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ECONOMICS OF FROZEN AND SMOKED SCUMBIA FISH MARKETING IN SELECTED URBAN MARKETS IN AKWA IBOM STATE, NIGERIA

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Abstract

The study was conducted in Akwa Ibom State to assess the Economics of Frozen and Smoked Scumbia fish marketing in Selected Urban Markets. Specifically, the study assessed the socio-economic characteristics to Scumbia fish marketers, analyzed the costs and returns of Scumbia fish marketing, determined the gross margin of frozen and smoked Scumbia fish marketing, determined the factors that influenced the gross margin and identified the constraints to Scumbia fish marketing in the study area. A well-structured questionnaire was used to obtain information from Scumbia fish marketers. Four urban markets were purposively selected in the State. These four urban markets are the biggest and most popular daily markets in the State. The selected markets were Ikot Ekpene Main market and Otor market in Ikot Ekpene L.G.A, Itam and Akpan Andem markets in Uyo metropolis respectively. Forty smoked and frozen fish marketers were randomly selected from each of the selected four markets making a total number of one hundred and sixty respondents for the study. Descriptive statistics, gross margin and multiple regression models were used for data analysis. The result of the study indicated that all the respondents were women, 81.9% were married, 3.1% were single, 6.3% were widowed and 3.8% were divorced. The result further showed that 45%, 50%, 42.5% and 5% sold only frozen form in Ikot Ekpene Main Market, Otor, Itam and Akpan Andem market respectively while 55%, 50%, 57%, 5% sold both frozen and smoked from in Ikot Ekpene Main Market, Otor, Itam and Akpan Andem Market respectively. The average Gross Margin of fish sellers per week was ₦26381.01 for frozen form, while in smoked form was ₦21446.2 in Ikot Ekpene Main Market, Otor, Itam and Akpan Andem market respectively. The significant variables influencing the marketing of frozen Scumbia fish positively at 5% level of significance were age of the marketers, marketing experience, marital status, while cost of transportation was significant at 10%. Significant factors influencing smoked fish marketers at 5% level of significance were educational level, marketing experience. Marital status and fish price were significant at 1%. The major constraint affecting scumbia fish marketers was low patronage that culminated into poor pricing. Based on these findings the study recommends that men should be encouraged to venture into scumbia fish marketing business.

Key words: Scumbia, fish marketing, economics, urban, gross margin

Introduction

Fish is a very important food product in Nigeria however despite the rich coastal and continental resources base of the country, demand for fish far exceeds production, Ambali and Ayinde (2019) posited that inspite of her rich fishery resource endowment, Nigeria's fish trade is grossly unbalanced. This is simply because the import value of frozen fish outrageously surpasses the export value of fishery products such as shrimps, ornamental fish, frozen fillet, cuttlefish among others. The demand for fish globally and particularly in Nigeria has been on

the increase with supplies not meeting up the demand (Food and Agricultural Organization, 2012). This is because the consumption rate of fish is increasing yearly than that of other animals. The trend may not change in the near future considering the rising population of the country and the increasing distance between fish producers and consumers. Nigeria's fish supplies come from four major sources (in order of importance, namely): Importation, Inland estuaries/coastal artisanal fishery, Industrial trawl fishery, and Aquaculture. The composition of the imports is largely mackerels (Scumbia or

Titus), sardinella, cod, haddock, hakes, herrings and croakers caught off the coasts of the Eastern Central Atlantic countries of Senegal and Mauritania and from the North Sea. The exporting countries to Nigeria are Norway, Spain, the Netherlands, Russia, Denmark, the Irish Republic and, to some extent, USA. Food and Agricultural Organization (FAO) (2010).

A recent study as reported by Bradley, Byrd, Atkins, Isa, Akintola, Fakoya, Ene-Obong and Thilsted, (2020). reported that Nigeria ranks third globally for the number of people dependent on coastal fisheries for food and nutrition security, and the demand for fish is growing, alongside growth in population and incomes. This makes it imperative to give due attention to issues bordering on fish production and distribution.

