Analysis of Smoked Fish Marketing in Mubi North Local Government Area, Adamawa State

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Abstract— The study analyzed smoked fish marketing in Mubi-North Local Government Area, of Adamawa State. The specific objectives were to describe the socio-economic characteristics of smoked fish marketing, describe the cost and returns of smoked fish marketing, describe channels of smoked fish marketing, describe the constraints to smoked fish marketing, and describe marketing efficiency of smoked fish marketing in the study area. Data was collected from 122 smoked fish marketers using simple random sampling technique. The data was collected from 50% of the sampling frame of each category of the smoked fish marketers within the local government area using a structured questionnaire. The data collected were analyzed using both descriptive and inferential statistics. The result reveals that majority (40.98%) of the fish marketers fell within 31 – 40 years, majority (63.93%) of the respondents were male, about 57.38% were married, about 49.18% of the respondents in the study area had primary education, 60.66% of the respondents had a household size of 1-5 people. further, the result revealed that 54.10% of the respondents in the study area had 21-30 years of marketing experience. Also, the result reveals that majority (53.27%) of the smoked fish marketers are small-scale operators with net income of ₦29, 173 per cartoon with marketing efficiency of 137.47% which indicate that their efficiency is relatively high implying that smoked fish marketing in the study area is efficient. The study has shown that the distribution channel of smoked fish in Mubi-north local Government Area is a decentralized channel in which the consumers can also obtain their fish directly from the producer that is there was liberty of distribution to every individual with little involvement of middlemen in the distribution. It was concluded that smoked fish marketing in Mubi-north local Government Area of Adamawa State is Profitable despite the problem encountered. To forestall the problems associated with smoked fish marketing in Mubi-north local Government Area of Adamawa state, the following recommendations were proffered: Financing of smoked fish marketing requires access to affordable and timely credit facilities to facilitates and sustain efficient and effective marketing processes, to minimize high cost of transportation as a result of rising fuel price and bad roads, the government should rehabilitate and were possible construct new roads linking fishing zones and fish markets, fish marketing association should be established so that they can have easy access to new information and marketing strategies in order to improve their marketing strategies.

Keyword— Analysis, Smoked, Fish, Marketing.

I. INTRODUCTION

Nigeria is a country with abundant natural and human resources, but despite her resources the country still remains among the least consumers of protein in Africa (Ajani, 2000). According to Nwaiwu *et al..,* (2012), food is not distributed equally among the households in Nigeria; this may be attributed to high level of poverty in some region of the country, distribution logistics, high cost involved in fish preservation and storage, transportation, post-harvest losses, and inadequate power supply. Most households consume minimum level of calorie that satisfies their protein requirements. Protein is an essential part of human diet and it is sourced from either plant or animal, generally, plant product contains different ratios of amino acids and lower concentration than animal products Britton, (2003). Animal

proteins are said to be superior to plant proteins, because it contains all amino acids needed in the body as oppose to plant proteins that has inadequacies in one or more of the essential amino acids Adebayo, (2005). Hence animal protein is referred to as complete protein.

