ANALYSIS OF MARKETING CHANNELS AND MARKETING EFFICIENCY OF SMOKED FISH MARKETERS IN OGUN STATE, NIGERIA

O. J. Olaoye[1]*, J. B. Ogunremi[2], W. G. Ojebiyi[3], C. O. Ojelade[4] and O. M. Falodun[4]

[1]Agricultural Media Resources & Extension Center (AMREC), Federal University of Agriculture, Abeokuta, Nigeria
[2]Department of Fisheries & Aquaculture, Federal University Wukari, PMB 1020, Taraba State, Nigeria
[3]Department of Agricultural Extension & Rural Development, Federal University of Agriculture, Abeokuta, Nigeria
[4]Department of Aquaculture & Fisheries Management, Federal University of Agriculture, Abeokuta, Nigeria
*Corresponding author: olaoyeoj@funaab.edu.ng

Abstract: This study analysed the marketing channels and marketing efficiency of smoked fish marketers in Ogun State, Nigeria. A multistage sampling technique was used to select 80 smoked fish marketers from Ijebu-Ode and Abeokuta agricultural extension zones in the state. Data collected were analysed with the aid of descriptive statistics and budgetary technique. The study revealed that the mean age, household size, smoked fish marketing experience, and daily income were 42.75 years, 7 persons, 22.35 years and ₦3456, respectively. Majority (77.50%) of the marketers were also revealed by this study to distribute their products directly to the final consumers without involving the middlemen. Inadequate financing and capital were identified as severe constraints to smoked fish marketing affecting higher proportion (52.50%) of the smoked fish marketers. The result of the budgetary analysis reveals that an average total cost of ₦71,055.41 and average total revenue of ₦74,907.03 are realisable with a net income of ₦3,851.62 and marketing margin of ₦29,558.39 per month. The marketing efficiency of 1.05 indicates that smoked fish marketing was efficient in Ogun State. The study concludes that smoked fish marketing is profitable and efficient in Ogun State. The study therefore, recommends that unemployed youths in the state should embark on smoked fish marketing, while the financial institutions should be encouraged to make affordable credit facilities accessible to smoked fish marketers in the State.

Keywords: Gross margin, marketers, marketing channels, profitability, smoked fish

Introduction

Fishery is one of the fastest growing subsectors of Nigerian agriculture; competing highly with livestock and crop production. Its importance is extended to all nations, especially, the developing and low income earning countries like Nigeria. This is evident from the report of Food and Agriculture Organization – FAO (2007) which noted the contribution of fish to be more than 60.0% of the world total supply of protein. The significance of fish and its products in human and livestock feed as reported in several studies cannot be overemphasized (Areola, 2007; FDF, 2007).

While commenting on the benefits of fish, Amao *et al.* (2006) observed that fish products are relatively cheaper than other animal protein sources such as beef, meat, mutton and turkey. Areola (2007) also noted that fish is suitable for complementing high carbohydrate diets common among developing countries like Nigeria. Shettima *et al.* (2004) summarized the significance of fish farming to Nigerian's economy in terms of food security, income earning, employment generation, poverty alleviation, foreign exchange earnings and provision of raw materials for animal feed industries. Olasunkanmi (2012) added that fish farming enhances more effective administration of natural resources and conservation of biological diversity.

Nigeria is a country blessed with vast natural and human resources suitable for fish production on a large scale. The country has over 14 million hectares of reservoirs, flood plains, natural and artificial lakes, ponds and major rivers (Federal Department of Fisheries – FDF, 2007). Osagie (2012) also noted that Nigeria has a coastline of approximately 853.0 km^2. These make the country to have the potential of increasing agricultures' contribution to Gross Domestic Product (GDP) through increased fish farming.

