



**AgEcon** SEARCH  
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

*The World's Largest Open Access Agricultural & Applied Economics Digital Library*

**This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.**

**Help ensure our sustainability.**

Give to AgEcon Search

AgEcon Search

<http://ageconsearch.umn.edu>

[aesearch@umn.edu](mailto:aesearch@umn.edu)

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*



## **MARKETING ANALYSIS OF FRESH AND PROCESSED (BARBECUE) ALONG CATFISH VALUE CHAIN, IMPLICATION FOR YOUTH LIVELIHOOD IN SOUTHEAST, NIGERIA**

**Ben-Chendo, G.N., Obasi P.C., Osuji M.N., Nwosu F.O., Emenyonu C.A.,  
Ibcagwa,  
B.O. and Uhuegbulem I.J.**

Department of Agricultural Economics, Federal University of Technology Owerri  
CORRESPONDENCE E-MAIL: [gbenchendo@gmail.com](mailto:gbenchendo@gmail.com), Tel. +2348035841847

### **ABSTRACT**

This study ascertained the profitability of fresh and processed (barbecue) catfish marketing for youth livelihood in Southeast Nigeria. With the use of a well-structured questionnaire, a multi-stage sampling technique was employed to select 140 catfish marketers covering six (6) urban local government areas namely Awka south, Nnewi north, Onisha north, Owerri municipal, Orlu and Okigwe south in Southeast, Nigeria. The data collected were analyzed using descriptive statistics, gross margin, profitability analysis and marketing efficiency tools. The results revealed that majority of the respondents were males (62.86%), married (50%) and had secondary education (51.43%). Most (53.57%) of them have been in the business for 6 years. The respondents had fish farming as primary occupation and most common source of capital was from family and relatives (64.24%). The study revealed that barbecue fish had a higher profitability index of 0.71 which implied that there was 71% return for every naira invested per kilogram of catfish processed. The marketing efficiency rate for barbecue catfish was higher (124%) than that of fresh catfish (85%). Findings revealed that marketing margin was very high and inefficient for barbecue fish with a lot exploitation and margin made from consumers. Based on the findings, the major constraints faced by the respondents were lack of storage facilities and intensive labour during grilling. The result of this study calls for marketers to seek alternative sources of storage such as cold rooms for a fee and youths are encouraged to go into barbecue catfish production since return to investment is high.

**KEYWORDS:** value addition, catfish, profitability, marketing efficiency, youth livelihood

### **INTRODUCTION**

Fish is highly nutritious food and is valued for its protein which is high in value compared to meat and egg (Ikutegbe and Sikoki, 2014). According to Eyo, (2001), in Nigeria fish has an edge over meat because it is cheaper and more acceptable because it doesn't have religious sentiment attached to it like pork. Catfish production is now a common practice in the southeast of the country so production and marketing activities provide a great opportunity for employment generation within the aquaculture industry (Spliettoff, 2012). Since fish and fish products are perishable due to lack of preservatives it is essential to process and preserve fish in order to assure health safety of the product and reduce moisture content to the minimum (Emere and Dibal, 2013). The fresh weight is usually sold cheaper than the processed because of its highly perishable nature which demands considerable efforts to extend its shelf life using processing and preservation. Methods such as refrigeration, freezing, smoking, salting, drying are used to extend the shelf life of fish (Nwachukwu and Madubuko, 2013). Besides these techniques grilling can be used to enhance the value of fish to produce barbecue fish which is a recent delicacy in the study area.

The technique of barbecue and grilled fish has developed as a result to increasing demand attached to a cheap source of protein delicacy for the class and there is a dearth of knowledge

on its profitability compared to fresh catfish. Adebo and Toluwase (2014) compared the marketing of fresh and smoked catfish in Ekiti and Ondo States and opined that both are profitable but the smoked catfish marketing was more profitable. However, the variable costs of processing the smoked fish was higher per kilogram (N537) compared to that of fresh catfish (N262.50). The return on investment was also higher for smoked fish (0.6) than that of fresh fish (0.48), the marketing of smoked catfish was efficient and worthwhile in a long run. This justifies the processes of value addition.

