IJMERI

Volume 03 Issue 02 | May 2025 Article 9

E- ISSN: 2980-4760
P- ISSN: 2980-4752

ORIGINAL ARTICLE

Supply Chain in Local Food Businesses: Basis for Business Model Development

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Received: February 2025
Revised: March 2025
Accepted: April 2025
Available: May 2025

ABSTRACT

This study aimed to assess the impact of supply chain disruptions and inefficiencies on local food businesses in Daet, Camarines Norte. It specifically investigated common supply chain management practices—focusing on inventory management, sourcing and procurement, and logistics and transportation—and examined the relationship between these practices and the supply chain issues experienced by these businesses. A quantitative research design was employed, using a structured survey questionnaire administered to 138 respondents from 46 local food businesses. Respondents included business owners, managers, and key personnel involved in supply chain operations. The survey measured the extent of supply chain practices and the level of disruptions using a five-point Likert scale. Data was analyzed using descriptive statistics (Weighted Mean) and Pearson Product-Moment Correlation to test for significant relationships. Results indicated that local businesses emphasized inventory availability and supplier relationships, though many still relied on manual inventory tracking. Adaptability in transportation was evident, yet fuel efficiency was less prioritized. Internally, communication breakdowns were the most frequent disruption, while extreme weather events were the leading external factor. Statistical analysis showed no significant relationship between supply chain practices and the disruptions experienced, suggesting that external, uncontrollable factors had a greater impact. Despite strong supply chain practices, local food businesses remain vulnerable to external disruptions. The study recommends transitioning to digital inventory tools, diversifying suppliers, adopting fuel-efficient logistics, and improving communication systems. A proposed business model aims to enhance internal coordination, resilience to external shocks, and overall operational efficiency

Keywords: *Supply Chain Management, Local Food Businesses, Disruptions, Efficiency, Business Model*

Published by IJMERI, Saint Joseph College, Southern Leyte, Philippines
Website: http://www.ijmeri.com/
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Recommended Citation
Langit, M. (2025). Supply Chain in Local Food Businesses: Basis for Business Model Development. *International Journal of Multidisciplinary Educational Research and Innovation. 3*(2), 113-127.

INTRODUCTION

The food industry plays a crucial role in global and local economies, acting as a primary source of employment, livelihood, and cultural preservation. In the Philippines, particularly in provincial towns like Daet, Camarines Norte, local food businesses contribute significantly to community development and identity. However, these enterprises often grapple with supply chain vulnerabilities such as delayed deliveries, fluctuating input prices, and inadequate infrastructure. Global events, including the wars in Ukraine and the Middle East, have further stressed food distribution systems, revealing the fragility of global supply chains (Masoura, 2024). Locally, the situation is compounded by the lack of access to digital logistics tools and limited financial capacity, making it difficult for small businesses to recover from disruptions. Despite support from Republic Act No. 11337 (Innovative Startup Act) and Republic Act No. 10644 (Go Negosyo Act), many food businesses remain exposed to operational risks. These disruptions undermine profitability and sustainability, threatening the viability of small enterprises in areas like Daet (Transportify, n.d.; Maheshwari, 2023).

While there is a growing body of research on global supply chain resilience, there is limited literature focusing on the practical experiences of small food businesses in semi-urban or rural Philippine settings. This study addresses that gap by examining the current supply chain management practices of local food enterprises in Daet, identifying the internal and external factors contributing to disruptions and inefficiencies, and assessing how these issues impact operations. It also seeks to explore the relationship between existing practices and the severity of supply chain challenges. Ultimately, the study aims to develop a localized business model that can help small food businesses in Camarines Norte improve their supply chain resilience, thereby enhancing operational efficiency and long-term sustainability.

Research Questions

This study aims to answer the following questions:

1. What are the common supply chain management practices of the local food businesses in Daet, Camarines Norte in terms of inventory management?
2. What are the common supply chain management practices of the local food businesses in terms of sourcing and procurement?
3. What are the common supply chain management practices of the local food businesses in terms of logistics and transportation?
4. How are the local food businesses affected by supply chain disruptions and inefficiencies in terms of internal factors?
5. How are the local food businesses affected by supply chain disruptions and inefficiencies in terms of external factors?

