

## How Smart Supply Chain Management Solves Logistics Bottlenecks at Mixue Bandung

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### Abstract

*The research aims to evaluate and optimize the integration of Supply Chain Management (SCM) to boost regional logistics efficiency. To achieve this purpose, the research team—comprising both lecturers and students—adopts a qualitative research methodology. The team gathers primary empirical data by conducting direct field observations and structured interviews with operational workers who manage day-to-day logistics and store processes. For data analysis, the team utilizes a qualitative thematic analysis technique, which involves transcribing interview recordings, coding field notes, categorizing data into core operational themes, and synthesizing the results to formulate concrete solutions. The findings reveal that Mixue's strict closed supply chain system successfully maintains uniform product quality and secures low product-rejection rates across all Bandung outlets. Furthermore, the integration of real-time Point of Sales (POS) data with central SCM systems eliminates transaction errors and effectively eradicates stockout occurrences.*

**Keyword:** *Supply Chain Management, Logistics Efficiency, Active POS Integration, Closed SCM, Franchise Operations*

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## **Introduction**

Supply Chain Management (SCM) provides an integrated approach that manages the entire flow of products, information, and finance from suppliers, manufacturers, and distributors down to the final consumers. SCM aims to boost a company's business efficiency and effectiveness by integrating the interconnected networks within the supply chain. This integration optimizes the flow of goods, services, and information from suppliers to end customers, lowers system costs, and maintains service levels. The SCM concept emerged as a response to traditional business practices, which often fragment operations and lack integration. In traditional practices, each segment of the supply chain – from raw material procurement and production to distribution – frequently operates in isolation without proper coordination. This lack of coordination causes inefficiencies, inflates costs, and slows down responses to dynamic market demands.

Rapidly changing business environments, global competition, and increasingly critical consumer demands regarding product quality, price, and availability drive companies to adopt SCM. Through SCM, companies can produce and distribute goods in the right quantities, at the right time, and to the right locations, while minimizing overall system costs. Furthermore, advancements in information and communication technology, such as the internet, strengthen the role of SCM. These technologies support cross-organizational business process integration, accelerate information flows, and enhance transparency and collaboration among supply chain partners. Initial observations reveal that companies face a barrage of intertwined challenges: operational constraints, complex stock management, logistical hurdles, regulatory compliance, and fierce market competition. To survive and thrive, organizations must identify these bottlenecks and deploy proactive solutions. Optimizing maintenance and reliability serves as a foundational solution to dismantle these barriers and unlock supply chain excellence.

Operational constraints and logistical hurdles often stem from unexpected equipment failures and disrupted workflows. As Islam, Monjur, and Akon (2023) emphasize, a tight interconnection between logistics and supply chain management dictates overall business success. When companies optimize maintenance and ensure asset reliability, they directly stabilize this interconnection. Reliable machinery ensures that production schedules remain uninterrupted, which in turn guarantees that logistics networks can transport goods without costly delays. Furthermore, Adeniran et al. (2024) demonstrate that advanced analytics optimize logistics by providing deep operational insights. Applying advanced analytics to maintenance—specifically through predictive maintenance—allows companies to anticipate equipment failures before they happen. This proactive approach eliminates sudden logistical bottlenecks, transforms unpredictable downtime into scheduled maintenance windows, and keeps the entire supply chain moving smoothly.

Complex stock management often punishes companies that cannot predict their equipment's reliability. When machinery fails unexpectedly, inventory managers overcompensate by stockpiling excess safety stock, which inflates holding costs and ties up valuable capital. Pasupuleti et al. (2024) highlight how optimization techniques and machine learning enhance inventory management and supply chain agility. By stabilizing equipment reliability, companies gain the confidence to implement leaner inventory strategies. Machine learning algorithms can harmonize maintenance schedules with inventory data, ensuring that spare parts arrive precisely when needed, thereby simplifying stock management and slashing unnecessary costs.