Creation of value increases shelf life and profit in marketing especially when the needs of the consumers are met. According to Okoh *et. al.*, (2008) these practices ascertain that the best products are available at the right time to fully satisfy the consumer's needs. The barbecued catfish marketing is found in urban and semi urban areas in the study area, with the increase of recreation and fast food centers, it is seemingly becoming popular.

Youths especially males who are skilled in barbecue preparation are found in such centers with a charcoal pot stand ready to attend to customers. Mafimisebi (2012) opined that majority of Nigerian people reported a preference for fresh fish; however limitations such as the low keeping quality of the fish after harvest and the distances between fishing grounds and marketing outlets make this very difficult. Marketing, processing and distribution of these catfish are usually done by women and youths and have become a source of employment and livelihood to this group of people. Catfish production and marketing has its challenges which are due to lack of storage facilities hence the difficulty of selling the catfish fresh at appropriate prices (Adebo and Toluwase, 2014). An attempt to resolve these challenges prompts the issue of value addition. The objectives of the study were to; identify the socioeconomic characteristics of the respondents, ascertain the profitability of the fresh and barbecue fish, estimate the marketing efficiencies and describe the constraints faced by the respondents.

#### **METHODOLOGY**

The study was carried out in the Southeast, Nigeria. The zone comprises of 5 states namely Anambra, Imo, Enugu, Abia and Ebonyi. Agriculture and trading are the main activities in the zone providing employment and income for its people.

#### **Sampling technique**

The study made use of multistage sampling technique. Out of the 5 states, 2 states were randomly selected namely Anambra and Imo states. Three urban local government areas were purposely selected from the states giving a total of six local government areas namely Awka south, Nnewi north, Onitsha north, Owerri municipal, Orlu and Okigwe south based on the predominance of fish production and fast food centers. A list of all the fish farmers and fast food centers were compiled with the use of key informants from the local government areas giving a sampling frame of 345. From the list a stratified sampling was done to select 12 fish farmers and 12 fast food/recreation centers giving a total sample size of 144 respondents but 140 respondents were valid for further analysis.

Primary data was collected using a well structured questionnaire and secondary information sources were used such as bulletins, journals, internet and textbooks. Data were analysed using descriptive statistical tools such as means frequency and percentages, profitability analysis and marketing efficiency tools.

The profit analysis is stated as:

$$NI=TR-TC$$

$$\text{Profitability index} = \frac{\text{total revenue}}{\text{total cost}}$$

Gross margin

$$TR-TVC,$$

$$TC=TVC+TFC$$

Where, TR=total sales, TVC=total variable costs, TC=total costs, TFC=total fixed costs, NI=Net Income

$$\text{Return on Investment (ROI)} = \frac{\text{total variable cost}}{\text{total revenue}}$$

$$\text{Marketing efficiency (ME)} = \frac{\text{value added by marketing}}{\text{cost of marketing services}} \times 100$$

Decision rule: ME=100 – efficiency, ME< 100 – inefficiency, ME> 100 – inefficiency

## RESULTS AND DISCUSSION

The analysis of the socioeconomic characteristics of the respondents was analyzed. The result is presented in Table 1.

**Table 1: Socioeconomic characteristics of the respondents.**

N=140

| Socioeconomic variables                               | Frequency | Percentage |
|---|-----------|------------|
| <b>Age</b>  |           |            |
| 16 -25  | 20        | 14.28      |
| 26 -35  | 80        | 57.14      |
| 36 -45  | 30        | 21.43      |
| 46 -55  | 10        | 7.14       |
| Mean  | 32.6      |            |
| <b>Marital status</b>                                 |           |            |
| Married   |           |            |
| Single  | 70        | 50.00      |
| <b>Gender</b>   |           |            |
| Male  | 70        | 50.00      |
| Female  | 88        | 62.86      |
|   | 52        | 37.14      |
| <b>Household size</b>                                 |           |            |
| 1 – 5   | 100       | 78.57      |
| 6 – 10  | 30        | 21.43      |
| Mean  | 4         |            |
| <b>Level of Education</b>                             |           |            |
| 0   | 9         | 6.43       |
| 6 – 12  | 72        | 51.43      |
| 13 – 18   | 45        | 32.14      |
| 19 – 23   | 14        | 10.00      |
| Mean  | 12.7      |            |
| <b>Primary occupation</b>                             |           |            |
| Fish farming  | 90        | 64.29      |
| Artisan   | 20        | 14.29      |
| Civil Servant   | 30        | 21.43      |
| <b>Secondary occupation</b>                           |           |            |
| Teaching  | 70        | 50.00      |
| Fish marketing/trading                                | 50        | 35.71      |
| Tricycle operator                                     | 20        | 14.29      |
| <b>Years of experience in fish/barbecue marketing</b> |           |            |
| 3 – 5   | 49        | 53.57      |
| 6 – 8   | 75        | 35.00      |
| 9 – 11  | 10        | 7.14       |
| 12 – 14   | 6         | 4.29       |
| Mean  | 6         |            |
| <b>Types of catfish sold</b>                          |           |            |
| Fresh only  | 45        | 32.14      |
| Barbecue only   | 35        | 25.00      |
| Fresh/barbecue  | 60        | 42.8       |
| <b>Source of initial capital</b>                      |           |            |
| Personal savings                                      | 40        | 28.57      |
| Family/relatives                                      | 90        | 64.29      |
| Bank loans  | 0         | 0          |
| Isusu   | 10        | 7.14       |