Despite the favourable conditions that support fish production, the Nigerian governments spent billions of Nigeria's hard-earned naira on importation of frozen fish, turkey and chickens in order to bridge the gap between fish supply from local production and the increasing fish demand of the teeming population of the country (FDF, 2007). This is also irrespective of the proactive programmes of the government like the National Fadama Development Projects that aimed at increasing fish production in Nigeria. Reasons for the deepening gap between the demand and supply of fish is not limited to low local production. It includes post-harvest losses of fish. This is because fish is highly susceptible to deterioration without any preservation or processing measures (Okonta and Ekelemu, 2005). The deterioration is caused by series of changes brought about by enzymes and bacteria in dead fishes. Hence, fish deteriorates as soon as it is caught or dies (Obasohan *et al.*, 2012). On these bases, immediate attention needs to be given to proper handling and preservation of fish as soon as it dies so as to extend its shelf-life, while retaining its quality. A good means of achieving this is through smoking of fish.

Smoking is the removal of most of the water content from the flesh and the depositing of preservative chemical on the fish's flesh (Adewuyi *et al.*, 2013). Smoking imparts a unique taste and flavour to the fish besides its preservative effect (Obasohan *et al.,* 2012; Ezike *et al.,* 2013). With this taste and flavour, smoked fish is highly cherished among almost all Nigerians. It is expected to be more desired in places like Ogun State where its production and processing is supported by natural endowments such as rivers, ponds and lakes. Therefore, making smoked fish available at the right time, right form, and right place and at the lowest possible cost becomes a necessity. This can only be achieved through an efficient marketing system.

The annual increase in the demand for local fish in Nigeria (Ali *et al*., 2008) makes marketing of smoked fish a viable enterprise to explore. Ogun State is one of the identified States in Nigeria with high production of fish. Aside from fishing which usually takes place in riverine and coastal communities, other communities without these natural features take advantage of the blessed areas through buying, smoking and marketing of fish in urban cities. It is on this note that this study analysed the marketing channels and marketing

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

483

efficiency of smoked fish among marketers in Ogun State. For the realization of this, the study specifically describes the socioeconomic and marketing characteristics of the smoked fish marketers; identifies the major channels of distributing smoked fish; examines what determines the price of smoked fish; identifies the constraints of smoked fish marketing; and determines the efficiency of smoked fish marketing in major markets of Ogun State.

Materials and Methods
The study area
The study was conducted in Ogun State in south- western Nigeria. It has an estimated population of at least 3 million people (National Population Commission - NPC, 2006). The state is located in the rainforest vegetation belt of Nigeria within longitude 2º 45′ E and 3º 55′ E and latitudes 7º 01′ N and 7º 8′ N in the tropics. Rainfall ranges between 1600 mm and 900 mm annually. The state is warm throughout the year with a temperature of between 28ºC and 35ºC, humidity is between 85 percent and 95 percent (Oloruntoba and Adegbite, 2006). The state is also blessed with marine and riverine biotopes estimated at 173.8 square kilometres (Adekoya, 2001), lacustrine and estuarine biotopes (Olaoye *et al.,* 2007) and is well endowed with natural water bodies such as springs, perennial flowing rivers, lakes and brackish waters (Babalola *et al.*, 2015). Ogun State Agricultural Development Programme divided the state into four agricultural extension zones namely Abeokuta, Ilaro, Ijebu-Ode and Ikenne zones which are all well known for fish production and marketing. Notable occupations of the people in the state are: agriculture, fishing, cloth making, textiles and civil service.

Sampling procedure and data collection
This was done through a multistage sampling technique. This involves the random selection of 50.0% (Abeokuta and Ijebu-Ode) of the agricultural zones in the state. This is followed by purposive selection of Makun-Omi market from Ijebu-Ode zone and Kuto, Olomore and Itoku markets from Abeokuta zone due to the concentration of smoked fish marketers in the selected markets. An average of 20 marketers was then conveniently interviewed from each of the selected markets giving a total sample size of 80.

