cannot be treated as an indicator of economic performance as such since low margin may coexist with inefficient use of resources, poor coordination and poor consumer satisfaction as well as disproportionate profit level. Marketing margin is the difference between what the consumer pays for the farm product and what the farmer receives. Marketing margin is therefore, the difference in prices paid to the first seller and that paid by the final buyer of the same commodity (Kohl and Uhl, 1998). Tomek and Robinson (1999) opined marketing margin as the price of a collection of marketing services. While Jones (1996) indicated marketing margin as the difference between purchase price and selling price, that made up of transport and other transaction costs as well as trader's profit. Marketing margin may fluctuate due to the perishability of product, number of levels of participants in the marketing channel, marketing services provider and the risk and uncertainty born by each of the market participants. It provides only one point of reference in the evaluation of performance and should be compared with measures of profit earned by marketing firms to determine whether or not the margins are excessive (Tomek and Robinson, 1981). They noted that out of their respective marketing margins, middlemen pay for labour, capital equipment and other devices employed in carrying out their marketing functions. Marketing costs also include payment for

management, capital and risk. According to the perfectly competitive model for the market behaviours, the net margin received by middlemen is not larger on average than that needed to keep him or her in a particular business.

METHODOLOGY

Study Area

The study area is Maiduguri Metropolis, the capital of Borno State of Nigeria. It lies within latitudes 10–14°N and longitude 11°30'E, and 14°45'E. It occupies a total landmass of 50,778sq km (Ministry of Land and Survey Maiduguri, 2008). It shares boundaries with Konduga Local Government Area to the North and Northwest and Jere Local Government Area to the South.

The climate of the study area is characterized by dry and hot season, with mean annual temperature of 25°C. The hottest months are March and April with maximum temperature of 35–37°C, while the coldest months are December and January with rainfall of about 500 – 700mm per annum (Nigeria Meteorological Agency, 2008). The vegetation is tropical Sahel Savannah consisting of mainly grasses with few drought resistant trees like *Acacia albida*, neem trees, etc.

Maiduguri Metropolis has an estimated population of 521,492 people out of which 290,449 were male while 231,043 were female (NPC, 2006). Majority of the inhabitants are farmers, fisher men, traders or civil servants. The major ethnic group is Kanuri, others include Shuwa Arabs, Babur/Bura, Marghi, Fulani and Hausa, and many immigrant settlers from within and outside Nigeria, and English is the official language (BOSADP, 2007). Major crops produced in the area include millet, sorghum, maize and groundnuts.

Sampling Techniques

Three (3) markets were purposively selected out of the seven (7) markets in the area. These are markets where dried fish are predominantly sold. These markets include: Tashan Baga Market, Gamboru Market and Monday Market. A total of 100 dried fish marketers were randomly and proportionately selected from the three (3) markets which were used for the analysis.

Data Collection

Data for the study were obtained from both primary and secondary information sources. The primary data were collected with the aid of a structured questionnaire administered to 100 fish sellers. Personal interview was also conducted and results of the interview were interpreted in the questionnaire. While the secondary information was obtained from textbooks, journals, past projects, internet, conference papers, etc.

Analytical Techniques

Descriptive statistics was used to interpret existing conditions of dried fish market conduct while market performance was measured based on findings on price analysis, marketing margin and costs and returns.

Market Performance

Market performance was measured based on findings on marketing margin, cost and returns in marketing and price efficiencies.

Marketing Margin

Marketing margin is the difference between the purchase price and the price received on resale. It shows the fraction of the consumer's expenditure on a commodity that is received by the producer or the marketing agents. The general formula for calculating marketing margin, according to Olukosi and Isitor (1990) is written as:

$$MM = \frac{CP - SP}{CP} \times 100$$

Where:

- MM = Marketing margin
- CP = Consumer price (₦)
- SP = Seller's price (₦)

Marketing margins may fluctuate depending on perishability of products, the number of level of participants in the marketing channel. The marketing services provided and risk and uncertainty borne by each of the market participants. The value of marketing margin obtained would indicate the percentage share that the producer received from the consumer.

Marketing Costs and Returns

Marketing costs: Marketing costs are the actual expenses incurred in the performance of the marketing functions as a commodity moves from the farm to the ultimate consumers (Olukosi and Isitor, 1990). Marketing costs consist of fixed and variable costs.

The fixed costs include capital invested, costs of shed. The variable costs are: transportation cost (T), cost labour (L), cost of handling (H), tax per cartoon, state revenue per cartoon, costs of agent fee, dealer license fee, annual agent/seller tax and cost of loss due to price decline.

