

MARKETING OF SMOKED CAT-FISH (*Clarias garipinus*) IN NUMAN LOCAL GOVERNMENT AREA OF ADAMAWA STATE, NIGERIA

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Abstract

*Marketing of fish can be enhanced by preserving its nutrient, taste, flavor, and value through smoking. This study analyzed the marketing of smoked Cat-fish (*Clarias gariepinus*) in Numan Local Government Area of Adamawa State, Nigeria. The specific objectives were to estimate the profitability of smoked Cat-fish marketing and determine the marketing margin and efficiency of the marketers. The primary data collected from 60 smoked Cat-fish marketers were analyzed using gross and marketing margins, net income as well as Shepherd – Futeral efficiency model. The costs and return analysis and profitability indices indicated that the smoked Cat-fish marketing is an incentive business in the study area with a monthly average gross margin of ₦75,800 per 40 kg carton, Net revenue of ₦74,500 per 40 kg carton and a marketing efficiency of 112.30% which indicate that their efficiency is relatively high implying that smoked cat-fish marketing in the study area is efficient. The study recommend timely and immediate circulation of market knowledge among marketers to reduce the level of fluctuation in prices of smoked cat-fish and use their market resources effectively. Government should make credit facilities available to smoked cat-fish marketers to enable them expand their capital and increase their profit margin.*

Key Words: *gross margins, marketing, net income, Numan, smoked Cat-fish.*

INTRODUCTION

Background of the Study

Marketing and distribution of fish is as important as its production. It involves all activities carried out from catching sites to the point of utilization by the consumers. Such activities include collection of fish, processing and preservation (smoking of fish using fire wood or regulated oven), transportation to consumers, pricing, buying and utilization (Crammer et al., 2001). In marketing, fish passes through various market participants and exchange points before they reach the final consumer. These markets intermediaries are the wholesale and retail. Both play important role in marketing system, at all stages in the marketing channel, fish has to be packed, un-packed to meet consumer's demand.

Analysis of cat-fish marketing is important considering the fact that fish and fish products contributed 6% to the gross domestic product (GDP) of Nigeria in 2006 (Baba *et al.*, 2015). About 90% of fresh fish produced in Nigeria is sold in the local markets as a cheap source of protein to the growing population. Fish often account for 40 percent of the country's dietary protein intake. Nigerian fish market is dependent on season, the ability of buyers to bargain, and the concept of demand and supply. Fisheries development depends on improved production and processing technology and also on an effective marketing system (Igoni-Egweke, 2018). Food and Agricultural Organization (FAO) (2000) and Oluwatobi et al., (2017); Akinsorotan et al.,

(2019) revealed that the projected human population and fish demand and supply in Nigeria from 2000 to 2020 as follows; in 2000, a population of 114.40 million with demand of 0.87 million tonnes and domestic fish supply of 0.53 million tonnes with short fall of 0.34 million tonnes was recorded and in 2020, the population is assumed to have risen to 229.90 million with demand of 1.75 million tonnes and domestic supply of 1.52 million tonnes with a short fall in supply of 0.23 million tonnes.

However, these figures are not surprising because fish unlike red meat whose consumption at old age faces a lot of controversies. According to Jennifer (2021) fish is filled with essential nutrients, like omega 3 fatty acids which can reduce inflammation, help protect heart, stave off chronic diseases and also contain protein to keep body lean and muscles strong. In spite of the importance of fish and the fishing industry, fish is an extremely perishable commodity, with very short life span due to enzymatic and microbial actions, resulting in disagreeable taste, smell and texture; thereby reducing consumer acceptability (Brigitte *et al.* 1994; Garrow and James, 1994). Nigeria is the largest fish consumer in Africa and among the largest fish consumers in the world with over 1.5 million tonnes of fish consumed annually. Yet, Nigeria imports over 900,000 metric tonnes of fish while its domestic catch is estimated at 313,231 metric tonnes/year (Ozigbo *et al.*, 2013).

Eyo, (2001) stressed that processed fish is sold as smoked or dried without varieties as fish fingers, cakes and other ready to serve fish foods to stimulate wider interest in marketing, distribution and consumption. Selling it in a processed form gives more return than fresh. Fish is one of the most perishable staples. It spoils very quickly because of intrinsic and extrinsic factors. The high ambient temperature in the tropics hastens fish spoilage by accelerating the activities of bacteria, enzymes, and chemical oxidation of fat in fresh fish.

