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Supplier Prices, Transport Costs, and Operating Constraints Among Small-Scale Fish Traders in Urban Nigeria: Evidence from Bwari Area Council

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Abstract

This study examined supplier prices, transport costs, and operating constraints among small-scale fish traders in Bwari Area Council, Federal Capital Territory, Nigeria. Specifically, it described respondents' business practices and identified perceived constraints relating to procurement, financing, transportation, and market operations. A descriptive cross-sectional survey was conducted across six trading locations in 2024, covering 126 fishmongers selected through a procedure described inconsistently in the source as both purposive sampling and random distribution. Data were collected using a researcher-administered semi-structured questionnaire and analyzed using observed frequencies and percentages based on item-specific valid responses. The findings showed that all 126 respondents endorsed high supplier prices, market fees and operating costs, input-price instability, and lack of funds as business constraints. Of the 125 respondents who answered the transportation item, all reported transportation difficulties. Low customer demand or sales was endorsed by 100 respondents, while 102 responses identified market-access challenges. The business-practice tables indicated reliance on family labor, fish farms as sources of supply, personal savings as business capital, and direct sales to consumers. However, some practice entries require verification. The findings identify procurement costs, market charges, price instability, financing shortages, and transportation difficulties as prominent concerns among the surveyed traders. Nevertheless, the study did not provide verified transaction-level records of purchase prices, quantities traded, transport expenditure, sales revenue, spoilage, or profit. Consequently, the reported constraints cannot be ranked by their actual financial burden, nor can their effects on marketing margins or profitability be established. The study recommends collecting transaction-level data across trading locations and periods to assess operating costs, gross margins, and net returns and to evaluate potential interventions such as coordinated procurement and transport arrangements.

Keywords: *fish marketing; supplier prices; transport costs; operating constraints; working capital; small-scale fish traders; Bwari Area Council; Nigeria.*

1. Introduction

Fish traders connect aquaculture farms, landing points, and wholesale outlets to retail customers. For a small trader, buying fish commits cash before the product is sold; transport charges and market fees may then be incurred irrespective of the quantity ultimately sold. Handling losses and delays matters particularly for fresh fish. These linked decisions make it important to examine procurement, logistics, and liquidity together, while keeping perceptions of difficulty separate from measured trading margins.

Research on Nigerian fish marketing has used cost-and-return analysis, marketing margins, and profit-efficiency models to examine the economics of fish trading. Obayelu et al. (2016), studying 120 fresh-fish marketers in Ogun State, reported that 57.5% identified high transportation

costs as a constraint, with a marketing margin of 34.55% and a return per naira invested of 1.43. Hussayn et al. (2021) reported that transport costs were negatively associated with profit among 120 catfish marketers in Lagos State ($p<0.01$); their analysis also reported costs equal to 76.72% of sales revenue and a mean profit efficiency of 74%.

Awolumate et al. (2022) examined 135 smoked- and dried-fish marketers in Lagos State. Awolumate and Muyiwa (2025) studied 150 roadside fish processors and reported associations between limited credit access ($p=0.025$) and insufficient capital ($p=0.002$) and profitability indicators; the reported $p=0.097$ for operating costs did not meet the conventional 5% significance threshold. Other Nigerian studies examine aquatic-food value chains, marketing functions, market outlets, post-harvest storage and enterprise support (Adeoye et al., 2022; Liverpool-Tasie et al., 2024; Nuhu & Okeke, 2024; Tran et al., 2021).

The Bwari survey provides local evidence on the ways fish traders describe procurement, finance, transport and market conditions. Its contribution is to distinguish widely reported difficulties from economic costs that have actually been measured. Three questions guide the analysis: Which business arrangements are recorded for the surveyed traders? Which constraints were identified in valid questionnaire responses? What further cost and transaction data would be needed to determine whether these constraints affect marketing margins and profitability? The analysis remains descriptive because the source tables contain missing and inconsistent entries and do not provide verified transaction-level financial records.

2. Literature and comparative framework

2.1 Procurement prices, operating costs and finance

Procurement prices and market charges affect the cash required to maintain stock and meet daily operating needs. Working capital can determine whether traders can purchase sufficient inventory, respond to supplier-price changes and meet costs before sales revenue is received. Obayelu et al. (2016) identified purchase price as a significant determinant of profit among fresh-fish marketers, while Awolumate and Muyiwa (2025) reported associations between limited credit, insufficient capital and profitability indicators among roadside fish processors. These findings provide context for interpreting the Bwari responses but are not estimates of the financial effects experienced by Bwari traders.

