Socio-Economic and Profitability of Fisheries Enterprises in Kano State, Nigeria

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Abstract: **The study focused on the analysis of value chain- Addition of freshwater fisheries in Kano State, Nigeria. The socio-economic characteristics of the stake holders along the fisheries enterprises and the marketing channel of fresh and smoked fish in the study area were determined Gross margin analysis to assess the profitability of the business was also determined. The constraints were also described and the factors that influence consumer preferences in the study area were identified. Primary data were collected using questionnaire. A total of 30 fishermen, 30 processors and 20 consumers; were interviewed. Descriptive statistics gross margin were used to analyze the data collected. Fishing was found to be male dominated (52.3%), while processing was found to be female dominated (47.5%). The constraints of the fishermen were dwindling of the dam, high cost of fishing goes, deformation and inadequate capital. The processors have been constrained, inadequate credit facility, inadequate processing facilities and poor sale and bad roads. Other constraints experienced by consumers include high cost of fish, fish fin problems, deterioration of fish and poor sanitary condition. In conclusion, profitability was ascertained too good for both fishermen and processors. Therefore Government should provide loan scheme for the proper increase and boasting of fisher men and processors activities.**

Keywords: **Socio-economics, Fishermen, Fish Processor, Fish Consumers, Constraints.**

1. INTRODUCTION

Fish is an important source of protein to the teeming population in Nigeria. Fish could be regarded as one of the major sources of animal protein in the country. According to Adekoya (2004), Fish represents about 55% of the protein sources intake of Nigerians. A large population of Nigerians is fish consumers with a demand estimated at about 1.4 million metric tons per annum.With a projected fish demand of 1.755 million metric tons in Nigeria (assuming a annual per capital fish consumption of 12.5kg and human population of 140.45 million, in the year 2000) and a total annual domestic production figure of less than 450,000metric tons, Nigeria has a fish supply deficit of about one million tons (Tobor, 1991). However, a demand supply gap of at least 0.7 million metric tons exists annually with imports making up the shortfall at a cost of about 2.0 million US dollars every five years (Jim, 2004).Domestic fish production of about 500, 000 metric tons is supplied by artisanal fisher folks (estimated at about 85% despite over fishing in many water bodies across the country). Fish farmers (1%) and industrial capture fisheries (14%) (FDF,2005). Fish is a popular, highly nutritious aquatic vertebra, which serves as a delicacy to most of the sub-Sahara Africa providing over 18% of total animals protein intake worldwide, with share as high as 40-60% in some West African States(FAO, 2002). Approximately 200 million Africans rely on fish as an important part of their diet. Ten million houses directly derive income from fish production, such as processing or trade. Yet the enormous potentials of fisheries to help feed and improve the nutritional status of the rapidly increasing population of Africa is greatly under-realized and precious aquatic resources are being degraded (World Fish Center, 2008).Fish is the cheapest animal's protein source in Nigeria, and smoked fish in particular has the potential to solve the pervasive protein shortage owing to its relative affordability compared with fresh fish. Boosting smoked fish consumption will entails retail price reduction, which is achievable only if the market for smoked fish operates efficiently (Taiwo, 2008).

Aim and Objectives of the Study:

In line with the study, the research broad objective is to analyze the socio economic and profitability of fisheries enterprises in Kano State, Nigeria. The specific objectives are to;

(i)   Describe the socio-economic characteristics of the stakeholders.

(ii)   Estimate the profit level of stakeholders along the fisheries enterprises.

(iii)   Determine the consumer preferences to fish in the study area.

(iv)   Identify the major constraints faced by the stakeholders in the study area.