Data analysis
Elicited data were analysed using the descriptive statistics such as frequency, percentage, mean, standard deviation and budgetary analytical technique. The budgetary analytical technique used involves the costs and return analysis which was used to determine the marketing margin (indicator of profitability) and marketing efficiency of smoked fish marketing as specified below:

$MM = TR – TC = ₦74,907.03 - ₦71,055.41 = ₦3,851.62$ ------ (1)
$ME = TR/TC = ₦74,907.03/₦71,055.41 = 1.05$ ----------- (2)
$TC = TVC + TFC = ₦43,572.74 + ₦27,482.67 = ₦71,055.41$ --- (3)
$GM = TR$ or $GI–TVC = ₦74,907.03–₦43,572.74 = ₦34,331.29$ --- (4)
$NI = TGM – TFC = ₦34,331.29 - ₦27,482.67 = ₦3,851.62$ ------- (5)

Where: MM = Marketing Margin, ME = Marketing Efficiency, GM = Gross Margin, TR = Total Revenue OR GI = Gross Income/Revenue, TC = Total Cost of Production, NI = Net Income, TGM = Total Gross Margin, TFC = Total Fixed Cost.

Results and Discussion
Table 1 show that approximately four out of every five (81.25%) of the smoked fish marketers were in the age brackets of 21-50 years while the rest are above 50 years. The mean age was calculated to be a 42.75 years which implies that the traders were still in the work force of the nation because people in the age group of 18-60 years are popularly referred to as active population or working population by most authors like Ande (2008). This group was regarded as the economic age bracket that is involved in productive activities. This is expected to lead to a high desire to increase family income and is in line with Babalola *et al.* (2015)'s submission. Table 1 further show that about 75.0% of the smoked fish marketers were females and this implies that smoked fish marketing like other trading activities is women dominated in Ogun State. The result reveals that higher proportion (62.5%) of the smoked fish marketers were married, while the remaining was single (6.25%), widowed (12.50%), separated (10.00%) and divorced (6.25%). This implies that responsibilities associated with marriage such as child nurturing and upbringing may affect the trading activities of the smoked fish marketers.

Although, the study was carried out in Ogun State which is typically a Yoruba state, up to 40.0% of the smoked fish marketers were not Yorubas. They were either the Hausas (30.00%) or the Ijaws (10.00%). This may also explain why some men were part of the smoked fish marketers in Ogun State and implies that non-indigenes of Ogun State were free to carry out their smoked fish marketing activities in the state has been reported by previous studies (Odebiyi *et al.*, 2013; Olaoye *et al.,* 2007).

Entries in Table 1 also show that close to three-fifths (57.50%) of the smoked fish marketers had household sizes of 6 -10 persons, while 26.25% and 16.25% of them had 1-5 and 11-15 persons per household, respectively. The mean household size of approximately 7 persons is an indication that the smoked fish marketers' households were neither too small nor too large; that will assist in solving labour issues. With respect to educational attainment, less than one-fourth (23.75%) of the smoked fish marketers were literates; having at least the primary education. This implies that majority of the smoked fish marketers were non-literates with no formal education. A similar study by Babalola *et al.* (2015) also revealed that majority of the fish marketers in Ogun State who were mainly women had low level of education. This may also explain why most of them had opted for trading which requires little or no formal education.

More than half (52.50%) of the smoked fish marketers had no secondary occupation with the remaining engaged in fish farming (22.50%), poultry farming (5.00%), tailoring (7.50%) and petty trading (12.50%) as secondary occupations. This implies that smoked fish marketing is the only occupation for higher proportion of the smoked fish marketers and this is attributed to the viability and profitability nature of the enterprise. This may also be linked to the fact that fishing is the main occupation of most household heads in riverine communities of Ogun State. This is in line with the report of Olawuyi and Rahji (2012) which stated that fishing is the main occupation of household heads in Ode-Omi kingdom of Ogun waterside LGA.

