

Full Length Research Paper

Economic analysis of coastal fisheries value chain development in Ogun Waterside Local Government Area, Ogun State, Nigeria

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Fish and fish products pass through a number of stages at which value is added before reaching the consumer, hence, the profitability of coastal fisheries value chain (CFVC) of Ogun Waterside Local Government Area was studied to identify opportunities for growth in the CFVC with emphasis on determining the potential for generating additional livelihoods for the poor and low income groups. A total of one hundred and seventy-six respondents comprising 72 fishermen, 64 fish processors and 40 fish-marketers were purposively selected using simple random sampling. Data were collected using a structured questionnaire and analyzed using descriptive statistics, gross margin analysis and profitability indicators. The result of the survey identified 3 major marketing nodes along the coastal area which are the fishermen, fish processors and the fish-marketers. The study revealed that the three nodes of the CFVC were profitable with a gross margin of ₦137,680.35, ₦49,719.03 and ₦48,985.11 respectively. The highest monthly Net Income of ₦39,261.11 and Net Return on Investment of 0.94 were recorded at the fish-marketers' stage of the CFVC, while the fishermen and fish processors had ₦16,482.95 (0.12) and ₦28,949.13 (0.56) respectively. Across the CFVC, poor transportation network, high cost of fishing inputs, inadequate funding and poor storage facilities were major constraints to CFVC development. The study concluded that the marketing stage of the CFVC was the most profitable compared to the other stages and fish smoking was the only form of value addition being carried out in the CFVC.

Key words: Economics, value, chain, coastal, fish-marketers.

INTRODUCTION

Hunger, malnutrition, and poor health are widespread and serious development challenges hindering economic development in Nigeria. These can only be overcome by providing the ever rising human population with better employment opportunities to improve their livelihoods (Akinrotimi et al., 2007) and also adequate nutrition to reduce the nutritional deficiencies prevalent in Nigeria.

The Nigerian fishery industry plays a significant role in the development of this country by providing livelihood for

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more than 50 million people in terms of employment, income generation and provision of principal protein to the diet (Akpaniteaku et al., 2005). Each year, there are an additional 80-90 million people to feed, most of them in developing countries, the most reliable source of protein for many of them is fish (Nzeka, 2003). However, irrespective of the great opportunities embedded in capturing fisheries in Nigeria, a lot of the fish resources are being discarded on a daily basis due to an unorganized or uncoordinated distribution channel (Aihonsu and Shittu, 2008). Analyzing fisheries value chain provides an insight into various employment opportunities that remain untapped in the fisheries sector (Kaplinsky and Morris, 2000).

Fish value chains in Nigeria are not yet developed to meet international market requirements as limited value addition (if any) is done in the industry, with the result that market for fish and fish products are limited to domestic markets (Investopedia, 2011). Over the past decade, development practitioners have increasingly shifted their attention from farming systems to targeting agricultural value chains and fisheries by extension, to improve smallholder production and participation in markets (Rota and Sperandini, 2010). This is because small-scale producers are often unable to increase production by adopting productivity-enhancing technologies unless the value chains for their products are sufficiently developed and dynamic (Kaplinsky and Morris, 2000). In addition to challenges highlighted above, fish is an extremely perishable foodstuff, and its spoilage begins almost as soon as it dies except it is preserved or processed into other forms (De-Roever, 2000). It is against this background that this project aims to analyze the fish value chain, determine the cost benefit of value addition and evaluate the most profitable node (stage) of the chain with a view to proffer recommendation on strategies to adopt for fish safety and efficient fish distribution in the coastal area of Ogun state, Nigeria.

Objectives of the study

1. Identify and describe the socio-economic characteristics of the actors in the fish value chain;
2. Identify and analyze the structure of the fresh and processed fish value chains;
3. Estimate the profit margin along the identified fish value chain;
4. Describe the constraints that are hindering the development of value addition in the study area.

MATERIALS AND METHODS

The description of the study area

The geographical location chosen for this study is the Ogun waterside area of Ogun State, 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 study area is closely associated with other maritime states of South-western Nigeria. 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%, with the Ikaes, Ilajes, Itsekiris and Urhobos making up the remaining 30%. It has an area of 1,000 km² and a population of 72,935 at the 2006 census. This area is also blessed with a large expanse of fertile land (soil) rich in organic matter, well drained and deep which makes it support cultivation of various crops especially plantation crops such as oil palm. The choice of the local government is due to 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 (Figure 1).