2.   METHODOLOGY

Description of the Study Area:

The study was carried out in Kano State; where freshwater fishes have a very old history due to availability of numerous freshwater bodies in the State. The state lies on latitude 10°33´N to 12°37´N and Longitude 7°40´E to 9°29´E. It is within Sudan Savannah zone. The total land area of the State is 20,709 square kilometer. The mean daily maximum and minimum temperatures are 33.1°C and 15.85°C, respectively. Kano State is bordered to the north and northwest by Katsina State, to the east and northeast by Jigawa State, to the south by Bauchi State and to the southwest by Kaduna State. According to official Gazettes of the Federal Republic of Nigeria (2007), the State had a population of Nine million, Three hundred and Eighty Three thousand Six hundred and Eighty two (9,383,682) inhabitants, with an annual growth rate of 3.3% who are mainly Hausa and Fulani by tribe (NPC, 2006). Agriculture is the major employment of labor in the State with many citizens involved in farming, fishing and marketing of aquatic resources such as fish, frogs either dried, smoked or other fish by-products.

Major crops grown in the State include Millet, Sorghum, Cowpea, Corn, Wheat, Cotton, Gum Arabic, Groundnut and Rice, fish and fish products available in the State, while rearing of animals like cattle, horses, goat and sheep are as well prominent (Rim, 1992).The State has quite a large number of fish markets up to sixteen. These include rural and urban markets where smoked and dry fishes are assembled. Most of the markets operate weekly or twice a week with the exception of city markets, which operate on daily basis. Next to farming are non-farm activities such as building, construction works, and so on. About twenty percent (20%) of the people engage in these activities to either supplement their income from farming, fishing or those from the privates or public sectors.

Sampling Techniques:

The sampling frame for the data collection comprised of fishermen, processors, and consumers, in the three selected zones of Kano State in accordance with the existing Agricultural Development programme (ADPs) Zones in the State.

Multistage sampling technique was used for sampling the respondents in the study area. The first stage involved purposive selection of one local government area from each zone based on relative abundance of hydrological features. On that basis, Bebeji Local Government Area was selected from Zone I (Tiga Dam), Kunchi Local Government Area was selected from Zone II (Ghari Dam) and Gwale Local Government Area was selected from Zone III (Mai Allo Dam).

Sampling Size:

The second stage, involve simple random selection of respondents from the three selected landing sites. However, 30 each of fishermen, processors (Women) and 20 consumers were used. The distribution of these respondents within the purposively selected study sites was based on the proportion of the respondents in the site. A total of eighty (80) respondents were covered by the survey.

Study Location and Distribution of Respondents in each of the selected Zone

ADPs	Location / Actors Fisher	Hydrological Features	Sample Size
I	Bebeji / Rano L.G. (Fisherman).	Tiga Dam	30
II	Kunchi L.G (Processors).	Ghari Dam	30
III	Gwale L.G. (Consumers).	Mai Allo Dam	20
	Total		**80**

Sources: Field Survey, 2014.

Methods of data collection:

Primary data were used for this study. The data were collected with the aid of structured questionnaire administered to the randomly selected respondents. The data on the socio-economic characteristics of the respondents, marketing costs returns, processing cost and data on fishing operations; as well as constraints militating against fish marketing in the study area, were collected. Structured questionnaire was prepared and used for collections of the primary data were tested for its reliability. The questionnaire will contained section (A) Fisherman, Section (B) Processors and Section (C) Consumers. Eighty (80) questionnaires were distributed to the targeted respondents. Data collection activities during these days include very early morning visits to landing sites to interview fishermen. Processors and Consumers were interviewed at different convenient time of the respondent.

Analytical tools:

The tools of analysis used for this study are:

- Descriptive Statistics,

- Profitability (Gross Margin), and

- Net Income (NI)

Descriptive Statistical Tools:

Frequencies tables and percentages were used to describe the socio-economic characteristics of the respondents. The characteristics include the Age, Marital Status, Education Attainment, and Occupation, Fishing experience and 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 that was used in estimating the gross margin is:

Profitability:

Gross Margin = $\dfrac{\text{Revenue- Cost of Goods Sold}}{\text{Revenue}}$

3.   RESULT

Socio-economic characteristic of fisheries stakeholders in Kano State:

The study examined the socio – economic characteristics of the respondents; such as age, sex, marital status, educational status, livelihood activities, year of experience and benefits derived from association.