However, household fish consumption in Nigeria measured at 13.3 kg/capita/year is low compared with the world's average of 20.3 kg/capita/year (FAO, 2018). This national average likely masks a much lower average among resource limited and vulnerable population groups as well as a notable supply-demand gap. In Nigeria fish constitute, 60% of protein intake (Federal Department of Fisheries (FDF) 2000). According to Amienheme (2005) fish is a rich source of high quality animal protein and also certain highly digestible energy. It is a good source of sulphur and essential amino, fatty acids. It is also rich in water soluble vitamins such as B complex, fat soluble vitamins such as vitamin A, D, E and K and minerals. The nutrient from fish is superior to all terrestrial meat such as beef, mutton, pork and chicken. Fish contains omega 3 fatty acids that are known to reduce cardiovascular diseases, hypertension and arteriosclerosis, thus becoming a preferred source of protein for elderly persons. Ovie and Raji, (2006).

Fish and fish products are crucial to the economy and health of the nation. The demand for protein is rising exponentially with the rapidly accelerating increase in human population. One of the commonest fish sold in Nigerian markets is scumbia fish popularly called Titus fish. It is one of the most common species of fish sold in Nigeria because it is

comparatively cheap and affordable. Scumbia fish is not found in Nigeria coastal rivers it is imported from Europe, Latin America and Eastern countries. Titus fish is one of the most important source of food and income to many people in developing countries. In Akwa Ibom State, scumbia fish is sold and is available in the markets in smoked and in frozen form. The fish must be handled with care to reduce deterioration rate as well as preventing contamination with undesirable micro-organisms. Transportation, distribution, marketing and fish handling procedures encompass all the operation aim at maintaining food safety and quality characteristics. Scumbia fish can be kept by freezing and smoking to prevent spoilage and to meet the demand of the consumers. Proper fish processing and handling reduces spoilage, improve shelf life and maintain quality of the fish. The level of profitability and efficiency of the market and marketing functions are very important for sustainable marketing of agricultural product like fish.

Nwaru, Nwosu and Agunmmuo (2011), stated that an efficient marketing system ensures that goods that are seasonal would be available all year round, with little variation in price, that can be attributed to cost of marketing functions like storage, processing, transportation, etc. An efficient marketing system makes both the producers and consumers better off. Nwaru *et. al.* (2011) posited that the effectiveness of the marketing process is assessed by the ability of the market to add value to the marketed product by creating time, form, place and possession utility.

Nwabueze and Nwabueze (2010) in a study titled: An investigation into the problems of fresh fish marketing in Oshimili South Local Government of Delta State, reported that more women (72.2%) were involved in fresh fish marketing. Edward and Madugu, (2011) conducted a study titled marketing and distribution channel of processed fish in Adamawa state and reported that both males and females were equally engaged in fish marketing and processing. Nwabueze and Nwabueze (2010) identified seasonality, scarcity, means of preservation, poor means of transportation and

use of badly-shaped containers as the main problems of fresh fish marketing in the area. Eze *et al.*, (2010) also reported that lack of storage facilities was major factor in agricultural produce marketing. Edward and Madugu (2011) found that poor access to capital was the most pressing problem of fish marketing in Adamawa state. Akanle, Yusuff, Busari and Adedeji, (2013) posited that because food is central to survival in every society, food security is by every standard, crucial and focal to perpetuation. When food becomes 'insecure' – unavailable and unaffordable domestically (in quality and quantity), several means are employed, to stem the tide of hunger and starvation, wherein food importation is core.

More technically, food insecurity refers to deficits or shortfalls in actual per capita daily calorie intake below the minimum per calorie intake recommended by Food and Agricultural Organisation and World Health Organisation for maintaining the human body-2450kcal/day. As incomes grow in Nigeria, demand for fish is predicted to increase. Increased fish production and consumption may contribute to alleviating food and nutrition insecurity. The majority of households in Nigeria (58%) suffer from chronic or transitory food insecurity (Ogundari, 2017). In 2016, 14.3 million people in Nigeria were classified as undernourished (FAOSTAT 2017). An average of 67% of children aged 6–23 months living with their mothers did not eat foods rich in iron, and 52% did not eat vitamin A. As a result, fish which is rich in micronutrients such as zinc, iron, iodine, calcium, vitamin B12 and vitamin A, as well as essential fatty acids and protein, could play an instrumental role in attaining food and nutrition security. This can be possible through a functional and well developed marketing system with profit to the sellers and utility to the buyers as incentives (Enete, 2008, Enete & Okon, 2010) thus the need for this study.

