VALUE CHAIN ANALYSIS OF THE ARTISANAL FISHERIES OF THE OGUN WATERSIDE AREA, NIGERIA

By

Ayanboye, A.O, Adeosun, O, Ajibade, A.O, Rafiu R.A and Saliu Esther
Oyo State College of Agriculture and Technology, Igboora, Oyo State

Abstract

The artisanal fisheries sector in Nigeria makes a significant contribution to employment creation, income and food security. This report presents the outputs of a value-chain study for the sector to help improve its economics performance of the artisanal fisheries of Ogun waterside. The main objectives of the study was to analyse and develop the fish value chain of the artisanal fisheries of Ogun waterside area, Nigeria. The study was carried out with the aid of structured questionnaire which was used to collect information about socio economics characteristics, financial performance, and the factors affecting the performance of the value-chain. A sample of 135 respondents from different actors of the artisanal fishery was covered in the study. The results shed some light on the value chain present in the trade. It also gives a detail description of the various actors involved, their functions and the cost of operation at various points of the value chain. The major constraints common to all the actors in the artisanal fisheries development are namely; inadequate credit facilities, seasonality of fish catch, inadequate social amenities and growth of hyacinth. Appropriate measures was recommended.

Key words: Value chains, Artisanal fisheries, and Nigeria.

Introduction

Since times immemorial, fishing is most important livelihood for the inhabitants of the coastal line of Nigeria. This natural resource along with the marine environment has not only been the custodian of livelihood security of the coastal populace but also supports the productive and protective habitats. The web of life of the coastal community is woven around it, be it festivals, weddings or even death, the community is intricately related to the natural marine resource. Fish contribute a significant amount of animal protein to the diets of people worldwide. According to [1], fish contribute more than 60% of the world supply of protein, especially in the developing countries. Fish does not serve as vital food alone, it is also a source of employment for millions of people around the globe. In 1996, an estimated 30 million men and women were deriving an income from fisheries, [1] and about 200 million people throughout the world are estimated to depend on fish for all or part of their incomes [2]. Fish supply is from four major sources viz., artisanal fisheries, industrial trawlers, aquaculture and imported frozen fish [3]. Fish and fisheries production constitute the cheapest sources of animal protein to man and remain one of his main sources of food. Fish is still the cheapest and most available source of animal protein in Nigeria. According to [4], fish represents about 55% of the protein sources intake of Nigerians. The Nigerian fishing industry comprises of three major sub sectors namely the artisanal, industrial and aquaculture of which awareness on the potential of aquaculture to contribute to domestic fish production has continued to increase in the country [5]. Artisanal or small-scale fisheries have been variously described in the literature. According to [6], 'traditional', 'small-scale' or 'artisanal' fisheries is used to characterise those fisheries that were mainly non- mechanised with low level of production. However, they are the predominant fishery in tropical developing countries [7]. In Nigeria, the coastal artisanal fishers use the traditional dug-out canoes or pirogue ranging from 3–18 metres in length while the gears used include cast nets, handlines, basket traps, longlines, set gillnets and beach and purse seines. The operating range of small-scale fisheries is around the 20 metres depth contour, with operations extending occasionally to a maximum depth of 40 metres [8].
In fact, artisanal fisheries include coastal, brackish water and all inland fishery sources such as rivers, reservoirs, dams, lakes, lagoons, as well as the floodplains.

The Nigerian artisanal coastal fishery sector is characterized by a rich resource base with a water area of 140,000 square kilometers and about 42,000 square kilometres continental shelf area, adjacent to the country's 853 kilometers coastline [1]. From 1985 – 2005, artisanal fishing accounted for more than 80% of total fish production in Nigeria. Many people find employment in the coastal fish marketing chain as fishermen, assemblers, processors, traders, intermediaries, transporters and day labourers, including women and children. Ogun state waterside is one of the coastal state in Nigeria. It is well-endowed with river networks, and a large expanse of exclusive ocean waters for commercial fishing. Consequently, several of the natives and residents in coastal (or littoral) states and communities in Nigeria are involved in the capture fisheries sub-sector (artisanal fishery) of the nation's economy. Similarly, in the Ogun Waterside Area, the people (i.e. men, women and children) are engaged predominantly or on part-time basis in one or more activities in the capture fisheries sub-sector.