Ages of Fisheries Stakeholders in Kano State:

The Ages range of 35-44 years old had the highest percentage of respondents (46%), followed by 25 -34 years old with 27% and the least value of 1% was for those within 65-74 years old as shown on Figure 1.

Household sizes of fisheries stakeholders in Kano State:

Table 1 presented the Household sizes of the fisheries stakeholders in Kano state studied during the period of this research work. The lowest household size range of 1-5 had the highest percentage of 43.75% while the highest size of 21-25 recorded the lowest occurrence percentage of 5.0%. There is a wide range of differences between these household in sizes and percentage occurrence.

Gender and Educational Status of fisheries stakeholders in Kano State:

Table 2 also presented the gender and educational status of the fishers. The males had 52.5% composition while the remaining of 47.5% were females. In terms of educational status of the populace of the study area, the educational

background range from the First School leaving certificate, secondary, tertiary, qur'anic and adult education with percentages of 18.75, 31.25, 7.5, 30, and 12.5% composition respectively as shown on Table 3

Fishing Experiences of the of fisheries stakeholders in Kano State:

A total of 30 respondents were recorded with varying years of experience as in Figure 2. Out of 30 respondents, 3 had 1-5 years of experience, 1 had 6-10 years of experience, 8 people had 11-15 years of experience, 11 people had 16-20 years of experience and 7 people had 21-25 years of experience.

Fishing organizations and membership by the fishermen in kano state:

The information generated showed that 70% of the fishermen are actively engaged in fishing organization while the remaining 30% do not belong to any fishing organization (Table 3). Majority of the fishermen in the studied communities belong to Balako Cooperative Society, Tiga fishing association, Nakowa Cooperative society and Allah de Cooperative Society. The membership ranged from 1 to 15 for the core fisheries cooperative society while some belong to more than one cooperative society. Among all, Tiga fishing Association embraces all the fishermen in the studied community.

Alternative livelihood activities engaged by the fishermen in Kano state:

All the fishermen (100.00%) responded fully to be engaging in other or alternative livelihoods apart from fishing. In Table 4, other livelihood activities engaged by the respondents apart from fishing are farming, civil service, and livestock rearing and trading. Farming had higher percentage of 47.62% more than other livelihood activities while the lowest is trading consisting of 6.34% composition.

Profitability and handling of unsold Fish by Fishermen in Kano state:

In Table 5, the processing of Fish after catch was recorded. But in Table 6, methods of processing used in the study area were smoking, sun drying, and frying. Table 7 recorded the profitability of Fish caught and value per week and the total profit recorded was ₦30,600.

Fish Processors in Kano state:

The major occupation was Fish processor and livestock rearing according to Table 8. In the study area, 66.66% were member of cooperative society while 33.33% were not a member (Table 9). The form of Fish processing were both smoked dried and sun-dried Fish as presented in Table 10. Table 11 presented the source of Fish for processing which consist of fishermen (53.33%), Fishermen cooperative (33.33%) and wholesaler in Rural market (13.33%). The category of Fish buyers in from the processors are shown in Table 12 has households, consumers, retailers and wholesalers to be 13.33, 13.33, 53.33 and 20% respectively. And the units of measurement used are basket and basin with the basin had higher percentage of 86.67% more than the basket (Table 13). In the course of this study, the sources of market information were co-processors, processor cooperatives and commission agents as recorded in Table 14.

Fish consumers in Kano state:

Table 16 presented the preference of the Fish type in the study area. Imported frozen fish were mostly preferred by the people with 65% value of preference while the least preferred is aquaculture fish with 15%. Table 17 also presented preference of fish species by the stakeholders. Catfish species is the most preferred with 60% followed by tilapia and sardine with 20% each.

Constraints faced by the Fisheries stakeholders in Kano State:

The problems faced by the Fishermen are dividing of the dam, high cost of fishing gears, aquatic vegetation, reduction in catches both in sizes and numbers, losses due to deterioration and inadequate capital (Table 17). Table 18 and 19 recorded the fishermen solution such as provision of storage facilities and constraint to fishermen such as inadequate storage facilities, processing facility and poor sale and Poor road linkages.