Traders and retailers of fish and fish products do not use proper storage facilities and often leave the fish in the sun for long periods - all leading to product loss and lower quality, which translate to lower revenues. In a survey conducted by Federal Ministry of Agriculture &

Rural Development on Fish marketers, the traders indicate that limited finance constrained the ability to develop and invest in the business operation or expansion. With the above challenges associated with fish marketing and many others namely: No functional sea Port where the imported fish can land in Akwa Ibom State, very poor and unreliable public power supply, high rate of inflation in the country, traders not using standard measurement to sale scumbia fish and poor market infrastructure among others. From the foregoing, it is imperative to assess the economic issues surrounding scumbia fish marketing in Akwa Ibom State.

Research Methodology

Study Area

The study was carried out in Akwa Ibom State of Nigeria. The State is located in the South-South geographical zone of Nigeria. The state lies between latitude 4⁰31 and 5⁰31 north and longitude 7⁰35 and 8⁰25 east. Akwa Ibom State is bounded in the south by Atlantic Ocean, in the north by Abia State, east by Cross River and West by River State. The state has a total land area of 7,246 square kilometers and has a shoreline of 129km on the Atlantic Ocean to the south. The State has an estimated population of 3,920,208 with males being 2,044,510 and females 1,875,698. About 85% of the total population lives in the rural areas (FRN Gazette 2007). The climate is tropical, marked by two distinct seasons, the dry (November-March) and the wet (April – October) seasons. Annual rainfall ranges between 2220mm in the north of the state and up to 3000mm in the south.

The state is divided into 31 administrative units called Local Government Areas (LGAs) which are grouped into six (6) agricultural zones of; Ikot Ekpene, Uyo, Oron, Etinan, Eket and Abak. From the Saline water swamp forest in the south to the rain forest in the north, the land is suitable for extensive agriculture. Agriculture is the major occupation of the people and almost all the families, farm either as primary or secondary occupation, the ecological zone of the state favours the growing of tree crops, roots, and tubers, cereals and vegetables. Because of the rich water resources of the state fishing is also

the major occupation of some inhabitants in the state.

Sampling Procedure/Sample Size

A multi-stage sampling procedure was used in selecting the respondents for the study. The first stage involved the purposive selection of two urban markets, two each in Uyo and Ikot Ekpene metropolis. This is because Scumbia fish is sold and consumed more in urban areas of the state and the markets are operated daily. Forty fish marketers were randomly selected from each of the selected four markets to have a representative sample. A random sample of forty scumbia fish sellers were selected because there was no definite population size of these sellers. This made a total number of one hundred and sixty respondents from the four markets for the study.

Method of Data Collection

Primary data was collected using a well-structured questionnaire to the respondents who were basically Scumbia fish marketers in the study area. While secondary data were obtained from published material that were related to the study.

Analytical Techniques

The study employed descriptive statistics such as mean and percentages, gross margin analysis, T- statistics and multiple regression models for data analysis.

Gross margin analysis is express as:

$$GM = TR - TVC$$

Where GM = Gross Margin

$$TR = \Sigma PQ$$

$$\Sigma = \text{Summation}$$

PQ = Price of fish sold x quantity of fish sold

$$TR = \text{Total revenue}$$

$$TVC = \text{Total variable cost}$$

The multiple regression models took the form:

$$Y = f(X_1 \text{-----} X_n)$$

Where: Y = (Gross margin - dependent variables)

f = function of (X₁ --- X_n)

are the independent variable

$$X_1 = \text{Age (years)}$$

$$X_2 = \text{Gender}$$

$$X_3 = \text{Marital Status (married = 1, No = 0)}$$

$$X_4 = \text{Educational Level in years}$$

$$X_5 = \text{Transportation (₦)}$$

$$X_6 = \text{Special training on marketing (Yes = 1, No = 0)}$$

$$X_7 = \text{Marketing Experience (in years,)}$$

$$X_8 = \text{Credit Accessibility (uses credit = 1, No = 0)}$$

$$X_9 = \text{Price of fish (₦)}$$

$$X_{10} = \text{Market charges (₦)}$$

The T – Test statistics model take the form:

$$t = \frac{\bar{X}_1 - \bar{X}_2}{\sqrt{\frac{S_1^2}{n_1} + \frac{S_2^2}{n_2}}}$$

