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## Fish Distribution and Marketing in Some Selected Fish Markets in Adamawa State, Nigeria

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### **Abstract:**

*The study of distribution and marketing of fish in some selected fish markets in Adamawa State, Nigeria was conducted between January and August, 2012. Structured questionnaires were used to collect data from 200 fish marketers in Vunoklang, Fufore, Wurobokki and Gurin fish markets, using simple random sampling technique. Analytical tools used were percentages and simple linear regression. There is a structure in the marketing of fish in the selected fish markets in Adamawa State. These include the whole sellers and retailers. The result shows that retailers were more than whole sellers (70.5% and 29.5%) respectively. The result also revealed that women were more involved (52%) in the fish business than men (48%). The middle age group (31-40) years old dominated the market (36%), indicating that most of the marketers were in their economic active years. The respondents with informal education have the highest percentage (62.25%). The result showed that respondent with experience of 11-15 years had the highest percentage of 28%, followed by 26% and 25% of those between (6-10) and above 16 years respectively while (0-5) year had the lowest percentage of 20.5%. Source of fish supply in the four major fish markets showed that 100% supply to Vunoklang is from Laddo Dam in Cameroon, Wurobokki had 76% supply from Laddo Dam in Cameroon and 23% from water bodies in Nigeria, while Gurin and Fufore have 62% and 37% from Laddo Dam in Cameroon with corresponding 38% and 63% from water bodies in Nigeria respectively. Laddo Dam in Cameroon supplied most of the fish in Adamawa major fish markets (69%) while water bodies in Nigeria supplied only 31.25%. List of fish species realized during the study indicates a total of (23). The most common and abundant species were Clarias species, Tilapia species, Alestes species Synodontis species, Labeo species, Auchenoglanis species and Protopterus species. Auchenoglanis, Heterobranchus and Clarias species were highly prized in the study area; N1167 per kilogram, N1100 per kg and N977 per kg respectively. Fish price in these markets is determined by size, species, season and other factors. It is apparent in Nigeria that demand and supply of fish are not in equilibrium due to depletion of the resources; nevertheless, location, population and income level of the people determine the sales and the price.*

**Keywords:** Fish, market structure, sales

### **1. Introduction**

Fish is a useful source of several minerals. According to Orisamuko (1991) fish play a vital role in-term of protein supply to human being. Moreover, the provision of protein by fish is higher than the ones obtained from cattle, sheep or plant materials. Fish especially in dry form is known as the cheapest source of animal protein, which supplements about 40% of the protein intake of Nigeria's population (Eyo, 1992). Processed fish has also been recognized as a way out of the ravaging and pervasive protein malnutrition problem (Ladipo., *et al*, 1981, Goeff and Bennet, 1995). There is also little or no religious rejection of it and no taboo against it which gives it an advantage over pork, beef or mutton. Economically fish cost considerably less than most meat. Fish is highly perishable and its rapid deterioration is aided by temperature. Therefore, fish must be marketed within few hours of being caught because premium price is always obtained for good quality fresh fish (Eyo, 1992).

The production potential and demand/market availability of fresh fish in the country are very good factors that can stimulate and boost its production and marketability (Orisamuko, 1991). It would be noted however that up till date Nigeria import fresh fish (FAO, 1994). According to Fagade (1992), a good fish marketing strategy must be such that it gets the fish to the consumer in an excellent

condition. Fagade (1992) also reported that the value added to the initial selling price of the original fresh fish can be quite considerable and in addition, the shelf-life of the fish is prolonged.

Essuman (1992) reported that the marketing of fish and fishery productions in many African countries is in the hands of the informal and private sectors of the economy. Fish is usually sold by auction or bargain at the various landing centers. The pricing process can some-time last for several hours, a situation which often leads to long delays in the sale of fish. In the absence of chilling, freezing and cold storage facilities, fresh fish price fluctuates freely even within a day and from one fishery centre to another depending on the volume of landings. Essuman (1992) also noted that price are not controlled by any official agency, but are influenced by supply and demand as well as the species and quality of the catch.