As important as fish is, availability of fish to the consumers at the right time, right form, right place and at the lowest possible cost is required, hence the importance of its value chain. The value chain describes the full range of activities which are required to bring a product or service from conception, through the different phases of production (involving a combination of physical transformation and the input of various producer services), delivery to final consumers, and final disposal after use. [9,10]. In reality, value chains tend to be extended with a whole range of activities within each link and links between different value chains [11]. Value chain analysis can be a useful analytical tool in understanding the policy environment in terms of efficiency in allocation of resources.

Justification

The role of artisanal fisheries in the total fish production in Nigeria cannot be overestimated. Apart from being an important source of protein, it serves as a livelihoods for many people. It provides rural employment to large population of stakeholders which include fishermen, processors, traders and other associated workers. This study is therefore important because the results of the study can be used as a guide to better understand the situation in the artisanal fishery from value chain perspective which will allow for objective planning for potential intervention to ensure sustainable fish production. It will also assist in the move towards a more market driven which will enhance and contribute to the growing demand for fish in the country in the long-term, whilst maintaining the socio-economic value of the fishery in the country.

Objectives of the Study

The main objective is to analyse and develop the fish value chain of the artisanal fisheries of Ogun waterside, Ogun state, Nigeria**.** The specific objectives are to:

i Identify and describe the socio-economic characteristics of all the stakeholders in the fish value chain
ii. Describe the main actors and their functions
iii. Describe the distribution channel in the value chain
iv. Identify and analyze the cost structure of the actors in artisanal fish value chains
v. Identify the constraints hindering the development of the identified artisanal fisheries fish value chain.

The Study Area

The country Nigeria consist of nine (9) coastal states which are; Lagos, Ogun, Ondo, Edo, Bayelsa, Rivers, Akwa Ibom and Cross River. The study was carried out in Ogun state one of the coastal state in Nigeria. The coastline in Nigeria is well-endowed with river networks, and a large expanse of exclusive ocean waters for commercial fishing. Consequently, several of the natives and residents in coastal (or littoral) states and communities in Nigeria are involved in the capture fisheries sub-sector (artisanal fishery) of the nation's economy. Similarly, in the Ogun waterside area, the people (i.e. men, women and children) are engaged predominantly or on part-time basis in one or more activities in the capture fisheries sub-sector. The study area is closely associated with other maritime states of South-western Nigeria. The proximity of the area to the Atlantic Ocean, lagoon systems and in particular, to the good, albeit complex network of streams, rivers, and other water-bodies make the area an appropriate geographical location for this study. She is located in the eastern part of Ogun state sharing boundaries with Ondo state in the north, Lagos state in the south and Ijebu east local government in the west. About half to three quarter of the length of the local government is surrounded by water extending from Lagos state to Ondo state, this peculiar feature gave birth to the name waterside. The area comprises over 50 towns and villages with headquarter at Abigi at 6°29'N 4°24'E / 6.483°N 4.4°E (www.wikipedia.com), while the main town in this area are Iwopin, Oni, Ibiade, Abigi, Efire, Ilushin, Makun- Omi, Ode-Omi and Lomiro.

The area consists largely of Yoruba speaking people of which, the Ijebus comprise about 70 percent, with the Ikales, Ilajes, Itsekiris and Urhobos making up the remaining 30 percent. It has an area of 1,000 km² and a population of 72,935 at the 2006 census. The choice of the local government is by its close proximity

to the Atlantic Ocean and its relative endowment with a complex network of streams, rivers, brackish water and in particular the extension of the Lagos (Lekki) Lagoon to the area. It is the only area of the state with a coastline on the Bight of Benin and also borders Lagos lagoon.

Sample Size and Sampling Techniques

A purposive sampling technique was used to select four (Makun-omi, Oni, Iwopin and Agbalegiyo) coastal fishing communities from the 23 fishing villages of Ogun state coastal area based on their intensity of fishing activities. A simple random sampling was then used in the selection of 30% of the fishermen and fish processors in the four selected communities who were interviewed to give a total of 60 and 40 fishermen and fish processors respectively. Lastly a purposive sampling method was used in selecting 35 fish marketers at their central market to give a total of 135 respondents as indicated in the table 1.