The mean fish marketer's daily income was ₦ 3,456.00 which indicates that the business is worth going into for an average women who are resource constrained to meet immediate family needs. Also, majority (62.50%) of the smoked fish marketers were reported in Table 1 to be members of market associations. This implies that members had no hindrance to fish hawking and selling in the markets. As expected, their distribution of smoked fishes as referrals can easily be made from a trader to others within the same market in case the former is in short of supply.

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

484

Table 1: Socio-economic characteristics of the smoked fish marketers (n = 80)

Socio-economic characteristics	Frequency	Percentage	Mean±SD*
Age (Years)			
21-50	65	81.25	42.75±1.08 years
>50	15	18.75	
Sex			
Male	20	25.00	
Female	60	75.00	
Marital status			
Married	50	62.50	
Single	5	6.25	
Widowed	10	12.50	
Separated	8	10.00	
Divorced	5	6.25	
Tribe			
Yoruba	48	60.00	
Hausa	24	30.00	
Ijaw	8	10.00	
Household size			
1-5	21	26.25	6.73±1.6
6-10	46	57.50	
11-15	13	16.25	
Educational attainment*			
No formal education	61	76.25	
Primary education	11	13.75	
Secondary education	7	8.75	
Tertiary education	1	1.25	
Secondary occupation			
Fish farming	18	22.50	
Poultry farming	4	5.00	
Tailoring	6	7.50	
Petty trading	10	12.50	
None	42	52.50	
Daily income (₦)			
1000 – 1999	24	30.00	
2000 – 2999	10	12.50	₦ 3,456.00
3000 – 3999	42	52.50	
≥4000	4	5.00	
Membership of market associations			
Members	50	62.50	
Non-members	30	37.50	

Source: Field survey, 2014; *SD = Standard deviation

Table 2: Marketing characteristics of the smoked fish marketers (n=80)

Smoked fish marketing variables	Frequency	Percentage	Mean ± SD*
Smoked fish marketing experience (Years)			
1-10	0	0.00	
11-20	46	57.50	22.35±1.28 years
21-30	20	25.00	
31-40	12	15.00	
41-50	2	2.50	
Source of capital			
Cooperative	14	17.50	
Bank	1	1.25	
Friends and families	10	12.50	
Self	55	68.75	
Source of labour			
Self	50	62.50	
Hired	2	2.50	
Family	28	35.00	
Source of smoked fish			
Fishermen	40	50.00	
Producers	30	37.50	
Wholesalers	10	12.50	
Scale of trading			
Small	25	31.25	
Medium	19	23.75	
Large	36	45.00	
Mode of transportation			
By road (vehicles)	50	62.50	
By water	20	25.00	
By human carriage	10	12.50	
Access to storage facilities			
Had access	46	42.50	
Had no access	34	57.50	

Source: Field survey, 2014; *SD = standard deviation

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

485

Smoked fish marketing characteristics of the smoked fish marketers (n=80)

Table 2 reveals that more than half (57.50%) of the smoked fish marketers had 11-20 years marketing experience, while 25.00% and 15.00% had 21-30 years and 31-40 years of smoked fish marketing experience. A similar result was reported by Babalola *et al.* (2015), that the highest proportion of fish marketers had more than 20 years of fish marketing experience. The mean experience of 22.35±1.28 years (which is much more higher than that obtained from the study of Omoare *et al.* (2013) is an indication that smoked fish marketers had spent substantial part of their lives in the business and this explains why it remains the only occupation for more than half of them. Capital raised for setting up the business was self-sourced by higher proportion (68.75%) of the marketers. Others sourced theirs from cooperatives (17.50%), bank (1.25%) as well as friends and family members (12.50%). This implies that like every other small scale business, loans are not easily accessible from commercial banks to smoked fish marketers; because the marketers may not meet the requirements (like collaterals) for accessing loans form financial institutions and are in line with the submission of Omoare *et al.* (2013).