Fish has been acknowledged as an important source of animal protein, it contributes significantly to the survival and well-being of a large number of the people around the world. It is known to be efficient converter of food for human consumption and saving children from kwashiorkor due to low protein intake and unbalanced diet and there is little or no religious restriction on its consumption Dauda *et al..,* (2013). Fish is an important source of essential nutrients which includes; protein, lipids, vitamins and minerals Tsado *et al..,* (2012). In Nigeria almost 50% of the total animal protein intake is from fish, it occupies this unique position being the cheapest source of animal protein and it has contributed immensely to the economy as it employs a good percentage of the active labor force in the agricultural sector Food and Drink Federation (FDF, 2009). However, it worth being noted that consumption of fish like other food products is not evenly distributed in Nigeria, According to Dauda *et al.*, (2013), fish consumption in Nigeria is only high in the Southern part of the country but very low in the northern part because of the challenges faced by fish marketers such as preservation techniques, transportation, excetra. Fish supply in Nigeria is either through capture fisheries, fish farming or by importation Anene *et al..*, (2010), but unfortunately far above this, half of fish consumed in Nigeria is imported. Nigeria requires about 2.66 million metric tone (mt) of fish annually to satisfy the dietary requirement of its citizens (160 Million). Amao *et al.*, (2006). Regrettably, the total aggregate domestic fish supply from all sources (capture and culture fisheries) is less than 0.7 million MT per annum. Nigeria has to import about 0.7 million mt of fish valued at about USD 500 million annually to augment the shortfall Atanda, (2012). In 2009, about N97 billion was spent importing fish into Nigeria. This massive importation of smoked fish in the country has ranked Nigeria the largest importer of smoked fish in Africa Atanda, (2012). Smoked fish importation in Nigeria may still continue for some time because supply from captured fisheries in Nigeria has been erratic and on the decline in recent years (FDF, 2007) and the growth rate in aquaculture is not yet sufficient for the ever-increasing demand.

Accordingly, protein intake is generally low in the area and animal sources of protein are better than crop. Similarly, fish is one of the most important sources of protein in Nigeria but it supplies is not well distributed and this create locational variation and price differences. Also, there are scanty information on price and channels of distribution in the area. It is therefore important to study the Profitability Analysis of Smoked Fish Marketing and understand the factors that affect it became pertinent and worth embarking. Questions which the study addressed were: What are the socio-economic characteristics of smoked fish marketers in the study area? What are the costs and returns of smoked fish marketing in the study area? What are the marketing channels of smoked fish marketing in the study area? What are the constraints to smoked fish marketing in the study area? What is the marketing efficiency of smoked fish marketing in the study area?

Objectives

The broad objective of the study was to evaluate the profitability of smoked fish marketing in Mubi North Local Government Area, Adamawa state while specific objectives were to: describe the socio-economic characteristics of smoked fish marketers; determine the costs and returns of smoked fish marketing in the study area; describe the marketing channels of smoked fish marketing in the study area, describe the constraints to smoked fish marketing in the study area, describe the marketing efficiency of smoked fish marketing in the study area.

II. METHODOLOGY

Area of the study

This study was conducted in Mubi-north Local Government Area (LGA) of Adamawa state. Mubi is the capital of Mubi-North LGA of Adamawa State in Nigeria. It lies on latitude 10º 32' N to 10º 11' N and longitude 13°12' E to 13° 35'E, with a total land mass of 506.4Km² (Adebayo and Tukur, 1999; NPC 2007). The area lies on the West bank of the Yedzeram River; a stream that flows into Lake Chad and is situated on the Western flanks of the Mandara Mountain. It shares common boundaries with Borno State to the North, Hong Local Government Area to the West, Maiha Local Government to the South and Cameroun Republic to the East (Adebayo, 2004). Mubi-North comprises of four (4) districts (Mubi-Town, Bahuli, Mayo-Bani and Muchalla) and it is divided into eleven (11) political wards namely; Mijilu, Lokuwa, Mayo-Bani, Kolere, Digil, Yelwa, Vimtim, Muchalla, Bahulli, Sabon-layi and Betso. The ethnic groups are mainly Fali, Gude, Marghi and