Efficiency in marketing system is essential for growth and development of the fishery subsector. Marketing efficiency is the maximization of input (of land, labour, capital and management) – output (satisfactions) ratio. It is usually segmented into two forms, ‘technical efficiency’ and ‘economic efficiency’. As these concepts are frequently confused, it seems necessary to clarify the difference between them. Technical efficiency concerns the effectiveness or competent with which the physical aspects of marketing are performed. Economic efficiency requires the realization of maximum output in money terms or of a given output with minimum resources.

Making a profit is what all businesses strive to do because without profit, the business will not survive in the long run. Unlike profit, profitability is a relative measure of the success or failure of a business. It has more to do with the rate of return expected on an investment (capital), or the size of the return, compared to what could have been obtained from an alternative investment (such as putting your money in a risk-free certified deposit or buying government treasury bonds) (Evan, 2020). The nature of the product on one hand and lack of organized marketing system on the other often resulted in low profit and efficiency respectively. Meanwhile, to be more profitable, fish trade requires every activity that increases sales revenue and as well decreasing the costs of marketing. Thus, prioritizing the adopted marketing strategies to improve profit becomes necessary, since profitability is the primary goal of all business (Taiwo *et al.*, 2019) The inability of smoked cat-fish marketers in the study area to effectively ascertain whether marketing of smoked cat-fish is profitable and not mere making profit as well as the inefficiency in using marketing resources; necessitates the need for this research to verify

profitability, marketing efficiency and margin in smoked cat-fish marketing in Numan LGA of Adamawa State.

MATERIALS AND METHODS

The Study Area

Numan also known as “Nomweh” (hilltop) is one of the 21 Local Government Areas (LGAs) in Adamawa State where the study was conducted. It is situated at latitude 9.47° North, longitude 12.03° East and 137 meters elevation above the sea level. It is a port town that lies on the confluence of Benue and Gongola rivers. River Benue one of the largest rivers in West Africa is the major source of economic activities for inhabitants across its bank and equally serves as natural habitat for aquatic animals.

