

ANALYSIS OF FROZEN FISH MARKETING IN MUBI-NORTH LOCAL GOVERNMENT AREA OF ADAMAWA STATE

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ABSTRACT

This study examined frozen fish marketing in Mubi-North Local Government Area of Adamawa State, Nigeria, focusing on the socioeconomic characteristics of marketers, costs and returns, marketing efficiency, and key constraints. Primary data were collected from 100 marketers using structured questionnaires and analyzed with descriptive statistics and gross margin techniques. Findings revealed that the enterprise is male-dominated (84%), though women also play important roles. Most marketers were youthful or middle-aged (20–49 years), with 60% married and many managing large households. Educational attainment varied, as 30.8% had tertiary education while 22.1% had no formal education. Marketing experience was generally high, with a quarter of respondents having more than 15 years of involvement. Income analysis showed that 68% earned ₦200,001 to ₦500,000 monthly, confirming the livelihood importance of the business. Cost and return analysis indicated that purchase costs accounted for the largest share of expenses (41.7%), yet marketers achieved a net profit margin of 23%. Marketing efficiency was moderate, with average profit margins of ₦503.8 per box, though spoilage and fluctuating demand reduced performance. Major constraints included high competition, poor storage, unreliable electricity, fluctuating prices, and weak transport infrastructure. The study concludes that frozen fish marketing is profitable but limited by infrastructural and institutional challenges. It recommends enhanced access to credit, investment in cold storage and renewable energy, training in modern marketing, and government support through improved infrastructure and favorable policies.

Keywords: Frozen fish, marketers, cost return, marketing efficiency, key constraints and Mubi

INTRODUCTION

According to the UN's Food and Agriculture Organization, there are more than 28 million people engaged in fishing operations worldwide. The annual world catch of fish exceeds 100 million tons, of which around 25% is processed into frozen fishery products. Whole frozen fish represents big Agric-business, given that worldwide sales from frozen fish exports by countries totaled US\$25.4 billion in 2018. Overall, the value of frozen fish exports rose by an average 9.2% for all exporting countries since 2014 when frozen fish shipments were valued at \$23.3 billion. Year over year, there was an uptick in the value of global frozen fish exports appreciating by 4.9% from 2017 to 2018. Among continents, European countries sold the highest dollar value worth of frozen fish exports during 2018 with shipments amounting to \$8.5 billion or about a third (33.39%) of the global total. Close behind in second place were exporters in Asia at 31.7% followed by Latin America (10.3%) excluding Mexico but including the Caribbean, then North America (9.8%). Smaller percentages came from Africa (7.8%) and Oceania (5%) led by New Zealand and Papua New Guinea. In Nigeria Aquaculture production (metric tons) was 316,727 as of 2015. The fishery sector is estimated to contribute about 3.5% to Nigeria's Gross Domestic Product (GDP), and also provides direct and indirect employment to over six million people. Kwara State Government, (2010).

According to Eyo (1992), Fish is a very important agricultural product in the country as it occupies a prime place in the economy of the country. The value for the employment opportunities come from different fishing activities such as production, processing, preservation and transportation (Ali

et al. 2008). The Central Bank of Nigeria, CBN. (2005) report shows that the contribution of the fishery sector to the GDP of Nigeria rose from N76.76 billion in 2001 to N162.61 billion in 2005. 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. 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. 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 2.06 million Mt of fish annually to satisfy the dietary requirement of its citizens with population of people (160 Million). 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. In 2009, about N97 billion was spent importing fish into Nigeria. This massive importation of frozen fish in the country has ranked Nigeria the largest importer of frozen fish in Africa. Frozen 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 and the growth rate in aquaculture is not yet sufficient for the ever-increasing demand.

