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Analysis of the Determinants of Fresh Fish Marketing and Profitability among Captured Fish Traders in South-South Nigeria: The Case of Akwa Ibom State

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Authors' contributions

This work was carried out in collaboration between all authors. All authors read and approved the final manuscript.

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ABSTRACT

The study analyzed the determinants of fish marketing and profitability in four selected markets in Akwa Ibom State, Nigeria. Primary data collected through a multi stage random sampling of eighty (80) fish traders were analyzed using descriptive statistics, profitability ratios, Gross and marketing margins as well as Ordinary Least Square (OLS) regression. Result showed the dominance of married (75%), female marketers (70%) with high level of education. The result further showed that ₦145.83 and ₦147.00 accrued to wholesalers and retailers as net income per kilogram of fish sold, representing 28.10% and 25.7% of the total marketing margins, with marketing efficiency of 674.14% and 787.78% respectively. This, together with the profitability Index (PI) of 0.24 and 0.23 and Operating ratio (OR) of 0.76 and 0.77 for wholesalers and retailers further lend credence to the profitability of fish marketing in the study area. Among the factors which impacted significantly on fish trader's profit were marketing experience, access to credit, storage cost, transportation cost, fish buying prices and age of marketers. Also, high transport cost, inadequate storage facilities,

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poor funding, high levy and other taxes were identified as the major challenges faced by fish marketers in the study area. These observation suggest the need to reduce transport and storage cost by providing access roads, rehabilitating damaged roads, providing storage facilities such as cool rooms and warehouses at affordable storage rates. Access to agricultural marketing loans should be enhanced through the provision of affordable credit. These, together with the evolution of a realistic tariff and tax structure would promote fish marketing and enhance marketing efficiency in the study area. Also, our unemployed youths should be encouraged through awareness campaigns to venture into fish marketing as a profitable venture in the study area.

Keywords: Analysis; fish marketing; profitability.

1. INTRODUCTION

The contributions of fish and fishery products to the dietary intake of millions of Nigerians have been widely acknowledged in the literature. For instance, Its contribution to Gross Domestic Product (GDP) at 1990 Constant basic prices stood at ₦9,240.54, ₦9,810.63, ₦10,395.40 and ₦ 1,012.63 in 2008, 2009, 2010 and 2011 respectively [1]. Apart from providing employment for over five hundred thousand people, it contributes over 40 percent of the animal protein intake of the resource poor people [2]. [3] put the total contribution of fisheries to the Nigerian economy at N126,417billion gross output with a capitalization of N78,530 billion. [4], also attributed 60 percent of total protein intake in adults especially in rural areas to fish. Apart from this, it is an important source of foreign exchange [5], contributing significantly towards agricultural development [6,7].

Recently, the demand for fish and fishery products in the country has doubled, thus widening the domestic demand and supply gap. [8] placed the country's current consumption and demand rate at 1.2 and 1.5 million tons respectively. This implies a per capita consumption of 7.5-8.5 kg annually, less than the WHO recommended 13.5kg per person per day. Also, data presented by [9] and [10] as shown in Table 1 below shows that between 1997 and 2014, average national annual fish demand exceed supply by 1,233,854.3 tons, representing an average annual percentage shortfall of 65.07 percent which is supplied through importation. [11] attributed this increase in fish demand to; the relative decline in the supply of animal protein from other sources, increasing population, decline in captured fishes due to pollution and over fishing, government fishing regulations, rampant growth of water plants such as water hyacinth in our rivers that disrupt the free movement of fishing trawlers as well as rampant deforestation of mangrove trees which serve as

natural habitats for fishes. It can also be attributed to:

- The increased awareness of developing countries on the nutritional and health benefits of fish products. For instance, it is documented by [12] that fish contains Omega 111 fatty acid known to reduce cardiovascular disease, hypertension and arteriosclerosis.
- Fish is found to be cheaper compared to other protein sources e.g beef, mutton, chicken [13,14]
- It is a source of sulphur and amino acids such as lysine, leucine, valine and argine, thereby acting as a supplementary diet for carbohydrate [15].
- Beyond this, the recent ban on the importation of frozen chicken and turkey has resulted in sky rotted prices of chicken; hence, consumers migrate to other protein source such as fish.