Market Returns (Net Returns)

The net return is the difference between what is received and costs incurred. This is mathematically presented as:

$$NR = \sum p_i v_i - (FC + VC) \text{ (Pomeroy, 1989)}$$

Where:

- NR = Net returns (₦)
- P_i = Average price of dried fish sold/week (₦)
- V_i = Number of cartoons sold per week (₦)
- F_c = Fixed costs (₦)
- V_c = Variable costs (₦)

If NR gives a positive figure, the market would be expected to be efficient.

Marketing Efficiency

Marketing efficiency is defined as the maximization of the ratio of output to input in marketing (Olukosi et. al., 2005). It is expressed as:

$$ME = \frac{\text{Value added by marketing}}{\text{Cost of marketing services}} \times 100$$

For the market to be efficient, marketing efficiencies must be at least equal to or close to average (that is, 50%).

Pricing Efficiency

Pricing efficiency refers to the improvement of the operations of buying, selling and pricing output to reflect consumer's wish (Olukosi et. al., 2005).

Pricing efficiency was determined using efficiency ratio which measures the benefits to costs for a particular marketing system or commodity. It is expressed as:

$$ER = 100 - \frac{(C_1 + C_2)}{V}$$

Where:

- ER = Efficiency ratio
- C₁ = Total costs of purchase (₦)
- C₂ = Total costs of marketing (₦)
- V = Total value of dried fish marketed (₦)

The market would be expected to be efficient if ER is positive.

Market Conduct

Market conduct was described in terms of:

- a) Buying and selling practices in the market i.e. the presence or absence of collusion among sellers;
- b) Pricing behaviour of firms existing in the market i.e. the mode of purchases, the process of price discovery and exclusionary tactics of middlemen (Olukosi et. al., 2005).

RESULTS AND DISCUSSION

Market Performance

Marketing margin, costs and returns and price efficiency were used to examine market performance in dried fish marketing in the study area.

Marketing Margin

Marketing margins of the grade of dried fish per cartoon were determined as yardsticks for measuring market performance. The findings are presented in Table 1

Table 1: Marketing Margin of Dried Fish per Cartoon in Maiduguri, Borno State

Grade of dried fish	Cost per cartoon (₦)	Selling price per cartoon (₦)	Percentage market margin
Grade A	12,000	18,000	33.33
Grade B	10,000	16,500	39.39
Grade C	8,000	14,500	44.82

Source: Market Survey, 2010.

The results of the analysis in Table 1 shows that 33.33%, 39.39% and 44.82% marketing margins were obtain for grade A, B and C of dried fish respectively per cartoon. High market margins as indicated by Jones (1996) can be adduced to the ability of the marketers to finance risk. The existence of high market margin can be detrimental to producers in the form of low prices and to the consumers in the form of high retail prices. Such a high market margin results from imperfect market conditions.

Marketing Costs and Returns

Marketing costs and returns were estimated with respect to variable and fixed costs as well as the returns obtained by respondents in dried fish marketing.

Marketing Costs of Dried Fish per Week

Marketing costs of dried fish are the actual expenses incurred in the performance of the marketing functions as dried fish move from the producers to the final consumers. The findings are presented in Table 2

Table 2: Marketing Cost of Dried Fish per Week.

Items	Number of cartoons sold per week	Value (₦) of cartoons sold	Average price per cartoon (₦)	Percentage (%)
Revenue (returns)	4,688	76,750,510.04	16,333.03	
Fixed Costs:				
Capital Invested:		48,063,300		96.08
Cost of Shed:		1,959,200		3.92
Total		50,022,500		100
Variable Costs:				
Transportation		468,800		30.55
Labour		187,520		12.22
Cost of handling		93,760		6.11
Tax		46,880		3.05
Revenue charge		117,200		7.64
Agent fee		234,400		15.27
Dealers license		214,000		13.95
Agent tax		78,250		5.10
Loss due to price fluctuation		93,760		6.11
Total		1,534,570		100
Returns per cartoons			1,531.44	

Source: Market Survey, 2010.

Analysis of marketing costs per week for dried fish marketing in Table 2 shows that capital invested constituted 96.08% of the fixed cost and 3.92% for cost of shed. Transportation constituted 30.55% of the variable cost, while tax recorded 3.05% of the variable cost, the average price of dried fish per cartoon was ₦16,333.03 and the returns per cartoon of dried fish was ₦1,531.44 as profit obtained per cartoon of dried fish sold.

Market Returns (Net Returns)

Market return is the difference between amount received and costs incurred in dried fish marketing. The findings are presented in Table 3

Table 3: Market Returns of Dried Fish per Week

Items	Value (₦)	Number of cartoons
Average price of dried fish per cartoon	16,333.03	
Number of cartoons sold per week		4,688
Fixed cost	50,022,500	
Variable cost	1,534,570	
Net returns	25,013,440.04	
Net return per cartoon	5,335,63	

Source: Market Survey, 2010.

Analysis of the results in Table 3 for Net returns per week of dried fish marketing in Maiduguri was determined. The result shows that net return of ₦25, 013,440.04 was obtained by the dried fish marketers per week.