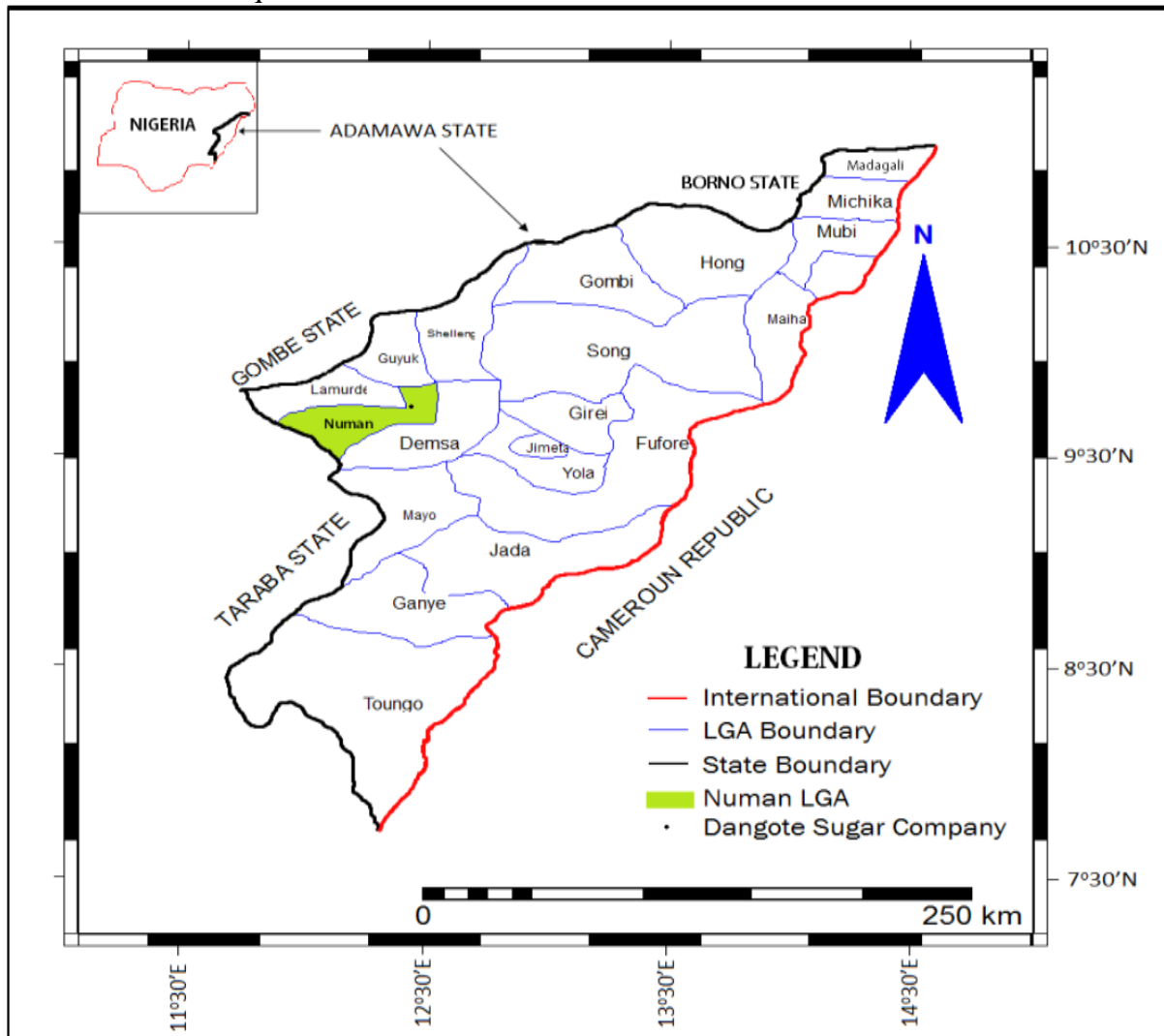


Fig 1: Map of Adamawa State showing the study area

Source and Methods of Data Collection

Data for the study was collected mainly from primary source through the use of well-structured questionnaires which was administered to the smoked Cat-fish marketers in the study area. The

information obtained includes cost and returns of the marketers, marketing margin and efficiency.

Sample Size Determination

The sample size for this research was determined with the Taro Yamane method of sample size determination. Taro Yamane, a mathematical statistician developed a statistical formula for calculating or determination of sample size in relation to the population under study so that inferences and conclusions reached after the survey can be generalized to the entire population from which the sample was gotten. It involves the use of level of precision which makes is easier to get the required sample size than other methods.

The Taro Yamane statistical formular is thus:

$$n = \frac{N}{1 + N(e)^2}$$

where;

n= required sample size from the population under study

N= is the whole population that is under study

e = is the precision or sampling error which is usually 0.10, 0.05 or 0.01. (0.10 was used for this study).

Sampling Techniques

Purposive and simple random sampling procedure were used in selecting (60) smoked Cat-fish marketers for the study. Three (3) wards and six (6) markets, two (2) from each ward were purposely selected based on their prominence in smoked Cat-fish marketing in the study area.

The population for the study was obtained from smoked cat-fish marketers association in the study area. The sampling frame included the list of all smoked cat-fish marketers from the purposely selected markets. The Taro Yamane statistical formula was used to obtain the number of smoked cat-fish marketers in each of the selected markets.

Finally, simple random sampling was used in selecting 15 marketers in new market, 13 in cross market, 10 in old market, 10 in kwalinga market, 7 in kwakombe market and 5 in Ngbalang market. The sampling details is shown in Table 1.

Table 1: Sample Size

Wards	Markets	Frame	Sample size
Sabon pegi	New market	18	15
	Cross market	15	13
Numan ward 2	Old market	11	10
	Kwalinga market	11	10
Imburu	Kwakombe market	8	7
	Ngbalang market	5	5
Total	6	68	60

Source; (survey data, 2021)

Methods of Data Analysis

The analytical tools that were used for the study includes, gross margin and net income analysis which were used to determine the profitability of smoked Cat-fish marketers while marketing margin and efficiency were used to achieve objective ii,

$$GM = TR - TVC \dots\dots\dots 1$$

Where:

GM = Gross Margin (₦/Kg)

TR = Total Revenue (₦/Kg)

TVC = Total Variable Cost (₦/Kg)

NR = TR – TC.....2

TC = TFC + TVC.....3

Where;

NR = Net Returns (₦/Kg)

TC = Total Cost (₦/Kg)

TR = Total Revenue (₦/Kg)

TVC = Total Variable Cost (₦/Kg)

TFC = Total Fixed Cost (₦/Kg)

Return on Investment = Net Farm Income /Total Cost: (Olukosi *et al.*, 2005)

Objective II was achieved by the use of the following equations;

Shepherd - Futeral model as used by Adedeji *et al.*, (2019) was used to determine the efficiency of marketers.

$ME = \frac{TC}{GI} \times 100$ 4

Where;

ME = Marketing Efficiency of smoked catfish

TC = Total Cost incurred by marketers (purchase cost + marketing cost)

GI = Gross Income of each marketer.

The Market Margin analysis equation as used by Iliyasu *et al.*, (2011) was used to determine the market margin:

$M.M = \frac{SP-CP}{SP} \times 100$ 5

Where,

M.M = Market Margin.