\bar{X}_1 = mean gross margin of frozen fish marketers

\bar{X}_2 = mean gross margin of smoked fish marketers

S_1^2 = variance margin of frozen fish marketers

S_2^2 = variance margin of smoked fish marketers

n_1 = number of frozen fish marketers

n_2 = number of smoked fish marketers

Results and Discussion

Socioeconomic Characteristics of Respondents

Table 1 shows that all the respondents were females indicating that fish marketing in Akwa Ibom State is mostly carried out by the women. Also majority 104 (65.0%) of the respondents were within the age bracket of 31-35 years and the mean age was 34 years indicating that more energetic women were involved in marketing of Scumbia fish in the study area. This result corroborates with that of Ogboru *et al.*, (2011). Furthermore, 81.9% were married, 3.1% single, and 6.3% were widows, 3.8% divorced. The contribution of marital status on fish marketing can be explained in terms of the supply of family labour. Family labour would be more where the household head is married. A seller with more family labour to assist in the business will like sale more by drawing more customers and providing quicker services to the customers. This is in line with the research of Yuguda (*et al*, 2013). Table 1 further indicated that none of the respondents had no formal education, 14.4% attended primary school, and most of the respondents were literates as shown by 66.3% that had attended secondary school, 19.4% attended tertiary. Education helps in socialization and exposure of marketers. This

finding corroborate with that of Ejiogu-Okereke (*et al.*, 2016) who postulated that most fish farmers in Rivers State were literate as majority were able to acquire secondary education. Table 1 also indicated that 1.3% of the scumbia fish marketers had less than 2 years of marketing experience in the business, 86.3% had between

2-3 years of marketing experience and 8.8% had between 4-5 years of experience in the market. The mean marketing experience of the respondents was 3 years. This implied that sellers of frozen and smoked scumbia fish are relatively new in the business.

Table 1: Socio-Economic Characteristics of Respondents

Variables	Frequency	Percentage
Gender		
Female	160	100.0
Male	0	0.0
Age (years) Mean 34 years		
<25	9	5.6
25-30	43	26.9
31-35	104	65.0
36-40	1	0.6
>40	3	1.9
Marital Status		
Married	131	81.9
Single	5	3.1
Widow(er)	10	6.3
Divorced	6	3.8
Separated	8	5.0
Education		
No formal education		
Primary	23	14.4
Secondary	106	66.3
Tertiary	31	19.4
Marketing Experience (Mean 3 years)		
<2	2	1.3
2—3	138	86.3
4—5	14	8.8
6—8	1	0.6
>8	5	3.1
Household Size (Mean 5 years)		
1—2	8	5.0
3—4	7	4.4
5—6	99	61.9
7—8	41	25.6
>8	6	3.8

Source: field survey, 2018

Distribution of Respondents Based on Forms of Scumbia Fish Sold (Frozen and Smoked) in Different Selected Markets.

Table 2: showed the distribution of respondents based on forms of scumbia fish sold (frozen and smoked) in the selected markets. Each carton of fish contains about 72, 60 or 45 fishes per carton. Some respondents sold fishes from cartons that contains 72, some sold that which contains 60, while some sold cartons with 45 fishes per carton in the four selected markets. In Ikot Ekpene main market, 7.5% of respondents sold the one which contains 72 fishes per carton, in frozen form and while 2.5% sold the same quantities in both frozen and smoked form, 37.5% of the respondents sold the cartons which contains 60 quantities in frozen form, while 27.5% sold the same quantity in both frozen and smoked form. 35% of respondent sold the one which contains 45 quantities per carton in both frozen and smoked form. In Otoh market- Ikot Ekpene L.G.A, 7.5% of the respondents sold the one which contains 72 quantities per carton, in frozen form, while 5% of the respondents sold both frozen and smoked form of the same quantity. Also 42% of the respondents sold the one which contains 60 quantities per carton in frozen form while 25% of the respondents sold

both the frozen and smoked form of the same quantity. 20% of the respondents sold the carton which contains 45 quantities per carton in both frozen and smoked form.