In a dynamic market, consumer demands shift rapidly. Richey et al. (2022) argue that a responsiveness view of logistics determines how effectively a company satisfies these shifting market needs. However, a company cannot respond quickly if its operational assets are unreliable. Optimizing reliability directly injects agility into the organization. To take responsiveness a step further, modern supply chains deploy cutting-edge

technologies. Yan et al. (2022) showcase how reinforcement learning optimizes decision-making within logistics and supply chain management. When applied to reliability engineering, smart algorithms dynamically adjust maintenance schedules based on real-time market demand and equipment wear. This intelligence ensures that the production line remains fully operational during peak demand periods, allowing the company to outmaneuver competitors.

Ultimately, overcoming these operational hurdles builds a fortified market position. Tukamuhabwa, Mutebi, and Kyomuhendo (2023) establish that robust supply chain management practices, logistics capabilities, and logistics integration drive a firm's competitive advantage. A reliable, well-maintained operation forms the bedrock of these logistics capabilities. It ensures that the company consistently delivers high-quality products on time, winning customer trust in a crowded market. Additionally, structured maintenance protocols ensure that facilities continuously meet strict safety and environmental standards, effortlessly neutralizing regulatory risks.

Based on the field analysis and relevant previous research, this activity identifies the emerging problems and delivers the solutions to boost logistics efficiency by optimizing Supply Chain Management for Mixue products in Bandung.

## **Method**

This study adopts a qualitative research approach to explore the operational dynamics of the target organization. The research team, comprising both lecturers and students, conducts field observations and structured interviews to gather primary data. Specifically, the study focuses on Mixue operations in Bandung as the primary research object. To gain deep, firsthand insights, the team interviews operational workers who directly manage the logistics and supply chain processes.

The research evaluates two core variables: Logistics Efficiency and Supply Chain Management. To analyze the gathered data, the team employs

a qualitative data analysis technique. This process involves transcribing the interview recordings, coding the field notes, and categorizing the information into key themes. Finally, the team synthesizes these themes to identify current operational bottlenecks and formulate strategic solutions that optimize the supply chain and boost overall logistics efficiency for Mixue Bandung.

## **Results and Discussion**

### **Supply Chain Management to Boost Logistics Efficiency at Mixue Bandung**

Mixue Bandung actively implements an integrated Supply Chain Management (SCM) system to coordinate all operational activities, from raw material procurement to final product delivery. This system ensures that consumers consistently receive fresh products at affordable prices. To achieve this, Mixue combines three powerful strategies: low-cost operations (slashing raw material and distribution costs), high responsiveness (maintaining buffer stocks for core ingredients), and product differentiation (introducing unique menu innovations). While Mixue fosters long-term partnerships with primary suppliers, the overarching corporate framework dictates strict sourcing boundaries to secure the supply network.

Mixue enforces a strict closed supply chain system, meaning the central franchisor completely controls the entire supply network. Under this system, every Mixue outlet in Bandung must source its raw materials and operational equipment exclusively from central-managed or headquarters-designated suppliers. This rigid control guarantees product consistency, service quality, and comprehensive quality control across all franchises. Consequently, Mixue's model intentionally rejects traditional cross-sourcing. In standard business practices, cross-sourcing allows store owners to switch between multiple independent vendors to cut costs or bypass supply disruptions. Mixue explicitly prohibits this freedom. Outlets cannot choose alternative vendors because corporate headquarters tightly regulates the quality, formula, and unit pricing of every single ingredient.

To handle sudden spikes in customer demand, store owners actively analyze daily and weekly sales data to track peak periods like weekends, holidays, or national promotions. Based on these insights, management adjusts operational planning by establishing a specific buffer stock, increasing inventory levels by 20% to 30% above normal requirements during busy days. Store managers also optimize daily workflows by directing employees to prepare toppings, ice, and packaging before peak hours begin, significantly accelerating service speed when long queues form. During extreme rushes, outlets deploy a Limited Menu strategy, selling only core items to streamline operations and maintain service quality. To combat supply disruptions or shipping delays from the central warehouse, outlets maintain a backup stock of essential raw materials for at least two to three days. Managers aggressively monitor lead times—the window between ordering and delivery. If the central warehouse signals a delay, managers place orders earlier than usual to prevent stockouts.