Table 1 : Study Population and Location

	Chain actors			
Fishing Communities	Fishermen	Fish Processors	Fish-marketers	Total
Makun-omi	15	12	13	40
Oni	15	14	5	34
Iwopin	18	8	8	34
Agbalegiyo	12	6	9	27
Total	60	40	35	135

Source: Field survey 2013-2014

Analytical Procedures

The analytical methods used to investigate the outlined objectives include

Descriptive statistical tools such as tables, frequencies, percentages mean and standard deviation. These were used to describe the socio-economic characteristics of the respondents. The characteristics included the ages of the farmers, marital status, educational attainment, major occupation, farming experience, sex among others.

Gross margin analysis (GM)

The budgetary technique was used to determine the gross margin income at each stage of the chain. Gross margin (GM) is the difference between the total revenue and the variable cost incurred. Fixed items were depreciated using a straight line method. The model used in estimating the gross margin is:

Budgetary technique which involves the cost and return analysis was used to determine the profitability at each node of the stakeholders or actors along the chain in the study area.

The model specification is given as:

GM= TR- TVC……..Equation 1

TR= PQ……...…. Equation 2.

Where

TVC = variable cost (N)

TR=Total revenue (N)

P= Unit price of output (N)

Q= Total quantity of output (N)

Some profitability indicators such as Net Return on Investment (NROI), Net Farm Income (NFI), Net Profit Margin (NPM), Expense Structure Ratio (ESR) and Benefit Cost Ratio (BCR) were also used.

Where NROI = NFI/TC

NFI = GM- TFC

NPM = NFI/TR

ESR=TFC/TC

BCR = TR/TC

Result and Discussion

The socio-economic characteristics of the fish value chain actors of the artisanal fisheries of the Ogun waterside area is shown in table 2 below. Among the fishermen, 81.67 % were male while only 18.33% were female. This findings showed that majority of the fishermen were male. This corroborate the findings of [12] and in particular [13], that the majority of fishermen in Ogun waterside were men. Although the results showed the dominance of the artisanal fisheries sector by men, the contribution of the women folk in active fishing cannot be undermined. According to [14], women still use traps and nets to catch fish in most fishing communities in Nigeria. In contrary, the majority of processors (97.50%) and 100% of the traders were female while only 2.50% of traders were male. This showed that male engaged in fishing while female is mostly found in fish processing and trading. Women have been reported to be more involved in post-harvest activities than men. [15,16], reported that women are more involved in the trade of fish smoking. Larger percentage of fishermen, traders and processors fell within the age ranged of 31-50 years with mean age and standard deviation of 48.52 and 8.91 for fishermen, 36.15 and 8.22 for processors and 80% in traders and 34.82 and 7.79 for traders respectively in fish marketers. This may be because at this age range of 31-50 they are active and have strength to work. This is the an age in which people are considered highly productive and active to undertake strenuous task associated to the farm work, which a line with Bello, (2000) assertion that age has positive correlation with acceptance of innovation and risk taking.

Marital status of the respondents revealed that 80% of the fishermen, 97.50% of the processors and 97.14% of the traders were married. This is an indication fishing serves as sources of livelihood for all the respondents. Educational level of the respondents are also shown table 2. About 71.67 percent of the fishermen, 60% of the processors and traders had up to primary education while 16.67 percent of the fishermen, 17.5% of the processors and 17.4 of the traders had secondary education. The revealed that educational level of the respondents was low. Low level of education among men and women in fishing communities in West Africa posed significant constraints on sustainability in artisanal fisheries, just as it will do in farm production in general [17]. Generally, education and particularly fishing- related training, is expected to impact positively on the productivity of fishers. According to [18], educated farmers tend to be more likely to adopt modern agricultural practices. Based on the years of experience, 55%, 55% and 77.41% of fishermen, fish processors and fish traders respectively had 11-30years experience, showing that the respondents are not new in the business. Most (65% and 42.86%) of the fishermen and traders practiced Islam, while 72.50% of the fish processors were Christians. Majority 63.33%, 67.50% and 62.50% of the fishermen, processors and traders had household sizes of 6-10 persons and a mean household size of 8, 8 and 7 persons respectively. A relatively large household size was found in the study. The finding supports the preponderance of large family sizes among the poor in rural areas [18].