Sampling size and techniques

A purposive sampling technique was used in the selection of four (Igbosere, JK Camp, Olosumeta and Elefon) coastal fishing communities from the 23 fishing villages of Ogun State coastal area based on their intensity of fishing activities. Simple random sampling technique was employed in the selection of 30% of the fishermen and fish processors in the four selected communities who were interviewed to give a total of 72 and 64 fishermen and fish processors respectively. A total of 40 fish marketers were purposively selected at the central market arena to give a total of 176 respondents as illustrated in Table 1. Lastly, a focus group discussion was carried out with the major actors and stakeholders of the coastal fisheries value chain to complement field data.

Analytical procedures

Combinations of statistical, budgetary and parametric analyses were used to analyze the obtained data. These include descriptive analysis, inferential statistics and

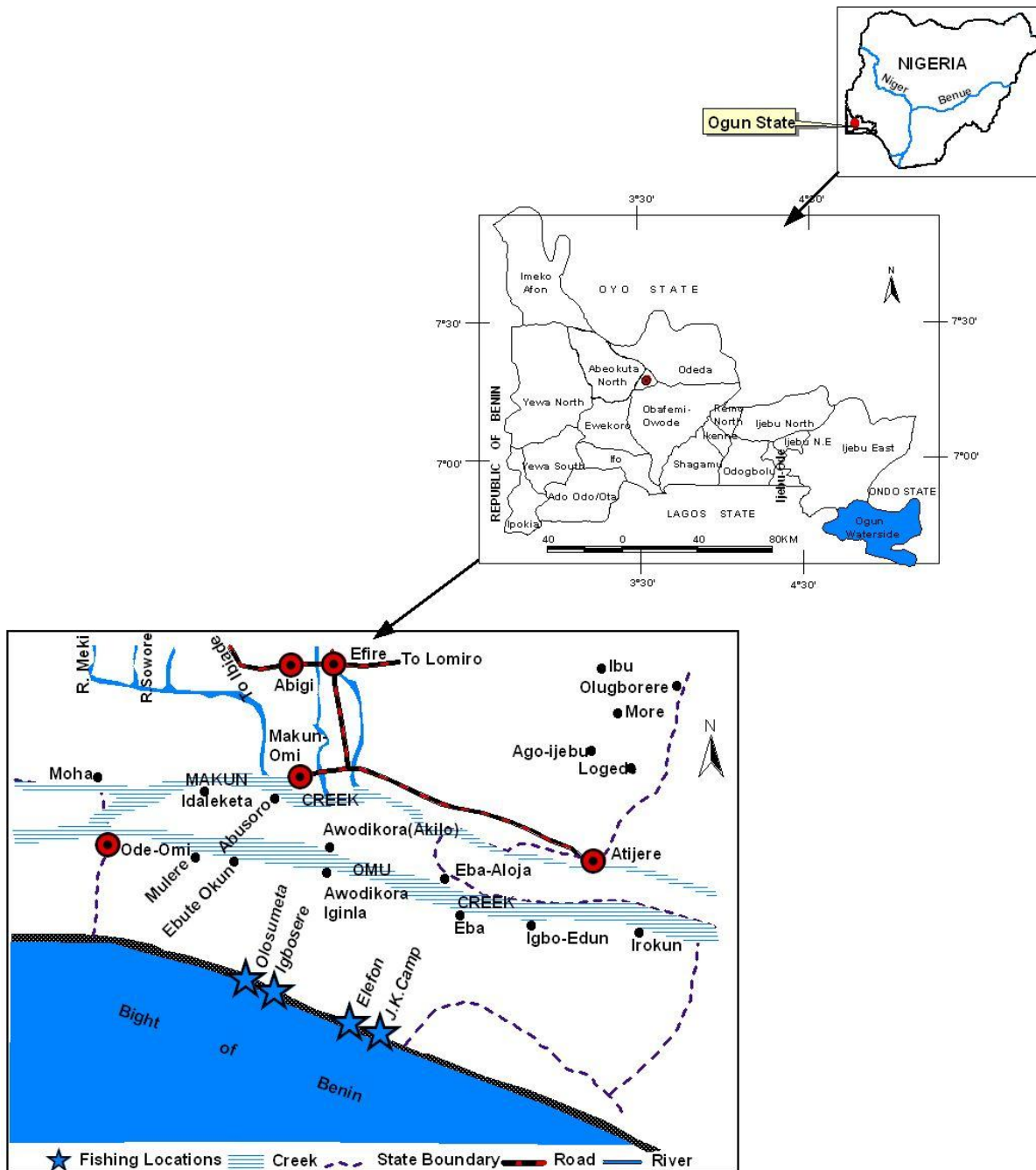


Figure 1. A map of the study area.

profitability indicators.