To compensate for this shortfall, Nigeria resort to massive importation of fish. [8] stated that the country's current import stood at 700,000 million tons annually at a value of US\$400million. Also, statistics provided by [16] revealed that a total of 3,149,873 tons of fish was imported between 1996 and 2004 amounting to US\$1,833,324.039 between the same periods. In 2006, Nigeria imported US\$ 20 million worth of frozen fish per annum to offset this gap [17]. Presently, Nigeria spends N100 billion on fish importation annually and the current consumption demand in the country stands at over 2.6 million tons per annum while importation rate is over 750,000 Metric tons [18].

However, in spite of the huge import bills and the recent government effort towards boosting fish production through aquaculture and sound fishery policies, the gap between projected fish demand and supply continues to widen [19]. Hence, to reduce and possibly eliminate this shortfall, a sound and sustainable fishery

marketing strategies with realizable objectives that would not only improve upon but overhaul our fish marketing system becomes imperative. Efficient food marketing system have been documented to reduce post harvest loses, ensure adequate returns to farmer's investment and stimulate expansion in food production thereby enhancing the level of food security in the country [20]. Other studies such as [21,22, 23] and [24] all lend credence to the importance of adequate marketing system. Marketing fish entails all the activities that are carried out from the point of production to where it reaches the final consumer. It encompasses various kinds of transaction costs. These costs vary among marketers and location and impact severely on the marketing margin of fish marketers. Consequently, the study analyzed the determinants of fresh fish marketing and profitability among fish traders in Akwa Ibom State, Nigeria. Also, the major fish marketing problems in the study area would be identified, with view to proffering solution on how to improve upon its efficiency.

2. METHODOLOGY

2.1 Study Area

The study was conducted in Akwa Ibom State, which occupies part of the South- South region of

Nigeria. It has a population of 3,920,208 and a total land mass of 6,900sq km [25]. It is located between latitude 4°31' and 5°53' North and longitude 7°25' and 8°25' East of the Greenwich meridian and comprises of 31 Local Government with Uyo as the State capital. The major occupation of the people is fishing, farming and trading.

2.2 Sources of Data Collection

Data for the study were primary data collected through a multi- stage sampling procedure from 80 fish traders. The first stage involved selecting four Local Government Areas from the existing thirty one, these were; Uyo, Itu, Mbo and Ikot Abasi. The second stage involved the random selection of three markets where fish trading is carried out intensively from the selected Local Government Areas making a total of four markets. Utaewa market was chosen from Ikot Abasi, Itu market from Itu, Ibaka market from Mbo and Upenekang market in Ibeno Local Government Areas respectively. Next, 20 fish traders were selected in each of the market with the help of key informants from a compiled list of fish traders in the area in the ratio of ten wholesalers and ten retailers making a total of 80 respondents that were administered with questionnaire.

Table 1. Nigerian fish demand- supply matrix 1997- 20014

Year	National fish supply (tons)	Projected demand(tons)	Demand shortfall (tons)	Percent shortfall
1997	413124	1,442,470	1,029,346	71.36
1998	483323	1,511,414	1,028,091	68.02
1999	479,503	1,583,130	1,103,627	69.71
2000	467,066	1,657,670	1,190,604	67.34
2001	486,329	1,735,146	1,248,817	67.34
2002	511,329	1,815,715	1,304,008	66.42
2003	494,964	1,899,435	1,404,471	66.39
2004	508,010	1,986,442	1,478,432	66.44
2005	552,433 [†]	1,643,750	1,091,317	66.39
2006	567,949*	1,691,250	1,123,301	66.42
2007	583,872*	1,738,750	1,154,878	66.42
2008	600,613*	1,787,500	1,186,887	66.40
2009	617,353*	1,838,750	1,221,397	66.43
2010	634,560*	1,890,000	1,255,440	66.43
2011	652,606*	1,943,750	1,291,144	66.43
2012	671,492*	2,000,000	1,328,508	66.43
2013	689,958*	2,055,000	1,365,042	66.43
2014	709,683*	2,113,750	1,404,067	66.43
Average	562,474.7	1,796,329	1,233,854.3	65.07

Source: Data from 1997- 2004 is adapted from [9], data from 2005-2014 is adapted from [10],

* denote estimated value

2.3 Data Analysis

Data collected were analyzed using descriptive and inferential statistics. The descriptive statistics were frequency distribution and simple percentages while the inferential statistics were:

2.3.1 Marketing margin

This was computed using the formula given by [26]. It is expressed as

$$MM = \frac{USP - UBP}{USP} \times 100.$$

Where;

MM = marketing margin of fish
 USP = Fish Selling price per Kilogram and
 UBP = Fish buying price per Kilogram

2.3.2 Market efficiency

This was computed using the formula given by [27]. It is specified as:

Marketing efficiency =

$$\frac{\text{Value added by marketing activities}}{\text{marketing cost}} \times 100$$

i.e $\frac{\text{Net margin}}{\text{marketing cost}} \times 100$

2.3.3 Gross margin

It is computed as the difference between the total revenue and total variable cost

$$GM = GR - TVC$$

Where GM is the Gross margin in naira per kilogram of fish,

GR = the Gross revenue in naira and
 TVC is the total variable cost in naira

2.3.4 Multiple regression analysis

Following the method of [28] in their study on pig marketing, multiple regression analysis was used to identify factors influencing fish trader's profitability. The implicit form of the model is specified as follows:

$$Y = f(X_1, X_2, X_3, X_4, \dots, X_8, + U) \quad (3)$$

Where

- Y = Profit of fish traders (₦),
- X₁ = Educational level of Traders (years)
- X₂ = Storage cost (naira)
- X₃ = Marketing experience (years)
- X₄ = Transportation cost (naira)
- X₅ = Fish buying price (Naira)
- X₆ = Access to credit (yes= 1, no = 0)
- X₇ = Age of traders (in years)
- U = error term

The model can be stated explicitly as:

$$Y = b_0 + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + b_5X_5 + \dots + b_7X_7 + U \dots \quad (3)$$

Where

b₁ . . . b₈ are coefficients to be examined and
 X₁ . . . X₇ are the explanatory variables defined in equation (1) above.

Apart from Gross margin, other profitability ratios that were used include;

- Profitability Index (PI) = NI/TR
- Operating Return (OR) = TVC/TR

Where

- TVC = Total Variable cost in naira;
- TR = Total revenue in naira per kilogram of fish;
- NI = Net income in naira.

3. FINDINGS AND DISCUSSION

3.1 Socioeconomic Characteristics of Fish Farmers

Table 2 revealed that the dominant age group was 40 and above years (50%), indicating that fish marketers were aged people. Also 70% of marketers were female and 30% male. The dominance of female marketers corroborates the findings of [29] in Adamawa and [30] in Benue state who reported 58% and 90% respectively. 62.5 percent were married, 25% and 12.5% single and divorced respectively. The predominance of married people as markers agreed with the findings of [31] who observed that most rural people of 25 years and above in Nigerian communities are married. The dominance of married respondents implied availability of labor for marketing activities. The Table further indicated that 75% of respondents

were literates and is likely to impact positively on fish marketing. The high literacy rate would assist marketers assimilate new fish marketing information imparted by extension agents and other marketing professionals to them. In the study area, [32] reported that majority of fish traders were aged, literate with high years of marketing experience. In terms of funding, 50% of respondents financed their business with their personal savings, 35% borrow from friends and relatives while 12.5% and 2.5% borrow from social organization and bank respectively. Experience wise, fish marketers were quite experience; 43.8% had between 6-10 years, 28.7% had 11-15 years while 20% and 7.5% had between 1-5 and above fifteen years of experience. This is capable of impacting positively on fish marketing in the area.

3.2 Profitability of Fish Marketing in the Study Area

Table 3 presents the average marketing costs and returns as well as the profitable ratios associated with wholesale and retail fish marketing in the study area. The average wholesale and retail revenues were ₦596.53 and

₦645.3. Fish buying prices had the highest costs of 95.2% and 96.2% between wholesale and retailers, followed by transport cost with 3.7 % and 2.6%. The lowest marketing cost value of 0.23 and 0.24 % between wholesaler and retail were attributed to security. The gross margin for both wholesaler and retailer were ₦ 145.83 and ₦ 147.00 with a total marketing margin of 28.10 and 25.7%. Retailer's profit was higher than that of wholesalers because most consumers prefer to buy in smaller quantities, irrespective of cost, since it is affordable. Also, most wholesalers travel several kilometers into the sea with speed boats to buy fish from fishing trawlers that rarely sail to the shore, thereby increasing their variable cost. Such traders are equally exposed to the activities of sea pirates, boat mishap etc which add to their overhead cost, hence impact negatively on their margin. In Adamawa State, [29] also reported a higher marketing margin for wholesalers than retailers as well as a higher gross margin for retailers than marketers respectively. This finding contradicted [33] who reported a higher marketing margin for retailers than wholesalers in the study area.