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METHODS

Study Design

This research takes on a quantitative approach using a descriptive-correlational design to better understand how local food businesses in Daet, Camarines Norte manage their supply chains—and more importantly, how they deal with the disruptions and inefficiencies that come their way. The descriptive part of the study focuses on examining current practices in supply chain management, particularly in areas like inventory management, sourcing and procurement, and logistics and transportation. Through this, the study aims to provide a clear picture of the patterns, systems, and routines that local businesses currently use to keep their operations running.

On the other hand, the correlational part of the research investigates how these practices relate to the challenges that businesses face. Specifically, the study looks at both internal factors (like limited resources, staff shortages, and internal operations) and external factors (such as transportation delays, supplier issues, and market volatility). By analyzing these relationships, the goal is to identify the most pressing issues and the extent to which they're influenced by existing supply chain practices. The independent variables in this study are the supply chain management strategies themselves—inventory management, sourcing and procurement, and logistics—while the dependent variables are the internal and external issues that cause supply chain problems.

This study doesn't stop at identifying problems; it also aims to offer solutions. By understanding which practices are effective and which aren't, the findings will help shape a strategic business model. This model will be tailored to strengthen the operational resilience of food enterprises in Daet, helping them adapt and thrive even amid disruption. Additionally, the study considers the role of communication and collaboration among business owners, managers, and suppliers as part of the broader strategy to improve supply chain efficiency and reduce vulnerability to external shocks.

Population and Sample

The population targeted in this study includes all registered small and medium-sized food businesses (SMEs) operating in Daet, Camarines Norte. According to the 2024 records from the Business Permits and Licensing Office (BPLO), there are a total of 231 registered food businesses in the area. To ensure the study focuses on businesses with enough operational experience, only those that have been running for at least one year and have at least five employees will be considered. These criteria help ensure that respondents have firsthand experience dealing with supply chain challenges.

Given the manageable size of the total population, a simple random sampling method will be used. This method gives every eligible business an equal chance of being selected, which helps reduce bias and ensures that the findings can be generalized to the broader food business community in Daet. The sample size will be determined based on how many businesses meet the criteria, ensuring the results are truly representative of the industry landscape in the municipality.

Instrumentation

To gather data, the researcher developed a custom survey questionnaire grounded in a thorough review of relevant literature and prior studies on supply chain management. The questionnaire is divided into two major parts: the first part focuses on the key practices in inventory management, sourcing and procurement, and logistics and transportation; the second part assesses how often and how severely businesses experience disruptions and inefficiencies in their supply chain. Responses in the second

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section are collected using a 5-point Likert scale, which allows for measuring nuances in experience and opinion.

To ensure the survey's validity and effectiveness, it was reviewed by a panel of five experts from both academic and professional backgrounds. This included a university professor with business expertise, two Department of Education professionals experienced in logistics and asset management, and two private-sector practitioners specializing in procurement and inventory control. Their feedback helped fine-tune the questionnaire and confirmed that it was clear, relevant, and aligned with the study's objectives.

Before rolling out the final version, the instrument underwent a dry run with 20 food businesses in nearby municipalities—Mercedes, Talisay, and Vinzons. This pilot test helped identify any confusing or ambiguous questions and provided valuable insights into how the survey might be interpreted in a real-world setting. The feedback gathered during this trial led to several refinements, and the reliability of the tool was tested using Cronbach's Alpha, which confirmed its internal consistency.

During the actual data collection, three individuals from each participating business were asked to respond to the questionnaire: the owner or authorized representative, the production manager, and the supply chain specialist. This multi-respondent approach ensures a well-rounded understanding of each business's supply chain practices and challenges from different functional perspectives.

Data Analysis

The analysis of the collected data began with descriptive statistics to provide a clear snapshot of the participating businesses—their type, number of years in operation, and size (based on number of employees). This information helps contextualize the supply chain practices and challenges reported in the rest of the study.

To measure the extent to which businesses implement supply chain management practices and how often they face specific disruptions, the weighted mean was calculated. This allows for an understanding of how consistently certain practices are applied and how widespread particular issues are. Ranking was also used to determine the most frequently encountered internal and external factors contributing to supply chain problems.