Marketing Efficiency (ME)

In order to determine maximization of the ratio of output to input in dried fish marketing, marketing efficiency was estimated. The findings are presented below:

$$ME = \frac{\text{Value added by marketing}}{\text{Cost of marketing services}} \times 100$$

$$= \frac{₦51, 557,070}{₦76, 570,510.04} \times 100$$

$$ME = 67.33\%$$

The finding shows that the marketing efficiency of 67.33% was obtained. This reveals that dried fish marketers received about 67.33% per cartoon sold as profit. This indicates efficient marketing performance (because the marketers receive more than 50% as their market share).

Pricing Efficiency (ER)

Pricing efficiency used to measure the benefits to costs for dried fish marketing. The findings are presented below:

$$ER = 100 - \frac{(C_1 + C_2)}{V}$$

Where:

ER = Efficiency ratio

C1 = Total cost of purchase (₦)

C2 = Total cost of marketing (₦)

V = Total value of dried fish marketed (₦)

$$ER = 100 - \frac{(₦49, 013,300 + ₦81, 154,000)}{₦29, 190,000}$$

$$ER = 95.54$$

The result of the pricing efficiency shows that dried fish marketing in the study area is efficient. The total cost of purchase per week was ₦49, 013,300 and the total cost of marketing was ₦81, 154,000 while, the total value of dried fish marketed was ₦29, 190,000 with the efficiency ratio of 95.54. This shows that there was positive efficiency ratio. This signifies that dried fish marketing is efficient in the study area.

Market Conduct

The market conduct of dried fish sellers was examined based on buying and selling practices and pricing behaviour in the market. The findings are presented in Table 4.

Table 4: Marketing Conduct for Dried Fish in Maiduguri Metropolis, Borno State

Variables	Frequency	Percentage
Market Information situation:		
Media	23	23
Personal contact	40	40
Announcement in the market	27	27
Memorandum	10	10
Total:	100	100
Arrival at prices when dealing with buyers:		
Haggling	72	72
Standardized price	28	28
Total:	100	100
Setting final prices:		
Sellers	20	20
Agents	24	24
Both	56	56
Total:	100	100
Class of business:		
Wholesalers	48	48
Retailers	52	52
Total:	100	100

Source: Market Survey, 2010.

The analysis of the market conduct in Table 4 reveals that 23% of the respondents get market information through media, 40% through personal contact, 27% through announcement in the market while, 10% of the respondents get information on market situation through memorandum. This shows that majority of the respondents get information on market situation through personal contact.

The result on how to arrive at price when dealing with buyers shows that majority (72%) arrived through haggling while, 28% arrived through standardized fixed price. This shows that price of dried fish were not standardized in the study area.

The analysis of market conduct further revealed 20% of sellers set the final prices, 24% of the agents set the final price while, most (56%) said prices were set by both the sellers and the agents. The result of class of business shows that 48% of the marketers were wholesalers while, most (52%) were retailers in the study area.

CONCLUSION AND RECOMMENDATIONS

The importance of the fishery sub-sector in Borno State and Nigeria's economy cannot be overemphasized considering the fact that fish and fish products contributes larger proportion to the gross domestic product (GDP) of the country. About 90% of fish produced in Nigeria is sold in the local market as a cheap source of protein to the growing population. Fish also made up 40% of dietary protein consumption in the country and dried fish marketing in Maiduguri, Borno State of Nigeria is a lucrative business. Based on findings from this study, we conclude that marketers who sell grade C dried fish product obtain high market margin followed by grade B; this is an indication of exploitative nature of the fish market. Also capital invested and transportation constituted the highest cost of dried fish marketing in the study area. The result also shows that dried fish marketers obtain reasonable net returns and are efficient in price and market performance, since the marketers received more than 50% as their market share. Also majority of the respondents get information on market situation through personal contact, price of dried fish were not standardized, most of dried fish sellers were retailers and prices were set by both the sellers and the agents in the markets in the study area.

The following recommendations are suggested based on the findings:

- i) In order to improve the quality of dried fish handled by fish marketers, extension agents should train the marketers on efficient fish processing and storage techniques. Attainment of such knowledge could help to reduce the level of losses and improve profit.
- ii) The local dried fish marketers should be organized into cooperatives. This could be of help to members to improve their business through assistance such as loans, get more remunerative prices and other benefits from the cooperative society.
- iii) Federal and State Governments should adequately provide infrastructural facilities such as good roads; good market facilities and so on to improve market efficiency and reduce cost of marketing.
- iv) Effort should be made by cooperative groups' and the government to standardize the unit of measurement for dried fish throughout the state and the nation as a whole, to check the fraudulent activities in dried fish marketing.

- v) There is need to implement policies and programmes that are capable of attaining efficiency in dried fish prices in the study area.

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