Fulani. The inhabitants are predominantly farmers who produce maize, beans, sorghum, and soya bean and traders of livestock that include cattle, goat and sheep to neighboring country like Cameroun.
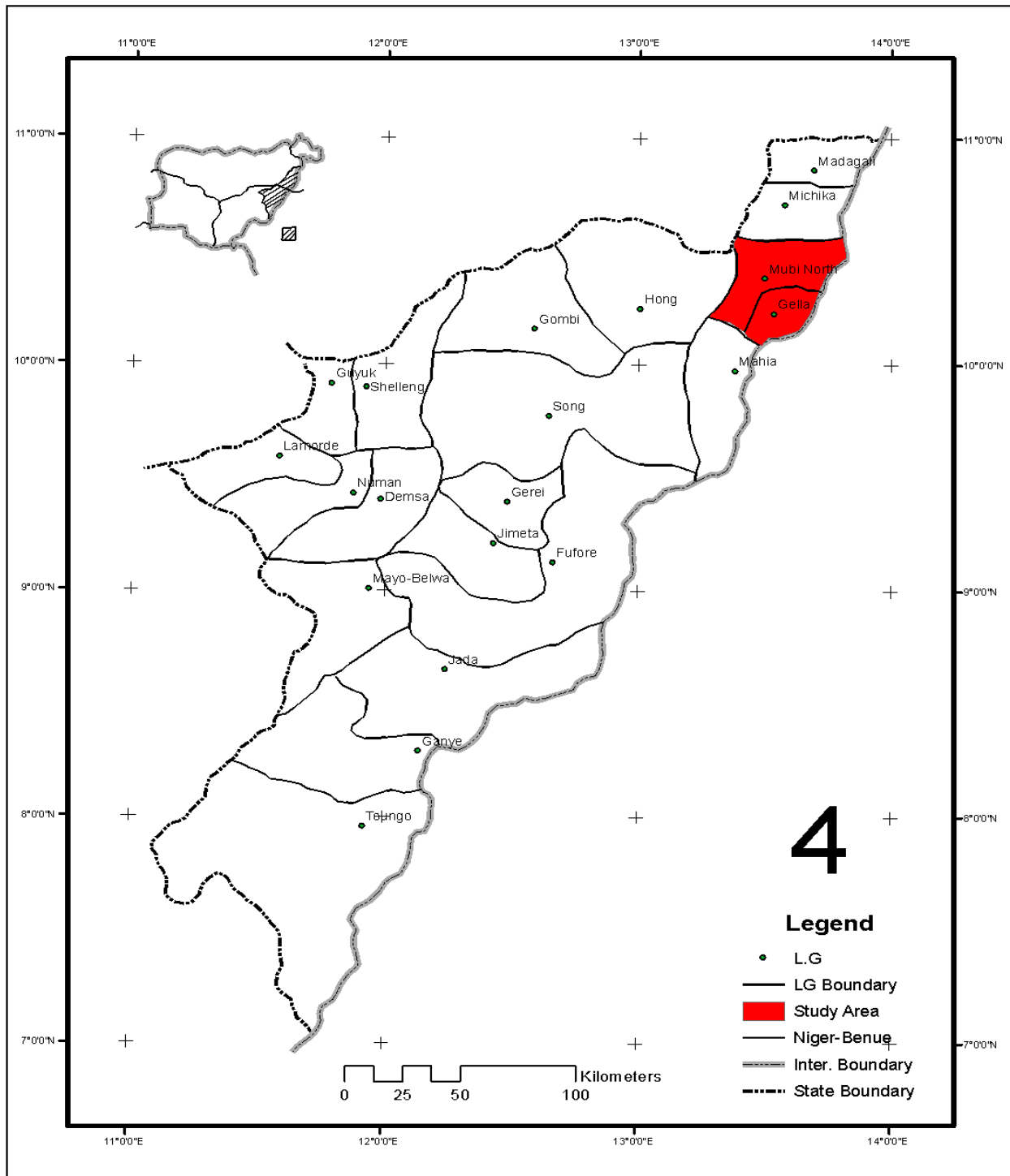

Fig.1: Map of Adamawa State, showing a portion of Mubi North local Government

Source: Adebayo AA (1999)

Population of the study

The population of the study was all the smoked fish marketers in Mubi-north Local Government Area of Adamawa State which constitute three categories of smoked fish marketers. The first category were hawkers, second category were retailers and the third category were whole sellers. From the list of smoked fish marketers collected from their association, there were 130 hawkers, 84 retailers and 30 whole sellers respectively and this served as the sampling frame (population) of the study.