Mixue operates a highly structured, standardized international franchise model powered by an integrated Point of Sale (POS) system. Corporate headquarters requires all Indonesian outlets to utilize its proprietary internal POS software. This digital backbone serves as more than just a cash register; it seamlessly integrates sales transactions, inventory management, financial reporting, and warehouse ordering. This connection allows headquarters to monitor every store in real-time. The POS system digitally records cash and non-cash transactions (including QRIS and digital wallets), prints receipts, and instantly updates inventory levels with each sale. It automatically generates financial and performance reports, liberating owners from manual calculations.

Furthermore, the system connects directly to Mixue's distribution centers. Outlets place all raw material orders through the POS application, enabling the central office to manage shipments and track consumption trends. Stores run this cloud-based software on dedicated checkout

computers installed during setup. Because the system utilizes cloud technology, owners can securely monitor sales and stock levels remotely via laptops or smartphones. To maintain security, the system restricts access: cashiers only handle sales transactions, while owners access comprehensive reports and inventory controls through the My Mixue application.

Mixue optimizes delivery schedules by establishing a strict ordering window from Monday to Wednesday. Since shipments from the central warehouse to Bandung outlets take three days, managers calculate this lead time precisely and place orders at least three days before inventory runs out.

To manage inventory, outlets use a Computer-Assisted Ordering (CAO) mindset alongside manual Stock Opname practices. Managers track daily sales data and remaining inventory via physical counts, then update the data in Excel. The system uses these metrics to automatically calculate exact reorder quantities, maintaining safe inventory thresholds before shortages occur. This ordering process factors in current stock, demand trends, delivery lead times, and required buffer stocks to ensure that orders match actual store needs. Ultimately, the integration of POS and CAO systems at Mixue Bandung enables real-time inventory adjustments based on actual sales data, rapidly accelerating the entire replenishment process.



**Figure 1. Mixue Bandung**

## **Logistics Management, Distribution, and Warehousing of Mixue Products**

Mixue utilizes its central warehouses as consolidation and break-bulk hubs. Mixue Indonesia operates strategic warehouse locations across various regions, including Cikarang and Sidoarjo, to support raw material distribution to all their outlets. Mixue Indonesia sources its raw materials through a combination of international imports—specifically from China—and headquarters-approved local suppliers. As an international franchise brand, Mixue enforces a closed and centralized procurement system. Under this system, the company directly imports nearly all core ingredients, such as beverage powders (milk tea, chocolate, matcha), ice cream bases, and specialty syrups and flavorings, from Mixue's partner factories in China. These ingredients serve as the primary components to maintain uniform product flavor, texture, and quality across all outlets, both in Indonesia and globally. Finally, Mixue uses its central warehouses as consolidation and break-bulk points, and distributes products to outlets on a weekly scheduled basis using trucks through Lalamove delivery services.



**Figure 2. Delivery and Interview at Mixue Bandung**

## **Reverse Logistics for Mixue Products**

Mixue outlets return expired or damaged products to the Mixue distribution center, which either recycles or destroys them. Every raw ingredient carries a "best before" date; while consumers can still safely consume the product after this date, the overall quality may decline. Furthermore, finished

products have specific, short-term expiration windows. For example, brewed tea inside a thermos expires after 5 hours, ice cream mix inside the machine expires after 8 hours, and prepared milk tea also expires after 5 hours.

### **Strategic Recommendations: Mitigating the Bullwhip Effect to Enhance Logistics Efficiency at Mixue Bandung**

To maximize logistics efficiency, Mixue Bandung must aggressively eliminate the bullwhip effect across its supply chain network. By sharing real-time Point of Sale (POS) data directly with suppliers and central distribution centers, Mixue can accurately forecast actual consumer demand. If the company fails to control this distortion, several severe operational penalties occur, which these strategic actions directly address.

**Eradicating Overstock and Preventing Customer Defection;** Uncontrolled demand distortion creates massive overstock at distribution centers and manufacturing plants once peak seasons subside. For example, during summer sales spikes, individual franchises order excessive amounts of milk powder, sugar, and syrups. If the central distribution center misinterprets this short-term surge as a permanent trend, it overproduces and stockpiles vast quantities of raw materials. When cooler weather arrives and demand plummets, warehouses end up holding idle inventory, leading to the costly expiration of sensitive toppings and milk powder. Consequently, when the supply chain bottlenecks and fails to deliver the right products at the right time, disappointed consumers defect to competitors.