Table II : Socio-economic characteristics of the artisanal fisheries value

Variables	Fishermen		Fish Processors		Fish-traders	
	Freq	%	Freq	%	Freq	%
Gender						
Female	11	18.33	39	97.50	35	100.0
Male	49	81.67	1	2.50	0	0.0
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Age						
20-30	2	3.33	7	17.00	7	20.00
31-40	13	21.67	24	60.00	23	65.71
41-50	21	38.32	8	20.00	5	14.29
51-60	18	23.34	1	2.5	-	0.0
>60	6	13.34	-	0.0	- 0.0	
Mean	48.52 ±8.91		36.15 ±8.22			34.82 ±7.79
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Marital status						
Single	8	13.33	-	-	1	2.86
Married	48	80.00	39	97.50	34	97.14
Widow	-	0.00	1	2.50	-	0.00
Widower	4	6.67	-	-	-	-
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Education Level						
No formal Education	7	11.67	9	22.5	8	22.86
Primary Education	43	71.67	24	60	21	60.00
Secondary Education	10	16.67	7	17.5	6	17.14
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Years of experience						
1-10	10	16.67	16	40	3	8.57
11-20	20	33.33	14	35	11	31.43
21-30	13	21.67	8	20	16	45.71
31-40	8	13.33	2	5	4	11.43
>40	9	15.00	-	0.0	1	2.86
Mean		24.33±13.79	16.25±8.45			13.80±5.68
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Religion						
Christian	19	31.67	29	72.5	20	57.4
Islam	39	65.00	11	27.5	15	42.86
Traditional	2	3.33	-	0.0	-	0.0
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**
Household Size						
1-5	10	16.67	13	32.5	15	37.5
6-10	38	63.33	27	67.5	25	62.5
>10	12	20.00	-	0.0	-	0.0
Mean		8.18± 2.45		7.93 ± 2.14		6.67± 2.0
Total	**60**	**100.0**	**40**	**100.0**	**35**	**100.0**

Source: Field survey, 2013-2014

Description of Players in the Value Chain of Artisanal Fisheries and their functions

A number and range of players were identified along the value chain of artisanal fisheries in the study area. Players are the actors who take up various activities in the chain in lieu of certain returns accruing to them. The players operate between the fishermen and the final consumers. The actors, in the distribution of fish to the final consumers performed different functions such as buying and selling, processing, packaging, grading, transportation and storage which could be classified into physical, exchange and facilitating functions. Irrespective of the chain based on the product, the actors present in the chain and their functions are as follows:

Fishermen

Fishermen are the primary source of fish among the players in the value chain of artisanal fish. At the stage, the fish is supplied in its fresh form on daily basis, depending on the amounts of catch and the period of supply. Majority (77.5%) revealed that fishing was their major occupation while (22.5%) were into other forms of business such as farming, tailor and carpentry because of the decline in the fish harvesting of the fishery sector. The peak period ranged between the month of May and June. Majority of the fishermen (60%) go for fishing two times a day (that is, early in the morning and late in the evening time) while 40% said they go for fishing three times a day (morning, afternoon and evening time) suggesting that, this is probably because fishing is their primary occupation, thus, they are likely to commit more hours and effort toward the success of this enterprise. Majority of the fishermen (77.5%) used gill net while the remaining (22.5%) used long lines. According to the fishermen, they would have prefer cast net but for the problem of aquatic weed (water hyacinth which floats above the water level) thus debar the use of cast net in the water. This problem was more pronounced at Oni fishing village. About 77.5% of the fishermen revealed that they used dug-out boat while only 22.5% used outrigger. About 75% of the fishermen revealed that they fish from shallow habitat, due to capacity of their boat while 25% go deeper part of the river. Majority of the fishermen (97.5%) sold their fish at waterside to processors, traders and consumers. The fishermen sold 95% of their total catch while the remaining 5% goes to their family for consumption. They performed the major role of fish harvesting and supplying to the processors, traders and consumers.

Fishermen do not transport their fish to distant selling point and they do not preserve because their buyers are always around waiting for them. However, they do not sell on credit. The various fish species caught with their local name include: *Sardinella, maderensis* (Sawa), *Pseudotolithus typus* (Alapo), *Heterotis niloticus* (Aika/Afo), *Clarias gariepinus* (Aro), *Gymnarchus niloticus* (Osan), *Chrysichthys auratus* (Igangan), *Hydrocynus forskalii* (Atoko), *Marcusenius senegalensis* (Lele), *Caranx ignobilis* (Owewe), *Sphyraena barracuda* (Esun), *Elops larcerta* (Sugbon), *Cichlidae* (Epia), *Synoglossus senegalensis* (Abo), *Papyrocranus afer* (Lakoro), *Parachanna Africana* (Korowo), *Corvina nigrita* (Awo) and *Ichthyoborus monody* (Lamisoro).