Descriptive statistical tools

Frequencies, tables, pie-charts, bar charts and percentages 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

The budgetary technique was used to determine the gross margin income at each stage of the chain. The model used in estimating the gross margin is:

Table 1. Study size and location.

Fishing communities	Chain actors			Total
	Fishermen	Fish Processors	Fish-marketers	
Igbosere	20	22		52
Elefon	12	16		38
Olosumeta	23	14	40	47
JK Camp	17	12		39
Total	72	64	40	176

Source: Field survey, 2012-2103.

- GMI = $\sum TR - \sum TVC$ ----- (i)
- TR = $P_y \cdot Y_i$ ----- (ii)
- TVC = $P_x \cdot X$ ----- (iii)
- TC = TVC + TFC ----- (iv)
- NFI = GMI – TFC ----- (v)
- NROI = NFI/TC ----- (vi)
- NPM = NFI/TR ----- (vii)
- ESR = TFC/TC ----- (viii)
- BCR = TR/TC ----- (ix)

Where,

- GMI = Gross Margin Income (₦)
- TR = Total Revenue (₦)
- TVC = Total Variable Cost (₦)
- TC = Total Cost (₦)
- NROI = Net Return on Investment (₦)
- P_y = Unit Price of Output Produced (₦) (Is there only one type of fish or is P average the unit price?)
- Y = Quantity of Output (Hand) (what does “Hand” mean? a special unit? If it is, it should be explained)
- P_x = Unit Price of Variable input used (₦) (input i?) (P_i)?
- X_i = Quantity of Variable Input (Kg). (are all input have same unit Kg?)
- NFI = Net Farm Income (₦)
- NPM = Net Profit Margin (₦)
- ESR = Expense Structure Ratio (%)
- BCR = Benefit Cost Ratio (%)

Depreciation

Depreciation values of respondents fixed items were used for the calculation. For this analysis, straight line

method (SLM) which assumed salvage value of zero was used. The formula is specified as:

$$D_s = (OC - SV) / L$$

Where:

- D_s = Annual depreciation
- OC = Original cost
- SV = Salvage value
- L = Expected or useful life (year).

RESULTS

Socio-economic variables of the value chain actors in the study area

The socio-demographic variables of the respondents are presented in Table 2. Most (85.8%) of the sampled fish-marketers were female, while all the sampled fishermen and fish processors were male and female respectively. Many (43.1%) of the fishermen were within the age bracket of 41 and 50 years as against 46.8% of the fish processors and 50.6% of the fish marketers who fell within the age range of 21 to 30 years and 41 to 40 years of age respectively. A larger percentage of the fishermen, fish processors and fish marketers (91.7, 57.8 and 70.4%) were married with an average household size of 9, 10 and 6 persons respectively. 43.1 and 31.2% of the fishermen and fish processors had no form of education, while 66.0% of the fish marketers had secondary school education; most of the respondents had a great number of experience in their occupation with an average year of experience of 23, 21 and 15 years respectively for the fishermen, fish processors and fish-marketers respectively.

Structure of the fresh and processed fish business in the Ogun Waterside coastal fish value chain

The structure of fresh and processed fish in the study area as observed during survey is presented in Table 3.

Table 2. Socio-economic variables of the chain actors in the fish value chain.

