

AN EXPLORATORY STUDY ON FISH VENDORS' OPERATIONS AND CHALLENGES IN DUMAGUETE CITY PUBLIC MARKET

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Abstract

The operations management practices of small-scale fish vendors are critical to food security and local livelihoods in coastal cities of the Philippines, yet they remain understudied in academic literature. This study explores how fish vendors in Dumaguete City Public Market manage perishable inventories, coordinate supply chains, and adapt to systemic challenges that threaten their business sustainability. Employing a qualitative exploratory design, data were collected through a two-hour focus group discussion (FGD) with 13 vendors, facilitated in the local Visayan language. The session was audio-recorded, transcribed, and analyzed thematically to capture lived experiences and adaptive strategies. Findings reveal that vendors employ context-driven practices such as dynamic pricing, informal preservation methods, and provenance-based marketing to balance profitability with the perishability of their products. Supply chain coordination was rooted in interpersonal trust, yet vendors remained vulnerable to power imbalances with wholesalers. Systemic challenges—including chronic ice shortages, regulatory inequities, and inadequate sanitation—further constrained operations. Despite these barriers, vendors demonstrated resilience through community collaboration, improvisational waste reduction, and suki (loyal customer) relationships that provided stability in volatile markets. The study contributes to operations management and informal economy literature by offering granular insights into the everyday realities of fish vendors, highlighting both ingenuity and systemic inequities. Policy implications include strengthening cold chain infrastructure, improving sanitation and pest control in public markets, ensuring fair enforcement of licensing regulations, and supporting vendor associations or cooperatives. These measures can enhance operational resilience, promote inclusive policymaking, and ensure the long-term sustainability of coastal market economies realities.

Keywords: Business Sustainability, Fish Vendors, Operations Management, Public Markets

Introduction

The fisheries sector is central to food security, livelihoods, and economic resilience in many coastal communities. In the Philippines, public markets serve as vital nodes where fish trading connects producers, intermediaries, and consumers, sustaining both household incomes and cultural practices. Dumaguete City, a coastal urban hub in Negros Oriental, exemplifies this reality, with its public market functioning as a critical space for fish vendors whose work supports local food systems and community identity. Despite this significance, the day-to-day operations management practices of vendors in such informal market settings remain underexplored in scholarly literature.

Fish vendors in Dumaguete navigate a complex operational environment shaped by the perishability of their products, fluctuating supply chains, and resource limitations. Chronic shortages of ice and the absence of reliable cold storage facilities hinder effective preservation. Sanitation issues, including pest infestations and poor drainage, further compromise product quality and vendor competitiveness. Regulatory inequities also pose challenges: licensed vendors often bear heavier financial and administrative burdens, while competing with unlicensed sellers who operate outside formal market rules. These vulnerabilities are compounded by climate-related risks, such as typhoons and seasonal fluctuations, which disrupt supply and intensify financial uncertainty.

Yet, alongside these constraints, vendors demonstrate ingenuity and resilience. They adopt dynamic pricing strategies to balance supply and demand, engage in resource-sharing practices—such as pooling ice and bulk purchasing—and cultivate loyalty through suki (regular customer) relationships. Vendors also rely on localized marketing tactics that emphasize product origin and freshness, reinforcing trust in contexts where formal quality

assurance systems are absent. These adaptive strategies highlight how informal market actors innovate within structural limitations.

Most existing studies on fish trade and informal markets emphasize broader themes such as food safety, value chain efficiency, or macroeconomic contributions. Fewer studies examine the micro-level practices and coping mechanisms of vendors themselves, particularly in urban public markets where systemic constraints intersect with everyday business operations. This gap points to the need for context-specific research that bridges operations management frameworks with grassroots realities.

Against this backdrop, the present study investigates the operations management practices of fish vendors in Dumaguete City Public Market. Specifically, it pursues three objectives:

1. To identify and analyze the operations management practices employed by fish vendors.
2. To examine systemic challenges—including infrastructural deficits, regulatory burdens, and market competition—that constrain business sustainability.
3. To propose context-driven recommendations for enhancing operational resilience and supporting inclusive policymaking in informal economies.