Materials and Methods

The study was carried out in Mubi-North Local Government Area of Adamawa State. The use of Primary data was employed to collect data for the research. One hundred (100) structured questionnaire was administered to the respondents and was supplemented by oral interview where the respondents that could neither read nor write. Purposive and Simple random sampling was employed to select the respondents for the study. Out of the eleven (11) political wards that made up the four districts under Mubi-North LGA Shagari Low cost of Yelwa ward and Sabon Kasuwa (Mubi main market) of Sabon-layi ward was purposely selected. This is because of their relative importance influencing the marketing activities of frozen fish in the study area. The information obtained in the questionnaire comprised; the Socio-economic characteristics of fish marketers, cost and returns of fish marketing and constraints associated with frozen fish marketing in the study area. Hence, a total of one hundred (100) respondents was selected at random which is 50% of the total Population which is Two hundred (200) registered respondents as shown in Table 1 below. Fifty-six (56) respondents from Sabon kasuwa of Sabon-layi ward and forty-four (44) respondents from Shagari Low cost, Yelwa ward Mubi-north LGA. Below, was the Sample frame describing the population of the frozen fish marketers in relation to their percentage proportion and the Sample size.

Table 1: Sample of Registered Frozen Fish Marketers in proportion to Sample Size Frame

Wards	Sampling frame	Sample Size (50%)
Yelwa (Shagari low cost)		
Wholesalers	6	3
Retailers	94	47
Sabon-layi (Sabon kasuwa)		
Wholesalers	6	3
Retailers	94	47
Total	200	100

The Net marketing income was estimated using the mathematical expression.

$$\text{NMI} = \text{TR} - \text{TMC}$$

Where:

NMI – Net Marketing Income in Naira (₦)

TR= Total Revenue in Naira (N) obtained as a product of per unit cost of frozen fish multiplied by the total number of frozen fish.

TMC = Total marketing cost in Naira (N)

As, TMC= TFC + TVC

Where:

TFC= Total Fixed Cost in Naira (N)

TVC = Total Variable Cost in Naira (N)

As, TVC = VC₁ + VC₂ + VC₃ + VC₄ + VC₅ + VC₆

Where:

VC₁ = Cost of storage

VC₂= Cost of tax

VC₃ =Cost of Power Supply

VC₄= Cost of transportation

VC₅= Cost of loading and offloading (N)

VC₆= Cost of Fish (N)

The efficiency of fresh fish marketing by the intermediaries as describe by Sherpherd-Futrell method (Ugwumba and Okoh, 2010) :

$$\text{ME} (\%) = \left(\frac{\text{TMC}}{\text{TR}} \right) \times 100$$

Where:

ME= Coefficient of marketing efficiency

TMC = Total cost incurred by the marketers

TR= Total value of product sold.

RESULTS AND DISCUSSIONS

Table 1 show that the majority of frozen fish marketers were male (84%), while females constituted only 16%. This indicates male dominance in fish marketing, though women also contribute meaningfully with the largest age group of 20–29 years (27%), followed by 40–49 years (31%). This suggests that both youth and middle-aged adults are actively engaged in frozen fish marketing, contributing energy, innovation, and experience. According to Oladele and Yusuf (2023), younger adults often drive innovation in agribusiness, while Bello and Usman (2023) emphasized that middle-aged marketers combine stability with adaptability to changing market demands. Table 1 show that most respondents were married (60%), which suggests that household responsibilities and access to family labor influence involvement in marketing. Married individuals often pursue stable income-generating activities, while single and widowed marketers may depend more on personal effort. Mohammed *et al.* (2023) observed that marital status significantly shapes labor allocation and household income strategies in agricultural enterprises. Table 1 show that the majority (30.8%) of marketers had tertiary education, while 22.1% had no formal education. This mix indicates that while education enhances managerial and financial literacy, uneducated marketers also play a role in the trade. Education increases capacity to adopt efficient storage and marketing practices according to Okafor and Adeyemi, (2023). Similarly, Afolabi *et al.* (2023) found that higher literacy levels improve access to market information and credit opportunities in agribusiness. Table 2 show that about 25% of marketers had over 15 years of experience, while 23% had 11 to 15 years. This indicates a relatively experienced marketing population. Experience is vital in price negotiations, storage decisions, and managing market fluctuations. Abdullahi and Usman (2023) highlighted that marketing experience enhances risk management and long-term profitability.