Many people have worked on the marketing and distribution of fish in Nigeria. These include Tobor 1984, Eyo, 2001; Gulland, 1974, Adebayo, 2003, Moses (1992). Olukosi and Isitor (1990) and so many others. This work is aimed at the distribution and marketing of fish in some selected fish markets in Adamawa state.

## 2. Materials and Methods

### 2.1. Study Area

Adamawa state lies between latitude  $7^{\circ}$  and  $11^{\circ}$  N of the equator and between longitude  $11^{\circ}$  and  $14^{\circ}$  E of the Greenwich meridian. It shares boundary with Taraba State in its South and West, Gombe State in its Northwest and Borno State to the North. Adamawa State has an international boundary with the Cameroon Republic along its Eastern border. The state covers a land area of about 38, 741 km<sup>2</sup>. It has an annual rainfall that ranges from 700mm to 1600mm with a mean monthly temperature range of 26.7<sup>o</sup>c to 27.8<sup>o</sup>c. The major occupations of the inhabitants include farming rearing and fishing. (Adebayo and Tukur 1999).

### 2.2. Methodology

Data collection was done by the use of a structured questionnaire and verbal interview with the fish traders. A total of 200 questionnaires were administered in the study areas. 50 questionnaires were allocated to each market. The first part of the questionnaires was aimed at eliciting information on sex, education, Age structure, occupation, origin and experience in the fish business, while the second part was concerned with the marketing and distribution of fish in the four major fish markets in Adamawa State from January to August 2012. Data were collected on a weekly basis and a systematic random sampling method was adopted in interviewing the respondents. The collected data were processed using simple percentages.

## 3. Results

The result of this work showed that there are more females (52%) into fish marketing in Adamawa state than males (48%) fig1. The age structure of the respondents in Adamawa fish markets is shown in Fig.2. It pointed out that the middle age group (31-40) years old dominated the market with 36%, followed by the age range of (41-50) years with 32%. The age range (20-30) years old was 24.25% and above 50years showed the lowest percentage (7.75%). Fig.3 describes the education level of the respondents in the major fish markets. The highest was 62.25% for those with informal education, followed by 24.75% and 13% with secondary and primary education respectively. The function of the respondent in the fish markets is described in Fig.4. The result shows that the percentage of retailers were more than that of the whole sellers (70.5%) and (29.5%) respectively.

Fig.5 highlights the years of experience of the respondents in the fish business. It reveals that those who have been in this fish business between 11-15 years have the highest percentage (28%). This was followed by those who have been in the business between 6-10years and above 16 years with their corresponding percentages of 26% and 25% respectively. While those with 5 years experience and below have the lowest percentage of 20.5%

The source of fish supplied to the four major fish markets in Adamawa State is shown in Table1. Vonuklang has 100% supply from Laddo Dam in Cameroon, Wurobokki/has 76% supply from Laddo Dam in Cameroon and 23% from water bodies in Nigeria, while Gurin and Fufore have 62% and 37% from Laddo Dam in Cameroon with corresponding 38% and 63% from Nigerian water bodies respectively.