Table 2 further reveals that labour used for smoked fish marketing was mainly provided by 62.50% of the marketers themselves, while 35.00% and 2.50% sourced labour from family members and hired labour, respectively. This implies that hired labour is not a common practice of the smoked fish marketers due to the availability of family members as source of cheap labour. Table 2 also shows that exactly half (50.00%) of the smoked fish marketers sourced their fishes directly from fishermen after catches, while 37.50% and 12.50% sourced smoked fishes from producers and wholesalers, respectively. This is an indication that half of the smoked fish marketers were smoking the fishes by themselves.

As shown in Table 2, this study reveals that close to one-third (31.25%) of the smoked fish marketers categorized themselves as operating a small scale business, while 23.75% and 45.00% of them saw themselves as operating under the medium and large scales.

Road was the major means of transportation used by higher proportion (62.50%) of the smoked fish marketers. About 25.00% and 12.50% however made use of water transportation systems and human carriage systems, respectively. The use of any of the transportation systems is dependent mainly on the traders' location to the nearest markets. Table 2 further shows that more than half (57.50%) of the smoked fish marketers had no access to storage facilities. This explains why the marketers made use of all the main actors in the distribution process to sell their produce as soon as possible, because they could not allow the surplus fishes to deteriorate while waiting for only those who will buy in bulk.

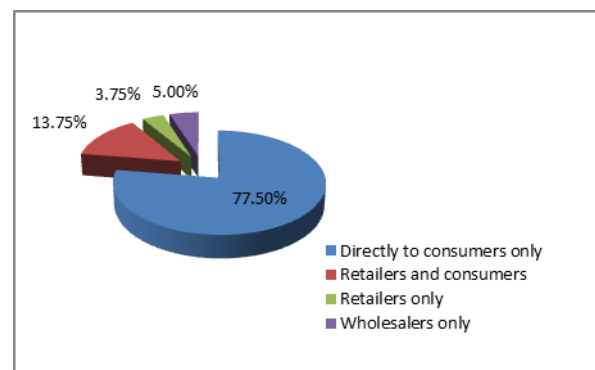***Distribution of smoked fish by the marketers in Ogun State***

The chain of distribution of any product can be demonstrated to start from the manufacturer to the wholesaler and then to the retailer before finally getting to the final consumer (Ande, 2008). However, Table 3 shows that majority (77.50%) of the smoked fish marketers distribute their goods (smoked fish) directly to the consumers only, while 13.75% sell to both retailers and consumers. Table 3 further shows that lesser proportions (3.75% and 5.00%) distribute their goods to the retailers and wholesalers. The channel of distribution of smoked fish is also illustrated in Fig. 1. This implies that majority of the smoked fish marketers were able to bypass the middlemen (wholesalers and retailers) and then sell directly to the final consumers. Hence, middlemen were not used by

significant proportion of the smoked fish marketers in the study area and this is likely to make smoked fish available to consumers at relatively cheaper prices.
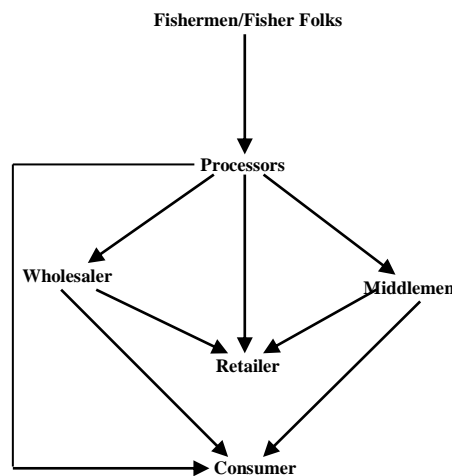
Source: Field survey, 2014
Fig. 1: Distribution channel of smoked fish in Ogun State

Source: Field survey, 2014
Fig. 2: Categories of smoked fish distribution

Price Determination between smoked fish marketers and their customers

The results in Table 3 revealed that higher proportion (62.50%) of the smoked fish marketers reported that haggling is the major method been used to determine price between them and their customers (buyers of smoked fishes). That is, the price is usually argued over before a consensus is finally reached between the traders and the prospective buyers. While about 25.00% applied the forces of demand and supply, 12.50% made use of known weighing scales to determine their prices. This finding agrees with Omoare *et al.* (2013) who reported that less than one-fourth of the fish marketers in Ogun State made use of weighing scales as a unit of measurement. This implies that smoked fishes have no fixed price among most of the fish traders and that the price is dependent upon some other factors.