Fish Processors

Fish processors are actors who actively participated in adding value to the fish. Majority of the processors were female. They change fish from fresh to smoke whereby reducing the rate of spoilage and it also make the fish available where it is needed at convenient time. They processed their fish in such a way that its moisture content is removed to debar the growth of microorganisms that act on dead fish. Processors carried out very important function in this area because they process, store and transport the fish to urban market. They buy fresh fish from fishermen and traders. As revealed by the processors, 72.5% of them combined trading with fish processing and none of them joined cooperatives. The processors confirmed that the peak period when they get fish for sale is between May and June. Majority (75%) of the processors contacted their customers by transporting fish to them at the market place while 22.5% said their customer come to the fishing village to meet them, few revealed that their customers are consumer at fishing villages. All the fish processors revealed that the only method of processing fish is smoking and they preserved unsold fish by re- smoking again. According to them this method can last the fish for three weeks. The fish processors used materials such as salt, kerosene, water, firewood, stick, basket, knife, drum and wire gauze for fish smoking. As soon as they buy fresh fish, they put it in salt and water solution; the gills and intestine will then be removed. The scales will also be removed if it is scaly fish, after this they thoroughly washed the fish and place on a tray or basket to drain water from it. They finally set fish on a drum with wire gauze where they already put firewood inside

Fish Traders

Fish traders are another actors in the artisanal value chain. Majority of the traders were female like the processors. The traders buy and sell both fresh and smoked fish. They reprocessed fish to maintain its value smoke left- over if there is any. Fish traders purchased fish by informal bargaining at the landing site. They sell to processors, local traders, typically women, who buy fish to sell in urban cities in Ogun state and to consumers. This survey further revealed that 87.5% of the traders choose this fish trade as their primary occupation while other engaged in one or two other things, such as tailoring, and agricultural farming to augment the income from the business in case they

have no fish to trade with during the period of fish scarcity. Two types of traders were found; they are wholesalers and retailers. This classification depend on the quantity of fish they deal with. About 67.5% of the traders started as retailers while 32.5% started the business as wholesalers. The wholesalers buy in bulk from a major source (fishermen, processors). Traders performed the functions of grading. They graded the fish and separated them by size, species, appearance, freshness. Majority of the traders do not transport their fish to selling point especially the wholesalers among them, they reached the price they sell their fish by measuring, bargaining or counting depending on the size, species and season. Majority of them do not preserve their fish instead they sell out the fish cheaply to avoid spoilage, they only transport when they have scarce fish species or live big fish.

The Value Chain of Artisanal Fisheries in Ogun Waterside

This is to show the route fish passes through before it gets to the final consumer. Figure I shows the only functional value chain of artisanal fisheries in Ogun waterside. The artisanal fisheries of Ogun state waterside consist of the local value chain, with domestic landings only. The general flow of fish is from fishermen to fish traders and fish processors before it gets to the final consumers