Table 1: Socioeconomics Characteristics Frozen Fish Marketers

Socioeconomics Characteristics	Frequency	Percentage (%)
Gender		
Male	84	84.0
Female	16	16.0
Total	100	100.0
Age Group		
Below 20	22	22.0
20–29	27	27.0
30–39	16	16.0
40–49	31	31.0
50 and above	4	4.0
Total	100	100.0
Marital Status		
Single	19	19.0
Married	60	60.0
Widowed	16	16.0
Divorced	5	5.0
Total	100	100.0
Educational Levels		
No formal education	23	22.1
Primary	20	19.2
Secondary	18	17.3
Tertiary	32	30.8
Other	11	10.6
Total	100	100.0

Source: field survey 2025

Table 2: Occupation of Frozen Fish Marketers and Experience of Frozen Fish Marketers

Socioeconomics Characteristics	Frequency	Percentage (%)
Occupation		
Fish + Job	30	30.0
Fish + Trading	30	30.0
Fish + Farming	18	18.0
Frozen fish only	17	17.0

Socioeconomics Characteristics	Frequency	Percentage (%)
Occupation		
Other	5	5.0
Total	100	100.0
Years of Experience		
<1 year	11	11.0
1–5 years	20	20.0
6–10 years	21	21.0
11–15 years	23	23.0
>15 years	25	25.0
Total	100	100.0

Source: Field survey, 2025

Table 2 show that most respondents combined frozen fish marketing with other income sources, especially jobs and trading (30% each). This indicates diversification as a livelihood strategy to mitigate risks from price volatility. Abubakar and Musa, (2023) observed that multiple occupations reduce vulnerability in agribusiness households, while Sani and Ibrahim (2023) noted that diversification strengthens resilience against market shocks. Table 3 show that most marketers (68%) earned between ₦200,001 and ₦500,000 monthly, indicating that frozen fish marketing is relatively profitable. However, a smaller proportion (1%) earned less than ₦50,000, reflecting disparities in scale and efficiency. According to Sani and Ibrahim (2023), profitability in agribusiness depends on access to capital, supply networks, and effective cost management. Table 3 show that the majority (35%) of respondents had household sizes of 10 and above, showing the prevalence of large families. While large households provide labor for marketing and handling, they also increase consumption pressure. Bello and Usman (2023) noted that household size has a dual effect by enhancing labor supply but reducing marketable surplus due to high consumption needs. Table 4 show that purchase cost accounted for the largest share of expenditure (₦3,050,000; 41.7%), followed by labour (16.9%) and packaging (16.1%). Transport, storage, and market fees together contributed less than 4%. The total revenue was ₦7,414,635, while total costs stood at ₦5,705,250, yielding a net profit of ₦1,709,385, representing 23% of total revenue. This confirms that frozen fish marketing is profitable, though heavily capital-intensive due to high purchase and operational costs. Sani and Ibrahim (2023) observed that high input costs are common in agribusiness, yet profitability is maintained through sales volume. Similarly, Abdullahi and Usman (2023) emphasized that effective cost management and bulk purchases enhance net returns in agricultural marketing. Table 5 show that demand patterns were diverse, with 23% of marketers reporting very low demand and 21% indicating very high demand, while 17% observed low demand. This shows fluctuations depending on season and market conditions. The time taken to sell varied: 25.3% sold within a week, while another 25.3% required more than four weeks, reflecting both fast-moving and slow-moving product cycles. Wastage levels were most commonly 5–10% (27.7%), though 16.9% reported losses above 20%, indicating storage and handling challenges. Distribution was dominated by retail (26.5%) and wholesale (25.3%), while online marketing accounted for 25.3%, showing growing use of digital platforms. The average profit margin was ₦503.8 per box. These findings align with Afolabi *et al.* (2023), who reported that perishability and demand fluctuations influence sales efficiency in food marketing. Okafor and Adeyemi (2023) also highlighted that adoption of digital channels improves distribution and reduces dependence on traditional markets. Table 6 show that Market competition (mean rating = 3.23) was the highest constraint, followed by environmental

challenges (3.11), bargaining issues (3.05), and power outages (3.02). Supply chain disruptions (2.86) were rated lowest but still significant. This indicates that while constraints exist, they are moderate rather than overwhelming. According to Bello and Usman (2023), competition and bargaining power significantly shape profitability in food marketing. Oladele and Yusuf (2023) also noted that infrastructural problems such as unreliable power supply reduce marketing efficiency for perishable products like fish.