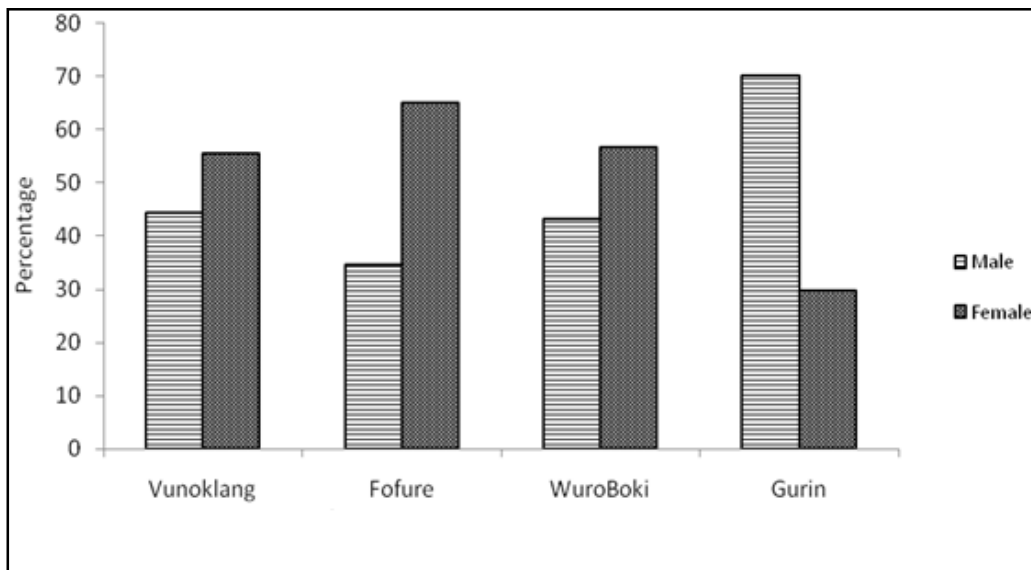


Figure 1: Percentage of respondents in relation to sex in the four fish markets in Adamawa State

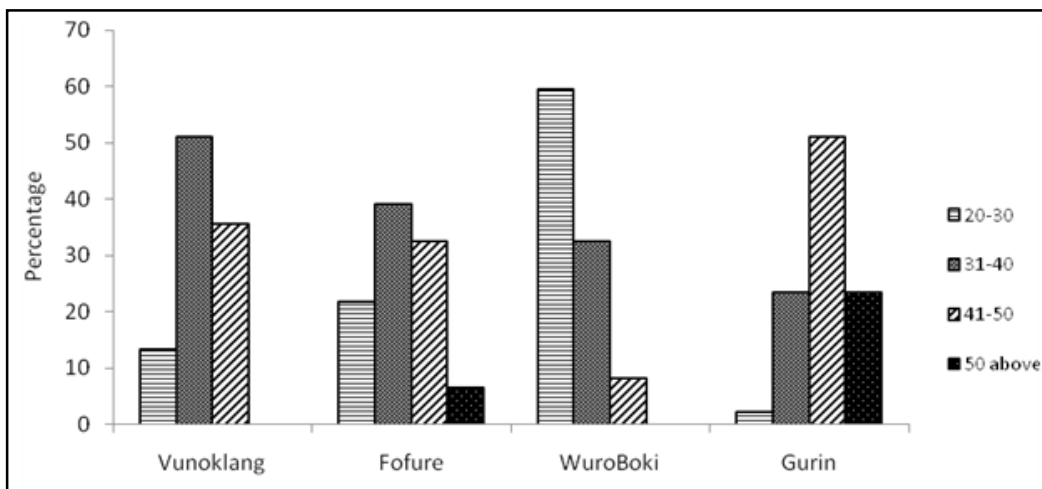


Figure 2: Percentage of the age structure of the respondents in Adamawa fish markets