In Itam market, 10% of the respondents sold the one which contains 72 quantities per carton in a frozen form while 5% of the respondents sold the frozen and the smoked form of the same quantity. 32.5% of the respondents sold the one which contains 60 quantities per carton in a frozen form while 30% of the respondent sold both the frozen and smoked form of the same quantity. 22.5% of the respondents sold the cartoon which contains 45 quantities per carton in both frozen and smoked form. In Akpan Andem market, 10% of the respondents sold the one which contains 72 quantities in frozen form while 5% of the respondents sold both frozen and smoked form of the same quantity. 40% of the respondents sold the carton which contains 60 quantities of fish per carton in frozen form while 20% of the respondents sold both frozen and smoked form of the same quantity. 25% of the respondents sold the one which contains 45 quantities of fish per carton in both frozen and smoked form.

Table 2: Distribution of Respondents Based on Forms of Scumbia Fish Sold (Frozen and Smoked) in the Selected Markets.

Ikot -Ekpene Main Market													
Quantity of fish per cartoon	Respondents	Only frozen frequency	%	Only smoked frequency	%	Both frequency	%	Pooled only frozen	%	Pooled only smoked frequency	%	Pooled both frequency	%
72 (208.3g)	4	3	7.5	-	-	1	2.5	18	45	-	-	22	55
60(250g)	12	7	37.5	-	-	5	27.5						
45(333.3g)	24	14	-	-	-	10	25						
Otor Market in Ikot-Ekpene													
72(208.3g)	5	3	7.5	-	-	2	5	20	50	-	-	20	50
60(250g)	27	17	42.5	-	-	10	25						
45(333.3g)	8	-	-	-	-	8	20						
Itam Market in Uyo Metropolis													
72(208.3g)	6	4	10	-	-	2	5	17	42.5	-	-	23	57.5
60(250g)	25	13	32.5	-	-	12	30						
45(333.3g)	9	-	-	-	-	9	22.5						
Akpan Andem Market in Uyo													
72(208.3g)	6	4	10	-	-	2	5	20	50	-	-	20	50
60(250g)	24	16	40	-	-	8	20						
45(333.3g)	10	-	-	-	-	10	25						

Source: field survey, 2018

Costs and Returns of Frozen Scumbia Fish Marketing

Table 3 showed that the average cost of fish per week in Ikot Ekpene main market was ₦101466.67 with an average of 8.73 cartons of fish. In Otor market, the average cost of frozen fish, per week was ₦95396.67 with an average

of 8.21 carton of fish. In Itam market the average cost of frozen fish per week was 96833.3 with an average of 8.33 cartons of fish. And in Akpan Andem market the average cost of frozen fish per week was ₦99166.67 with an average of 8.53 cartons of fish.

Table 3 Costs and Returns of Frozen Scumbia Fish marketing

Average amount per-carton bought (₦)	Average unit cost (₦)	No. of carton sold	Average unit selling price (₦)	Average cost of fish sold (₦)	Average amount (₦)	Marketing margin selling- cost price	Returns per-carton
Ikot -Ekpene Main Market							
11,500(72pc)	191.67	10.5	310.3	120750	15898608	38236.08	3641.53
11,500 (60pc)	191.67	9.5	235.8	109250	134406	25156	2648
12,000 (45pc)	266.67	6.2	304.6	74400	84983.4	10583.4	1707
Otor Market in Ikot-Ekpene							
11,500(72pc)	191.67	9.6	215.8	110400	149160.96	38760.96	4037.6
11,500 (60pc)	191.67	8.9	240.5	102350	128427	26077	2930
12,000 (45pc)	266.67	6.12	305.7	73440	84189.78	10749.78	1756.5
Itam Market in Uyo Metropolis							
11,500 (72pc)	191.67	10	218.6	115000	157392	42392	4239.2
11,500 (60pc)	191.67	9	245.3	103500	132462	28962	3218
12,000 (45pc)	266.67	6	350.00	72000	94500	22500	3750
Akpan Andem Market In Uyo							
11,500 (72pc)	191.67	10	220.3	115000	158616	43616	4361.6
11,500 (60pc)	191.67	9.4	248.2	108100	139984.8	31884.8	3392
12,000 (45pc)	266.67	6.2	320.3	74400	89363.7	14963.7	2413.5

Source: field survey, 2018

Costs and Returns of Smoked Scumbia Fish Marketing

Table 4 showed that the average cost of fish per week in Ikot Ekpene main market was ₦ 70,000.00 with an average of 6 cartons of fish. In Otor market, the average cost of fish per week

was ₦ 70,000.00 with an average of 6 cartons of fish, in Itam market, the average cost of fish per week was ₦ 70,000.00 with an average of 6 cartons of fish. In Akpan Andem market, the average cost of fish was ₦ 70,000 with an average of 6 cartons of fish per week.