Variables	Value chain actors					
	Fishermen		Fish Processors		Fish-marketers	
	Freq	%	Freq	%	Freq	%
Gender						
Male	72	100.0	0	0.0	6	14.2
Female	0	0.0	64	100.0	39	85.8
Total	72	100.0	64	100.0	45	100.0
Age						
21-30	14	19.3	30	46.8	12	26.4
31-40	19	26.4	18	28.3	23	50.6
41-50	31	43.1	16	24.9	6	13.2
>50	8	11.2	0	0.0	4	8.8
Mean \pm S.E	43.79 \pm 0.57		39.05 \pm 0.58		36.73 \pm 0.65	
Total	72	100.0	64	100.0	45	100.0
Marital status						
Single	6	8.3	11	17.16	4	8.8
Married	66	91.7	37	57.79	32	70.4
Divorced	0	0.0	10	15.6	7	15.4
Widow	0	0.0	6	9.36	2	4.4
Total	72	100.0	64	100.0	45	100.0
Household Size						
1-5	0	0.0	0	0.0	13	28.6
6-10	42	58.4	51	80.0	32	70.4
11-15	30	41.7	13	20.0	0	0.0
Mean \pm SD	9.04 \pm 0.12		10.02 \pm 0.05		6.08 \pm 0.12	
Total	72	100.0	64	100.0	45	100.0
Education Level						
No formal education	31	43.1	20	31.2	9	19.8
Primary Education	26	36.14	32	49.9	6	13.2
Secondary Education	15	20.85	12	18.72	30	66.0
Tertiary Education	0	0.0	0	0.0	0	0.0
Total	72	100.0	64	100.0	45	100.0
Years of experience						
1-10	8	11.1	6	9.4	4	8.8
11-20	19	26.41	48	74.9	17	37.4
21-30	31	43.1	8	12.5	15	33.0
>30	14	19.5	2	3.1	9	19.8
Mean \pm SD	22.7 \pm 0.61		20.95 \pm 0.54		15.3 \pm 0.63	
Total	72	100.0	64	100.0	45	100.0

Majority (65.3, 60.8 and 68.2%) of the fishermen, fish processors and fish-marketers targeted species from the clupeid family, that is, *Sardinella mardenerensis* (Sawa) of which 94.5% of the fishermen preferred the fish possibly based on its availability; while 62.4 and 74.8% of the

processors and fish-marketers respectively processed and sold it based on its profitability and high demand respectively. Majority (72.2, 56.2 and 61.6%) of the actors in the chain respectively minimized spoilage of the fish by disposing it cheaply to the consumers or even on

Table 3. Percentage distribution of the structure of fish activities in the value chain.

Variable	Fishermen		Fish Processors		Fish-marketers	
	Freq	%	Freq	%	Freq	%
Type of fishery						
<i>Sardinella maderensis</i> (Sawa)	47	65.3	39	60.8	31	68.2
<i>Pseudotolithus typus</i> (Alapo)	18	25.0	22	34.3	10	22.0
Others	7	9.7	3	4.7	4	8.8
Total	72	100.0	64	100.0	45	100.0
Reasons for preference						
Consumers' Acceptability	0	0.0	10	15.6	2	4.4
Availability	68	94.5	14	21.9	9	19.8
Profitability & High Demand	4	5.6	40	62.4	34	74.8
Total	72	100.0	64	100.0	45	100.0
Spoilage minimization						
Harvesting/buying in batches	7	9.7	18	28.1	12	26.4
Disposing fish at a reduced cost	52	72.2	36	56.2	28	61.6
Re-smoking	13	18.1	10	15.6	5	11.0
Total	72	100.0	64	100.0	45	100.0
Quantity Purchase/market day (Hand)						
1-10	0	0.0	24	37.4	27	59.4
11-20	55	76.5	34	53.0	18	39.6
>20	17	23.6	6	9.4	0	0.0
Mean \pm SE	16 \pm 0.712		13 \pm 0.501		10 \pm 0.912	
Total	72	100.0	64	100.0	45	100.0
Cost of purchase/trip (₦)						
1000-5000	40	55.5	16	25.1	0	0
6000-10000	24	33.4	48	74.9	30	66.5
11000-15000	8	11.1	0	0.0	15	33.4
Mean \pm SE	3500 \pm 0.120		7000 \pm 0.219		9000 \pm 0.742	
Total	72	100.0	64	100.0	45	100.0
Value of sales (₦)						
5000-7000	47	65.3	8	12.5	9	19.8
8000-10000	25	34.8	30	46.8	23	50.6
>10000	0	0.0	26	40.6	13	28.6
Mean \pm SE	4500 \pm 0.500		8000 \pm 0.219		10000 \pm 0.742	
Total	72	100.0	64	100.0	45	100.0
Average Income (₦)						
5000-10000	5	6.95	11	17.2	14	30.8
11000-15000	6	8.34	26	40.6	19	41.8
16000-20000	46	63.9	16	25.0	8	17.6
>20,000	15	20.9	11	17.2	4	8.8
Mean	16,210 \pm 0.13		28,780 \pm 0.51		39,105 \pm 0.32	
Total	72	100.0	64	100.0	45	100.0
Problem of sales						
Transportation	46	63.9	28	43.7	32	70.4

Table 3. Contd.