Furthermore, Table 3 reveals that odour, colour and texture of the smoked fishes were factors considered by different buyers and traders of smoked fishes in determining the price. The colour of the smoked fish is however the major determinant of price of smoked fish as identified by majority (73.75%) of the smoked fish marketers. This implies that smoked fishes with colours that significantly differ from the standard colour are less likely to be well priced.

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

486

Table 3: Price determination between smoked fish marketers and their customers (n=80)

Price determining variables	Frequency	Percentage (%)
Method of price negotiation		
Haggling method	50	62.50
Use of weighing scales	10	12.50
Demand and Supply force	20	25.00
Factors that determine price of smoked fish		
Odour	7	8.75
Texture	14	17.50
Colour	59	73.75

Source: Field survey, 2014

Constraints Militating against Smoked Fish Marketing in Ogun State (n=80)

The mean values in Table 4 reveal that inadequate financing/capital is the major and only constraint facing smoked fish markers in Ogun State. This is so because more than half (52.50%) of the smoked fish marketers identified it as a very severe problem they encounter in their smoked fish marketing activities. Majority of the marketers perceived other identified constraints as not giving them problems. This may be because they were able to deal with the constraints over the years based on their substantial smoked fish marketing experience.

Table 4: Constraints facing artisanal fish processing in the study area (n = 120)

Constraints	Very severe (2)	Severe (1)	Not a constraint (0)	Mean score	Rank
Inadequate finance/capital	42 (52.50)*	9 (11.25)	28 (35.00)	1.16	1st
Price fluctuation	26 (32.50)	8 (10.00)	46 (57.50)	0.80	3rd
High cost of transportation	6 (7.50)	9 (11.25)	65 (81.25)	0.26	5th
Inadequate storage facilities	22 (27.50)	7 (8.75)	51 (63.75)	0.64	4th
Inadequate supply of fish	31 (38.75)	8 (10.00)	42 (52.50)	0.88	2nd

Source: Field survey, 2014; *figures in parentheses are expressed in percentages

Costs and returns analysis of smoked fish marketing

Table 5 presents the analysis of the different costs and return from smoked fish marketing in Ogun State. The costs were broadly categorized into variable and fixed costs. The variable costs consist of amounts spent on firewood, fish, kerosene, and transportation fare spent in obtaining the fish at the market while the fixed costs are those spent on processing equipment, processing shed, steel bowls, cane baskets, wire gauze and steel knives. The variable cost summed up to ₦43,572.74 and accounts for 61.32% of the total cost (₦71,055.41.) while the total fixed cost equals ₦27,482.67 and accounts for 38.68% of the total cost (₦71,055.41). This implies that costs of variable inputs consumed more than three-fifth of the total cost of smoked fish production. However, the average total revenue accrued from smoked fish production equals ₦74,907.03.

Table 5: Costs and returns analysis of smoked fish marketing per month

Items	Amount (₦)	Total cost (%)
Variable cost		
Firewood	2,600.00	3.66
Fish	36,066.67	50.76
Kerosene	1,243.33	1.75
Transportation in obtaining the fish	2,096.67	2.95
Transporting the fish to the market	1,566.67	2.20
Total Variable Cost (TVC)	**43,572.74**	**61.32**
Fixed cost		
Processing equipment	8,466.67	11.92
Processing shed	12,033.33	16.94
Steel Bowls	1,523.23	2.14
Steel Basket	2,510.30	3.53
Wire gauze	1,833.37	2.58
Steel Knife	1,110	1.56
Total Fixed Cost	**27,482.67**	**38.68**
Total cost (TVC + TFC)	**71,055.41**	**100.00**
Total revenue (TR)	**74,907.03**	
Gross margin	**34,331.29**	
Net income	**3,851.62**	
Marketing efficiency	**1.05**	