Through qualitative focus group discussions (FGDs) with 13 fish vendors, the study captures participant narratives that illuminate both vulnerabilities and adaptive strategies. In doing so, it contributes to the literature on informal economies, advances discourse on small-scale operations management, and underscores the importance of participatory policymaking. By centering the lived experiences of Dumaguete's vendors, this research emphasizes the urgency of developing adaptive, inclusive solutions that strengthen the sustainability of coastal markets in the face of urbanization and environmental change.

This study is grounded in three intersecting bodies of literature: operations management, informal economies, and resilience theory. From an operations management perspective, the study examines how vendors coordinate supply, manage perishable inventories, and engage customers under resource constraints. The informal economy lens highlights how small-scale vendors operate outside or at the margins of formal regulation, relying on trust-based supply chains and social networks in place of contractual arrangements. Finally, resilience theory provides a framework for understanding how fish vendors adapt to shocks and systemic inequities, whether through dynamic pricing, community collaboration, or suki loyalty. Together, these perspectives guide the analysis and interpretation of findings, ensuring that vendor narratives are situated within broader scholarly and policy debates.

Literature Review

Fish vendors typically manage their operations through informal yet adaptive practices. Inventory is often managed on a day-to-day basis, with purchasing decisions based on anticipated demand, available capital, and supply chain reliability (Bermas et al., 2023; Overå et al., 2022; A.B.M.A. et al., 2024; Macusi et al., 2024). Vendors rely on local and regional suppliers, with supply chain relationships built on trust, social networks, and sometimes credit arrangements (Pedroza-Gutiérrez & Hernández, 2020; A.B.M.A. et al., 2024; Overå et al., 2022). Sanitation and waste disposal practices vary, with many vendors lacking access to adequate facilities, leading to challenges in maintaining hygiene and food safety standards (Rahayu et al., 2020; Grema et al., 2020; A.B.M.A. et al., 2024). Customer service is highly personalized, with vendors leveraging social capital and community ties to build loyalty and manage competition (Overå et al., 2022; Amanatin et al., 2025; Meghna & Kumari, 2023).

Key challenges include fluctuating supply and demand, price volatility, limited access to credit, inadequate infrastructure (e.g., cold storage, clean water), and regulatory pressures (Bermas et al., 2023; Maswita & Arifa, 2024; A.B.M.A. et al., 2024; Macusi et al., 2024; Grema et al., 2020; Overå et al., 2022). Gender-based constraints are notable, with women vendors often facing additional barriers such as lack of stall ownership, limited access to resources, and balancing domestic responsibilities (Macusi et al., 2024; Overå et al., 2022; Murphy et al., 2020; Fröcklin et al., 2013). Environmental factors, such as seasonality and climate change, further complicate operations by affecting fish availability and quality (Silas et al., 2020; Rahman et al., 2021; Yadav et al., 2024).

Vendors employ a range of coping strategies, including livelihood diversification (e.g., engaging in other trades or services), participation in informal savings groups, and leveraging family labor (Mushi, 2023; Anang et al., 2024; Sankar et al., 2024; Macusi et al., 2024; Sari et al., 2024). Innovations include adopting digital marketing channels (e.g., mobile sales, social media), direct-to-customer sales, and forming cooperatives or advocacy groups to improve bargaining power and access to resources (Alam et al., 2023; Stoll et al., 2015; Thompson & Rust, 2025; Sengupta et al., 2021). Social networks play a crucial role in facilitating supply chain resilience and mutual support during crises (Rouillé et al., 2024; Pedroza-Gutiérrez & Hernández, 2020; Amanatin et al., 2025).