Postharvest wastage	16	22.2	21	32.8	13	28.6
Low demand	10	13.9	15	23.4	0	0.0
Total	72	100.0	64	100.0	45	100.0

Source: Field survey, 2013.

credit. A larger percentage (76.5, 53.0 and 39.6%) of the respondents respectively purchased or harvested fish for sale between 11 and 20 hands per market day, whereas only 20.9, 17.2 and 8.8% of fishermen, fish processors and fish-marketers respectively realized an average income of more than ₦20,000 per market day. However, 63.9, 54.7 and 70.4% of the sampled fishermen, fish processors and fish-marketers revealed that transportation was the major constraint to sales.

Cost and return analysis

The cost and return analysis of actors in the Ogun Waterside fish value chain is shown in Table 4. The chain actors incurred several costs in the course of the value addition in the form of variable and fixed costs of production. The fixed cost items were made up of depreciation values of Out Board Engine (OBE), fishing gear, fishing craft, paddle and pole among others. The total cost of production at the three stages of the chain was ₦134,782.40, ₦50,915.50 and ₦51,304.79 respectively. The depreciation cost of OBE (58.1%) constituted over half of the total cost incurred by fisherman, while only 0.34% was expended on bowls at this stage of the chain. Fish processors and fish-marketers expended 37.04 and 51.37% of their total costs on the purchase of fish, while 0.19 and 0.21% respectively was incurred on value addition by these two chain actors respectively.

Constraints to value chain development in the study area

Over 79.2 and 62.4% of the fisherman and fish processors respectively reported poor transportation network to their coastal communities as a very severe constraint to the development of the fish value chain in the coastal area of Ogun State, Nigeria, while 82.2% of the middlemen regarded poor storage facilities as a major and very severe constraint to the fish value chain development as indicated in Table 5.

DISCUSSION

This research project evaluated the fish value chain in the coastal area of Ogun State, Nigeria. The study identified 3 major marketing nodes along the coastal area,

including: fishermen, fish processors and the fish-marketers. All fishermen (100%) and all fish processors (100%) in the Ogun Waterside coastal fish value were male and female respectively. This could be attributed to strenuous and tasking nature of the typical fisherman's work which the male gender could possibly handle better than the weaker female gender. These findings were in line with the findings of Olubanjo et al. (2007), Olawumi et al. (2010) and Olaoye and Odebiyi (2011) who reported that business was gender biased. Many (43.1, 46.8 and 50.6%) of the fishermen, fish processors and fish-marketers interviewed were between 21 and 50 years of age, a highly productive and active age when actors could undertake strenuous task. This is in line with the findings of Bello (2000) and George et al. (2010) that age had a positive correlation with agricultural productivity.

In rural communities, marriage is a respected and prestigious institution that bestows social status and recognition on people. The marital status of respondents as presented in Table 2 indicated that 91.7, 57.7 and 70.4% of the respondents respectively were married, implying that most of the women involved in the fish value chain in the study area were married, suggesting that marriage is a cherished value in the study area, with a resultant increase in their household size. This corroborates with the findings of Alfred and Fagbenro (2006) and Odulate et al. (2011) who reported higher percentage of married women in the coastal communities of Ondo and Ogun States, Nigeria respectively. Majority (58.4% of fishermen, 80.0% of processors and 33.0% of fish-marketers) of the actors in the Ogun Waterside coastal fish value chain had household sizes ranging between 6 and 10 persons. This relatively large household size may decrease the number of labour needed at different nodes along the coastal fish value chain. These results are similar to the findings of Fabusoro et al. (2007) who reported that average household size in Africa was about 9 persons.

Education is an important factor which can influence fish production and determine level of awareness on the rate of return on value addition in fish. Results from this study showed that 43.1, 31.2 and 66.0% of fishermen, fish processors and fish-marketers respectively had no form of education at all; while 36.14% (fishermen), 49.9% (processors) and 13.2% (fish-marketers) respectively had a maximum of primary school education. This confirmed

Table 4. Cost and return analysis of the chain actors in the Ogun Waterside coastal fish value chain.