4. DISCUSSION

The result of the study indicate that majority of the fishermen range between 41 – 48 years which have the highest percentage (46.25%) followed by 33 – 40years and 49 -56years all with (16.25%), then followed 25 -32 years with (11.25%), then 57 -64 years with (8.75%), and least percentage of 1.25% was registered on age range of between 65 -72 years. The implication of this finding is that middle aged people take part more in fishing activities than old aged and younger ones in the study area. This has to do with the fact that young adult or middle aged people are more energetic and may have better entrepreneurial drive in the society. It's so because at these aged range people are more energetic and healthier. This tally with the finding of Malgwi (2000) in his study of economics of fish production in Maiduguri metropolitan area, where he revealed that most of the fishermen are in their middle aged .This is in line with finding of Bello (2000) and George *et.al.,*(2010) that age had a positive correlation with Agricultural Productivity.

The result shown that 50.00% had household size of 1-6 members followed by 31.25% with household size of 7 – 12 members, then 12.5% have a household size of 13 – 18, thus majority of the respondents in the study area are having less household because the business is more of middle aged who have less family size than the old ones. "Middle aged people participate more in value addition chain analysis in freshwater fishery in Kano State. Theses result are similar to the finding of Fabusoro *et al.*(2007) who reported that average house hold size in Africa was about 9 person.

Gender is an important socio-economic parameter, according to either male or female (Lahai *et al.*, 2000). The study revealed that both male and female were involved in all activities of fishing such as Fishing, processors marketing and consumers with male having the majority (52.5%) , while female constitute (47.5%) of the respondents. The few size of female processors participating in the activities may be due to religious and cultural barrier in the study area. These findings are in accordance with the finding of Sule and Raji (2006) who pointed out that fishing business is an exclusive business for male.

Education is very important in every aspect of life and it plays a fundamental role towards Aquaculture development, because it enhances easy assimilation, awareness and receptivity to innovation of aquaculture practices. This education gives a better awareness, persuasion and adoption of innovation hence better improvement in production (Adams,*et.al*., 1987). The result indicated that educational status of the respondents with majority having secondary education (31.25%) followed by Qur'anic education with (30.00%) This signifies that majority of the respondents had Qur'anic education due to the dominance of Islamic religion in the study area. With those having tertiary education having the least percentage of (7.5%). This findings is line with of Mele (2007), following his study of economic analysis of fresh fish marketing in Dadinkowa, Gombe State in where he found that majority of the respondents had formal education.

Fishing experience is the number of years that the fishermen spent in fishing business. The longer the experience in the business, the better the performances in fishing activities. The result indicated that most of the respondent (36.66%) had fishing experience of 16 – 20 years, 26.66 % of the respondents had fishing experience of 11 – 15 years and 23.33% of the respondents had fishing experience of 21 – 25 years, while 10.00% of the respondents had fishing experience of 6 – 10 years (least percentage). With this experience, it implies that the fishermen can manage their fishing activities and risk and make sound decision to enhance their performance.

This result estimated the return for value addition or profit made by the fishermen in the value chain was obtained by subtracting the total cost of any activity along the chain (supply) from the revenue generated from it. The result revealed that return varies according to the role played by fishermen and the extent of level of participation along the value chain. To estimate return, the mean value from the total cost incurred is subtracted from the mean value of the revenue from the sale of the commodity. Gross Margin ratio is the ratio of gross of business to its revenue. It profitability profit measuring what proportion profit (Ie revenue, less cost of goods sold).

Majority of the consumers preferred imported frozen fish which had 65.00% due to the neatness, capture fish had 20.00% of the respondents followed by aquaculture fish with least percentage of 15.00% of the respondents in the study area. This indicate that majority of the respondents sampled in the area preferred imported frozen fish, because of hygienic and safe time.