Sample of the study

Purposive and simple random sampling was used to draw the sample for the study. Three markets namely: Mubi main market, Mubi new market, and general hospital mini market were purposively selected due to concentration of smoked fish marketers. Simple random sampling was used to select proportionate size of all the categories of smoked fish marketers. The study considered 50% of each of the categories. The sampling distribution is presented below.

Table 1. Sampling distribution of smoked fish marketers according to categories

CATEGORIES OF MARKETTERS	SAMPLING FRAME	PROPORTION (50%)	SAMPLE SIZE
Hawker	130	65	65
Retailers	84	42	42
Whole sellers	30	15	15
Total	244	122	122

Source: market survey 2019

Sources of data and data collection

Primary data was the source of data for the study. The data was collected using structured questionnaire. A pre-tested questionnaire was administered to the marketers which was supported with interview to guide them in filling or ticking the questions correctly. This was because the marketers were not well educated to understand and fill the questionnaire alone.

Validity and reliability

Reliability means the accuracy or precision of a measuring instrument while validity means the extent to which the research instrument measures what it supposed to measure. To achieve validity and reliability the questions in the questionnaire was free from ambiguity (the questions was not too complex), and was followed by interview to know their view on the subject and the test-retest method was used.

Techniques of data analysis

Descriptive statistics (frequency counts, percentages and means) was used to describe the socio-economic characteristics of the respondents such as age, family size, marketing experience, gender, marital status, educational status etc. and describe the constraints associated with smoked fish marketing that is objective one and four respectively.

Inferential statistics marketing efficiency was used to achieve objective five of the study

The formula for calculating marketing efficiency is as expressed below:

$$ME = \frac{\text{Value added by marketing cost of marketing}}{\text{cost of marketing}} \times \frac{100}{1}$$
……………… (1)

Net Farm Income (NFI) was used to estimate the costs and returns of smoked fish marketing in the area that is objective two. The mathematical expression of the Net Business Income is presented as follows:

$$NBI = TR - TVC - TFC$$
…………………………………………………. (2)

Where NBI = Net Business Income

TR = Total Revenue (₦)

TVC = Total Variable cost (₦)

TFC = Total Fixed cost (₦)

Flow chart was used to describe the marketing channels of smoked fish marketing in the area that is objective three.

III.   RESULTS AND DISCUSSION

Distribution of the socio-economic characteristics of smoked fish marketers

Socio-economic characteristics of the smoked fish marketers were analyzed by employing the use of descriptive statistical tools which include the use of table, frequency, and percentage. Below are the details.

Table 2: Distribution of the respondents according to Gender

Variables	Frequency	Percentage
Gender		
Male	78	63.93
Female	44	36.07
Total	122	100

Field Survey, 2019

Table 2 present result on gender of respondent in the study area. It shows that males are seen to have dominated the enterprise (63.93%) while females constitute (36.07%). This result was in line with the research work carried out by Nwaru (2005) which indicates that majority (66.67%) of the marketers were males and is also consistent with the findings of Ajani (2000) and Chekene and Chancellor (2015) who found that majority of smoked fish marketers in Nigeria were males. This means that males participate more in smoked fish marketing than their female counterparts in the study area and the reason could be attributed to the tedious nature of the various activities before smoked fish is fit for consumption.

Table 3: Distribution of the respondents according to Age

Variables	Frequency	Percentage
Age		
>20	40	32.79
31-40	50	40.98
41-50	21	17.21
50 - 60	11	9.02
Total	122	100

Field Survey, 2019

Table 3 present results on age distribution of the respondent. It shows that majority (41%) fell between 31 to 40 years, 32.79% fell between 20 years and above, 17.21% fell between 41 to 50 years, 9.02% feel between 50 to 60 years. Thus, this confirmed the findings of Tobor (1984) who conducted a study on profitability analysis of smoked fish marketers in Yola Adamawa State and found that, majority (64.17%) of smoked fish marketers fell within the economically active group of between 20 and 40 years. This indicates that youths formed the bulk of the smoked fish marketers, the reason could be that their youthful strength can be effectively utilized in marketing. Thus, the implication of this result is that majority of the marketers are within the productive age and can adequately manage and carry out marketing activities at an optimal level and hence, their profit maximization motive is secured.