Items	Fishermen		Fish processors		Fish-marketers	
	Amount (₦)	% of TC	Amount (₦)	% of TC	Amount (₦)	%of TC
Fixed cost						
Dep. Smoking kiln	-	-	12050.0	23.67	1833.3	3.57
Dep. Fishing Gear	9879.6	7.33	-	-	-	-
Dep. Fishing Craft	32,166.2	23.87	-	-	-	-
Dep. Wire gauze	-	-	3227.3	6.34	-	-
Dep. OBE	78,305.9	58.10	-	-	-	-
Shop/stall	-	-	5492.6	10.79	7890.7	15.38
Dep. Paddle& pole	845.7	0.63	-	-	-	-
TFC	121,197.40	89.92	20769.90	40.79	9724.0	18.95
Variable cost						
Bowl	461.80	0.34	421.55	0.83	-	-
Knife	-	-	255.9	0.50	-	-
Styrofoam	2790.8	2.07	-	-	-	-
Fuel	4872.3	3.61	-	-	-	-
Lamp/torch	790.8	0.59	745.6	1.46	863.7	1.68
Kerosene	1,340.8	0.99	525.0	1.03	256.9	0.50
Packaging	-	-	-	-	2567.9	5.01
Fire wood	-	-	6798.2	13.35	2150.9	4.19
Labour	2050.50	1.53	545.5	1.07	3512.8	6.85
Value addition	-	-	98.6	0.19	105.89	0.21
Transportation	-	-	975.4	1.92	4389.2	8.56
Basket	-	-	620.8	1.22	780.0	1.52
Tax	-	-	60.5	0.13	257.9	0.51
Fish	-	-	18,863	37.04	26355.6	51.37
Miscellaneous	1278.0	0.95	-	-	-	-
Palm kernel shaft	-	-	235.5	0.46	340.0	0.66
TVC	13,585.0	10.08	30145.6	59.17	41,580.79	81.05
Total cost	134,782.40	100.0	50915.5	100.0	51,304.79	
Total revenue	151,265.35		79,864.63		90,565.90	
GMI	137,680.35		49,719.03		48,985.11	
NFI	16,482.95		28,949.13		39,261.11	
NROI	0.12		0.56		0.94	
BCR	1.12:1		1.56:1		1.94:1	
NPM	0.11		0.36		0.43	
ESR	0.89		0.41		0.18	

Source: Field Survey, 2013.

the general opinion that most fisherfolks were illiterate or semi-illiterates, most of whom have dropped out of the formal school system (Olubanjo et al., 2007; Alfred et al., 2008).

The structure of the fresh and processed fish value chain along the coastal area of Ogun Waterside LGA, Nigeria

Over 60% of all the value chain actors agreed that S.

marderensis (Sawa) was the most preferred fish species because of its availability for fishermen (94.5%), processors (21.9%) and fish-marketers (19.8%). Most of the fishermen (72.2%), fish processors (56.2%) and fish-marketers (61.6%) normally reduced spoilage by selling off their fish products at reduced price or even on credit to avoid the stress of transporting the fish back home and re-smoking which would add to their overall cost of production.

Almost all the fish processors helped to preserve the

Table 5. Constraints to the coastal area fish value chain development.

Variables	Fishermen			Fish processors			Middlemen		
	Very Severe	Severe	Not Severe	Very Severe	Severe	Not Severe	Very Severe	Severe	Not Severe
Inadequate fund	90.4	6.9	2.78	56.2	31.2	21.6	60.0	40.0	0.0
Poor storage facilities				0.0	22.0	78.0	82.2	17.8	0.0
Social amenities	98.6	1.4	0.0	74.9	25.1	0.0	8.9	20.0	71.1
High cost of fish input	11.1	88.9	0.0	12.5	37.4	50.0	71.1	20	8.9
Seasonality of fish	25.0	31.9	43.1	31.2	56.2	21.6	40.0	60.0	0.0
Poor transportation network	79.2	19.4	1.4	62.4	37.6	0.0	8.9	20.0	71.1
Breakage/spoilage of fish	2.8	69.4	27.8	18.7	65.5	15.6	0.0	100.0	0.0
Unpredictable weather	12.5	8.3	79.2	0.0	0.0	0.0	0.0	0.0	0.0
Trawlers' threat	62.5	30.6	6.9	0.0	0.0	0.0	0.0	0.0	0.0

shelf life of fish by smoking which was the only form of value addition mostly accepted by the chain actors. This is in line with the findings of Odulate (2000) who observed that smoked fish products commanded higher price than fresh fish in the study area. This could be attributed to lack of other processing or preservation facilities within the study area. Most of the marketing took place at every nine days interval in a common market arena known as "Makun Omi" near Abigi town of the coastal area.