Table 4: Cost and Returns of Smoked Scumbia Fish Marketing

Average amount per-cartoon bought (₦)	Average unit cost (₦)	No. of carton sold	Average unit selling price (₦)	Average cost of fish sold (₦)	Average amount (₦)	Marketing margin selling-price cost	Returns per-carton
Ikot Ekpene Main Market							
11,500 (72pc)	191.67	6	237.2	69000	102470.4	33470.4	5578.4
11,500 (60pc)	191.67	6	300.7	69000	108252	39252	6542
12,000 (45pc)	266.67	6	330.8	72000	89316	17316	2886
Otor Market in Ikot Ekpene							
11,500 (72pc)	191.67	6	248.2	69000	107222.4	38222.4	6370.4
11,500 (60pc)	191.67	6	302.5	69000	108900	39900	6650
12,000 (45pc)	266.67	6	332.7	72000	89829	17829	2971.5
Itam Market in Uyo Metropolis							
11,500 (72pc)	191.67	6	255.3	69000	110289.6	41289.6	8257.92
11,500 (60pc)	191.67	6	300.4	69000	108144	39144	6524
12,000 (45pc)	266.67	6	355.3	72000	95931.00	23931	3988.5
AkpanAndem Market in Uyo							
11,500 (72pc)	191.67	6	260.4	69000	112492.8	43492.8	7248.8
11,500 (60pc)	191.67	6	301.5	69000	108540	39540	6590
12,000 (45pc)	266.67	6	352.3	72000	95121	23121	3853.5

Source: field survey, 2018

Gross Margin Analysis of an Average Frozen Scumbia Fish Marketer per Week

Table 5 showed the Gross Margin Analysis of an average frozen scumbia fish marketer per week. From the table. In frozen form of scumbia fish the gross margin analysis were Total Revenue – Total Variable cost = Gross Margin

(TRV-TVC =GM). In Ikot Ekpene main market, the gross margin were 126125.4 - 98983.3 = 27142.1. In Otor market, the gross margin were 120592.58 - 98296.67 = 22295.91. In Itam market, the gross margin were 128118 - 98933.3 = 29184.7. In AkpanAndem market, the gross margin were 128118 - 101216.67 = 26901.33

Table 5 Average Gross Margin of a Frozen Scumbia Fish Marketer per Week in IkotEkpene Main Market

S/NO	COST ITEM	AMOUNT (₦)
1.	Cartoon of fish per week (8.73cartons)	96833.3
2.	Transportation	1200.00
3.	Market Charges	_____
4.	Damaged fish	950.00
5.	Cool room services	_____
6.	Total variable cost (TVC)	98983.3
7.	Revenue for sales of frozen fish	126125.4
8.	Gross margin	27142.1
Otor Market in IkotEkpene		
1.	Cartoons of fish per week (8.21 cartons)	95396.67
2.	Transportation	1050
3.	Market Charges	650
4.	Damaged fish	1200
5.	Cool room services	_____
6.	Total variable cost (TVC)	98296.67
7.	Revenue for sales of frozen fish	120592.58
8.	Gross margin	22295.91
Itam Market in Uyo		
1.	Cartoons of fish in a week (8.33cartons)	96833.3
2.	Transportation	600
3.	Market Charges	650
4.	Damaged fish	850
5.	Cool room services	_____
6.	Total variable cost (TVC)	98933.3
7.	Revenue for sales of frozen fish	128118
8.	Gross margin	29184.7
AkpanAndem Market in Uyo		
1.	Cartoons of fish (8.53cartons)	99166.67
2.	Transportation	300
3.	Market Charges	650
4.	Damaged fish	1100
5.	Cool room services	_____
6.	Total variable cost (TVC)	101216.67
7.	Revenue for sales of frozen fish	128118
8.	Gross margin	26901.33

Source: field survey, 2018

Gross Margin Analysis of an Average Smoked Scumbia Fish Marketer Per Week

Table 6 showed the Gross Margin Analysis of an average smoked scumbia fish marketer per

week. The gross margin derived thus; Total Revenue – Total Variable Cost. In Ikot Ekpene main market, the gross margin were 100012.8 – 73150 = 26862.8. in Otor market, the gross

margin were $101983.8 - 74250 = 27733.8$. In Itam market, the gross margin were $104788.2 - 73600 = 31188.2$. In Akpan Andem market, the gross margin were $105384.6 - 73550 = 31834.6$.