**Strategic Action:** Mixue must implement an automated demand-smoothing protocol within its cloud-based POS system. Instead of allowing distribution centers to project future production based on raw order volumes, central logistics must synchronize production schedules directly with real-time daily consumption trends at the store level.

**Minimizing Cold Chain Storage and Electricity Costs;** Inaccurate forecasting inflates holding costs, particularly within Mixue's specialized cold chain infrastructure. Mixue relies heavily on temperature-controlled storage for sensitive ingredients like liquid milk, soft-serve ice cream bases, and flavored syrups. When headquarters pushes massive inventory volumes

to Bandung franchises ahead of a national promotion, a lower-than-expected turnout forces these ingredients to accumulate in store freezers. Outlets must then run additional refrigeration units or rent extra storage space. This over-capacity spikes electricity bills and exposes sensitive ingredients to spoilage due to overcrowded cooling units.

**Strategic Action:** Mixue should deploy a Just-In-Time (JIT) replenishment model for its cold chain operations. Logistics managers must establish maximum capacity thresholds for store-level freezers within the POS software, automatically blocking excessive headquarters shipments before they overload local store infrastructure.

**Curtailing Raw Material Waste in Seasonal Promotions;** A lack of supply chain visibility causes severe material waste, especially for limited-time or seasonal menu items with short shelf lives. During high-profile promotional campaigns, the factory mass-produces specific seasonal fruit syrups. Once the campaign concludes, many franchises still hold substantial inventory of these specialty items. Because these syrups last only two months after opening and regular menu items cannot utilize them, individual franchises must discard the excess, causing massive material waste across the region.

**Strategic Action:** Central management must coordinate closely with marketing teams to implement a strict "Phase-Out" inventory strategy for seasonal items. The system must automatically decrease production and distribution of promotional ingredients two weeks before the campaign officially ends, forcing outlets to deplete their existing stock entirely.

**Optimizing Production and Eliminating Reverse Logistics Chaos;** Weather fluctuations frequently disconnect early production forecasts from actual market demand. When Mixue prepares for a major event, a sudden shift in weather can drastically lower consumer demand for cold beverages. If the central warehouse continues to dispatch delivery trucks based on the original pre-event forecast, franchises receive inventory they do not need. This mismatch forces logistics teams to execute expensive product returns or

redistribute items to other outlets. These emergency transfers disrupt standard distribution routes, increase fuel consumption, extend driver work hours, and raise the risk of product damage during transit.

**Strategic Action:** Mixue must integrate dynamic weather forecasting algorithms into its Computer-Assisted Ordering (CAO) system. By cross-referencing real-time meteorological data with historical sales patterns, the system can automatically adjust and scale down scheduled shipments to Bandung outlets 48 hours prior to bad weather, preventing unnecessary dispatches and costly reverse logistics chaos.

Optimizing Supply Chain Management (SCM) directly transforms operational performance, turning logistics from a simple cost center into a powerful engine for competitive advantage. The case of Mixue Bandung clearly demonstrates how the systematic integration of raw material flows, digital tracking, and strategic distribution drives logistics efficiency. When supported by established operational theories and contemporary industry insights, Mixue's strategies provide a robust blueprint for franchise supply chain success. Mixue achieves remarkable product consistency across all Bandung outlets by strictly enforcing a closed supply chain system. This centralized, top-down procurement model eliminates unauthorized third-party vendors and mandates that all stores buy core ingredients directly from headquarters-approved facilities. From a foundational management perspective, Foster and Sidharta (2019) emphasize that standardized inputs form the bedrock of organizational quality control. By centralizing and standardizing raw materials at the source, Mixue dramatically minimizes raw material defects and maintains a consistently low product-rejection rate at the outlet level. This seamless execution supports the findings of Tukamuhabwa, Mutebi, and Kyomuhendo (2023), who argue that highly integrated supply chain practices and robust logistics capabilities directly build a firm's long-term competitive advantage.