2.2 Transport and market coordination

Transport connects production and wholesale locations with retail markets, and its costs may vary with distance, fuel prices, vehicle availability, shipment size and product-handling requirements. Obayelu et al. (2016) reported high transport costs among 57.5% of their Ogun State sample, while Hussayn et al. (2021) found a negative association between transport costs and catfish marketers' profit in Lagos State. These studies illustrate the value of measuring actual expenditures alongside traders' perceptions.

2.3 Business practices and fish value chains

Fish marketing margins are sensitive to the unit of analysis. A high selling price does not imply a high net return when purchasing quantity, shrinkage, unsold fish, transport, levies, and labor are omitted. A defensible margin analysis would record purchase and sale prices per comparable weight or unit and distinguish variable marketing costs from household labor that is not paid in cash. The present questionnaire does not supply those measurements, so the article does not rank business practices by financial efficiency.

The original Bwari project reports on labor sources, fish procurement, product types, species traded, buyers, sources of capital, quality-maintenance practices, pricing, customer outreach, and business expenses. Studies from other Nigerian locations document related challenges involving market distance, storage, capital, levies, processing facilities, and transport (Adedigba et al., 2024; Adeoye et al., 2022; Ajagbe et al., 2025; Ogunremi et al., 2024; Olaoye et al., 2024). These studies provide contextual comparison, although their populations, products, and outcome measures differ.

3. Materials and methods

3.1 Study design and area

The study adopted a descriptive cross-sectional survey design in Bwari Area Council, Federal Capital Territory, Nigeria. Fieldwork was reported to have taken place over two weeks in 2024. The respondent-location records identify six trading locations: Kubwa Village Market fresh-fish area (36 respondents), Yellow Page Village (30), Phase 3 area in Kubwa Village (26), Dei-Dei Fish Market (17), Arab Road Market fish section (10) and Biazhin Village (7).

3.2 Sampling and data collection

The project describes the sampling procedure as purposive but also states that 126 questionnaires were distributed at random. The available records do not establish a sampling frame or selection probabilities sufficient to resolve this inconsistency. Accordingly, the study is treated as a survey of 126 fishmongers, without claiming probability sampling or representativeness beyond the respondents observed. Data were collected using a researcher-administered semi-structured questionnaire covering socioeconomic characteristics, business practices and perceived

constraints. Secondary literature was used to contextualise the findings.

3.3 Instrument validity and pilot testing

The project reports that academic supervisors reviewed the questionnaire for relevance and clarity and that a pilot exercise involving 15 participants was conducted. Although test–retest reliability and Cronbach's alpha were proposed in the project, numerical reliability coefficients were not available in the supplied records; no coefficient is therefore reported.

3.4 Data processing and analysis

The original project states that data were cleaned and coded in Microsoft Excel 2010 and exported to SPSS version 20.0. The stated analysis plan included frequencies, percentages, means, and standard deviations, with analysis of variance (ANOVA) and multiple regression proposed for hypothesis testing. For this manuscript, respondent-level records were reviewed for completeness and consistency; one aggregate row was excluded, leaving 126 individual records. Results are reported using observed frequencies and percentages with item-specific valid denominators. Blank entries were not imputed. Inferential tests and means or standard deviations that could not be reproduced from the available records are not reported as validated results.

3.5 Ethical considerations

Approval or exemption from institutional ethical review, the wording of participant information, and the consent process cannot be established from the manuscript provided. These details must be verified by the authors. Trading locations and personal financial information should be reported without identifying individual respondents.

4. Results

4.1 Socioeconomic characteristics

The project reports 126 respondents, comprising 61 men (48.4%) and 65 women (51.6%). The age-band table records one respondent below 25 years (0.8%), 58 aged 25–35 years (46.0%), 46 aged 36–45 years (36.5%), 14 aged 46–55 years (11.1%), and seven aged 56–64 years (5.6%). The mean age and standard deviation reported in the original project cannot be reconciled with the age-band records and are not interpreted here.