Table 2. Socioeconomic characteristics of fish marketers in the study area

Variable	Number of respondents	Percentage
Age		
0-20	5	6.3
21-30	15	18.7
31-40	20	25.0
41 and above	40	50.0
Marital Status		
Married	50	62.5
Single	20	25.0
Divorced	10	12.5
Sex		
Male	24	30.0
Female	56	70.0
Educational Level		
No Formal Education	20	25.0
Primary School	13	16.2
Secondary School	40	50.0
Post Secondary school	7	8.8
Source of funding		
Friends and relatives	28	35.0
Social organization	10	12.50
Personal savings	2	2.50
Loan from banks	40	50.0
Marketing experience		
1-5	16	20.0
6-10	35	43.8
11-15	23	28.7
Above 15	6	7.5

Source: Field survey, 2013

In terms of profitability ratios, average profitability index (PI) for wholesale and retail in all the markets were 0.24 and 0.23, indicating that for every naira earned, 24 kobo and 23 kobo accrue to wholesalers and retailers as net income respectively. Also, operating ratio (OR) value of 0.76 and 0.77 for wholesalers and retailers indicated greater total revenue over total variable cost. This implied that fish marketing in the study area was profitable.

3.3 Wholesale Marketing Margin and Marketing Efficiency in the Selected Markets

Table 4 shows the wholesale marketing margin and marketing efficiency. From the Table, the net marketing margin per kilogram of fish ranges from ₦ 143.00 in Ibaka market to ₦ 150.61 in Itu market with the total average net margin of ₦ 145.83. Average marketing cost was ₦21.83. Of this, Ibaka market had the highest cost (₦24.50), followed by Upenekang (₦22.69). This is possible because both markets were characterized by high levy and multiple tax structure. Bassey et al [33] attributed the high marketing cost in Ibaka market to transportation cost and illegal extortion by touts and revenue agents. Also, the market efficiency was higher in Utaewa market (756%) followed by Itu (723.04%) and was the least at Ibaka market (583.67%). The average marketing efficiency was 674.14% implying the existence of an efficient fish pricing system in the study area.

3.4 Retail Marketing Margin and Marketing Efficiency in the Selected Markets

Table 5 presents the retail marketing margin and marketing efficiency in the study area. The net marketing margin ranges from ₦128.87 in Upenekang to ₦160.50 in Itu. The high margin in Itu and Ibaka can be attributed to location. For instance, Itu fish market is located along a major highway, thereby receiving traveler's patronage, while Ibaka market is located at a border town, which serves as a major fishing port in the state. The average marketing cost was ₦19.07. Ibaka market was found to be associated with the highest transaction cost (₦22.10), followed by Utaewa (₦21.03), the lowest being Itu (₦16.50). The highest marketing cost in Ibaka market was due to high rent and multiple tax structure perpetrated by Local Government revenue agents and youth leaders as well as the

deplorable state of the road which resulted in high transport fares. Beyond this, the retail fish market was found to be more efficient in Itu (972.73%) than Ibaka (870.57%), the least being Ibaka and Upenekang with efficiency Percentages of 695.02 and 612.79 respectively.

3.5 Determinants of Profit of Fish Marketers

Table 6 presents the factors influencing fish marketer's profit in the study. Of the four functional forms (linear, semi-log, exponential and double log) that were estimated, the semi-log model was chosen as the lead equation due to the conformity of the estimates to a priori expectation (using signs and magnitudes of the coefficient of variables) and the statistical criteria which consist of R² value, F-statistics and t-test. The result revealed R² value of 0.894, implying that about 89.4% of the profit of fish marketers is explained by the explanatory variables.

The coefficient of storage cost was negative and significant at the 5 percent level. This implied that increasing storage cost would reduce profit of fish marketers by 2.04 percent. This is in line with a priori expectation, because fish marketing require adequate storage to avoid spoilage. Since storage facilities are grossly inadequate in the study area, most marketers resort to smoking and home storage which is not only costly but damage prone, thereby increasing the marketing cost. This finding is at variance with [28].