SP = Selling Price.

CP = Cost Price.

RESULTS AND DISCUSSION

Cost and Returns of Smoked Cat-fish Marketing

Table 2 depict monthly average cost and returns analysis of the Smoked Cat-fish marketing in the study area.

Table 2: Monthly Average Cost and Return Analysis of Smoked Cat-fish Marketing

Items	Amount/40 kg carton (₦)
Selling price/carton	170,000
Cost price/carton	150,000
Revenue from selling of 4 cartons	680,000
Total Revenue	680,000
Variable Cost	
Cost of 4 carton of smoked catfish	600,000
Cost of preservatives	1,000
Cost of loading and off loading	200
Cost of transportation	2,000

Other expenses	1,000
Total Variable Cost (TVC)	604,200
Gross Margin(GM) = TR-TVC	75,800
Fixed Cost	
Cost of Shade	500
Depreciation of Cost of tables/basins(20%)	800
Total Fixed Cost (TFC)	1,300
TC = TVC+TFC	605,500
NR = TR – TC	74,500
Return on Investment	12.30%

Source; field survey, 2021

The results of the analysis revealed that on the average the marketers sold four (4) big cartons of Smoked Cat-fish weighing 40 kg each at the rate of ₦4,250 per Kg monthly. The total revenue realized from the sales of these smoked Cat-fish was ₦680,000. A total cost of ₦605,500 which comprises of the Total Variable Cost (TVC) of ₦604,200 and Total Fixed Cost (TFC) of ₦1,300 was incurred. The findings also revealed net income of ₦74,500 per kg and 12.30k return on investment for every one naira invested. This implies that Smoked Cat-fish marketers make profit from the business in Numan local government area of Adamawa state. However, based on the rate of return on the investment the business is not profitable. There are positive chances that the profit margin may be increased if the marketers will gate more access to credit facilities and use their resources effectively. This finding is consistent with Taiwo, et al., (2019) who also reported positive gross margin (₦38,101.36) in smoked fish marketing in Ondo State Nigeria.

Marketing Margin of Smoked Cat-fish

Table 3 shows the Marketing Margin (MM) analysis of the marketers in the study area. The average cost price of one big carton (40kg) of smoked Cat-fish was ₦150,000 and the average selling price was ₦170,000 with a marketing margin of ₦20,000 per **40 kg carton** which implies that marketers exercise high economic power on price. The result confirmed the appreciable profit margin recorded by the marketers in the study area. This agreed with the findings of Oluwatoyin (2020) in his study on the profitability assessment of cat-fish marketing in Ondo State, that the demand for fish consumption is significantly high.

Table 3: Marketing Margin Analysis of Smoked Cat-fish

Items	Amount/40 kg carton (₦)
Average cost price	150,000
Average selling price	170,000
Market Margin (MM)	20,000

Source: field survey, 2021

Table 4 show that the marketing efficiency of smoked Cat-fish was efficient with coefficient of marketing efficiency estimate of 112.30%. This implies that Cat-fish pricing and marketing services were performed at levels acceptable to all participants ranging from producers, middlemen to consumers. The result concur with the findings of Hamid (2020) who reported high efficiency (137.47%) in smoked fish marketing in Mubi. Similarly, Daniel et al., (2019) also asserted that retail marketing of processed cat-fish in Kwara metropolis was relatively more efficient than wholesale marketing of the product (85.75% and 78.84% respectively). The high

marketing efficiency observed for the retail marketing could be attributed to the values which were added to the product which help in making it more attractive to the customers.

Table 4: Marketing Efficiency of Smoked Cat-fish

Items	Amount/40 kg carton (₦)
Revenue(R)	680,000
Marketing Cost (MC)	605,500
Marketing Efficiency(R/MC X 100)	112.30%

CONCLUSION AND RECOMMENDATIONS

Conclusion

This study analyzed the marketing of smoked Cat-fish (*Clarias gariepinus*) in Numan Local Government Area of Adamawa State, Nigeria. The costs and return analysis and profitability indices indicated that the smoked Cat-fish marketing is an incentive business in the study area with a monthly average gross margin of ₦75,800 per kg, gross revenue of ₦680,000 per kg and a marketing efficiency of 112.30% which indicate that their efficiency is relatively high implying that smoked cat-fish marketing in the study area is efficient and can serve as a great tool for alleviating poverty.

Recommendations

The study recommend timely and immediate circulation of market knowledge among marketers to reduce the level of fluctuation in prices of smocked cat-fish and use their market resources effectively. Government should make credit facilities available to smocked cat-fish marketers to enable them expand their capital and increase their profit margin.

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