At the heart of Mixue's operational efficiency lies a digital backbone that connects store-level transactions to the broader distribution network. The integration of central SCM software with local Point of Sales (POS)

systems secures absolute transaction accuracy and enables real-time stock monitoring. In modern operations management, Heizer and Render (2017) champion data-driven synchronization, stating that real-time information sharing effectively eliminates operational blindness and dampens the disruptive bullwhip effect. Empirical evidence shows that this real-time visibility significantly reduces stockouts and empty-shelf occurrences across Bandung franchises. By tracking consumption trends as they happen, the system empowers logistics managers to deploy automated, advanced analytics for replenishment. This validates the insights of Adeniran et al. (2024), who demonstrate that advanced analytics optimize logistics workflows by turning raw data into actionable, proactive supply chain decisions.

Logistics efficiency relies heavily on intelligent geographic placement. Mixue achieves massive economies of scale by routing its distribution through a central warehouse hub in Cikarang. This facility acts as a high-velocity consolidation and break-bulk point, streamlining bulk orders before dispatching them on a weekly schedule to individual outlets. This structural setup perfectly illustrates the "responsiveness view" proposed by Richey et al. (2022), which argues that flexible, strategically positioned logistics nodes dictate how efficiently a company services regional markets. By consolidating shipments and optimizing truck delivery schedules, Mixue systematically lowers total distribution costs, saves transit time, and eliminates wasteful, erratic transport runs. This optimization confirms the core thesis of Islam, Monjur, and Akon (2023): a well-aligned interconnection between logistics and broader supply chain strategies remains non-negotiable for sustained business success.

To defend against volatile market demands and sudden sales spikes, Mixue mandates a proactive risk-mitigation framework built around buffer stocks. Outlets routinely increase their inventory levels above normal daily requirements during known peak periods. Gupta and Singh (2019) outline

this practice as a core principle of inventory management, asserting that calculated safety stocks protect operational continuity against unpredictable demand swings. When national promotions or warm weather trigger massive consumer rushes in Bandung, this buffer stock ensures that outlets seamlessly satisfy customer orders without interrupting service or depleting ingredients. This agile response aligns with Pasupuleti et al. (2024), who highlight how advanced inventory optimization techniques enhance overall supply chain agility and operational resilience. Furthermore, by smoothly stabilizing inventory levels against market shocks, Mixue mirrors the cutting-edge goals discussed by Yan et al. (2022), where intelligent optimization systems dynamically adjust supply networks to capture future market opportunities without generating excess waste.

## **Conclusion**

This study demonstrates that optimizing Supply Chain Management (SCM) directly drives logistics efficiency for Mixue products in Bandung. The evidence confirms that the strict closed supply chain system effectively maintains uniform product quality and minimizes rejection rates across all franchises. Furthermore, the integration of real-time Point of Sales (POS) data with central SCM systems eliminates transaction inaccuracies and drastically reduces stockouts. Strategically, the centralized warehouse in Cikarang successfully lowers regional distribution costs through disciplined consolidation and scheduled trucking. Finally, the proactive implementation of buffer stocks equips individual outlets to seamlessly absorb sudden demand spikes and mitigate delivery delays. Ultimately, this integrated optimization framework transforms Mixue's logistics network into a highly responsive, cost-effective, and competitive market asset.

To sustain and enhance these operational achievements, Mixue should adopt the following strategic actions Automate Demand Forecasting, corporate IT must upgrade the current POS and Computer-Assisted Ordering (CAO) systems to automatically integrate local weather patterns and regional calendar events, shifting procurement from reactive

adjustments to predictive scheduling. Digitalize Inventory Audits, outlets should transition from manual Excel-based stock tracking to fully automated digital inventory counting tools to eliminate human errors and accelerate the weekly replenishment cycle. Optimize Cold Chain Contingencies, store managers must install secondary backup power sources for cold storage units to safeguard temperature-sensitive ingredients against unexpected local power outages.

For the franchise industry, this research provides a concrete operational blueprint. Franchise managers can replicate Mixue's integrated POS-warehouse model to slash overhead costs, eliminate bullwhip distortions, and protect brand consistency across geographically dispersed networks. Future researchers should employ quantitative methodologies, such as data envelopment analysis or structural equation modeling, to precisely measure the mathematical impact of POS integration on exact profit margins.

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