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Table 4 Distribution of the respondents according to Marital Status

Variables	Frequency	Percentage
Marital Status		
Married	70	57.38
Single	20	16.39
Widow	23	18.85
Divorced	9	7.38
Sub-total	122	100

Field Survey, 2019

Table 4 present result on marital status of the respondents. It shows that majority (57.38%) of respondents were married, 18.85% of respondents were widows, 16.39% of respondents were singles, and 7.38% of respondents were divorced. This reveals that majority of smoked fish marketers (57.38 %) are married, followed widows (18.85%), followed by singles (16.39%) and divorced (7.38%). This is in tandem with the study conducted by Ajani (2000) and Falodun (2011), who reported that majority (76.30%) of smoked fish marketers were married, also observed by Iliyasu *et al.,* (2012) and (Chaston, 2011) also reported that majority (65%) of the smoked fish marketers were married with unmarried respondents accounted for 30% while divorced and widows represented 3.33% and 1.67% accordingly. Married marketers could have more "advantaged" in agricultural marketing and improved agricultural technology adoption because spouses and children of married marketers constitute the major labor force in smoked fish marketing. This is evident as members of the family could serve as source of labor for various activities involved in smoked fish processing. Hence, the implication of this result is that marriage directly influences adoption of agricultural technology into smoked fish marketing.

Table 5: Distribution of the respondents according to educational status

Variables	Frequency	Percentage
Educational Status		
Primary School	60	49.18
SSCE/NECO	38	31.15
Others	24	19.67
Total	**122**	**100**

Field survey, 2019

Table 5 present result on educational status of the respondents which indicates that majority (50%) had primary school education, followed by SSCE/NECO (31.15%) and other educational qualifications (19.67%). This result implement that most of the marketers were educated having at least primary school certificate. 31.15% had secondary education and 19.67% made up the remaining percentage. This is in line with the findings conducted by Abah *et al.,* (2013) who reported that more than half of the marketers (76.6%) had some formal education and hence possibly are innovative. This was substantiated by Eyo, (1998) who observed that high literacy level could have positive impact on the adoption of Agricultural technologies, as opined by Joseph, (2004). Majority (69.63%) of the smoked fish

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marketers had secondary education. This implies that most smoked fish marketers in the area completed their secondary education. Thus, the implication of this result is that, the marketers are somewhat educated and can presumably interact to generate new ideas that may improve working conditions in smoked fish marketing.

Table 6: Distribution of the respondents according to family size

Variables	Frequency	Percentage
Family Size		
1-5	74	60.66
6-10	32	26.23
11-15	14	11.47
>15	2	1.64
Total	122	100

Field Survey, 2019

Table 6 present result on family size of respondents. It shows that majority (60.66%) of the markers had 1 – 5 persons in their household, 26.23% had 6 to 10 members, 11.47% had 11- 15 members, while family with 15 and above household size had (1.64%). The distribution of the family size above indicates that the household size ranged from 1-15 majority as 1-5 size possessed 60.66%, 6-10 size possessed 26.23%, 11-15 size possessed 11.47% and >15 size possessed 1.64%.This is in line with the finding of Chaston,,(2011) who reported that the distribution of the household size of the respondents indicates that the household size ranged from 1 to 15 with majority falling within 6–10 and represented 35%, followed by those with household size of 1–5 people accounted for 30% while those with over 10 people represented 25.8% who contributed to the business labor supply since many of the marketers do employ family labor as the major source of business labor. Iliyasu et'al. (2012) further found that the average household size of smoked fish marketers were 10 persons. This implies that smoked fish marketers in the area have considerable family labor. This is consistent with the findings of Ajani (2000) who found the average household size of smoked fish marketers in the three major smoked fish ecologies of Nigeria to be 10 persons. Hence, the implication of this above result is relatively in large household size cases, labor is readily available for business activities.

