

## **Analysis of Traditional Fish Processing Methods Among Fishermen in Argungu Local Government Area of Kebbi State, Nigeria**

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### **Abstract**

*The study aimed to analyze traditional fish processing methods among fishermen in Argungu Local Government of Kebbi State, Nigeria. Structured questionnaires were administered to 100 randomly selected respondents from 3 landing sites. Percentages, frequencies and multiple regression analysis were used for the data analysis. The study revealed that most (80%) of the respondents were female and (69%) are within the age range of 30 to 49 years, (60%) were married with the family size of 6 to 10 dependent. About (72%) of the respondents had formal education with average of 19 years processing experience. More than half (83%) of the respondents had income of less than ₦99,000 and (72%) of them had no prior contact with extension agents. (82%) of the respondents adopted smoking and (30%) salting as methods of fish processing. The findings recommended that the fisheries unit of agricultural extension agency and research institutes should device appropriate or improved methods of processing fish locally that will be less hazardous to health and environmentally suitable. Government should engage in rehabilitation of rural feeder roads leading to the processing communities to improve transportation system and reduce cost.*

**Keywords:** *Socio-economic, Fishermen, Traditional fish processing, Argungu Local Government*

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### **INTRODUCTION**

Fish is becoming increasingly important in the diet of Nigerians as the cost of beef increases daily. Fish contribute about 55% to the protein intake of Nigeria (Abu, 2015). The demand for fish is very high due to its importance in human nutrition and for animal feed (fish meal and poultry feeds). Its biological value in terms of high protein content and other nutrients account for the consumption of fish products as compared to other animal protein sources (Oluwatoyin *et al.*, 2010). Its amino acid profile, low cholesterol, high vitamins and mineral content, as well as fatty acid profile makes it stands out among sources of animal protein (Adewuyi *et al.*, 2010). Fish is susceptible to deterioration due to accelerated action of proteolytic enzymes and subsequent microbial degradation, hence appropriate preservative measures required (Modu, 2015). Most of the fish marketed throughout Nigeria are captured from inland waters along the Benue-Niger Rivers, the Kainji Lake, the Lake Chad and other numerous Dams (Modu, 2015).

The quality of the freshly caught fish and its usefulness for further utilization in processing is affected by the fish capture method. Unsuitable fishing method does not only cause mechanical damage to the fish, but also creates stress and the conditions which accelerate fish deterioration after death. Fish is highly susceptible to deterioration without any preservative or processing measures (Okonta and Ekelemu, 2005). Emokpae (1979) reported that immediately the fish dies, a number of physiological and microbial deterioration set in and thereby degrade the fish. Fish is a major source of protein and its harvesting, handling, processing and distribution provide livelihood for millions of people as well as providing foreign exchange earning to many countries (Al-Jufaili and Opara, 2006). Appropriate processing of fish enables maximal use of raw material and production of value-added products which is obviously the basis of processing profitability (Al-Jufaili and Opara, 2006).

Global Africa Network (GAN) (2010) observes that Nigerians are large consumers of fish and it remains one of the main products consumed in terms of animal protein. About 50 percent of fish demand is currently being met by local supply. The fisheries sector is estimated to contribute 3.5 percent of Nigeria's GDP and provides direct and indirect employment to over six million people. It is a means of income generation for those who harvest, process and market it and provides job for people. Fish and fish based products are very important in the development of national economy and also serve as raw material for agro-allied industry. The nutritional importance of fish is very high and ranks just as good as meat and better than wheat or any plant protein source in essential amino acids content. It is also good for complementing high carbohydrate diet (Tobor, 1990).

### **Statement of the Research Problem**

Despite the importance of fish production in Nigeria, fish mongers still suffer a great loss, due to lack of proper storage and poor handling. Huge quantities of fish are lost after capture. There is an enormous waste of food, particularly in developing countries where fish represents a significant proportion of protein intake.

### **Justification of the Study**

Various studies have been conducted on the fish processing methods, but little has been done in the study area being one of the major sources of fish in Kebbi State. Therefore, this study will provide basic information needed in improving the livelihood and local fish processing methods in the study area.

### **Aim and Objectives**

The aim of this study is to analyze the traditional methods of fish processing among fishermen in Argungu Local Government Area of Kebbi State.

The specific objectives of the study are to:

1. Describe the socio-economic characteristics of the respondents in the study area
2. Identify the traditional method used for processing by the respondents.

## **MATERIALS AND METHODS**

### **Study area**

The study was carried out in Argungu Local Government area of Kebbi State located in the northern part of State. It has a population of 955,000 people (Mamman, 2000). The area lies between the latitude 12°N to 13°N and longitude 4°E to 5°E. The area has a number of inland rivers, lagoons and reservoirs which empties/drains in to River Niger. Argungu is well known for

its annual International Fishing Festival where fishermen display their artisan, expertise, experiences in catching the biggest weight fish in the competition. Fishing is one of the important farming activities of the inhabitants of the area.

### Sample size and sampling procedure

Three (3) landing site were purposively selected from the study area based on the relative population and number of household in each village. A Total of 40 fishermen from Lelaba, 35 fishermen from Merawa and 25 fishermen from Matanfada were randomly selected giving a total of 100 fishermen.

### Data collection

Data were collected from primary source with the aid of structural questionnaire administered to 100 respondents in the study area. Data were collected base on socioeconomic status of fishermen, methods used by the fishermen in processing of fish and major constraints of the fishermen.