To explore the relationships between variables, the study used Somers' Delta Correlation Coefficient (d) to determine whether there is a statistically significant connection between the level of supply chain practice and the severity of disruptions experienced. Additionally, the Contingency Coefficient (C) was used to see whether there's any notable association between a business's profile (e.g., its size, age, or type) and the nature of the inefficiencies it encounters.

RESULTS

By combining these different statistical tools, the study aims to go beyond just describing problems—it seeks to uncover patterns and relationships that can lead to actionable strategies. Ultimately, the findings will help local food businesses not only understand their supply chain strengths and

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weaknesses but also make informed decisions to improve their systems, become more resilient, and remain competitive in a challenging economic environment.

Content Validity:

Table 1. Common Supply Chain Management Practices of the Local Food Businesses along Inventory Management

	Indicators	Weighted Mean	Interpretation
1.	Inventory levels are regularly checked to ensure sufficient supplies for daily operations.	4.57	VMP
2.	A written list, barcode system, or inventory software is used to monitor the movement of products in and out of storage.	4.27	VMP
3.	Products are stored in proper conditions, such as refrigeration for perishable items or secure packaging for fragile goods, to prevent damage or spoilage.	4.52	VMP
4.	Inventory records are frequently reviewed, and any errors are corrected immediately to maintain accurate stock levels.	4.41	VMP
5.	Sales trends are observed to identify fast-moving and slow-moving products, helping with inventory planning and stock management.	4.36	VMP
6.	Minimum stock levels are established for essential items to ensure availability and prevent unexpected shortages.	4.48	VMP
7.	Coordination with suppliers is maintained to support a smooth restocking process and avoid delays in receiving important inventory.	4.41	VMP
8.	Inventory levels are adjusted based on customer demand, considering peak seasons, popular products, and changing sales trends.	4.41	VMP
9.	Best-selling products receive priority in stock management to reduce storage costs and improve overall inventory efficiency.	4.44	VMP
10.	Regular inventory audits are conducted by comparing physical stock with recorded data to maintain accuracy and prevent discrepancies.	4.43	VMP
	Overall Weighted Mean	4.43	VMP

Rating Scale:		*Descriptive Rating:*
4.20-5.00	-	*Very Much Practiced (VMP)*
3.40-4.19	-	*Frequently Practiced (FP)*
2.60-3.39	-	*Occasionally Practiced (OP)*
1.80-2.59	-	*Rarely Practiced (RP)*
1.00-1.79	-	*Not at All Practiced (NAP)*

The findings shown in Table 1 indicate that most local food businesses in Daet, Camarines Norte are managing their inventories effectively in day-to-day operations. The highest-rated practice was “Inventory levels are regularly checked to ensure sufficient supplies for daily operations,” with a

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weighted mean of **4.57**. This suggests that many businesses prioritize routine stock monitoring to avoid supply shortages. For example, a tapsilogan in the town center may assign someone—often the owner or a staff member—to check staple items like rice, eggs, or meat each morning. Though their approach may involve manual checklists or mental tracking, it proves reliable in a fast-paced setting. The second highest-rated indicator, "Products are stored in proper conditions, such as refrigeration for perishable items or secure packaging for fragile goods," scored **4.52**, reflecting awareness of the importance of safe storage to reduce spoilage and maintain product quality. In most eateries and shops, refrigerators and sealed containers are used to store sensitive goods, indicating an understanding that poor storage can lead to losses and reduced customer trust.

On the other hand, the two lowest-rated indicators—though still relatively high—highlight areas where improvements can be made. The lowest score was for "A written list, barcode system, or inventory software is used to monitor the movement of products in and out of storage," with a mean of **4.27**. This suggests that while some use basic tracking systems, others still rely on informal methods such as handwritten notes or memory, which may lead to inaccurate stock records. The second lowest-rated item, "Sales trends are observed to identify fast-moving and slow-moving products, helping with inventory planning and stock management," had a mean of **4.36**. This reflects that although businesses may notice general trends, many do not use these insights for strategic inventory planning. Previous studies support these observations. Catral et al. (2022) found that even simple spreadsheet tools can improve inventory monitoring in resource-limited settings. Secretario and Naval (2021) noted that small businesses in Daet show varying levels of digital readiness, with some using manual ABC classifications and others exploring basic ERP tools. Moreover, Cheng et al. (2020) emphasized the importance of balancing shelf life, pricing, and timing in perishable inventory. These findings collectively suggest that while local businesses demonstrate strong manual control, there is a pressing need to introduce more accessible, data-informed systems to enhance efficiency and resilience.