Table 7: Distribution of the respondents according to marketing experience

Variables	Frequency	Percentage
Marketing Experience (years)		
1-10		
11-20	30	24.59
21-30	18	14.75
Above 30	66	54.10
Sub-total	8	6.56
	122	100

Field Survey, 2019

Table 7 present marketing experience of respondents. It shows that, those with 1-10 years of market experience (24.59%), those with 11-20 years of market experience constitute (14.75%) those with 21-30 years of market experience (54.10%) and those above 30 in market experience are (6.56%) which reveals that majority of

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marketers spent 21-30years (54.10%), 1-10years (24.59%), 11-20 years (14.75%) and above 30years (6.56%) in business. Thus, this agreed with the findings as recorded by Chaston, (2011) whose study indicated that majority 40% of smoked fish marketers have marketing experience of between 21 and 30 years followed by (22.5%) of respondents with experience of over 30 years, similarly, as reported by Eyo, (1998)

Marketers with experience of about 6 and 10 years and above 15 years constituted about (41%) and (30%) respectively. Experience is important in determining the profit levels of marketers, hence the implication of this result is that the more the experience, the more marketers understand the marketing systems, conditions, trends and thus, the profit maximization intention of the marketers is assured and secured etc.

Table 8: Distribution of the smoked fish marketers according to Scale of Processors

Variables	Frequency	Percentage
Scale of operation		
Wholesalers	15	12.30
Retailers	42	34.43
Small-scale traders	65	53.27
Total	122	100

Field Survey, 2019

Table 8 present the processor of the respondents in the study area which shows wholesalers (12.30%), retailers (34.43%) and small- scale traders (53.27) Scale of Production is one of the major determinants of income to be earn, this can be characterized into small- and large-scale marketing. Hence, the small- scale traders composed the majority of the marketer's population with about 53.27%, the retailers having 34.43%% and the Wholesalers possessing 12.30%. Thus, this is in line with. Eyo, (1998) Majority of the marketers 75.5% are small-scale marketers selling between 0-10 cartons per week while 15.6% and 8.9% sales between 13-14 and 15 cartons or more signifying the low purchase in the study area. This implies that the study area comprises mostly small-scale marketers. Thus, the implication of this result is that even individuals with little amount of income can still venture into this business and still make maximum profit in small scale category.

Costs and returns analysis of Smoked fish marketing in the study area

Table 8 below also reveals the costs and returns associated with smoked fish marketing in Mubi-north local government area. It reveals a Net Income (NI) of ₦33,173 per cartoon, Total Variable Cost (TVC) ₦75,272 and Total Fixed Cost (TFC) ₦555.00. The acquisition cost of fish ranked first, cost of transportation ranked second and cost offloading and offloading ranked third among the variable cost. The attributed of Fixed Cost which is ₦555.00 was very low impaired to the total variable costs incurred. The Total Revenue (TR) generated from selling 218 kg of smoked fish at ₦500 per kg was of ₦109,000. This shows that smoke fish marketing in the area is profitable in terms of monetary value by the positive sign of the net income.

Table 8: cost and returns analysis of marketing in the study area

Items	Amount/kg (₦)
Variable costs	
Acquisition cost of 218kg of smoked fish	65,350.00
Cost of storage	250.00
Cost of tax	1975.00
Cost of transportation	5237.00
Cost of loading and offloading	2,460.00
Total Variable Costs	**75,272**
Fixed Costs	
Baskets	375.00
Knife	180.00
Total Fixed Cost	**555.00**
TBC = TVC + TFC	**75,827.00**
Revenue from selling of 218kg of smoked fish @ ₦500	109,000.00
Total Revenue	**109,000.00**
Net Business Income = **TR – TBC**	**33,173.00**

Source: Field Survey, 2019.