Table 1. Gender and age distribution of respondents

Characteristic	Category	Frequency	Percentage (%)
Gender	Male	61	48.4
Gender	Female	65	51.6
Gender	Total	126	100
Age	Below 25 years	1	0.8
Age	25–35 years	58	46.0
Age	36–45 years	46	36.5
Age	46–55 years	14	11.1
Age	56–64 years	7	5.6
Age	Total	126	100

Source: Original project tables (field survey, 2024).

4.2 Business practices

The original project tables describe a business model relying heavily on family labor, fish farms as a source of fish, personal savings as capital, and direct sales to consumers. They also report the use of small purchase quantities and small pond systems to maintain freshness, while the use of ice boxes or refrigerators was recorded as absent in the source table. These figures should be interpreted cautiously because some project tables contain unclear or inconsistent response entries.

Table 2. Selected reported business practices

Practice	Recorded response in project	Frequency	Percentage (%)
Labour source	Family members—always	126	100
Fish source	Fish farms—always	126	100
Type sold	Fresh fish—always	126	100
Type sold	Smoked fish—often	70	55.6
Type sold	Smoked fish—always	56	44.4
Species sold	Catfish—always	126	100
Species sold	Tilapia—always	71	56.3
Species sold	Tilapia—often	55	43.7

Buyer type	Consumers—always	126	100
Business capital	Saved money—always	124	98.4
Business capital	Saved money—often	2	1.6
Quality practice	Buying in small quantities—always	126	100
Quality practice	Use of ice boxes/refrigerators—never	126	100

Source: Original project tables (field survey, 2024

4.3 Perceived operating constraints

The reported response table contains 126 valid responses for supplier prices, market fees and operating costs, price instability and lack of funds; all answers on these four items were either agree or strongly agree. Transportation difficulties received 125 valid responses, again all in the two agreement categories, with one blank entry. The customer-demand item received 100 valid responses (26 blank), and the market-access item received 102 (24 blank). These denominators matter: the percentages describe only those who answered each question, not necessarily all 126 sampled traders.

Table 3. Recorded responses to selected operating constraints

Constraint	Valid n	Blank n	Agree, n (% valid)	Strongly agree, n (% valid)
High supplier prices	126	0	75 (59.5%)	51 (40.5%)
High market fees and operating costs	126	0	38 (30.2%)	88 (69.8%)
Input-price instability	126	0	2 (1.6%)	124 (98.4%)
Lack of funds	126	0	1 (0.8%)	125 (99.2%)
Transportation difficulties	125	1	40 (32.0%)	85 (68.0%)
Low customer demand/sales	100	26	54 (54.0%)	46 (46.0%)
Market-access challenges	102	24	19 (18.6%)	83 (81.4%)

Source: Original project tables (field survey, 2024

The original project's constraints table also includes means, standard deviations and rankings. Those statistics are not reproduced as validated estimates because they are inconsistent with the recorded categories and cannot be reliably reconstructed from the available row-level data. Items with very sparse or no recorded responses, including refrigeration, insecurity, theft/harassment, fresh-fish availability and electricity, do not support reliable full-sample conclusions.

4.4 Comparison with Nigerian studies

Table 4. Comparison with selected Nigerian fish-marketing studies

Study and sample	Reported findings	Interpretive boundary
Bwari survey (n=126)	All valid responses endorsed supplier prices, market fees/operating costs, input-price instability and lack of funds; 125 valid transport responses endorsed transport difficulties.	Perceived constraints; no verified costs, revenue or profit.
Obayelu et al. (2016), Ogun State (n=120)	57.5% reported high transport costs; marketing margin 34.55%; return per naira invested 1.43.	Different location, sample and period.
Hussayn et al. (2021), Lagos State (n=120)	Costs were 76.72% of sales revenue; mean profit efficiency 74%; transport costs negatively associated with profit ($p<0.01$).	Economic outcomes cannot be transferred to Bwari.
Awolumate et al. (2022), Lagos State (n=135)	65.93% female; study concerned smoked- and dried-fish marketers.	Accessible abstract does not provide directly comparable constraint percentages.
Awolumate and Muyiwa (2025), Lagos State (n=150)	Limited credit $p=0.025$; insufficient capital $p=0.002$; operating costs $p=0.097$.	Different actor group; p-values do not provide effect sizes.