Table 2. Common Supply Chain Management Practices of the Local Food Businesses along Sourcing and Procurement

	Indicators	Weighted Mean	Interpretation
1.	Supplies are ordered regularly to ensure that all necessary items are consistently available, avoiding shortages that could disrupt daily operations.	4.24	VMP
2.	Any issues, such as late deliveries from suppliers, are promptly addressed to prevent delays in production or service and to maintain smooth operations.	4.26	VMP
3.	Clear and straightforward agreements are made with suppliers to ensure a continuous and reliable supply of materials, reducing the risk of unexpected shortages.	4.24	VMP
4.	Strong, positive relationships are developed and maintained with suppliers to encourage timely deliveries and open communication, ensuring smooth transactions.	4.36	VMP
5.	Purchases are made either from a single supplier or multiple suppliers, depending on which option offers the best value, convenience, and reliability for the business.	4.36	VMP

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6.	A backup supplier is secured and ready to step in should the primary supplier experience issues, ensuring that there are no disruptions in the supply chain.	4.34	VMP
7.	The performance of suppliers is regularly reviewed to assess their reliability in terms of delivery times, product quality, and overall service.	4.20	VMP
8.	A change in suppliers is considered when the current supplier is unable to meet the business's evolving needs or quality standards, ensuring the business operates efficiently.	4.15	FP
9.	The purchasing process is consistently evaluated to find ways to streamline and improve efficiency, making the ordering of supplies faster and less cumbersome.	4.27	VMP
10.	Suppliers who prioritize environmentally friendly practices, such as using sustainable materials or reducing waste, are selected whenever possible to align with the company's sustainability goals.	4.30	VMP
	Overall Weighted Mean	4.27	VMP

Rating Scale:		*Descriptive Rating:*
4.20-5.00	-	*Very Much Practiced (VMP)*
3.40-4.19	-	*Frequently Practiced (FP)*
2.60-3.39	-	*Occasionally Practiced (OP)*
1.80-2.59	-	*Rarely Practiced (RP)*
1.00-1.79	-	*Not at All Practiced (NAP)*

The findings from the study highlight several key sourcing and procurement practices among local food enterprises in Daet, Camarines Norte. Most notably, businesses in the area place great importance on cultivating close relationships with suppliers and choosing suppliers based on value and reliability, both with a weighted mean of 4.36, classified as Very Much Practiced. These practices reflect a preference for personal trust and community-based connections in procurement strategies. The reliance on informal agreements and regular, hands-on management of inventories is consistent with the local business culture, where face-to-face interactions and shared relationships are central to day-to-day operations. However, the study also revealed areas for improvement, particularly in the practices of switching suppliers when existing ones do not meet changing business requirements (4.15) and checking supplier performance regularly (4.20). These practices, although still rated as Very Much Practiced, scored lower, indicating a reluctance to make changes even when supplier performance falls short, possibly due to cultural preferences for loyalty and limited alternatives within the region.

These results align with existing literature on small business procurement practices. Studies by Secretario and Naval (2021) and Romo et al. (2022) similarly emphasize the importance of reliable, trust-based supplier relationships for operational continuity, which is mirrored in the Daet food enterprises' practices. However, research by Patel (2023) and Mishra et al. (2021) suggests that diversifying suppliers and regularly evaluating their performance are crucial for reducing risks and enhancing resilience—practices that are less common in Daet. This indicates that while local businesses benefit from strong personal ties with suppliers, adopting more formalized, strategic procurement practices could further strengthen their supply chain resilience. To improve efficiency and reduce disruptions, even small businesses can benefit from implementing basic supplier evaluation tools to better balance trust with objective performance assessments.