4.3. Marketing Channel of Smoked Fish

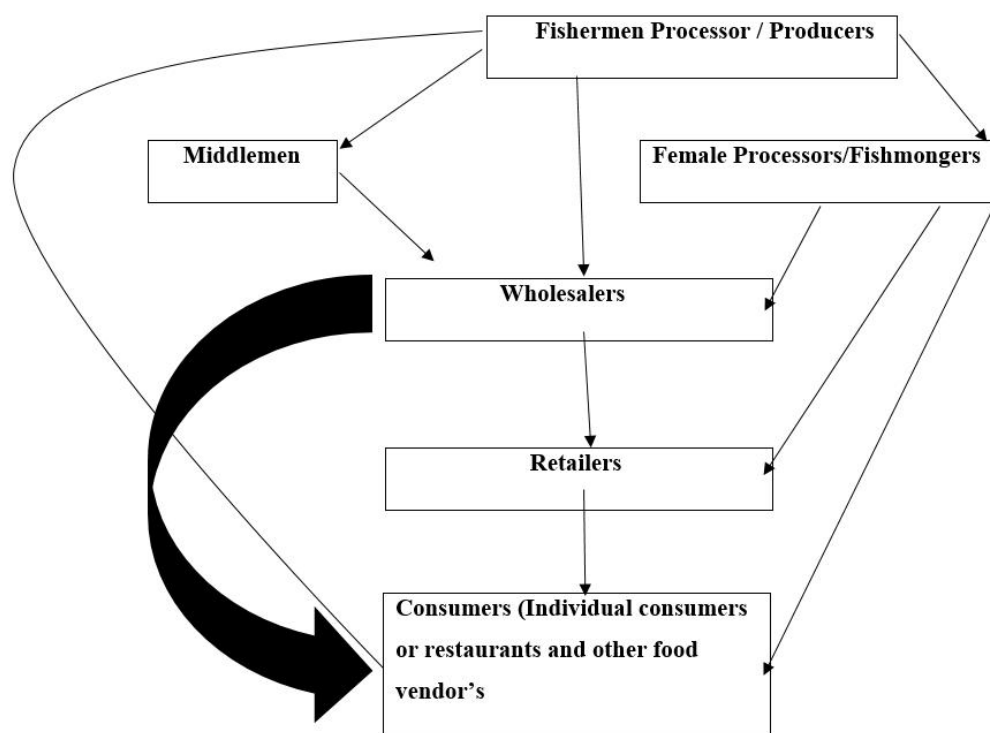*Fig.2: Marketing Channel of Smoked fish marketing in Mubi-north Local government area.*

A marketing channel is a set of practices or activities necessary to transfer the ownership of goods from the point of production to the point of consumption. It is the way products and services get to the end-user. A marketing channel is a useful tool for management, and is crucial to creating an effective and well-planned marketing strategy.

Thus, the marketing channels of fish from the fisherman to the final consumer in the study area for smoked fish are illustrated in Figures 2 above. The most prominent marketing channel for smoked fish is that between fishermen, fishmongers and consumers. The channel of marketing of smoked fish in the Mubi-north was slightly more complex. This was probably because they have to deal with a chain of operatives from the source through various market outlets before reaching the consumer. This confirms the findings of Chapman and Hall (1994) that, the route by which sea foods reach the consumer may be direct or highly complex with a variety of exchanges. Most individual consumers, restaurants, chop bars, and other food vendors purchase fish directly from the nearby wholesalers. This was perhaps due to their relatively cheaper price compared to that of retailers. This also confirms the findings of Barwuah (1998) that wholesale cold stores sell at lower prices to attract more customers.