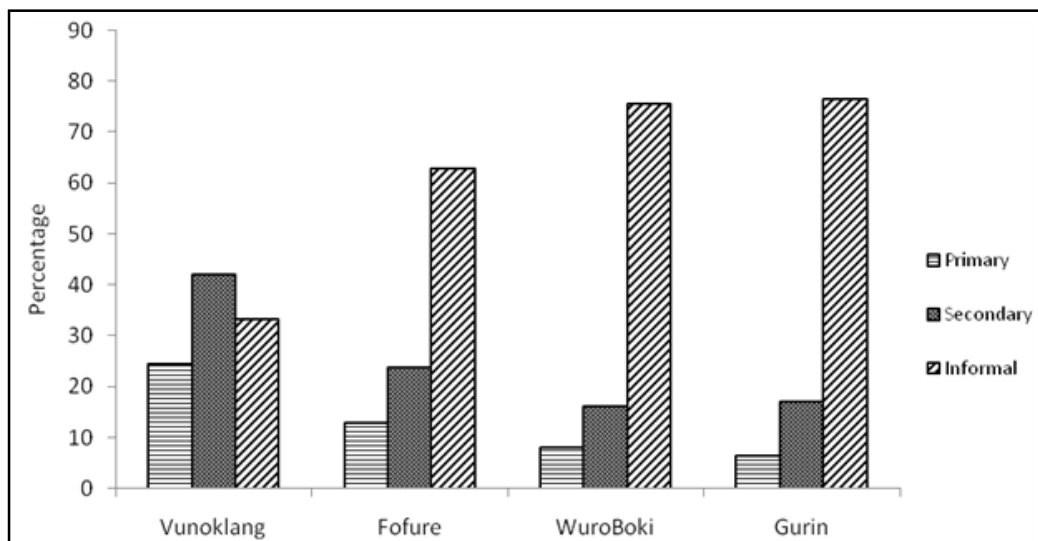


Figure 3: Percentage of the respondents in relation to educational background in the four fish markets in Adamawa State.

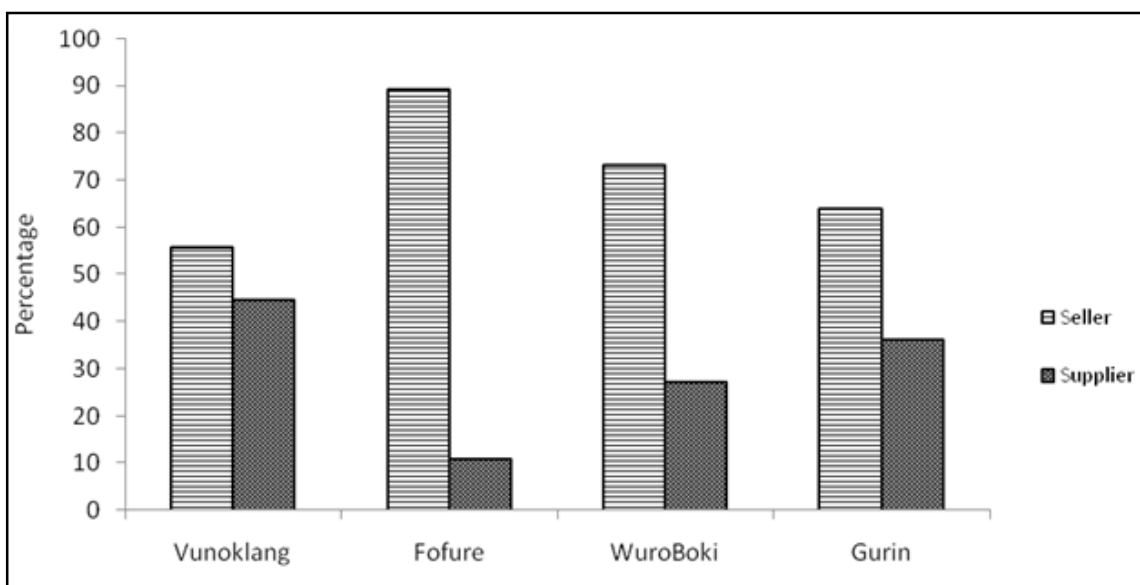


Figure 4: Percentage of whole sellers and retailers in the four fish markets in Adamawa state