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Table 3. Common Supply Chain Management Practices of the Local Food Businesses along Logistics and Transportation

	Indicators	Weighted Mean	Interpretation
1.	Goods are delivered using the most suitable transportation method for the area, such as motorcycles for smaller deliveries or trucks for larger shipments.	4.39	VMP
2.	Transport problems, like delays or high delivery costs, are addressed promptly to ensure timely and cost-effective deliveries.	4.28	VMP
3.	Simple tools or apps are used to find the fastest and most efficient delivery routes, reducing delivery time and improving service.	4.10	FP
4.	Products are delivered just in time to ensure freshness and maintain their quality when they reach customers.	4.33	VMP
5.	Deliveries are planned for times when roads are less busy, helping to avoid delays and ensure timely arrival.	4.12	FP
6.	Deliveries are combined when possible to reduce transportation costs by consolidating shipments into fewer trips.	4.08	FP
7.	A plan is in place for unexpected situations, like vehicle breakdowns, to prevent delivery delays.	4.29	VMP
8.	Reliable and affordable delivery companies are chosen to ensure a balance between quality service and reasonable pricing.	4.22	VMP
9.	Customers can track their orders, providing better transparency and improving overall customer service.	4.26	VMP
10.	Fuel efficiency is prioritized by using vehicles that consume less fuel or exploring alternatives, such as electric vehicles or shared transportation options.	4.03	FP
	Overall Weighted Mean	4.21	VMP

Rating Scale:		*Descriptive Rating:*
4.20-5.00	-	*Very Much Practiced (VMP)*
3.40-4.19	-	*Frequently Practiced (FP)*
2.60-3.39	-	*Occasionally Practiced (OP)*
1.80-2.59	-	*Rarely Practiced (RP)*
1.00-1.79	-	*Not at All Practiced (NAP)*

The findings in Table 3 show that the two highest-rated logistics practices among local food businesses in Daet, Camarines Norte, are the use of the most suitable transportation method (WM = 4.39) and just-in-time delivery to ensure product freshness (WM = 4.33). These results highlight how local businesses are highly responsive to the logistical needs of their environment. Given Daet's geographical layout, entrepreneurs adapt by using motorcycles for smaller, time-sensitive deliveries and trucks for bulk goods. This ensures that perishable items, like coconut-based desserts or freshly baked goods, arrive

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in good condition. The just-in-time delivery approach works especially well for small eateries and bakeries, where daily production cycles and limited storage space require careful inventory management. For example, a local carinderia might order just enough ingredients for the day, with deliveries timed perfectly to ensure fresh meals. These well-practiced methods show how local businesses can manage logistics effectively, even without advanced systems, which reflects what Catral et al. (2022) and Romo et al. (2022) highlight about the importance of reliable transportation.

On the other hand, there's still room for improvement in practices like fuel efficiency and the use of alternative transportation (WM = 4.03) and consolidation of shipments to reduce transportation costs (WM = 4.08). Despite a strong focus on flexibility and product freshness, many businesses continue to make separate delivery trips, which increases fuel consumption and operational costs. Fuel-efficient vehicles and shipment consolidation are still underutilized, possibly due to high upfront costs or limited access to resources like charging stations. To address these challenges, LGUs or business support organizations could encourage better delivery planning or provide subsidies for fuel-efficient vehicles. As Barman et al. (2021) suggests, introducing flexible and resilient logistics strategies can help businesses recover from disruptions, while Perdana et al. (2022) highlights the need for contingency planning in logistics. Mishra et al. (2021) also emphasizes the importance of proactive logistics coordination, which can help Daet's local food businesses overcome disruptions, lower costs, and contribute to sustainability.