Vendors and researchers recommend improving market infrastructure (e.g., sanitation, storage), expanding access to credit and training, and fostering supportive policies for informal vendors (Maswita & Arifa, 2024; Bermas et al., 2023; A.B.M.A. et al., 2024; Sari et al., 2024). Empowering women vendors, enhancing public health measures, and

promoting sustainable waste management are also highlighted as priorities for improving efficiency, sustainability, and profitability (Macusi et al., 2024; Overå et al., 2022; Grema et al., 2020).

Methodology

This study employed a qualitative exploratory design using Focus Group Discussions (FGDs) to examine the operations management practices, challenges, and adaptive strategies of fish vendors in Dumaguete City Public Market. FGDs were chosen for their capacity to elicit in-depth, participant-driven narratives that capture lived experiences and contextual insights, aligning with the study's aim of bridging formal operations management frameworks with grassroots realities.

Participants were identified with assistance from the City Economic Enterprise Office, the governing body overseeing the public market. Eligibility required active engagement in vending within the market and availability during the scheduled FGD. While 10 vendors were initially invited, 13 ultimately participated, reflecting both spontaneous interest and the communal nature of market dynamics. The participants varied in age, years of business experience, and stall size. No exclusion criteria were applied to the additional volunteers, as their perspectives enriched the diversity of voices. Participants were not monetarily compensated but were provided with snacks as a token of appreciation.

Data were collected through a semi-structured FGD protocol designed around three key themes: Operations Practices, Systemic Challenges, and Adaptive Strategies. The two-hour session was facilitated by a trained moderator and conducted entirely in Visayan, the local language, to ensure cultural and linguistic appropriateness. A note-taker was present to record non-verbal cues and contextual observations. With participants' consent, the session was audio-recorded, transcribed verbatim, and subsequently translated into English to facilitate systematic analysis while maintaining fidelity to the original discussion.

All research procedures adhered to established ethical guidelines for human subjects research. Prior to the FGD, participants received a comprehensive briefing on the study's objectives, the voluntary nature of their involvement, measures to protect confidentiality, and their right to withdraw at any time without consequence. Verbal informed consent was obtained from all participants before the discussion began. To preserve anonymity, no personal identifiers (e.g., names or stall numbers) were collected or included in transcripts or reports.

Data analysis followed an inductive thematic analysis approach. The process began with repeated readings of the transcripts to establish familiarity, followed by systematic coding of salient phrases and concepts. Codes were then consolidated into broader, overarching themes that reflected recurring patterns across participants' accounts. These themes were cross-validated with field notes taken by the facilitator and note-taker to ensure reliability and contextual grounding. This iterative process enhanced the credibility and trustworthiness of the findings.

Findings

Operations Management Practices

Fish vendors in Dumaguete City Public Market operate in a high-risk, low-margin environment shaped by the perishability of their products. Their practices reveal a blend of informal ingenuity and context-driven pragmatism.

Inventory management and preservation tactics. Vendors relied heavily on ice boxes to preserve freshness. When ice supplies ran out, salting and drying became fallback options:

"Kung mahurot ang ice, asinan namo ang isda. Kung madaot gihapon, ilabay sa gobyerno."
"When ice runs out, we salt the fish. If they're still spoiled, the government disposes of them."

Supply chain coordination. Trust governed relationships with wholesalers, but this trust was fragile and often asymmetric:

"Kung dili mi mosunod sa presyo sa wholesaler, dili na mi tagaan ug isda. Masuko sila dayon."
"If we don't accept the wholesalers' prices, they cut our supply."

Dynamic pricing. Prices were adjusted within the day to match declining freshness, prioritizing turnover over margin:

"Kung sayo ang isda, presyo kay ₱200. Kung hapon na, barato na kay maluya na."
"Fresh fish in the morning sell for ₱200. By afternoon, prices drop because they're less fresh."

Customer engagement. Vendors used hyper-local branding and provenance cues to appeal to buyers:

"Siaton ni! Lab-as kaayo!"

"This is from Siaton! Super fresh!"