Table 6: Gross Margin Analysis of an Average Smoked Scumbia Fish Marketer per Week

S/NO	COSTS ITEM	AMOUNT (₦)
Ikot-Ekpen Main Market		
1.	Cost of smoked fish per week (6cartons)	70,000
2.	Transportation	1200
3.	Market Charges	_____
4.	Damaged fish	850
5.	Cool room services	_____
6.	Cost of smoking	1000
7.	Total variable cost (TVC)	73150
8.	Revenue for sales of smoked fish	100012.8
9.	Gross margin	26862.8
Otor Market in IkotEkpen		
1.	Cost of smoked fish per week (6 cartons)	70,000
2.	Transportation	1200
3.	Market Charges	650
4.	Damaged fish	1200
5.	Cool room services	_____
6.	Cost of smoking	1200
7.	Total variable cost (TVC)	74250
8.	Revenue for sales of smoked fish	101983.8
9.	Gross margin	27733.8
Itam Market in Uyo Metropolis		
1.	Cost of smoked fish per week (6 cartons)	70,000
2.	Transportation	600
3.	Market Charges	650
4.	Damaged fish	850
5.	Cool room services	_____
6.	Cost of smoking	1500
7.	Total variable cost (TVC)	73600
8.	Revenue for sales of smoked fish	104788.2
9.	Gross margin	31188.2
AkpanAndem Market in Uyo		
1.	Cost of smoked fish per week (6 cartons)	70,000
2.	Transportation	300
3.	Market Charges	650
4.	Damaged fish	1,100
5.	Cool room services	_____
6.	Cost of smoking	1500
7.	Total variable cost (TVC)	733.50
8.	Revenue for sales of smoked fish	105384.6
9.	Gross margin	31834.6

Sources: field survey, 2018

Factors Affecting the Gross Margin of Frozen and Smoked Scumbia Fish Marketing

Socioeconomic factors influencing the marketing of frozen and smoked scumbia fish in

the study area is presented in Table 7. The multiple linear regression was used to estimate the factors through the ordinary least square methods. The coefficients of multiple

determinations were 0.74% and 0.87% for the frozen and smoked fish marketing respectively. These imply that, 74% and 87% of the variations in the marketing of frozen and smoked fish in the study area were explained by the independent variables included in the model such as Age, Educational level, Marketing Experience, Marital Status, Fish price, Market Charges and Cost of Transportation. The likelihood ratio chi squares were both significant at 5% level which attests to the goodness of fit of the model. The significant variables positively influencing the marketing of frozen scumbia fish at 5% level of significance were age of the marketers, marketing experience and marital status. While cost of transportation was significant at 10%. For smoked fish marketers the significant factors were Educational level ($P < 0.05$), Marketing Experience, ($P < 0.05$) while Marital Status and Fish price were significant at 1%

The coefficient of age was significant at 5% level of significance and positively related to the gross margin of frozen fish marketing. This implies that gross margin of frozen fish increases with increases in the age of the marketers. However, the coefficient of the age was negative but not significant for the smoked fish marketers. Implying that the gross margin of smoked fish marketing in the study area decreased with increase in the marketers' age. This might have been attributed to the stress and risk involved in the fish smoking process which needs more energetic individuals to carry out the exercise than the aged.

The coefficient of educational attainment was positive and not significant for frozen fish marketers, meaning that increase in educational attainment will increase the gross margin of frozen scumbia fish. This may have been attributed to the fact that, the more educated the marketers are, the more skills they will acquire in their marketing. While educational attainment was significant at 5% level and positively related to gross margin for the smoked fish marketers.

The coefficients of marketing experience were both positive for the frozen and smoked fish marketers at 5% level of significance indicating that increase in the marketing experience will in the same vein increase the gross margin of both frozen and smoked fish marketers.