The result of the analysis of the socioeconomic characteristics of the respondents showed that the marketers had an average age of 33 years. Majority (about 71 percent) were not more than 35 years old. This implies a very youthful group of sellers who may be energetic and strong enough to perform various marketing functions, especially those requiring much energy like processing. Furthermore, the youthful population marketers may be an indication of the influx of youths in the business, a phenomenon which portends well for the trade. This result agrees with that of Madugu and Edward (2011), who reported similar age range for fish marketers in Adamawa State, Nigeria.

The result in Table 1 also shows that there were equal numbers of single and married individuals among the respondents. This is however expecting considering the youthfulness and age range of the respondents. The implication for the single individual is that they will be able to earn income which will enable them become financially independent at a much younger age. The implication for the married individual is that they will be able to earn income to take care of their family needs.

There were more males than females among the respondents. This is a little unexpected since activities like processing and marketing have been dominated by females. This again might be a sign that males are now diversifying into hitherto female dominated economic activities. This result differs from that of Oparinde and Ojo (2014) who reported more females than males in artisanal fish marketing in Ondo State, Nigeria.

The results also shows that majority of the respondents (about 79 percent) had household size of between 1-5 persons. The average household size was 4 persons. This is an indication of the relatively moderate household size of the respondents and may not be unconnected with their age and marital status both of which indicate a very youthful population.

The analysis of the educational level of the respondents show that majority of the respondents (51 percent) had between 6 – 12 years of education. It may be assumed that they had up to secondary school education. This is an important achievement for these marketers especially as it relates to their ability to perform their marketing functions efficiently and optimally. The education acquired by the marketer will equip them and assist them take advantage of modern technologies and avenues which could boost sales and enhance their revenue. This results aligns with that of Alfred, Odefadehan and Ukut (2012) who reported same results among women fish marketers in Ondo State, Nigeria.

Majority of the respondents (about 64 percent) were into fish farming as their primary occupation. This may be an indication of the level of interest younger people are showing in agriculture in general and fish farming in particular. This is also an indication of backward and forward integration.

The result also shows that most of the respondents were involved in teaching as a secondary occupation. This may an indication of the relatively high demand for these young people in the various public and private schools in the area.

The result in the table also shows that majority of the respondents had just between 3 – 5 years of marketing experience. This is again is a reflection of the youthfulness of this group of marketers and may also be an indication of how experienced they are in managing fluctuations in prices and all other vagaries of fish marketing. The average year of experience for the marketers was 6 years.

The result also shows that many of the respondents (about 43 percent) were involved in selling both fresh fish and fish barbecue. A sizeable proportion of the respondents (about 32 percent) were also involved in fresh fish marketing only. This may be an indication of the diversity involved in the marketing of these commodities as well as the innovativeness of the marketers in being able to combine the sale of more than one commodity.

The result in the table also shows that family and friends accounted for the major source of credit used by the marketers. None of the marketers got credit from the bank. This may be an indication of the much easier access they have to credit from family and friends than from the bank. It may also be an indication of the reasonably low amount of credit they were able to access.