Systemic Challenges

Ice shortages. Ice scarcity emerged as the most critical bottleneck, with vendors spending significant time securing it, often at the expense of selling:

"Naa Ice plant, pero naa man gud na silay mga priority sir, mga manok, mga magnolia ... Unahon na nila. So amoa maghulat ra mi ... unya amoang isda mulagway na."

"There is an ice plant, but they prioritize chicken, and businesses like Magnolia. We just wait, while our fish loses freshness."

"Dili mi manguha ug isda ug mawalay ice. Mabaho ang isda."

"We don't buy fish if there's no ice. It will smell."

Regulatory inequities. Licensed vendors reported heavier burdens than unlicensed sellers who drew away customers outside the market:

"Permit na sir, Mayor's permit... kinahanglan kumpleto mi mo bayad sa SSS, PhilHealth, BIR, Pag-ibig... daghan na kaayong naninda sa gawas kami namingaw nami diri sa sulod."

"We have to secure a mayor's permit and complete payments to SSS, PhilHealth, BIR, and Pag-ibig. Our problem is the unlicensed vendors outside—our stalls inside are empty while they attract the buyers."

Infrastructure deficits. Despite daily cleaning, sanitation remained a challenge, particularly with rodents and drainage:

"Bisan gabii mi maglimpyo, mo balik gihapon ang ilaga. Baho na pod ugma."

"Even if we clean nightly, rats return. The stench comes back by morning."

Adaptive Strategies

Community collaboration. Vendors mitigated risks through cooperative sharing of resources:

"Magtinabangay mi sa ice. Kung naa koy sobra, hatag sa silingan."

"We share ice. If I have extra, I give it to my neighbor."

Waste reduction. Spoiled fish were repurposed into dried products whenever possible:

"Kung daot na, bularon. Pero kung baho na gyud, labay."

"If slightly spoiled, we dry them. If spoiled, we discard them."

Suki relationships. Loyalty was reinforced through long-standing buyer-seller ties, even when prices were higher:

"Ang suki bisan mahal, diri gihapon mo palit. Suki na man gud."

"Loyal customers buy from us even if it's pricier. That's what loyalty means."

Discussion

Operations Practices Under Perishability

The findings reveal that fish vendors in Dumaguete manage operations by prioritizing rapid turnover over profit maximization. Prices are adjusted within the day to encourage sales before freshness declines. This resonates with studies showing that inventory and pricing in informal fish markets are strongly shaped by perishability and liquidity pressures (Bermas et al., 2023; Macusi et al., 2024; Overå et al., 2022; A.B.M.A. et al., 2024). Vendors' reliance on ice boxes, and fallback preservation strategies such as salting or drying, mirror patterns identified in Bangladesh, Nigeria, and Indonesia, where inadequate cold storage and sanitation force vendors into low-tech loss-mitigation (A.B.M.A. et al., 2024; Grema et al., 2020; Rahayu et al., 2020). Moreover, the use of provenance-based marketing ("lab-as," locality claims) reflects what Overå et al. (2022) describe as the reliance on social capital and community trust in the absence of formal quality standards.

Supply Chain Coordination and Power Imbalances

Dumaguete vendors' dependence on wholesalers through verbal arrangements, coupled with threats of supply withdrawal, highlights the tension between trust and exploitation. This dynamic parallels findings from Ghana and Southeast Asia, where supply chain relations are based on interpersonal trust and credit but expose vendors to asymmetric power and risks of sudden disruption (A.B.M.A. et al., 2024; Overå et al., 2022; Pedroza-Gutiérrez & Hernández, 2020). The Dumaguete evidence contributes by showing how these asymmetries manifest in daily operations, with wholesalers acting as de facto price setters.