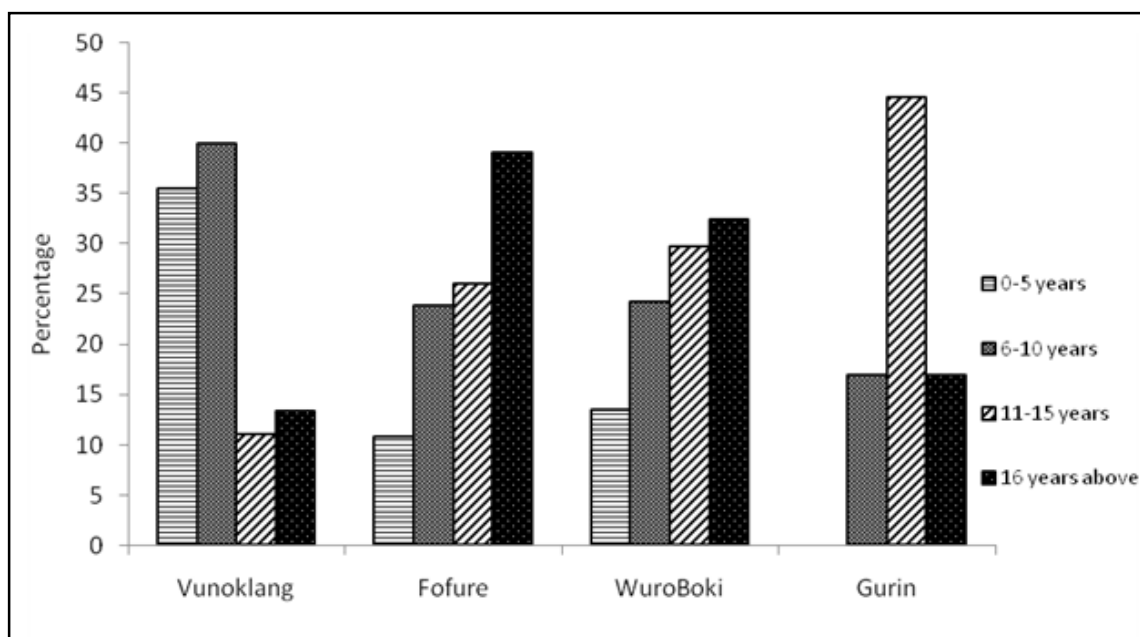


Figure 5: the percentage of respondents in relation to years of experience in the fish markets in Adamawa state

	Cameroon	Nigeria	Total
Vonoklang	100	0	100
Gurin	62	38	100
W urobokki	76	23	100
Fufore	37	63	100
Total	275	125	400
Percentage	60.69	31.25	100

Table 1: Source (s) of fish in the four major fish markets in Adamawa State

A total of 21 fish species were identified in the four major fish markets in Adamawa State (Table 2). The relative abundance of the 13 common fish species in all the four fish markets is shown in Table 3. Three ticks (√√√) indicate most abundant while single tick (√) represent less abundant. In the fish markets *Tilapia species*, *Clarias species*, *Alestes species*, *Synodontis species*, *Labeo species*, *Auchenoglanis species* and *Protopterus species* were the most abundant species through out the sampling period while *Citherinus species*, *ophiocephalus species*, *Mormyrus species* *Heterobranchus species*, *lates species*, *Ophiocephalu species*, *Hydrocynus species* etc. were less abundant.

	Scientific Name	Local Name
1.	<i>Alestes Species</i>	Bargi
2.	<i>Auchenoglanis Species</i>	Buro
3.	<i>Bagrus species</i>	Ragon Ruwa
4.	<i>Heterobranchus species</i>	Jeri
5.	<i>Citharinus species</i>	Faliya
6.	<i>Clarias Species</i>	Tarwada
7.	<i>Distichodus species</i>	Cinciyawa
8.	<i>Gymnacus. Species</i>	Kuma
9.	<i>Gymnacus species</i>	Dansarki
10.	<i>Hydrocynus Species</i>	Tsage
11.	<i>Labeo Species</i>	Data
12.	<i>Lates species</i>	Giwan Ruwa
13.	<i>Malapterurus species</i>	Minjirya
14.	<i>Ophiocephalus species</i>	Duno
15.	<i>Petrocephalus Species</i>	Farin wata
16.	<i>Polypterus Spp</i>	
17.	<i>Protopterus annectens</i>	Mai mama
18.	<i>Schilbe mystus</i>	Lulu
19.	<i>Synodontis Spp</i>	Kurungu
20.	<i>Tilapia Spp</i>	Karfasa
21.	<i>Mormyrus macrophthaunus</i>	Sole

Table 2: List of fish species in the four major fish markets, Adamawa State

Species	relative abundance
<i>Tilapia</i>	√√√
<i>Citharinus Citharus</i>	√
<i>Lates Niloticus</i>	√
<i>Clarias</i>	√√√
<i>Mormyrus</i>	√
<i>Alestes</i>	√√√
<i>Syndontis</i>	√√√
<i>Ophiocephalus</i>	√
<i>Labeo</i>	√√√
<i>Protopterus</i>	√√√
<i>Auchenoglanis</i>	√√√
<i>Heterobranchus</i>	√

Table 3: Relative abundance of 13 common fish species.