Table 3: Monthly Income and Household Size of Frozen Fish Marketers

Socioeconomics Characteristics	Frequency	Percentage (%)
Income (₦)		
<50,000	1	1.0
50,000–100,000	4	4.0
100,001–200,000	17	17.0
200,001–500,000	68	68.0
>500,000	14	14.0
Total	100	100.0
Household Size		
1–3	18	18.0
4–6	20	20.0
7–9	27	27.0
10 and above	35	35.0
Total	100	100.0

Source: Field survey, 2025

Table 4: Costs and Returns of Frozen Fish Marketing

Items	Total (₦)	Average per Trader/Box (₦)	Percentage of Total Cost (%)
Purchase Cost	3,050,000	50,000	41.67
Transport Cost	183,000	3,000	2.50
Storage Cost	30,500	500	0.42
Labour Cost	1,232,915	20,539	16.86
Packaging Cost	1,178,835	19,648	16.13
Market Fees	30,500	500	0.42
Total Cost	5,705,250	95,087	77.00
Revenue	7,414,635	123,578	100.00
Net Profit	1,709,385	28,491	23.05

Source: Field survey, 2025

Table 6 show that fluctuating prices (20 mentions) and poor transport infrastructure (18) were the most frequent challenges, followed by spoilage due to inadequate storage (15). Taxes/competition (12) and limited access to credit and power (10) were also reported. Suggested solutions included reducing transport costs, improving road networks, enhancing storage facilities, expanding credit, and government support. These results mirror findings by Abubakar and Musa (2023), who stressed that infrastructural and financial barriers remain central obstacles in agricultural marketing. Similarly, Sani and Ibrahim (2023) emphasized that access to affordable credit and improved storage are vital for minimizing losses and sustaining profitability.

Table 5: Demand, Sales Efficiency, and Distribution Channels

Variables	Category/Range	Frequency	Percentage (%)	Notes/Remarks
Demand	High	16	16.00	
	Very High	21	21.00	
	Moderate	13	13.00	
	Low	17	17.00	
	Very Low	23	23.00	
	Total	100	100.00	
Time to Sell	<1 week	21	25.3	Fast-moving products
	1–2 weeks	20	24.1	
	3–4 weeks	18	21.7	
	>4 weeks	21	25.3	Slow-moving products
	Total	80	100.00	
Wastage	No wastage	15	18.1	
	<5%	10	12.0	
	5–10%	23	27.7	Most common level of wastage
	11–20%	18	21.7	
	>20%	14	16.9	Highest loss
	Total	80	100.00	
Efficiency (1–5)	–	–	–	Average: 3.18
Distribution Channel	Wholesale	21	25.3	
	Retail	22	26.5	Most used channel
	Online	21	25.3	
	Direct	11	13.3	
	Other	5	6.0	Least used channel
	Total	80	100.00	

Variables	Category/Range	Frequency	Percentage (%)	Notes/Remarks
Margin (₦)	–	–	–	Average: 503.8
	–	–	–	Total: 10,072

Source: Field survey, 2025

Table 6: Constraints Faced frozen fish marketers and Suggested Solutions

Constraint Factor	Average Rating	% High (≥ 4)	% Moderate (3)	% Low (≤ 2)
Power Outages	3.02	28%	24%	48%
Supply Chain	2.86	25%	30%	45%
Market Competition	3.23	32%	28%	40%
Bargaining	3.05	30%	27%	43%
Environment	3.11	29%	26%	45%

Source: Field survey, 2025

Conclusion

The study concludes that frozen fish marketing is profitable but limited by infrastructural and institutional challenges. It recommends enhanced access to credit, investment in cold storage and renewable energy, training in modern marketing, and government support through improved infrastructure and favorable policies. Based on the findings I therefore recommend that youth should adopt frozen fish selling because it is profitable in Mubi.

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