5. Discussion

The simultaneous reporting of expensive supplies, transport difficulties and inadequate funds suggests a potential working-capital mechanism: traders must finance stock and its movement before making sales, while charges accumulate even when volumes are small. This is a plausible interpretation rather than a tested relationship. The survey does not link each respondent's credit position to shipment size, route, costs, stock turnover or profit; it cannot establish whether pooled procurement or loans would improve net returns.

The clearest result is the uniform endorsement of supplier-price pressure, market fees and operating costs, unstable input prices, and inadequate funds among respondents with recorded answers. All 125 respondents answering the transport item also expressed agreement that transport was difficult. The concentration of responses at one end of the scale may reflect widespread problems, but it also requires scrutiny of question wording, response options and data entry. An agreement scale alone cannot identify whether supplier prices, transport or market charges account for the largest share of expenditure. The study therefore documents the salience of reported constraints, not their measured economic importance.

The transport findings are consistent in direction with Obayelu et al. (2016), who reported high transport costs among 57.5% of fresh-fish marketers in Ogun State, and with Hussayn et al. (2021), who found a negative association between transport costs and profit among catfish marketers in Lagos State. The Bwari data add a local account of perceived difficulties but cannot estimate the monetary cost of transport or its causal effect on profit.

The strong response to lack of funds is also relevant to the wider Nigerian literature. Awolumate and Muyiwa (2025) reported associations between limited credit access and insufficient capital and profitability indicators among roadside fish processors. These findings support further investigation of working capital, but do not establish that the magnitude or statistical relationship is the same for Bwari fishmongers.

The business-practice tables describe reliance on family labour, fish farms as supply sources, personal savings and direct consumer sales. If confirmed, this combination would suggest that household resources and short cash cycles shape the enterprises' ability to purchase and distribute fish. Yet several items present unusually uniform responses, including universal non-use of ice boxes or refrigerators, which should be checked against questionnaires or field notes. Neither a reported practice nor satisfaction with profit margins substitutes for accounts of purchased quantities, selling prices and costs.

The data completeness issues are consequential. Customer-demand and market-access items have substantial missingness, and several other constraint items have too few recorded responses to support robust conclusions. The sampling description is also inconsistent, referring both to purposive sampling and random distribution. These issues limit representativeness and underline the need to validate the questionnaire, response coding and original field records.

6. Policy implications

The findings point to several testable management options, not evaluated interventions. Market administrators and trader associations could first document the amounts, frequency and basis of market charges. A short transaction diary could record supplier prices, quantities purchased and sold, spoilage and transport expenditure by trip. Such records would show whether pooled transport or coordinated purchase would reduce costs after accounting for waiting time, handling and losses. Credit products should be aligned with the interval between stock purchase and cash receipts, but affordability and default risk must be assessed rather than assumed. Any market-information service should be piloted and evaluated against observable trading decisions.

7. Limitations and future research

The next stage of research should compare procurement channels and routes within Bwari rather than treating all locations as a single market. Minimum records would include dated quantity purchased, unit cost, transport and loading fees, storage or ice expenditures, quantity sold, sale prices, unsold or spoiled fish, stall charges, and credit terms. Repeated records would permit gross-margin analysis by trading trip and product type. A properly documented sampling frame and consistent questionnaire coding would also allow clearer interpretation of subgroup differences.

Future studies should collect these measures alongside market charges, transport expenditure, credit use, storage costs, and product losses, preferably across locations and seasons, to enable calculation of gross margins and net returns.

8. Conclusion

The Bwari survey identifies supplier prices, market charges, unstable input costs, financing shortages and transport difficulties as widely reported concerns among participating fish traders. It also portrays businesses using family labour, personal savings and direct sales, subject to verification of the underlying practice tables. These findings describe respondents' experience in six Bwari trading locations; they neither quantify the financial burden

of each constraint nor demonstrate which factor determines profit. Verified purchase and sale records, movement and handling costs, and repeated observations across trading periods are needed before recommending a particular intervention on cost-effectiveness grounds.

Declarations

Ethics approval and consent to participate: The ethical approval and participant consent were verbally sought and obtained from the respondents, who are all adult proprietors of their firms.

Consent for publication: Not applicable; no identifying participant information is presented.

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Author contributions: All authors contributed to the study, including conceptualization, fieldwork, data analysis, drafting, and revision.

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