Majority of the consumers in the study area (60.00%), preferred fish species of Cat Fish, which is more palatable and have good taste in the study area. While the remaining respondent's preferred Tilapia and Sardine with 20.00% each. The

major constraints of the fishermen in the study area were found to be shrinking nature of the dams (63.33%) as they witness gross reduction in catches over the years since they noticed that the catches are also reducing, 13.33% identified high cost of fishing gears as their constraint, while 3.33% advanced loses due to deterioration as their problem; while 20.00% of the respondents identified lack of capital to the fishermen as the in major constraint.

The proffered solution of the aforementioned problems as suggested by the fishermen includes more water should be allocated to the dam so as to increase its level, 50.00%, 13.3% want availability of fishing gears at cheaper price as the solution to their problems. 3.33% demanded for provision of means of storage to avoid spoilage of catches. 33.33% wants provision of loan by Government or Commercial banks at lower interest rate as their solution to inadequate capital.

5. SUMMARY AND CONCLUSION

The study examined the analysis of socio economic and profitability fisheries enterprises in Kano state, Nigeria. Multistage sampling technique as employed to select a total of 80 stakeholders along the fisheries enterprises,30 fishermen, 30processors and 20 consumers. The sampling was based on purposive and simple random selection technique. The collected data were subjected to both descriptive statistics mainly. The study further attempted to describe the socio – economic characteristics of actors (Fishermen, processors and final consumers).And finally identified the major constraints, as well as possible solution for all actors in the fish value chain. The results of the study disclosed that majority of the respondents were within the range of 41 – 48 years, which had 46.25%, and majority of the respondents (fishermen, processors and consumers) were male, which had 52.5%. The results show that female had participation value chain especially in processing activities, which had 47.5% and also majority of the respondents were single, which had 80.00% most of the respondents have household size of 1-6 persons have 50.00%. However, majority 31.25% attends secondary school, and 30.00% attend Qur'anic education only 7.5% attended tertiary institution. Based on the results presented, it can be considered that fishermen, processors in the study area were operated small scale, because both have low level of formal education to use modern techniques of catching fish and processing along the value chain. Fishermen in the study area were found to be productive because they gave a mean gross margin return of #74350 at the period of raining season. All the stakeholders were found to be relatively efficient to the business operation. Dwindling of the dams, lack of effective processing and storage facilities, inadequate credit facilities, high cost of transportation, bad road network were identified as the major problem prevailing among the actors in the fisheries enterprises in Kano state.

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APPENDIX - A

Table: 1. Socio-economic characteristic of fisheries stakeholders in Kano State

Household size range	Frequency	Percentages
1 – 5	35	43.75
6 – 10	25	31.25
11 – 15	10	12.50
16 – 20	5	6.25
21 – 25	4	5.00
Total	80	100.0