Table 4. Internal Factors that Affect the Disruptions and Inefficiencies of Supply Chains

Indicators	Weighted Mean	Interpretation
1. Stock levels must constantly be adjusted, as disruptions are unavoidable, leading to either excess inventory that increases costs or shortages that prevent businesses from meeting customer demand.	3.66	FA
2. Proper storage of raw materials is a given, since delays in deliveries are expected, making spoilage or degradation a constant risk if storage conditions are not maintained.	3.76	FA
3. Staffing levels must always be monitored, as absenteeism and labor shortages are assumed challenges that can slow production and delay order fulfillment.	3.67	FA
4. Effective communication is crucial, as misunderstandings and operational bottlenecks are inevitable when supply chain inefficiencies disrupt normal workflows.	3.79	FA
5. Sufficient storage space is necessary, as unpredictable supply delays will result in excess stock buildup, requiring well-organized inventory management.	3.75	FA
6. Equipment and machinery must always be well-maintained, as disruptions will likely delay the procurement of spare parts, increasing downtime and affecting productivity.	3.75	FA
7. A backup plan must always be in place, as unexpected shortages, logistics failures, or sudden shifts in demand are guaranteed to occur at some point.	3.71	FA

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8.	Efficient order processing is essential, as delays in the supply chain are inevitable and can lead to longer lead times, unsatisfied customers, and lost sales opportunities.	3.75	FA
9.	Securing sufficient funds is a given, as financial instability due to rising costs, supply price fluctuations, and emergency expenses will continuously challenge business operations.	3.77	FA
10.	Sales forecasts must be accurate and adaptable, as market unpredictability and supply chain inefficiencies will frequently impact the ability to maintain optimal stock levels.	3.76	FA
	Overall Weighted Mean	3.74	FA

Rating Scale:		*Descriptive Rating:*
4.20-5.00	-	*Very Much Affected (VMA)*
3.40-4.19	-	*Frequently Affected (FA)*
2.60-3.39	-	*Occasionally Affected (OF)*
1.80-2.59	-	*Rarely Affected (RA)*
1.00-1.79	-	*Not at All Affected (NAA)*

The findings in Table 4 reveal that communication, financial stability, workforce management, and inventory control are key internal factors that impact local food businesses in Daet, especially during supply chain disruptions. Effective communication (Wm = 3.79) emerged as the most crucial factor, highlighting the need for clear coordination between staff and suppliers to avoid delays and mistakes. In smaller businesses, where managers often take on multiple roles, a breakdown in communication—whether it's ordering supplies or coordinating deliveries—can lead to wasted time or spoiled products. Financial stability (Wm = 3.77) is also important, as businesses often deal with unexpected expenses, from rising supply costs to equipment breakdowns. With limited resources, many rely on short-term credit or personal savings, making it harder to stay financially flexible when disruptions occur. Romo et al. (2022) emphasize how these financial strains and logistical challenges can add complexity to the day-to-day operations of local MSMEs.

On the other hand, internal practices related to monitoring staffing levels (Wm = 3.67) and adjusting stock levels (Wm = 3.66) received lower ratings, suggesting that these areas often lack proactive management. Labor shortages and absenteeism are common, but businesses often wait until a disruption occurs before addressing them. Similarly, stock levels are only adjusted when shortages or surpluses arise, rather than through predictive planning. To improve, business owners could adopt low-cost tools like shift planners or inventory tracking systems, which could enhance staffing flexibility and better manage stock. This aligns with the work of Laorden et al. (2020), who argue that MSMEs need to balance limited resources with effective practices to stay competitive, and Cheng et al. (2020), who emphasize how proper inventory management and pricing strategies impact both financial stability and operational efficiency. Improving these internal systems could help businesses in Daet become more resilient and sustainable in the long term.

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Table 5. External Factors that Affect the Disruptions and Inefficiencies of Supply Chains