Source: Field survey, 2014

Since the revenue (₦74,907.03) from smoked fish marketing is higher than the total amount (₦71,055.41) spent in the trading process, smoked fish marketing can be said to be profitable. Table 5 reveals that a gross margin of ₦34,331.29 was obtained from smoked fish marketing implies that the smoked fish marketers were left with ₦34,331.29 after offsetting the variable costs of production. Furthermore, a net income of ₦3,851.62 indicates that the smoked fish marketers were left with ₦3,851.62 after paying both the variable (₦43,572.74) and fixed (₦27,482.67) costs of production. This proves that smoked fish marketing is a profitable business in Ogun State. This supports the findings of Omoare *et al.* (2013) which reported that marketing of smoked fish is higher than that of frozen fish and fried fish. A marketing efficiency greater than 1 (1.05) was also obtained from smoked fish marketing as shown in Table 5. This implies that marketing of smoked fish is efficient in the study area.

Conclusion

This study reported that smoked fish marketers were economically active, experienced, non-literate married women who operated mostly on large scales due to accessibility to improved technologies. Capital for marketing of smoked fish was self-sourced; smoked fish were obtained mainly from fishermen, while labour was mainly self-provided in addition to family and hired labour. Smoked fish was distributed mostly to the consumers with lesser involvement of middlemen (such as wholesalers and retailers); known weighing scales were not used in price determination and smoked fish marketing is affected primarily by inadequate financing and capital. With total revenue exceeding total cost and a positive market margin, the study established that smoked fish marketing is profitable business in Ogun State and advises that unemployed youths can avail themselves of the opportunity to make money and earn a living. Also, a marketing efficiency of 1.05 makes this study to further conclude that marketing of smoked fish is efficient among the marketers in Ogun State.

Recommendations

To further make smoked fish available to its consumers in Ogun State at cheaper prices while also maximizing profit for

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

487

its marketers and ensure a continued marketing efficiency in Qgun State, this study recommended that:

i. Known weighing scales should be encourage and adopted in determining the prices of smoked fish;

ii. Affordable credit loan facilities that are flexible with lower interest rates should be made available to smoked fish marketers in Ogun State; and

iii. Unemployed youths in Ogun State are encouraged to embark on smoked fish marketing because it has been proved to be a profitable business.

References

Adekoya BB 2001. Programme Planning for Fisheries Extension "Training Module 1" Workshop Paper on "Creation of a Critical Mass of Fisheries Extensionists' at NIOMR July 16 – October 2001; 5, p. 14.

Adewuyi SA, Okuneye PA, Adeosun IF & Alaba OM 2013. Profit efficiency in fish smoking in Ilaje Local Government Area of Ondo State, Nigeria, *IJAFS,* 4(1&2): 421-427.

Amao JO, Oluwatayo IB & Osuntope FK 2006. Economics of Fish Demands in Lagos State, Nigeria. *J. Human Ecol.,* 19(1): 25-30.

Ande CE 2008. *Essential Economics for Senior Secondary Schools (2nd Edition).* Ogun State: TONAD Publishers Limited, p. 179.

Ali EA, Gaya HIM & Jampada TN 2008. Economic analysis of fresh fish marketing in Maiduguri Gamboru market and Kachallari Alau Dam landing site of North eastern Nigeria. *J. Agric. Soc.*, 4: 23-46.

Areola FO 2007. Fish marketing and export potentials of fish and fisheries products of Nigeria. A lecture delivered at educative and informative aqua-cultural workshop and aqua-exhibitions tagged: Sustainable Fisheries Livelihood, Management and Food Security in Nigeria on February 23, 2007, 23pp.