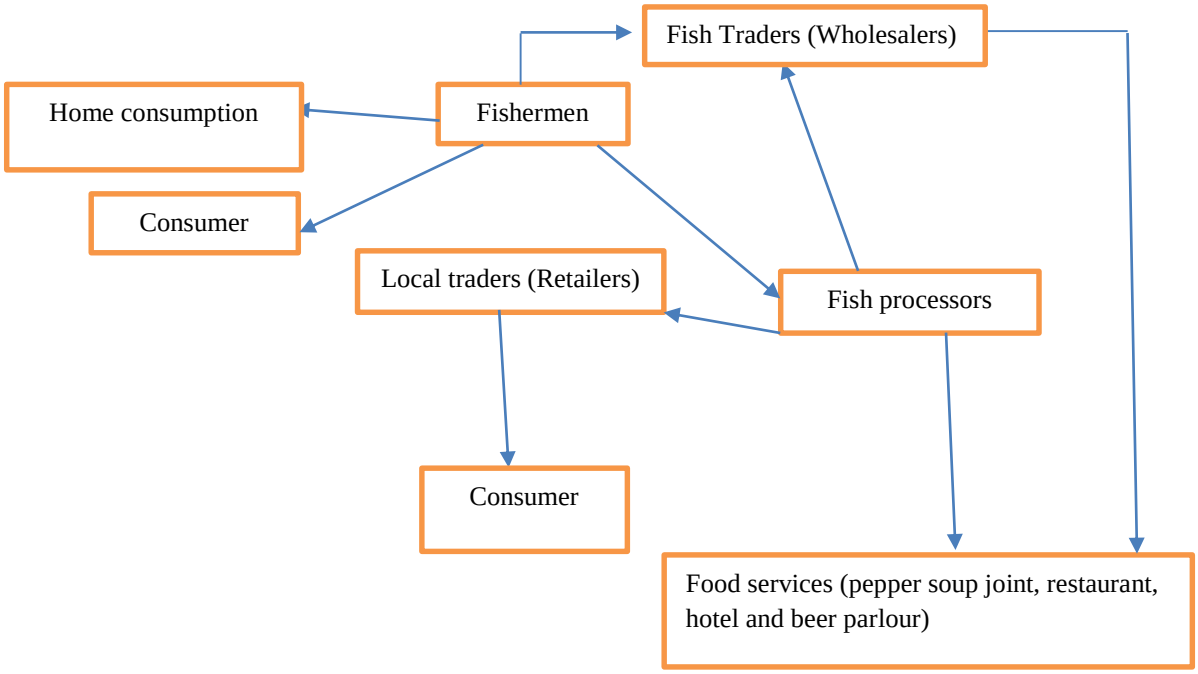

Figure III : Map of the functional value artisanal fisheries value chain in Ogun Waterside LGA, Nigeria
Source : Field Survey, 2013-2014

Cost and Return structure of Artisanal Fisheries Value Chain

The cost and return structure of the actors as showing in table iv revealed that the fishermen had an average fixed cost of N72,445, the processors had an average fixed cost of N2,306 while the fish traders had an average fixed cost of N8,735.07. The total variable cost for fishermen, processors and fish traders is N67,110.00, N73,317.5 and N47,843.05 respectively. The gross margin for the fishermen, fish processors and fish traders were N115,445, N71,011.5 and N39,107.8 respectively. The net margin analysis has shown that fishing operations by all actors in the study area is profitable. From the analysis of profitability indicators, the NROI for the fishermen, processors and traders was 0.31, 0.91and 0.54 respectively. This showing that for every Naira invested in the business a return of the ₦31.00, ₦91.00 and ₦54.00 respectively were obtained by fishermen, processors and traders respectively which further showed that there is relative high profit across the value chain. This is in line with the findings of [5,19,20] in their studies on profitability of fish farming and economics analysis of coastal fisheries value chain. Moreover, BCR for all the actors in the value chain was greater than 1 as revealed in table which implied that the fish value chain was profitable irrespective of the stage in the value.

Table IV :Average cost of operation and return of the players in the value chain

Items	Fishermen		Fish processors		Fish traders	
	Amount(₦)	%total cost	Amount(₦)	%total cost	Amount(₦)	%total cost
Fixed cost						
Dep Drum	-	-	580	28.49	-	-
Dep Fishing craft	16,375	22.60	-	-	-	-
Dep. Fishing Gear	7,500	10. 35	-	-	-	-
Dep. Wire gauze	-	-	250	12.28	-	-
Dep. OBE	48,250	66.60	-	-	-	-
Shop/stall	-	-	1,206	59.23	8,735.07	100
Dep. Paddle& pole	320	0.44	-	-	-	-
TFC	**72,445**		**2,036**		**8,735.07**	
Variable cost						
Salt	-	-	1,200	1.64	-	-
Knife	-	-	50	0.61	-	-
Styrofoam/bait	3,500	5. 22	-	-	-	-
Fuel	40,000	59.60	-	-	-	-
Lamp/touch	570	0.85	-	-	-	-
Kerosene	-	-	430.7	0.59	-	-
Oil	12,000	18.25	-	-	-	-
Food	7,500	11.18	-	-	-	-
Maintenance	2,240	3.34	-	-		
Packaging	-	-	2,750.5	3.75	3,500.00	7.32
Table	-	-	-	-	1,375.04	2.87
Labour	-	-	3,707.7	5.05	3,487.33	7.29
Firewood	-	-	8,670	11.87	-	-
Transportation	-	-	1,270.54	2.66	-	-
Basket	-	-	480.2	0.65	820.07	1.71
Tax	-	-	384.6	0.52	8.07	1.0
Miscellaneous	1,050	1.56	550.8	0.75	1,480.0	3.09
Fish	-	-	54,700	74.61	35,430	74.05
TVC	67,110.0		73,317.5		47,843.0	
Total cost	139,555.0		75,353.5		56,578.0	
Total revenue	255,500.0		142,500.0		108,500.0	
GM	115,445		71,011.5		39,107.8	
NFI	43,000		68,705.5		30,372.7	
NROI	0.31		0.91		0.54	
BCR	1.83		1.89		1.91	
NPM	0.17		0.48		0.28	
ESR	0.51		0.03		0.15	

