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Analysis Of Administrative Information System Integration In Supporting Supply Chain Agility And Effectiveness Of Coconut Cooking Oil Distribution (Case Study On FMCG Distribution Company In Surabaya)

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Abstract

This study aims to analyze the integration of administrative information systems in supporting supply chain agility and the distribution effectiveness of coconut cooking oil at an FMCG distribution company in Surabaya. Amidst the highly dynamic market for essential food commodities, the role of administration is often simplified to clerical activities and operational record-keeping, thus neglecting its strategic function as a data hub in the supply chain. This qualitative research with an exploratory case study approach applies comprehensive data triangulation techniques, including in-depth interviews with five cross-functional key informants, operational observations of physical distribution flows, and review of transaction documentation for 2024. The results show that administration plays a vital role in order management, inventory control, and the issuance of distribution documents. However, distribution effectiveness has not been optimal, reflected in the achievement of the company's annual sales target of 87.36% with significant monthly fluctuations (a peak of 124.20% in July and a low of 51.23% in September). Limited information system integration between administration, warehouse, and fleet logistics functions creates data processing lag and stock mismatches, which result in delivery delays and lost sales potential. This research provides novelty by formulating a theoretical and practical framework for cloud-based ERP administration

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integration and document validation automation to strengthen the agility of the essential food commodity supply chain in Indonesia.

Keywords: Administrative Integration; Distribution Effectiveness; Supply Chain Agility; Accounting Information Systems; Coconut Cooking Oil

INTRODUCTION

The dynamics of the fast-moving consumer goods (FMCG) industry, particularly coconut cooking oil in metropolitan areas like Surabaya, demand high supply chain efficiency. As an essential food commodity with high price and demand elasticity, the smooth distribution of coconut cooking oil is greatly influenced by supply chain agility in responding to fluctuations in market demand and supply stability.(Pujawan & Mahendrawathi, 2024)In this context, the administrative function is no longer limited to clerical recording activities, but rather acts as a strategic information hub that connects sales, warehouse inventory, finance, and shipping logistics functions.(Aisyah & Wiranata, 2024; Ilham & Suhendra, 2024)

The coconut cooking oil supply chain is generally multi-tiered, spanning from the producer/principal, through regional distributors, sub-distributors or resellers, to the final retailer. It is at the distributor level that the administrative function plays a crucial liaison role, as it must align supply allocations from the principal with actual demand from a distributed retail network, while ensuring that billing documents, delivery notes, and stock validation are synchronized. Demand for this commodity also tends to fluctuate, influenced by specific seasons, the principal's promotional programs, and the market price dynamics of the coconut commodity itself, thus requiring a high administrative adaptability capacity to ensure the supply chain remains responsive without sacrificing record-keeping accuracy.

Surabaya, as one of the main logistics hubs in East Java, faces high distribution complexity, given its vast delivery area, dense urban traffic, and limited warehouse capacity during peak operating hours. This complexity increases the risk of coordination failure if the administrative information system is unable to provide accurate and timely data to all involved functions, making this context relevant for an in-depth examination of the relationship between administrative integration and supply chain agility.

Inaccurate administrative management and weak inter-departmental coordination have a direct impact on operational reliability, ranging from stockouts, delays in printing delivery notes, to a decline in the fulfillment of company performance targets.(Guritno &

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Harsasi, 2025)This issue becomes even more crucial for essential food commodities, which are characterized by fluctuating demand and thin distribution margins, so even the slightest administrative delay has the potential to have a ripple effect throughout the supply chain.

Previous Research and Research Gaps

Numerous studies have been conducted on the role of administration in supporting organizational operations, but most remain conceptual or limited to the context of sectors other than fast-moving food distribution. Table 1 summarizes the position of previous research and the gaps that inform this research.