Babalola DA, Bajimi O & Isitor SU 2015. Economic potentials of fish marketing and women empowerment in Nigeria: Evidence from Ogun State. *Afr. J. Food, Agric., Nutr. & Devt.,* 15(2): 9922-9934.

Ezike JOJ, Adeyiga JA, Aderinko OM, Daramola JA, Kester C & Orhokomua FF 2013. A neural network system for determining the optimal profitability of smoked fish business in Nigeria. *Computing, Information System, Devt. Information & Allied Res.,* 4(4): 39-46.

Federal Department of Fisheries (FDF) 2007. Fishery Statistics of Nigeria. Federal Department of Fisheries Publication, Abuja, Nigeria, pp. 11-24.

Food & Agriculture Organization (FAO) 2007. *State of World Fisheries and Aquaculture 2006*. Food and Agriculture Organization of the United Nations, Rome. 162pp. Retrieved from http://www.fao.org/fi/statist/fisoft/fishplu.asp.

National Population Commission 2006. National Population Census 2006 Provisional Result Abuja, Nigeria.

Obasohan E, Emmanuel O, Edward E & Oronsaye JAO 2012. A survey on processing and distribution of smoked catfishes (*Heterobranchus* and *Clarias spp.*) in Ekpoma, Edo state, Nigeria. *Res. J. Recent Sci.,* 1(8): 23- 28.

Odebiyi OC, George FOA, Odulate DO, Agbonlahor MU & Olaoye OJ 2013. Value-chain analysis of coastal fisheries development in Nigeria. *Global J. Sci. Frontier Res. (Agriculture and Veterinary),* 13(11): 6-15.

OkontaAA & Ekelemu JK 2005. A Preliminary Study of Micro-Organism Associated With Fish Spoilage in Asaba, Southern Nigeria. Proceedings of the 20th Annual Conference of the Fisheries Society of Nigeria (FISON), Port Harcourt, 14th – 18th November, 2005, pp. 557-760.

Olaoye OJ, Adekoya BB, Ezeri GNO, Omonyimi GAK & Ayansanwo TO 2007. Fish hatchery production trends in Ogun State 2001-2006. *Aquafield,* 3: 29-40.

Olasunkanmi JB 2012. Economic analysis of Fish Farming in Osun State, South–western Nigeria. *IIFET 2012 Tanzania Proceedings,* pp. 1-10.

Olawuyi SO & Rahji MAY 2012. Analysis of livelihood strategies of household heads in Ode-omi Kingdom, Ogun-water side Local Government Area, Ogun State, Nigeria. *IJRRAS,* 11(2): 337-345.

Oloruntoba A & Adegbite DA 2006. Improving Agric extension services through university outreach initiative: A case of Farmers in model villages in Ogun State, Nigeria. *J. Agric. Edu. & Extension,* 12(4): 273-283.

Omoare AM, Fakoya EO, Abiona BG & Oyediran WO 2013. Fish marketing: A panacea towards sustainable agriculture in Ogun State, Nigeria. *Int. J. Bio., Biomol. Agric. Food & Biotech. Engr.,* 7(7): 421-427.

Osagie C 2012. Aquaculture as path to thriving agriculture. Retrieved on 5th October, 2012 from http://www.thisdaylive.com/articles/aquaculture-as-path-to-thriving-agriculture/12614/

Shettima BG, Mohammed ST, Ghide AA & Zindam PL 2014. Analysis of socio-economic factors affecting Artisanal Fishermen around Lake Alau, Jere Local Government Area of Borno State, Nigeria. *Nig. J. Fisheries & Aquac.,* 2(1): 48-53.

FUW Trends in Science & Technology Journal, www.ftstjournal.com
e-ISSN: 24085162; p-ISSN: 20485170; April, 2017: Vol. 2 No. 1B pp. 483 – 488

488