The coefficient for marketing experience was positive and significant at the 1 percent level. Experienced marketers are perceived to have learnt from the other marketer's experiences due to their prolonged fraternity with them. They have also accumulated enough marketing knowledge through several years of marketing trials and errors [23]. This finding lends credence to [28].

Transportation cost also impacted negatively on the profit of marketers at the 5 percent significance level. Its coefficient (0.998) showed that increasing transportation cost would decrease fish profit by 9.98 percent. This finding support those of 34 and 35, who reported that transportation cost accounted for a larger portion of marketing margin in Africa and Sub-Saharan Africa respectively. [23] also reported a higher transportation cost in the study area.

The coefficient for buying price of fish and age of marketers were negative and significantly related

to profit of marketers at the 10 percent levels. This showed that any increase in these variables would decrease profit of marketers. Also, aged marketers are not innovative and lack the vigor and energy to withstand the rigor of fish marketing. 28 also, reported a significant negative relationship for both cost of purchase and age of markers.

Access to credit impacted positively on the profit of marketers at the 1 percent level of significance. Its coefficient (0.997) indicated that increasing access to credit would increase profit by 9.97 percent. This result agrees with [36]. However, [28] reported a negative relationship between credit access and profit of pig marketers in the study area.

3.6 Fish Marketing Problems in the Study Area

Table 7 shows the fish marketing problems as given by respondents in the study area. As observed, high costs of transportation ranked first with 41.25%. This corroborates the findings of [34] who reported that transportation accounted for a large portion of marketing margin in Africa. High transportation cost can be attributed to the deplorable state of roads in the area, especially Ibaka and Utaewa markets that were poorly maintained. Beyond this, most fish marketers, especially wholesalers travel far distances into the ocean to buy fish from fishing trawlers thereby increasing their transport cost.

Table 3. Average marketing cost, returns per kg and profitability analysis of fish marketing

Variable	Wholesale	Retailer
Total sales(N)	596.53	645.29
Expenses (Variable cost)		
Fish Buying price(N)	428.87	479.22
Transport cost(N)	17.00	12.88
Storage (N)	1.80	2.87
Security (N)	1.02	1.22
Haulage and other charges(N)	2.01	2.10
Total variable cost (TVC)(N)	450.70	498.30
Net Income(N) (NI)= TR-TC	145.83	147.00
Marketing margin (%)	28.10	25.70
Profitability Index (PI) (%)	0.24	0.23
Operating Return (%)	0.76	0.77

Source: Computed from field survey data, 2013. Note: ₦160 is equivalent to 1 US \$

Table 4. Wholesale marketing margin and marketing efficiency in the selected markets

Markets	Cost of fish(#/Kg)	Selling price (#/ Kg)	Handling cost (#/ kg)	Marketing margin (#/kg)	Net margin (#/kg)	Market efficiency (%)
Upenekang	356.49	522.89	22.69	166.40	143.71	633.36
Ibaka	442.10	609.60	24.50	167.50	143.00	583.67
Utaewa	465.30	630.60	19.30	165.30	146.00	756.48
Itu	451.60	623.04	20.83	171.44	150.61	723.04
Average	428.87	596.53	21.83	167.66	145.83	674.14

Source: Computed from fish market survey data, 2013

Table 5. Retail marketing margin and marketing efficiency in the selected markets

Markets	Cost of fish (#/Kg)	Selling price (#/ Kg)	Handling cost (#/ kg)	Marketing margin (#/kg)	Net margin (#/kg)	Market efficiency (%)
Upenekang	424.69	574.59	21.03	149.90	128.87	612.79
Ibaka	479.20	654.90	22.10	175.70	153.60	695.02
Utaewa	509.60	671.26	16.65	161.66	144.95	870.57
Itu	503.40	680.40	16.50	177.00	160.50	972.73
Average	479.22	645.29	19.07	166.05	146.98	787.78

Source: Computed from fish market survey data, 2013

Table 6. Result of the multiple regression analysis/ production function analysis