Table 1. Mapping of Previous Research and Research Gaps

Researcher (Year)	Focus of Study	Sector/Object	Linkage to Supply Chain Agility	Gaps in This Research
Jhohana (2023)	Credit Sales Accounting Information System	Automotive dealer	Not reviewed	Limited to internal transaction recording, not cross-functional integration
Wildanika (2024)	Management strategy & SWOT analysis	Automotive dealer	Not reviewed	Focus on competitive strategy, not administration-distribution systems
Ariani (2025)	The role of office administration	Conceptual/general	Not reviewed	Conceptual in nature, without empirical distribution

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Researcher (Year)	Focus of Study	Sector/Object	Linkage to Supply Chain Agility	Gaps in This Research
				performance data
Melawati & Wibowo (2025)	The role of administration in company operations	Manufacturing	Not reviewed	Not yet linking administration with supply chain agility
Wardana et al. (2024)	Optimization of distribution division from a business administration perspective	Public utilities (PDAM)	Not reviewed	Different sectors; not touching fast-moving food commodities (FMCG)
Jamaludin (2021)	Design of an integrated supply chain management information system (procurement-warehouse-production)	Textile manufacturing	Not explicitly studied	Focus on upstream supply chain (raw material procurement), not downstream distribution to end consumers; no quantitative performance data
This research (2026)	Cross-functional administrative	Distribution of FMCG coconut cooking oil	Explicitly reviewed through 12	Combining quantitative evidence of

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Researcher (Year)	Focus of Study	Sector/Object	Linkage to Supply Chain Agility	Gaps in This Research
	information system integration (sales-warehouse-fleet)		months of performance data and root cause analysis	distribution performance with triangulative qualitative analysis

Based on the mapping in Table 1, three main gaps were identified. First, sectoral gaps: research on administrative integration in the distribution of essential food commodities like coconut cooking oil remains very limited, while the volatility characteristics of demand for this commodity differ significantly from the automotive or public utilities sectors, which have been widely studied previously.(Jhohana, 2023; Wardana et al., 2024; Wildanika, 2024)Studies in the automotive sector, for example, tend to focus on credit sales cycles or medium- to long-term competitive strategies, which typically have much more stable demand than daily food commodities.

Second, the conceptual gap: previous research generally discusses the role of administration in a normative manner.(Ariani, 2025; Melawati & Wibowo, 2025)without explicitly linking it to the theoretical framework of supply chain agility as an influencing variable. As a result, the contribution of administration to the speed and accuracy of supply chain response to market dynamics has not been empirically measured, but rather simply assumed to be important without evidence of a structured relationship.

Third, methodological gaps: there is still a lack of research that combines real quantitative evidence of distribution performance with qualitative, triangulated root cause analysis to explain the causal mechanisms between administrative integration failures and fluctuations in distribution performance. Most previous studies have used only one approach—either purely descriptive-normative or purely transaction documentation studies—and thus have not been able to explain why and how certain administrative obstacles correlate with specific periods of declining distribution performance.

This study offers three novel elements that distinguish it from previous research. Conceptually, this study integrates the lens of Accounting Information

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Systems/administration with the concept of supply chain agility, which has generally been studied separately, by positioning administration as a cross-functional control node, not merely a support function. Meanwhile, from an empirical perspective, this study presents twelve months of real distribution performance data as quantitative evidence combined with qualitative analysis of the root causes through triangulation of five cross-functional key informants, so that the causal mechanisms between administrative obstacles and performance fluctuations can be traced more sharply than conceptual studies alone. Finally, practically, this study produces a contextual improvement framework—cloud ERP integration, barcode/QR code-based document automation, and strengthening internal controls—designed specifically for the characteristics of volatile food commodity distribution, making it more applicable than generic recommendations in previous administrative studies.

To reinforce the argument for novelty, this study also introduces granular analysis at the quarterly level that reveals patterns of weakening distribution performance that are not apparent when viewed solely from annual aggregates or monthly fluctuations, as well as an explicit mapping between each administrative barrier and the dimensions of supply chain agility (alertness, accessibility, decisiveness, swiftness, and flexibility). This granular approach has not been found in previous administrative or supply chain studies that serve as comparisons in Table 1.

Based on the background description and research gaps above, this study aims to: (1) analyze the role of administrative information system integration in supporting supply chain agility and the effectiveness of coconut cooking oil distribution; (2) identify structural barriers that cause fluctuations in distribution performance along with the most affected dimensions of supply chain agility; and (3) formulate a contextual, phased mitigation strategy framework based on administrative digitalization for the essential food distribution industry.