### Data analysis

The data obtained were analyzed based on descriptive statistics using the frequency and percentage distributions with the aid of Statistical Package of Social Science (SPSS).

## RESULTS

### Socio-economic characteristics of respondents

The result in Table 1 shows that majority of the fish processors were Female with (86%). Furthermore, (38%) of the respondents were within the age range of 30 to 49 years with an average age of 41 years. The result also shows that (60%) of the respondents were married and (18%) were still single. (50%) of the respondents had family size of 6 to 10 and (23%) have >11. The educational level of the respondents shown that most (62%) had primary and secondary education and (15%) have went to Islamic school. About (79%) of the respondents had 11 to 30 years of experience with a mean of 19 years while only (15%) had <10 years of experience.

The result on Table 4.1 also shows that (45%) of the respondents had income of between ₦10,000 to ₦49,000. (38%) of the respondents had income between ₦50,000 to ₦99,000 and only (5%) of the respondents had an income above N49, 000. This shows that majority of them has low income from fish processing. The result also shows that only (28%) the respondents had contact with extension agents between one to two times in a year. while the remaining (72%) of the respondents had no extension visit at all.

**Table 1. Socio-economic characteristics of respondents**

Variables	Frequency	Percentage (%)
<b>Age</b>		
20-29	14	14
30-39	38	38
40-49	31	31
>50	17	17
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Sex</b>		
Male	14	14

Female	86	86
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Marital status</b>		
Single	18	18
Married	60	60
Widowers	22	22
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Household size</b>		
0-5	27	27
6-10	50	50
>11	23	23
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Education level</b>		
No-formal	13	13
Primary	35	35
Secondary	27	27
Tertiary	10	10
Islamic School	15	15
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Experience (Years)</b>		
1-10	15	15
11-20	44	44
21-30	35	35
31-40	6	6
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Income (₦)</b>		
10,000 - 49,000	45	45
50,000 – 99,000	38	38
100,000 – 149,000	12	12
>150,000	5	5
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Extension contact</b>		
Yes	28	28
No	72	72
<b>Total</b>	<b>100</b>	<b>100</b>

Source: Field work 2021

### Methods used by the respondents in fish processing traditionally

The method used in fish processing in the study area were identified and presented in Table 2. The most adopted method by the respondents in the study area was smoking which take (45%) of the respondent. The second widely method used in the study area was frying having (24%) of the respondents. Sun-drying is the third method used in the study area with (15%) respondents while (11%) use salting method.

**Table 2. Distribution of respondents according to methods of processing**

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
Frying	24	24
Salting	11	15
Smoking	45	45
Sun-drying	15	8
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Equipment used</b>		
Extended drum dyer	8	8
Drying rack	12	12
Frying pan	38	44
Local circular oven	42	36
<b>Total</b>	<b>100</b>	<b>100</b>
<b>Quantity in kg</b>		
20kg	12	12
30kg	37	37
50kg	30	30
>50kg	18	18
<b>Total</b>	<b>100</b>	<b>100</b>

Source: Field work 2021

The result also shows that (42%) of the respondents are using local circular oven in processing fish, then followed by frying pan (38%) while the rest are using drying rack and extended drum dryer. The table also revealed that (67%) are processing 30kg to 50kg while (18%) were found to process more than 50kg.

### **Discussions**

The result obtain in term of age of the respondents is in line with the findings of George et al. (2014) that the majority of respondents were between 30 to 49years of age in a study he conducted in Ibeju-Lekki Local Government Area, Lagos State, Nigeria. In term of marital status, the result from table 4.2 agrees with the findings of Olabunmi and Adebukola (2012) who also reported that married women were dominant in a study conducted in Ibarapa Area of Oyo State, Nigeria. Similar observation was reported by Sraboni *et al.* (2014) on women's empowerment in agricultural activities in Bangladesh. This is contrary to the other research findings, were reported that a large number of women participated in the fish processing activities within the fishing communities of Lake Feferuwa, in the state of Nasarawa, Nigeria. Olapade (2012) reported that women play some significant roles in artisanal fisheries in Asejire River, in the state of Oyo, Nigeria. The result also tallies with the findings of Oluwatoyin et al. (2010), who reported that smoking was the most preferable practice among women as it enhances desirable taste, flavor, and increase shelf life. The fourth method of processing adopted by 10% of respondents is fermentation. Fishes are stored enclosed in containers; allow to stand overnight, for fermentation process and subsequently sun dried.

### **Conclusion**

The study shown that traditional fish processing in the study area was mainly adopted by women whose family size and educational status had positive impact on the business. The result showed

that age and house hold size had positive impact on the number of traditional methods used, while education level indicated negative impact on the number of traditional method used.

### **Recommendations**

The following recommendations are hereby made, so as to improve the livelihood and fish processing techniques:

1. The fisheries unit of agricultural extension agency and research institutes should device appropriate or improved methods of processing fish locally that will be less hazardous to health and environmentally suitable.
2. Government should engage in rehabilitation of rural feeder roads leading to the processing communities to improve transportation system and reduce cost.
3. Government should put efforts towards empowering these processors to acquire facilities that will enable them processed large quantity of fish be intensified.
4. Access to credit facilities through bank of agriculture (BOA) and other commercial banks with low interest rate should be explored with a view to strengthening their exportation capabilities of the products.
5. Government should take necessary steps to manage and motivate them for creating significant opportunities for their better livelihood structure.

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