Coefficient/variable	Linear	Semi-log(A)	Double-log	Exponential
Intercept	0.618(1.205)	0.007***(7.738)	0.061*(-1.994)	0.003***(-3.142)
Educational level	0.212*(1.972)	1.472(0.964)	0.0071(1.132)	0.326(1.44)
Storage cost	0.071***(4.12)	-0.1514**(-2.04)	0.2275 (0.964)	0-0092*** (03.121)
Marketing Experience	0.6164(1.114)	1.2076*** (3.573)	0.0087*(1.923)	0.4744(0.293)
Transportation cost	0.4156(1.023)	-0.9981**(-2.681)	0.0471**(-2.931)	0.0622(0.824)
Fish buying price	0.3159(1.342)	-0.8070*(-1.912)	0.3128**(2.112)	0.0025*** (4.122)
Access to credit	0.0081**(-2.747)	0.9977*** (3.52)	0.0073(1.241)	0.8112(0.193)
Age of marketer	-240.41(0.8970)	-0.0191*(-1.908)	1070.21(0.914)	0.1468(0.371)
Adj. R ²	0.8074	0.6887	0.7774	0.6607
Observations	70	70	70	70
F ratio	48.813	9.852	7.621	10.341

Source: field Survey, 2013. N/B, figures in brackets are standard errors. *** Significant at 1%, **significant at 5%, and *significant at 10%. (A) is the lead equation

Table 7. Fish Marketing Problems suggested by respondents in the study area

Constraints	Number of respondents	Percentage
High transportation cost	33	41.25
Inadequate storage facilities	21	26.25
Poor funding	13	16.25
High levy and other charges	9	11.25
Other problems	4	5.00
Total	80	100

Source: Computed from fish field survey data, 2009

Inadequate storage facilities ranked second with 26.25%. Inadequate storage facilities like cool rooms and warehousing facilities in the study area often times resulted in severe losses due to spoilage. This is crucial given the perishable nature of fish and fishery products. As a result, traders resort to fish smoking as the only available preservative option, which is not only stressful but costly and associated with health complications. All these account for increase marketing cost leading to higher retail prices. Poor funding ranked third with 16.25 percent. This is evidenced by the fact that only 2.5 % of the eighty respondents were able to secure bank loan in the study area. But, poor funding has been documented to debar marketers from expanding their businesses, in order to reduce cost due to economic of scale [22].

Also, high haulage fees, levies and other charges ranked fourth. This was the case in Ibaka and Upenekang that were characterized by multiple tax structure. This was perpetrated by Local Government revenue agents, youth leaders and security agents. The incidence of such unwholesome levies is often transferred to the consumers, since they have to pay more than expected.

Apart from these, other factors such as inadequate market information, robbery incidence and activities of tout also accounted for 5% of the marketing problems in the area. A summation of these problems increased the marketing cost and results in high consumer prices.

4. CONCLUSION

The study showed that more female (70%) and youth within the age bracket of 31-40 years with high level of education are involved in fish marketing. Majority (75%) was married and financed their business through personal savings. It further revealed that retailers received #147.00 as net income per kilogram of fish sold while wholesalers received #145.83, implying that retail marketing was more lucrative than wholesale. Beyond this, wholesalers received on the average 28.10% and retailers 25.74% of the total marketing margin, with average marketing efficiency of 674.14% and 794.83% respectively. The profitability Index (PI) of 0.24 and 0.23 and Operating ratio (OR) values of 0.76 and 0.77 for wholesalers and retailers all supported the fact that fish marketing is profitable in the study area. Among the factors which impacted significantly on fish trader's profit are fish buying prices and age of marketers. Also, high transport cost,

inadequate storage facilities, poor funding, high levy and other taxes tax etc were identified as the major challenges faced by fish marketers in the profit were marketing experience, access to credit, storage cost, transportation cost, fish bu study area.

5. RECOMMENDATION

To promote fish marketing and ensures marketing efficiency in the study area, the following policy recommendations are offered:

- (i) Policies that would reduce transport and storage cost should be pursued. Such policies should be tailored towards the provision of good access roads, rehabilitating damaged roads, providing storage facilities such as cool rooms and warehouses at affordable storage rates.
- (ii) Access to affordable agricultural marketing loans should be enhanced through the provision of minimal and interest free loans.
- (iii) To evade multiple tax structure that characterized the study area, a realistic tariff and tax structure should be evolved.
- (iv) Also, our unemployed youths and young school leavers should be encouraged through awareness campaigns to venture into fish marketing as a profitable venture in the study area.

COMPETING INTERESTS

Authors have declared that no competing interests exist.

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