Source: Field Survey (2014)
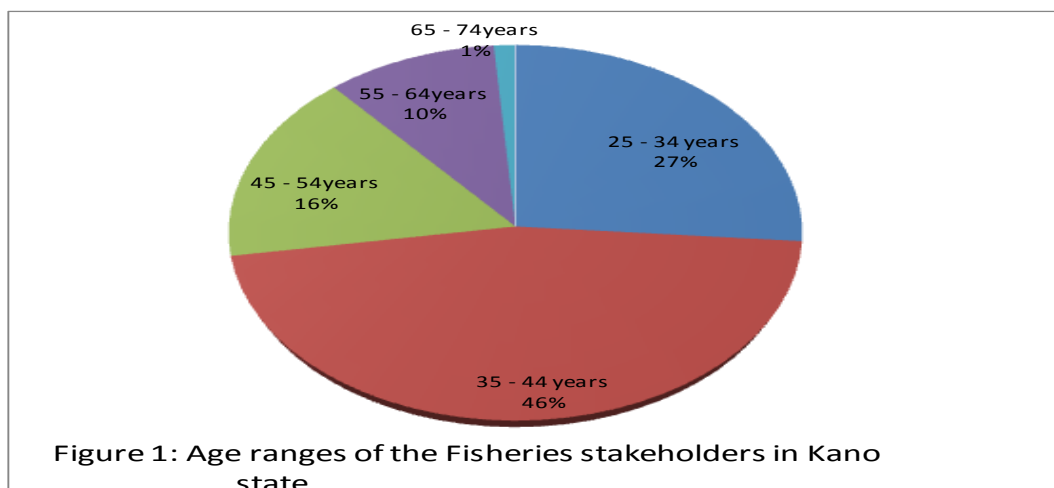

Figure 1: Age ranges of the Fisheries stakeholders in Kano state

Table: 2. Gender and Educational Status of fisheries stakeholders in Kano state

Variables	Category	Frequency	Percentage (%)
Gender	Male	42	52.5
	Female	38	47.5
	Total	80	100
Educational Status	Primary	15	18.75
	Secondary	25	31.25
	Tertiary	6	7.5
	Qur'anic	24	30.00
	Adult	10	12.5
	Total	80	100

Source: Field Survey (2014)

Figure 2: Variation in years of experiences of Fishermen in Kano state
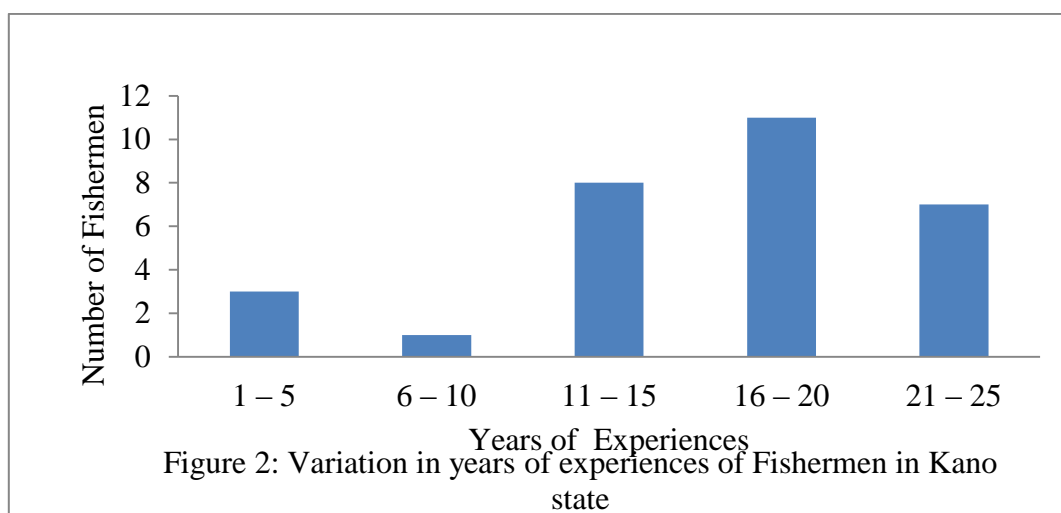
Table 3: Membership of Fishing Organization by Fishermen in Kano state

Membership	Frequency	Percentage (%)
Yes	21	70.00
No	9	30.00
Total	30	100.00

Source: Field Survey (2014)

Table 4: Other Livelihood Activities Engaged by the Respondents

Other Livelihood Activities	Frequency	Percentage (%)
Farming	30	47.62
Civil service	7	11.12
Livestock rearing	22	34.92
Trading	4	6.34
Total	63	100.00

Source: Field Survey (2014).

Table 5: Processing of Fish after catches by Fishermen in Kano State

Preservation	Frequency	Percentage (%)
Yes	9	30.00
No	21	70.00
Total	30	100 .00

Source: Field Survey (2014)

Table 6: Method of Processing of unsold Fish by Fishermen in Kano State

Method	Frequency	Percentage (%)
Smoking	4	44.44
Sundry	2	22.22
Frying	3	33.33
Total	9	100.00

Source: Field Survey (2014)