Systemic Challenges in Market Environments

The most critical constraint observed was ice scarcity. Vendors spending two to three hours securing ice reflects operational inefficiencies that are also documented across regional contexts (A.B.M.A. et al., 2024; Grema et al., 2020). This infrastructure gap not only increases spoilage but also reduces vendors' effective selling time. Licensed vendors' struggles against unlicensed competitors outside the market highlight regulatory inequities, consistent with literature noting weak and inconsistent policy support for informal vendors (Grema et al., 2020; Maswita & Arifa, 2024). Additionally, the sanitation challenges reported—rodents, drainage issues, and persistent odors—are aligned with similar findings in Nigeria and Indonesia, where hygiene deficits are systemic and beyond individual vendor control (Grema et al., 2020; Rahayu et al., 2020).

Adaptive Strategies and Social Capital

Despite systemic challenges, Dumaguete fish vendors demonstrate resilience through adaptive strategies rooted in community collaboration. Practices such as ice sharing, bulk purchases, and maintaining long-term "suki" relationships echo the literature's recognition of social networks as resilience infrastructure (Amanatin et al., 2025; Pedroza-Gutiérrez & Hernández, 2020; Rouillé et al., 2024). The transformation of spoiled fish into dried products also aligns with what Sari et al. (2024) and Stoll et al. (2015) identify as value-recovery strategies employed under resource constraints. These findings reinforce the importance of relational capital, which not only provides stability but also offers a coping mechanism when infrastructure and policy support are inadequate.

Contributions and Implications

This study contributes operational granularity to the literature by quantifying the time lost to ice procurement, documenting intra-day price adjustments tied to freshness decay, and illustrating how regulatory inequities divert demand from licensed to unlicensed sellers. These details enrich the broader themes identified in prior studies (Bermas et al., 2023; Macusi et al., 2024; Overå et al., 2022). Policy and practice implications include piloting micro-cold chain solutions (shared freezers, scheduled ice delivery), market-level sanitation upgrades, and enforcement of fair competition rules while streamlining compliance for licensed vendors. Cooperative mechanisms for collective procurement and credit access are also strongly supported by the literature as strategies to reduce dependence on wholesalers (Alam et al., 2023; Maswita & Arifa, 2024; Stoll et al., 2015).

Conclusion

This study examined the operations management practices, systemic challenges, and adaptive strategies of fish vendors at Dumaguete City Public Market. The findings reveal a sector shaped by the tension between perishability and profitability, where vendors prioritize rapid turnover through intra-day pricing adjustments, improvisational preservation, and provenance-based customer engagement. Supply chain coordination was governed by trust, yet often left vendors vulnerable to exploitation by wholesalers.

Systemic inequities—most notably ice shortages, regulatory imbalances, and persistent sanitation deficits—emerged as critical constraints. These findings mirror challenges documented in other Southeast Asian and global contexts (A.B.M.A. et al., 2024; Bermas et al., 2023; Grema et al., 2020; Overå et al., 2022; Rahayu et al., 2020). At the same time, Dumaguete vendors demonstrated resilience through community collaboration, improvisational waste reduction, and the cultivation of long-term suki relationships, reinforcing the literature's recognition of social capital as an essential coping and competitive resource (Amanatin et al., 2025; Rouillé et al., 2024; Stoll et al., 2015).

The study contributes by providing operational granularity—quantifying time lost to ice procurement, mapping intra-day price decay, and highlighting regulatory displacement effects—that enriches the largely regional evidence base. Policy implications include piloting micro-cold chain technologies, improving sanitation and pest-control systems at the market level, ensuring fair enforcement of licensing regulations, and strengthening cooperative mechanisms for collective procurement and bargaining.

Future research should evaluate the effectiveness of such interventions in reducing spoilage, stabilizing income, and enhancing vendor resilience. Further exploration of digital marketing innovations, gendered experiences, and long-term impacts of cooperative structures could deepen understanding of how informal vendors adapt within structurally constrained environments.

In sum, the study underscores that while Dumaguete's fish vendors face profound systemic challenges, their adaptive practices demonstrate both ingenuity and cultural resilience. With targeted infrastructural and policy support, these vendors can transition from survival-driven operations to more sustainable and equitable market participation.

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