Average cost (₦) per kilogram of the common fish species in the four fish markets is shown in Figure.6. *Auchenolanis species* has the highest cost per kilogram with ₦1,167 *Heterobranchus species* ₦1,100, *Clarias species* ₦ 977, *Mormyrus species* ₦844, *Synodontis species* ₦735, *Alestes species* ₦700, *Labeo species* ₦736, *Citharinus species* ₦521, *Gymnarchus species* ₦500, *Ophiocephalus species* ₦ 368, *Hydrocynus species* ₦300, *lates niliticus* ₦261, *Tilapia species* ₦239 and *Protopterus species* ₦156, per kilogram.

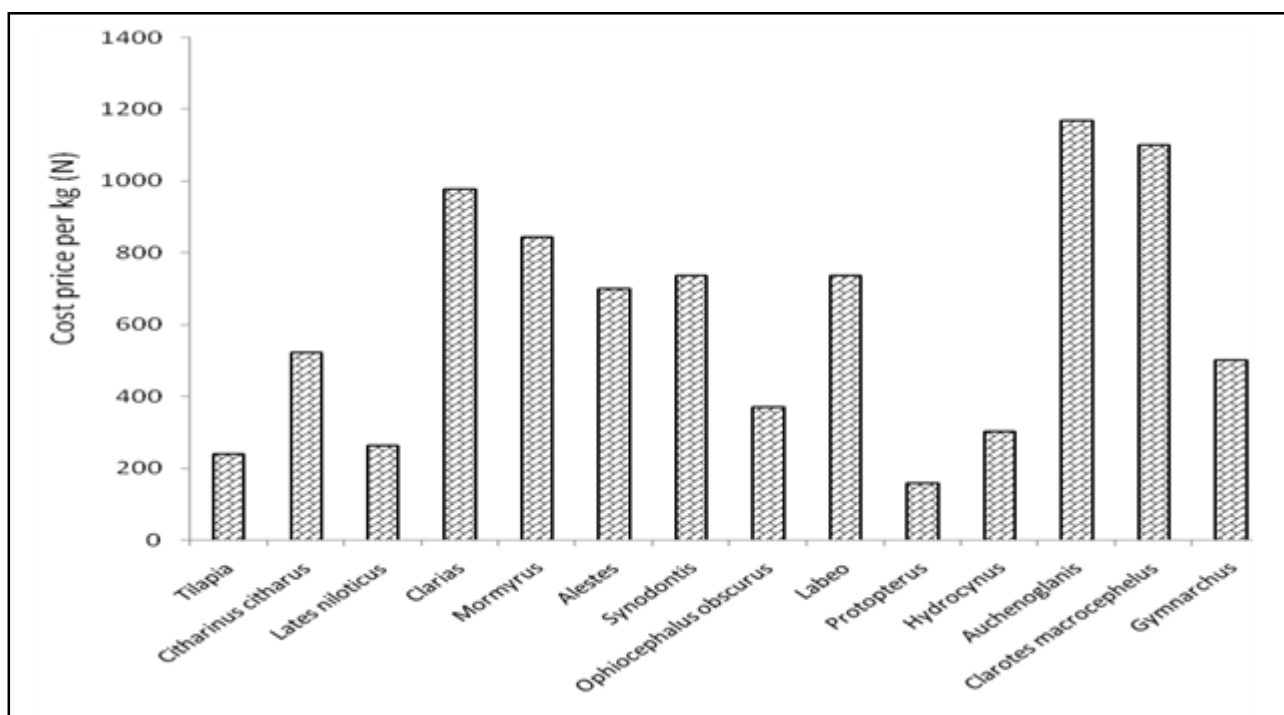


Figure 6: cost per kg for individual fish species in the four fish markets in Adamawa state

## 5. Discussion

The study on fish distribution and marketing undertaken in the four major fish markets in Adamawa State was carried out between the months of January and August 2012.

The result revealed that women are more involved (52%) in the fish business than men (48%). This result agrees with Ladu and meshelia (1995) who found out that females make up 60 percent of the total of fish marketers and distributors in Wurobokki market. This also agrees with Williams and Awoyemi (1998) who observed that women perform other types of income earning activities to supplement the household income through fish distribution and marketing in Norway.