4.4 Constraints to Smoked fish marketing

Table 9 below describes the constraints affecting the economic activities of smoked fish marketers in mubi-north local government area of Adamawa state. In other of ranking based on their relative percentages as regards to the various frequencies. Inadequate capital has been the major problem influencing marketing activities of the marketers is been ranked 1, followed by Price fluctuation ranked 2, inadequate storage facilities ranked 3, inadequate shed/shop and insect infestation ranked 4 and 5 respectively. However, this is in line with the work of Osarenren *et al.*, (2014) who identified problems confronting smoked fish marketing in the study area. Among the problems were lack of capital was ranked first followed by high cost of storage facilities and price fluctuation etc. Furthermore, Falodun (2011) reported had identified some of the problems influencing smoked fish marketing which include lack of capital, price fluctuation, inadequate supply and inadequate storage facilities in which were ranked: lack of capital as 1, price fluctuation as 2, inadequate storage facilities as 4 e.t.c. meanwhile on the previous investigation on the profitability of smoked fish marketing, Osarenren and Ojor, (2014) indicated that smoked fish was a profitable venture. Therefore, identification and adoption of the right market appealing to the consumers as a technique for achieving profitability can be said to be one of such right steps, because it enables fish farmers not only to produce and sell but also to maintain the right marketing delight with their customers which ends in enhancing profit which is the goal of the marketer.

Table 9: Constraints to Smoked fish marketing

Variables	Frequency	Percentage	Ranking
Inadequacy of Capital	50	40.98	1
Price fluctuation	39	31.97	2
Inadequate Storage facilities	18	14.75	3
Inadequate Shed/Shop	10	8.20	4
Insect infestation	5	4.10	5
Total	**122**	100	

Field Survey, 2019

Table 9 presents result on constraints to smoked fish marketing in the study area it shows that inadequacy of capital ranked first (40.98%), price fluctuation ranked second (31.97%) inadequate storage facilities ranked third (14.75%), inadequate shad/shop ranked fourth (8.20%) while insect infestation ranked fifth (4.10%). It shows that the most (40.98%) encountered problem was inadequate capital followed by price fluctuation (31.9%) followed by inadequate storage facilities (14.75%) followed by inadequate shad/shop (8.20%) and least incurred constraint was insect infestation (4.10) %. The implication of this result is that shortage of funds or capital constitute the most important constraint while insect infestation is the least constraints this result is in contrast with the finding of Amao, *et al.*. (2006), economics of fish demands in Lagos state, Nigeria.

Table 10. Marketing efficiency of smoked fish marketing in the study area

Variables	Value added by marketing cost	Cost of marketing	Marketing Efficiency
	105,000	75,827	143, 75.00

Field Survey, 2019

Table 4.1 present marketing efficiency of fish marketers in the study area. It shows that, the value added by marketing cost was 109,000, cost of marketing was 75,827 and the marketing efficiency was 143.75%. high value of ME implies that smoked fish marketing is in the study area is very efficient, and therefore, the profit maximization intention of the marketers is guaranteed. In other words, this implies that the fish marketers utilized their inputs so well to yield a productive output. Hence, when effectively and adequately managed, smoked fish marketing can serve as a great tool of alleviating poverty in the society at large.

IV.   CONCLUSION

The study conclude that smoked fish marketing is profitable and efficient. It also shows that smoked fish marketing in the area is a decentralized channel in which the consumers can also obtain their fish directly from the producers, implying that is there was liberty of distribution to individuals with little involvement of middlemen in the distribution. Furthermore, it was concluded that despite been profitable and efficient there are still some problems been encountered by the smoked fish marketing in area which include inadequate capital, high transportation cost, inadequate storage facilities which if eliminated will further boost the income and well-being of smoked fish marketers in the area.

RECOMMENDATION

To forestall the problems associated with smoked fish marketing in Mubi-north local Government Area of Adamawa state, the following recommendations were proffered:

- Financing of smoked fish marketing requires access to affordable and timely credit facilities to facilitates and sustain efficient and effective marketing processes. .
- To minimize high cost of transportation as a result of rising fuel price and bad roads, the government should address this by rehabilitating and were possible constructing new roads linking fishing zones and fish markets.
- Fish marketing association should be established so that they can have easy access to new information and marketing strategies in order to improve their marketing strategies.

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