Source: Field survey, 2013-2014

Major challenges of the actors

The table below shows the major challenges to artisanal fisheries sector as perceived by the players in the study areas. All actors considered inadequate credit facilities, seasonality of fish, inadequate social amenities and problem of water hyacinth as a very important challenge hindering the business.

Table lll: Major Challenges of the Actors

	Fishermen			Fish processors			Fish traders		
Variables	V.I	I	N.I	V.I	I	N.I	V.I	I	N.I
Inadequate credit facilities	100.0	0.0	0.0	100.0	0.0	0.0	100.0	0.0	0.0
Poor storage facilities	1.4	12.0	86.6	96.4	3.6	0.08	2.2	17.8	0.0
Seasonality of fish	98.8	1.2	0.0	90.4	6.4	3.2	60.0	20.0	20.0
Poor Transportation	0.0	6.9	93.1	85.4	14.6	0.0	90.4	6.9	2.78
High cost of fish input	100.0	0.0	0.0	0.0	0.0	100.0	0.0	0.0	100.0
Inadequate social amenities	100.0	0.0	0.0	74.9	25.1	0.0	71.1	22.2	6.9
Poor processing Facilities	0.0	0.0	100.0	100.0	0.0	0.0	100.0	0.0	0.0
Seasonality of catch	72.0	25.0	3.0	64.0	26.0	0.0	62.0	15.0	13.0
Growth of Hyacinth	65.0	22.0	13.0	42.0	45.0	13.0	63.0	12.0	25.0

VI= Very important, I= Important NI= Not Important

Source: Field survey, 2013-2014

Conclusion and Recommendation

Three main actors were found in the fish value chains of the artisanal fisheries in Ogun state. They are the fishermen, the traders and the fish processors. The actors, in the distribution of fish to the final consumers performed different functions such as buying and selling, processing, packaging, grading, transportation and storage which could be classified into physical, exchange and facilitating functions. The landing and marketing from the artisanal were for domestic only and the chain is quite short and simple. The only method of fish processing is smoking. Although the value chain was found to be profitable in the among actors, the problem of inadequate credit facilities, seasonality of fish, inadequate social amenities and water hyacinth as a very important challenge hindering the business, and this a cause for concern. The study recommends that

- ✓ Appropriate fisheries management techniques such as fish licensing, catch quota etc should be put in place to regulate overfishing
- ✓ Credit facilities should be made available by financial institutions and agencies to improve fish catch and value addition
- ✓ Adequate social amenities should be provided in the fishing communities to attract youth
- ✓ Good and storage facilities/cold rooms should be provided by government.
- ✓ Effort should be geared toward improving the structure of the value chain to make it to regional and international value chain..
- ✓ Government should help the artisanal fisher-folks in curtailing the growing hyacinth menace since this constitutes a major handicap to improved fish catch.