This result showed that the middle age group (31-40) years old dominated the market (36%), indicating that most of the marketers are in their economic active years. This result agrees with Madugu and Edward (2011) who also observed that in Adamawa State marketers between the ages (31-40) having the highest percentage (46.25%) followed by those above 40 years (28.75%) and ages 21-30 years (15%).

The data for education level illustrated that most of the respondents have informal education with 62.25%, followed by 24.75% and 13% with secondary and primary education respectively. This is in contrast with the findings of Madugu and Edward (2011) where they observed that the majority of the marketers had some formal education.

This result shows that retailers are more in number than the whole sellers (70.5% and 29.5%) respectively. This is because most of the retailers do not require more capital to operate this business. What they need to do is to come to the market with little or no money and collect the products from the whole sellers and pay back the money after sales. Also the whole sellers travel long distances as far as Cameroon which is not feasible to many with small capital.

The result showed that respondent with experience of 11-15 years had the highest percentage of 28% followed by 26% and 25% for those between (6-10) and above 16 years respectively. 0-5 year had the lowest percentage of 20.5%. Domination by more experienced age group is an indication of monopoly in the business. Ali *et al* (2008) in Maiduguri Gaboru market observed that marketing experience is important in determining the profit levels of the marketers.

Source of fish supply in the four major fish markets showed that 100% supply of Vunoklang is from Laddo Dam in Cameroon, Wurobokki had 76% supply from Laddo Dam in Cameroon and 23% from Nigerian waters, while Gurin and Fufore have 62% and 37% from Laddo Dam in Cameroon with corresponding 38% and 63% from Nigerian waters respectively. The entire supply of Vunoklang is fresh fish from Laddo dam in Cameroon or lakes within Cameroon. 76% of Wurobokki and 62% of Gurin are both supply from Laddo dam in Cameroon. The slight difference in Fufore market with 63% from Nigeria is due to Ribadu Lake and two other lakes that supply the market at interval almost throughout the year. In general it implies that Cameroon supply most of the fish in Adamawa major fish markets 69% while Nigeria has only 31.25%. This result agrees with Ladu and Meshelia (1995) who found that fish for marketing and distribution in Wurobokki market were from Laddo Dam in Cameroon Republic.

List of fish species realized during the study indicates a total of (21). The fish were not identified at species level because most of them were smoked or sundried and most of the features for identification were destroyed by fire or smoke. The common species that have were only 13. While the most abundant species were seven viz; *Clarias*, *Tilapia*, *Alestes*, *Synodontis*, *Labeo*, *Auchenoglanis* and *Protopterus*. This result agrees with Ladu *et al* (2004) in Doro Baga fish market who reported that *Clarias* and *Tilapia* were by far the most dominant commercial fish products throughout the period accounting for approximately 41.30% and 47.20% respectively.

Average cost (N) per kilogram of the common fish species is seen to be relatively high. This is so because, scale is not used to measure weight of fish product to determine price. Fish price in these markets is determined by size, species, season and other factors. It is realized during the study that, a large sized fish with lesser weight, cost higher than a container of small sized fish with higher weight. According to Shaw (1990), same species and quantity of fish may be cheaper in some locations and costly in others. When the price is high for a particular species, more fishermen increase their catch, effort and increasing supply, and the consequence is over exploitation. On the other hand, buyers limit purchase when prices for it are high and purchase more as the price falls. It is apparent in Nigeria that demand and supply of fish are not in equilibrium due to depletion of the resources; nevertheless, location, population and income level of the people determine the sales and the price. In a similar study by Chaston (1987) in England states that several factors influence the prices of fish in the retail market. These include demand for a particular fish, flexibility of shift in demand, preference, substitution between meat and fish, change in taste, purchasing powers of consumer, the economic situation and policy among others may also determine the change in price. However, Colman and Young (1989) revealed that, although demand for fish and other agricultural products is relatively irresponsible to price changes, price variation in fish product occurs mostly due to seasonality and affected in a random manner by environmental factors, such as weather, pest, etc., resulting in price fluctuations. Price, therefore, is an important variable and it becomes vital in a consumer oriented economy like Nigeria (Ladipo *et al*, 1981). To control any inflationary price in a given economy, price information is required to serve as a guideline for policy design to control inflation and provide adequate fish, readily available at a reasonable price to Nigerians particularly the low income earners.