**Marketing Profitability and return on investment.**

The result of the analysis of the profitability and returns on investment of the fish marketers is presented in Table 2

**Table 2: Profitability and returns on investment of the fish marketers**

| Item                           | Fresh | Value | Barbecue | Value   |
|--------------------------------|-------|-------|----------|---------|
| <b>Revenue</b>                 |       |       |          |         |
| Sales                          | 1kg   | 700   | 1kg      | 2000    |
| <b>Variable costs</b>          |       |       |          |         |
| Fingerlings                    |       | 20    |          |         |
| Cost of fresh fish             |       |       |          | 700     |
| Processing cost                |       |       |          | 200     |
| Feed                           |       | 240   |          |         |
| Vaccine medicine               |       | 5.00  |          |         |
| Labour                         |       | 10.00 |          | 100     |
| Packaging                      |       |       |          | 20      |
| Handling                       |       |       |          | 100     |
| Transportation                 |       | 15.00 |          | 50      |
| Market charges                 |       | 20.00 |          | 100     |
| Contingency (5% of total cost) |       | 22.00 |          | 62.50   |
| <b>Total V.C.</b>              |       | 332   |          | 1412.50 |
| Gross margin                   |       | 368   |          | 587.50  |
| Return on investment           |       | 0.47  |          | 0.71    |

Field survey, 2016.

The results in Table 2 show that the fish barbecue had higher sales than the fresh fish. Total variable cost of the fresh fish marketing was much lower than that of barbecue fish marketing. This maybe because of the higher degree of processing that is involved in the latter. Barbecue fish marketing made higher gross margin and higher return on investment than the fresh fish marketing. This result accentuates the imperativeness of value addition especially as it regards highly perishable products like fish. The more value added the higher the returns on the product.

**Marketing efficiency**

The marketing efficiencies of both barbecue fish marketing and fresh fish marketing were computed. The results are presented in Tables 3 and 4.

**Table 3: Marketing efficiency for Barbecue catfish**

| Marketing efficiency index (100%) | Frequency | Percentage |
|-----------------------------------|-----------|------------|
| 10 – 50                           | 10        | 7.14       |
| 60 - 100                          | 50        | 35.71      |
| 110 – 150                         | 20        | 14.29      |
| 160 – 200                         | 60        | 42.86      |
| Mean                              | 126.4     |            |

Field survey, 2016.

**Table 4: Marketing efficiency for fresh fish**

| Marketing efficiency index (100%) |    |       |
|-----------------------------------|----|-------|
| 10 – 50                           | 30 | 21.43 |
| 60 – 100                          | 70 | 50.00 |
| 110 – 150                         | 35 | 25.00 |
| 160 – 200                         | 5  | 3.57  |
| Mean                              | 85 |       |

Field survey, 2016.

The results in Table 3 and 4 show that barbecue fish marketing had a higher marketing efficiency which tended towards the exploitation of customers. The very high average marketing efficiency of about 125 is an indication of excess profit and thus an indication that customers are being disadvantaged and exploited. According to Scarborough and Kydd (1992) in Okutue (2013), marketing efficiency that is greater than 100% indicates excess profit, while marketing efficiency less than 100% is an indication of inefficiency. A large proportion of the barbecue fish marketers (about 43 percent) had marketing efficiency of between 160 – 200 percent which again clearly shows that the marketing of barbecue fish was inefficient and that the marketing process was exploitative.

The result in Table 4 shows that the average marketing efficiency of the fresh fish marketers was 85 percent which is also an indication of inefficiency in the fresh fish marketing system. This may be attributed to the nature of the product which makes storage difficult and rather expensive. It may also be due to the lack of basic infrastructure like power and good roads which could enable storage and or enhance easier evacuation of the products to places of higher demand. Marketers of fresh fish may be compelled to sell their products at low prices in order to avoid spoilage and thereby cutting down on losses.

#### Constraints to efficient marketing

The constraints to efficient marketing of fish products in the area were analyzed. The result is presented in Table 5.