Table 7: Profitability of Fish caught and value / week

Qty of fish caught/ (Week/kg)	Average	Frequency	Selling Price N 400/kg	Cost Price N250/kg	Labour	Commission paid	Profit (N)
1-2	1.5	2	1200	750	100	150	200
3-4	3.5	6	8400	5250	100	150	2900
5-6	4.5	3	5400	3375	100	150	1775
7-8	7.5	8	24000	15,000	100	150	8750
9-10	9.5	7	26600	16,625	100	150	9725
11-12	11.5	4	18400	11,500	100	150	6650
Total		30	N84000	N52500	N600	N900	N30, 000

Source: Field Survey (2014)

Table 8: Major Occupation of the Respondents (Fish Processors)

Occupation	Frequency	Percentage (%)
Fish processors	30	53.57
Farming	10	17.86
Livestock rearing	16	28.57
Total	30	100.00

Table 9: Membership of Cooperative Society of Fish processors in Kano State

Membership	Frequency	Percentage (%)
Yes	10	33.33
No	20	66.66
Total	30	100.00

Source: Field Survey (2014)

Table 10: Forms of Fish Processing by Fish Processors in Kano State

Forms	Frequency	Percentage (%)
Smoked dried fish	26	66.67
Sun dried	4	13.33
Fried	6	20.00
Total	30	100.00

Source: Field Survey (2014)

Table 11: Sources of Fish used for Processing by Fish processors in Kano State

Sources	Quantity Purchased./Day/Kg	Frequency	Percentage
Fishermen	$3 - 5$	12	40.00
Fishermen cooperative	$6 - 10$	8	26.67
Wholesaler in rural market	$6 - 10$	4	13.33
Fishermen Agent	$8 - 10$	6	20.00
Total		30	100.00

Source: Field Survey (2014)

Table 12: Categories of buyers from Fish processors in Kano state

Categories	Frequency	Percentage (%)
Households	4	13.33
Consumers	4	13.33
Retailers	16	53.33
Whole sellers	6	20.00
Total	30	100.00

Source: Field Survey (2014)

Table 13: Units of Measurement for purchase used by Fish processors in Kano state

Units	Frequency	Percentage (%)
Basket	4	13.33
Basin (plastic/metal)	26	86.67
Total	30	100.00

Source: Field Survey (2014)

Table 14: Sources of Market Information enjoyed by Fish processor

Sources	Frequency	Percentage (%)
Co-processors	16	53.33
Processors cooperatives	10	33.33
Commission agents	4	13.33
Total	30	100.00

Source: Field Survey (2014).

Table 15: Preferences of Fish Type by Consumers in Kano state

Type	Frequency	Percentage (%)
Imported frozen fish	6	30.00
Capture fish	9	45.00
Aquaculture fish	**5**	25.00
Total	20	100.00

Source: Field Survey (2014)

Table 16: Preferences of Fish Species by Consumers in Kano state

Species	Frequency	Percentage (%)
Catfish	12	60.00
Tilapia fish	4	20.00
Sardine fish	4	20.00
Total	20	100 .00

Sources: Field Survey (2014)

Table 17: Fishermen Constraints in Kano state

Fishing Constraint	Frequency	Percentage (%)
Restrictions by the dam	10	33.33
Aquatic vegetation menace	4	13.33
Reduction in catches (sizes and numbers)	8	26.67
High cost of fishing gears	4	13.33
Losses due to deterioration	1	3.33
Inadequate capital	3	10.00
Total	30	100.00

Source: Field Survey (2014)

Table 18: Constraints of the Fish Processors in Kano state

Processors constraints	Frequency	Percentage (%)
Inadequate credit facility	16	53.33
Inadequate processing facilities	8	26.66
Poor sale	2	6.66
Poor road linkages	4	13.33
Total	30	100.00

Source: Field Survey (2014)

Table 19: Constraints of the Fish Consumers in Kano state

Consumers constraints	Frequency	Percentage (%)
High cost of fish	10	50.00
Instability in economy	2	10.00
Deterioration of fish	6	15.00
Poor sanitary condition	2	10.00
Total	20	100.00

Source: Field Survey (2014)