References

1. Food and Agriculture Organization, (2007): Food and Agriculture Organization of the United Nations. The state of World Fisheries and Aquacutlure 2006. FAO Fisheries Department, Rome Italy, 30pp.
2. Akpaniteaku, R. C., Weimin, M. and Xinhua, Y. (2005): Evaluation of the contribution of fisheries and aquaculture to food security in developing countries. Naga, Worldfish Center, 28 (1 & 2), pp. 28 – 32
3. Akinrotimi, O.A., Abu, O.M.G. and Aranyo, A.A.(2011): Environmental Friendly Aquaculture Key to Sustainable Fish Farming Development in Nigeria. Continental Journal Fisheries & Aquatic Science, 5 (2): 17 – 31.
4. Adekoya, B. B. and Miller, J. W. (2004): "Fish Cage Culture Potential in Nigeria". An Overview. National Agriculture Focus. Vol. 1 No. 5, Pp10. An Agricultural News Magazine Published by Foundation Consultants Limited, Abuja.
5. Adewuyi, S. A., Phillip, B. B., Ayinde, I. A. and Akerele, D.(2010): Analysis of Profitability of Fish Farming in Ogun State, Nigeria. Journal of Human Ecology, 31(3): 179 -184.
6. Mathew S. (2001): Small-scale Fisheries Perspectives on an Ecosystem-based Approach to Fisheries Management. Paper presented at the Reykjavik Conference on Responsible Fisheries in the Marine Ecosystem, Reykjavik, Iceland. Food and Agriculture Organisation, Rome.
7. Berkes F., Mahon R., Mcconney P.A., Pollnac R.B., Pomeroy R.S. (2001): Managing Small-scale Fisheries; Alternative Directions and Methods. International Development Research Centre, Ottawa, Canada.
8. Gnanadoss D.A.S., Aderounmu, A A. (1982): Artisanal and Inshore Fisheries Development in Nigeria: Status Paper on the FAO/UNDP Project NIR/77/001. In: Proceedings of the 2nd Annual Conference of the Fisheries Society of Nigeria (FISON).
9. Porter, M.E. (1980): Value Chain Analysis. Oxford Press Ltd, London.
10. Kaplinsky, R. and Morris, M. (2000): A Handbook for Value Chain Research, International Development Research Center (IDRC), Canada.
11. Jacinto, E.R. (2004): A Research Framework on Value Chain Analysis in Small-scale Fisheries. Tambuyog Development Center, Philippines.
12. Williams, S.B. (1987): Economic status of artisanal fishermen in Ondo and Ogun States, Nigeria.Ife J.Agric. 9(1&2):101-112.
13. Olubanjo, O.O., O. Oyebanjo, and A.O. Adebayo, (2002): A rapid assessment of women's participation in the coastal and inland capture fisheries of the Ogun Waterside Area, Nigeria. (pp. 148 – 151) In Ibitoye, O.A. (ed.) Rural environment and sustainable development in Nigeria. Proceedings of the National Conference on 'Rural Environmen and Sustainable Development in Nigeria'. Research Group for African Environment and Development/ Department of Geography and Planning Science, University of Ado Ekiti. Petoa Educational Publishers.
14. Williams S.B., Awoyomi B. (1998): Fish as a Prime Mover in the Economic Life of Women in a Fishing Community. In: Eide A., Vassdal P. (eds.): Proceedings of the 9th International Conference of the International Institute of Fisheries Economics and Trade. Tromsø, Norway.
15. Mbenga C. A. (1999): Informal power. Gender, globalisation and fisheries workshop. 6-12 May, 2000. St. John's NF. 16.
16. Tettey, E.O. and Klousseh, K. (1992): Transport of cured fish from Ghana to Cotonou Trade formalities and constrain. Abdiyah Regional Programme to improve post-harvest utilization of artisanal fish catch in West African. Bonga fish Tech. Report Series.1: 92-97.

17. Williams S.B. (2002): Making Each and every African Fisher Count: Women Do Fish. In: Williams M.J. et al. (eds.): Global Symposium on Women in Fisheries. WorldFish Center, Manila.
18. Biswanger H. (1989): Brazilian Policies that Encourage Deforestation in the Amazon. Environment Development Working Paper 16. The World Bank, Washington, D.C.
19. Eboh E.C. (1995): Poverty, Population Growth and Environmental Degradation: The Vicious Cycle of Human Misery. In: Eboh et al (eds.): Rural Development in Nigeria: Concepts, Processes and Prospects. Auto-Century Publishing Co., Enugu, Nigeria.
20. Olaoye O.J, Odebiyi O.C, Omoyinmi G.A.K, Akintayo I.A, Udolisa R.E.K, Ezeri G.N.O, Hundeyin-Agoro O.C (2011): The Socio-Economic Analysis of Small Scale Fish Farmers in Lagos State Fish Farm Estate, Ikorodu, Nigeria: An Appraisal Proceedings 26th Annual Conference and Fair of the Fisheries Society of Nigeria (FISON), E. J. Ansa, H. A. Fashina-Bombata and P. E. Ndimele (Eds).
21. Odebiyi O.C. (2010): Impact of microfinance bank loan on aquaculture development in Ogun state, Nigeria. A project report submitted to the Department of Aquaculture and Fisheries management, Federal University of Agriculture Abeokuta.