**Table 5: Constraints to efficient fish marketing**

| Constraints                                  | Fresh fish |            | Barbecue catfish |            |
|--|------------|------------|------------------|------------|
|  | Frequency* | Percentage | Frequency *      | Percentage |
| Storage problems                             | 110        | 78.57      | 90               | 64.29      |
| Inadequate knowledge of marketing strategies | 70         | 50         | 40               | 28.57      |
| High cost of grilling/smoking                | 20         | 8.00       | 60               | 24.00      |
| Intensive labour use during grilling         | 50         | 35.71      | 80               | 57.14      |

Field survey, 2016. Multiple responses recorded

The result of constraints to efficient fish marketing shows that for the two groups of marketers, storage problems were the major constraint. About 79 percent of fresh fish marketers and 64 percent of barbecue fish marketers indicated they encountered storage problems. Also, intensive labour use was also a major constraint for the marketers. This is a challenge especially when considered from the perspective of the high cost of labour for agricultural activities. Inadequate knowledge of marketing strategies was the third major constraint to efficient fish marketing among the respondents. This may not be unconnected with the few years of experience the marketers have acquired. It is also an indication that here is need to get them aware of some of these strategies so as to improve their marketing activities.

## CONCLUSION AND RECOMMENDATIONS

The study showed that marketing of fresh fish and barbecue catfish in the area is profitable. It also showed that there is a high return on investment in the two trade. The study therefore recommends the following:

1. There should be concerted effort aimed at providing less labour intensive processing equipment so as to reduce the cost of marketing.
2. Basic infrastructure like constant power supply should be provided to ensure that storage facilities for fish products would be useful if acquired.
3. The government should encourage the marketers to form cooperatives and through and use that medium to extend to them information on better marketing strategies

## REFERENCES

- Adebo, G.M. and Toluwase, S.O.W.(2014) Comparative Analysis of Fresh and Smoked Catfish Marketing in Ekiti States of Nigeria. *Journal of Biology, Agriculture and Healthcare*. Vol. 4(19) pp 6-11.
- Alfred, S.D.Y. Odefadehan, O.O. and Ukut, M.E. (2012). Attitudinal Analysis of Women Involvement In Fish Processing and Marketing in Ondo State. *International Journal of Fisheries and Aquaculture* Vol. 4(7), pp. 124-132, August 2012
- Emere, M.C. and Dibal, D.M. (2013) A Survey of the Methods of the Fish Processing and Preservation Employed by Artisanal Fishermen in Kaduna City. *Food Science and Quality Management*. Vol.11. pp 16-22
- Eyo, A.A. (2001). *Fish Processing Technology in the Tropics*. University of Ilorin Press. 403pp
- Ikutegbe, V. and Sikoki F. (2014) Microbiological and biochemical spoilage of smoked-dried fishes sold in West African Open Markets. *Journal of food Chem*. Vol. 161 pp332-336
- Madugu, A.J. and Edward, A. (2011).Marketing and Distribution Channels of Processed Fish in Adamawa State, Nigeria. *Global Journal of Management and Business Research*. Volume 11 Issue 4 Version 1.0 March 2011. Pp. 20 – 26.
- Mafimisebi, T. (2012) "Comparative Analysis of Fresh and Dried Fish Consumption in Rural and Urban Households in Ondo State". In Visible Possibilities: The Economics of Sustainability, Fisheries Aquaculture and Seafood Trade: Proceedings of the sixteenth Biennial Conference of the International Institute of Fisheries, Economics and Trade. *Tanzania International Institute of Fisheries Economics and Trade (IIFET) Corvalli*.
- Nwachukwu, V.N. and Madubuko, C.U. (2013) "Microflora Associated with Processing and Storage of the White Catfish (*Chrysichthys nigrodigitatus*)". *Journal of Fisheries and Aquatic Science*. Vol. 8 pp108-114
- Okoh, R.N., Ugwumba, C. O. A. and Elue, H.O. (2008). Gender Roles in Food Stuff Marketing in Delta North Agricultural Zone: The case of Rice in Ume *et al.*, (eds) Faám 22<sup>nd</sup> Annual National Conference Proceedings. Pp114-123
- Okutue, N. (2013). Analysis of Structure and Conduct of Rice Marketing in the Federal Capital Territory, Nigeria. An Unpublished MSc. Thesis, Department of Agricultural Economics, Michael Okpara University of Agriculture, Umudike, Nigeria.
- Oparinde, L.O. and Ojo, S.O. (2014).Structural Performance of Artisanal Fish Marketing in Ondo State, Nigeria. *American Journal of Rural Development*, 2014, Vol. 2, No. 1, 1-7
- Spliethoff, P. (2012) Handling, Processing and Marketing of Agricultural Products. International Agriculture Center Netherlands. FAO