## 6. Acknowledgements

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## 7. References

1. Adebayo A.A and Tukur, A.L. (1999). Adamawa state in maps, published by paraclete publishers, Yola, Nigeria
2. Colman, D. and Young, T. (1989). Principles of Agricultural Economics: Markets and Prices in Less developed countries, Cambridge University Press.
3. Essuman, K.M. (1992): Fermented fish in Africa. A Study on processing, marketing and consumption (FAO). Technical Paper No. 327, P. 57.
4. Eyo, A.A (1992): Fish handling, preservation and processing. A paper presented at improve management for Agricultural training at Federal College of Fresh water fisheries technology. New Bussa on 22<sup>nd</sup> Sept. and 23<sup>rd</sup> Oct. 1992.
5. Eyo, A.A. (2001) Fish processing Technology in the Tropics. NIFFER, New Bussa, Nigeria Pp. 1-2 and 13.
6. Fagade, S.O. (1992): Keynote address on production, utilization and opportunities. In fisheries society of Nigeria (FISON) Abeokuta. 16<sup>th</sup> – 20<sup>th</sup> November, 1992. P. 11.
7. Food and Agricultural Organization (FAO) (1994). Production Year Book. Vol. 28 No. 6, Rome, Italy. P. 24.
8. Goeff, A and Bennet, C.J. (1995); Fish mummies and tima conglomerates; private sector fish processing and marketing in Ghana. In Stephen, J and John. M. (eds.), Marketing Africa's high value foods. 375-416.
9. Ladipo, O.O., Fabiyi Y. L. and Fantula, G.T. (1981) Fish marketing and Distribution System in: Marketing and Distribution of fish in Nigeria. A technical report submitted to the federal department of Fisheries, Lagos, 1981. pp 13-26
10. Ladu, B.M.B. and Meshelia, M.B. (1995) (Impress) The Marketing and Distribution of Fish in Wurobokki Fish Markets, Adamawa State.
11. Ladu, B.M.B., Ovie S.I. and Sule, O.D., (2004). Study of the contribution of fish marketing to Livelihoods in the countries of the Chad Basin: Fisheries Information Monitoring System (FIMS) for the lake Chad Basin Monitoring Fish Landings in Doro Baga fish market, Borno State, North East Nigeria. DFID/FAO-SFLP Final Report: contract No. GCP/INT/735/UK. NIFFR, New Bussa.
12. Madugu, A.J. and A. Edward (2011): Marketing and Distribution Channel of Processed Fish In Adamawa State, Nigeria, Global Journal of Management and Business Research, 11(4), Global Journal Inc. (USA) Publishers.
13. Moses, B.S. (1992) Introduction to tropical fisheries, 2<sup>nd</sup> Edition. Longman Publication, University Press, Ibadan. Pg. 1-125.
14. Olukosi, J.O and Isito, S.U. (1990) Introduction to Agricultural Marketing and Price: Principles and Application, living Books Series G.U. Publication Abuja. Pp. 60-65 1.
15. Orisamuko, E.A. (1991) "Fish Production in Nigeria". In: Gongola Agricultural Development Programme (GADP) Appraisal Report of the Fisheries of Gongola State 1992. Prepared by Federal Agricultural Coordinating Unit May, 1992.
16. Shaw S.O. (1990) Marketing a Practical Guide for Fish Farmers. Fishing News Books. Great Britain.
17. Tobor, T.G. (1984) The fish industry in Nigeria Status of Fish preservation methods and Future Growth, Pre-requisite to cope with anticipated increase production. Proceedings of symposium of fisheries, Federal Palcae Hotel, Lagos P. 90.
18. Williams, S.B. and Awoyemi, B. (1998). Fish as a prime mover of the Economic Life of Women in a Fishing Community. Proceedings of the IIFET held in Tromso, Norway of July 1998. 286-92.