Marital status was negatively related to the gross margin of the frozen fish marketers and was a significant variable at 5% level of significance having strong effect in the fish marketing exercise. The implication here is that the more the marketers get married the more the chances of them letting go frozen scumbia fish marketing. Whereas, the marital status for smoked scumbia fish marketers was positively related to gross margin and also significant at 1% level of significance, implying that increase in the number of marketers that are married will lead to increase in the gross margin of the marketers. This might have been attributed to the fact that their spouses inject more capital into the business thereby increasing the volume which will eventually lead to increase in gross margin all things being equal.

The coefficients of Cost of transportation were both negative for the frozen and smoked scumbia fish marketers. But the coefficient was significant at 10% level of significance for frozen but not significant for smoked fish marketers meaning that increase in Cost will reduce the gross margin of frozen scumbia fish as well as that of the smoked scumbia fish marketers.

The coefficients of market charges were both negative and not significant for the frozen and smoked scumbia fish marketers. This implies that, the more the market charges increase the less the gross margin of the marketers. The coefficient of fish price was positive but not significant for the frozen fish marketers, implying that increase in fish price will lead to a greater gross margin for the marketers. While, the coefficient was positive and significant for the smoked fish marketers at 5% level of significance. This also implies that increase in fish prices increase the gross margin of the marketers in the study area.

Table 7: Factors Affecting the Gross Margin of Frozen and Smoked Scumbia Fish Marketing

Variables	Frozen Coefficient	Std. Error	p-values	Smoked Coefficient	Std. Error	p-values
Constant	1.4564	4.1556	0.0234**	-1.4421	4.5941	0.2249
Age	0.0069	0.0608	0.0285**	-0.0382	0.0683	0.1312
Education	0.2073	0.4393	0.9161	0.2459	0.4130	0.0633*
Experience	0.0506	0.1647	0.0142**	0.3049	0.2697	0.07688*
Marital Status	-0.0955	0.3482	0.0223**	0.2090	0.3799	0.0085***
Transportation	-0.00184	0.05768	0.09746*	-7.574e-05	0.000214	0.7256
Market Charges	-0.00017	0.00018	0.9334	-2.236e-05	0.000167	0.8941
Fish price	0.1137	0.7233	0.1572	0.00043	0.000459	0.0526**
Likelihood ratio Chi ² R ² = 0.74	=	36.72 **		Likelihood ratio Chi ² R ² = 0.87	=39.3**	

Source: field survey, 2018

** Significant at 5%, *** significant at 1%, * significant at 10%

Constraints to Scumbia Fish Marketing in the Study Area

Table 8 presents the constraints militate against the effective marketing of scumbia fish in the study area using frequency count. It showed that, negative price fluctuation arising from low patronage ranked first followed by unhealthy market competition which ranked second. This

is expected as the market is highly disorganized. This is perhaps the major driver of the first constraint- negative price fluctuation. Stall location ranked third. Large number of sellers ranked fourth. Rainy season ranked fifth, carton price instability ranked sixth and unknown/inaccurate quantity in the carton ranked seventh.

Table 8: Constraints to Scumbia Fish Marketing in the Study Area

Constraints	Frequency	Percentage	Rank
Low patronage causing price reduction	31	19.1	1 st
Unhealthy Market Competition	28	17.3	2 nd
Stall location	23	14.1	3 rd
Large number of Sellers	12	7.5	4 th
Rainy Season	12	7.3	5 th
Carton Price instability	9	5.8	6 th
Unknown/inaccurate Quantity in a carton	2	1.3	7 th

Source: field survey, 2018

Conclusion

The result showed that the average Gross Margin of fish sellers per week was ₦26381.01 for frozen scumbia fish, while N21446.2 was for smoked scumbia fish in the markets. This showed that Scumbia fish marketing is profitable. Most of the fish marketers were young women within the age bracket of 31-35 years with the mean age of 35 years. The significant variables influencing the marketing of frozen Scumbia fish positively at 5% level of

significance were age of the marketers, marketing experience, and marital status. While cost of transportation was significant at 10%. Also the Significant factors influencing smoked fish marketers were educational level, (P< 0.05) and marketing experience, (P<0.05) while marital status and Fish price. was significant at 1%. The major constraint to Scumbia fish marketing was low patronage which culminates into poor price formation in the markets. It is however concluded that Scumbia fish marketing

is a profitable and viable business of which men

should be encouraged to join.

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