Profit margin analysis

In terms of capitalization, the average investment of an artisanal fisherman in the study area was 89.92% of the total cost of production which included depreciation values of fishing gear, fishing craft and engines among others; while the percentage of total fixed cost for the fish processors and fish-marketers were 40.79 and 18.95% respectively.

Gross margin analysis was used to assess the profitability of value added activities in the identified fish value chain. Gross margins were computed for fishermen, processors and fish-marketers. The results showed that an average fisherman obtained a margin of about ₦16,482 monthly which represented 10.9% of the total revenue. This translated to an average of ₦549.5 per day, implying that a larger percentage of the fishermen were still living close to an average of ₦500 per day.

The budgetary analysis for the fish processors and fish-marketers revealed a marketing margin of ₦28,949.13 and ₦39,261.11 monthly, which translated to a total of 36.25 and 43.35% of their total incomes respectively.

Low marketing margins at the fisherman level compared to the other stages in the value chain suggested a lower competition at the processors and fish-marketers' stages, a point corroborated by Kalanda-

Sabola (2007). The survey also revealed that the proportion of consumable products for fishermen (10.08%), processors (59.17%) and fish-marketers (81.05%) was higher than that of the non-consumables at 89.9, 40.79 and 18.95% respectively. The rate of return on investment of 0.11, 0.36 and 0.43 implied that for every Naira invested in a fish value chain enterprise by the three chain actors respectively, a return of ₦11.00, ₦36.00 and ₦43.00 respectively were obtained by fishermen, processors and fish-marketers, probably as a result of high investment cost to start the fish business. This implied that there was a considerably high level of profitability across the chain nodes in the study area. This result is consistent with the findings of Ashaolu et al. (2006), Adewuyi et al (2010) and Olaoye et al., (2011) from their studies on profitability of fish farming and artisanal fisherfolks. The benefit/cost ratio (BCR) of 1.12:1 (fishermen), 1.56:1 (processors) and 1.94:1 (fish-marketers) showed that fish value chain was profitable irrespective of the constraints militating against its development at the three stages of the chain respectively. The expense structure ratio of 0.89, 0.41 and 0.18 for the three categories of fisherfolks implied that about 89, 41 and 18% of the total cost of production was made up of the fixed cost; while 0.11, 0.36 and 0.43 values for the net profit margin implied profit margins of 11, 36 and 43% respectively for the fishermen, processors and fish-marketers respectively per month.

Conclusion

The coastal fisheries value chain analysis revealed that the fishermen and fish processors node of the chain were gender specific as all the respondents were found to be male and female respectively. There are virtually no exports of captured fish in the study area, and so the value-chain was short and simple compared to some value chains in other countries. A larger percentage of

the respondents had primary level of education which attests to the general opinion that most farmers or fisherfolks are illiterates or semi-illiterates; this is a major setback to the fish value chain development in the coastal area. The structure of the value chain revealed that the most preferred species of fish was found to be the clupeid (*S. marderensis*) which is one of the economically important species in Nigeria. Lack of adequate road network hindered other means of value addition to the fish industry; hence most of the seafood products are therefore sold in smoked dried form. One of the biggest challenges faced by the seafood sector in the coastal fishing community is value addition. A deprivation of value addition facilities in the study area is a major setback to the fish value chain industry.

RECOMMENDATIONS

The study recommends that there is need to develop a comprehensive and effective road networking in the study area as water is the only means of transportation which is a major constraint to the development of the coastal fish value chain. It should be noted that the development of the coastal fish value chain of Ogun Waterside LGA would encourage youth involvement and participation in the value chain. Hence, sophisticated storage facilities/cold rooms should be provided by government as well as cooperative societies for the storage of unsold fish.

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