	Indicators	Weighted Mean	Interpretation
1.	Suppliers are assumed to occasionally face delivery delays, but it is expected that they will resolve issues promptly to ensure materials are delivered as efficiently as possible.	3.70	FA
2.	Transportation challenges, such as occasional delays, are expected, but it is assumed that they will be managed effectively to minimize disruptions and allow for timely deliveries in most cases.	3.76	FA
3.	New health inspection requirements are assumed to necessitate adjustments in production schedules, ensuring that the business maintains compliance with higher quality and safety standards.	3.85	FA
4.	Disruptions from extreme weather events, such as typhoon-induced flooding, are expected, but it is assumed that contingency plans will be in place to protect raw materials and minimize losses.	3.98	FA
5.	During hot weather, it is assumed that demand for frozen products will naturally increase, creating an opportunity to replenish stock more frequently to better meet customer needs.	3.85	FA
6.	Occasional delivery delays are expected, but it is assumed that the business will continue improving logistics and working with trusted partners to maintain a steady and reliable supply of goods.	3.79	FA
7.	It is assumed that competitors offering discounts may temporarily attract some customers, but the business is expected to focus on delivering high-quality products and personalized experiences to retain customer loyalty.	3.80	FA
8.	Occasional challenges with courier services are assumed, but steps are expected to be taken to ensure reliable and timely delivery to customers, enhancing satisfaction and service quality.	3.66	FA
9.	The rising cost of ingredients is expected to be a challenge, but it is assumed that the business will explore more cost-effective sourcing options and improve operational efficiency to maintain financial sustainability.	3.85	FA
10.	Global price increases are assumed to lead to higher production costs, but the business is expected to proactively seek innovative solutions and optimize processes to maintain affordability and competitiveness in the market.	3.87	FA
	Overall Weighted Mean	3.81	FA

Rating Scale: *Descriptive Rating:*
4.20-5.00 - *Very Much Affected (VMA)*

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3.40-4.19	-	*Frequently Affected (FA)*
2.60-3.39	-	*Occasionally Affected (OF)*
1.80-2.59	-	*Rarely Affected (RA)*
1.00-1.79	-	*Not at All Affected (NAA)*

Table 5 presents the perceived influence of external factors on supply chain disruptions among local food businesses in Daet, Camarines Norte. The highest-rated factor was disruptions from extreme weather events such as typhoon-induced flooding, which was expected but managed through contingency plans to protect raw materials and minimize losses (Wm = 3.98). This high rating reflects a strong awareness among local business owners of the region's vulnerability to frequent typhoons and flooding. For small and medium-sized food businesses that rely on agricultural inputs like vegetables, fruits, and fish, extreme weather can severely impact logistics, leading to delayed deliveries or spoiled perishable goods. In response, businesses prepare emergency procurement plans, secure alternative storage in less flood-prone areas, and maintain buffer stocks to sustain operations during supply disruptions. To manage stock availability during these periods, businesses rely on manual inventory tools, such as ledger books or Microsoft Excel, to track stock levels and coordinate with suppliers.

Another significant external factor identified was global price increases, particularly in fuel, raw materials, and packaging, which could lead to higher production costs (Wm = 3.87). In Daet, business owners have started to seek innovative solutions, such as using local substitutes for imported ingredients or partnering with local farmers to reduce transportation costs. This reflects the entrepreneurs' adaptability in managing cost efficiency while maintaining quality. On the other hand, occasional supplier delivery delays (Wm = 3.70) and challenges with courier services (Wm = 3.66) were ranked lower, with businesses indicating a moderate concern but confidence that suppliers and couriers would address issues promptly. Despite occasional delays, local food businesses often mitigate risks by maintaining minimum stock thresholds and diversifying suppliers. These findings indicate that local food businesses in Daet face various external challenges, including inflation, logistical disruptions, and technological limitations, as discussed by Plantitas et al. (2024) and Romo et al. (2022). Additionally, Van Roie (2022) highlights the strain caused by fuel cost hikes and labor shortages, while Briones et al. (2023) point to the technological gap limiting the adoption of advanced tools. Addressing these challenges through better contingency planning, supplier management, and network resilience is crucial for the long-term sustainability of these businesses.

CONCLUSION

Based on the findings, the following conclusions were drawn:

1. Local food businesses in Daet, Camarines Norte, should consider adopting digital inventory management tools to improve accuracy and streamline operations. While strong supplier relationships are crucial, diversifying suppliers can offer greater flexibility and help mitigate risks. Investing in fuel-efficient or alternative transportation methods would also contribute to cost savings and sustainability in the long term.

2. Communication within businesses is the most frequently affected internal factor, suggesting the need for improved communication channels. Although inventory management is a concern, businesses

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have established coping mechanisms. Extreme weather events, especially typhoon-induced flooding, present significant external challenges, necessitating better contingency planning.

3. The development of a business model that focuses on improving internal coordination, enhancing resilience to external disruptions, and optimizing operational efficiency is crucial for ensuring long-term sustainability and competitiveness in a volatile market.

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