LITERATURE REVIEW

Administrative Information System as a Strategic Node

Administration in the perspective of modern management is understood as the process of managing information and documents that support organizational decision-making as a whole, not just clerical activities.(Aisyah & Wiranata, 2024; Ilham & Suhendra, 2024). In the context of a distribution company, the administrative information system functions as a data link between sales, inventory, finance, and logistics functions,

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so that the quality and speed of administrative information processing determine overall operational reliability.

Supply Chain Agility

Supply chain agility refers to an organization's ability to respond quickly and appropriately to changes in market demand and supply disruptions, relying on accurate and real-time visibility of information along the supply chain.(Guritno & Harsasi, 2025; Pujawan & Mahendrawathi, 2024).(Sofiah et al., 2021)confirms that supply chain agility essentially reflects an organization's internal speed in responding to customer needs, and the root causes of this weak agility can be systematically traced through a cause-and-effect analysis approach to the organization's internal processes—an approach that is in principle in line with the root cause analysis used in this study. The higher the quality of information integration across functions, the higher the organization's capacity to make adaptive operational adjustments. This finding is in line with(Jamaludin et al., 2023), which proves that resource flexibility has a positive effect on supply chain agility, and supply chain agility in turn contributes significantly to supply chain resilience in manufacturing SMEs.

The Relationship Between Administrative Integration and Supply Chain Agility

Based on the two concepts above, this study proposes that the level of integration of administrative information systems—reflected in data synchronization between order recording, warehouse stock validation, and fleet scheduling—is a prerequisite for achieving supply chain agility. When this integration is weak, information that should flow in real time experiences lag time and discrepancies (data mismatches), thus hampering the speed and accuracy of supply chain responses to market dynamics.(Permana et al., 2024)emphasized that effective logistics management plays a key role in improving supply chain efficiency, reducing operational costs, and ensuring timely delivery, so that well-integrated administration is an important prerequisite for achieving such efficiency.

Dimensions of Supply Chain Agility

Supply chain agility can be broken down into five complementary operational dimensions.(Pujawan & Mahendrawathi, 2024): (1) alertness, which is the ability to detect changes or anomalies early; (2) accessibility, which is the ease of access to relevant and accurate data by all related functions; (3) decisiveness, which is the speed of decision-making based on available data; (4) swiftness, which is the speed of

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operational execution after a decision is taken; and (5) flexibility, which is the ability to adapt work processes to changing conditions without disrupting overall operational reliability. These five dimensions are used as an analytical lens to map the impact of each administrative barrier on supply chain agility in the results and discussion sections.

Conceptual Framework of the Research

The conceptual framework in this study positions data integration across three areas—sales, warehouse, and fleet—as the primary determinant of information clarity (data visibility). If data flows smoothly and without delay, the five dimensions of supply chain agility can operate optimally, thereby achieving distribution targets. Conversely, when obstacles such as siloed systems or manual data entry occur, inventory visibility is compromised and triggers a chain effect of delayed deliveries.

METHOD

This research uses a descriptive qualitative approach based on exploratory case studies.(Nilam Sari et al., 2024)The selection of the research location at one of the coconut cooking oil distribution companies in Surabaya was based on the complexity of its distribution coverage and the level of achievement of its operational targets, which showed significant fluctuations throughout 2024, making it relevant to explore the causal mechanisms between administrative integration and distribution performance. The company being researched is an official regional distributor serving a network of retailers in the Surabaya area and its surroundings; the identities of the company and informants are kept confidential in accordance with research ethics.

Data Sources and Informants

The data source sampling technique uses the purposive sampling method, by selecting 5 key informants who have direct authority in the administration and supply chain processes:

1. Informant 1: Administration & Operations Supervisor
2. Informant 2: Order Entry & Data Processing Staff
3. Informant 3: Head of Warehouse & Inventory Management
4. Informant 4: Fleet Delivery & Logistics Coordinator
5. Informant 5: Accounting & Internal Control Staff

The five informants were chosen because they represent all functional nodes directly involved in the administrative data flow—from order entry, inventory validation,

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delivery execution, to internal control—so that triangulation of sources can reach complementary perspectives and confirm findings from different sides.

Data Collection and Triangulation Techniques

Data collection is carried out through three main techniques:

1. In-depth Interview: using a structured interview guide to explore administrative workflow processes, system constraints, and coordination patterns.
2. Operational Observation: direct observation of the order entry process, matching of physical warehouse data, printing of distribution documents, and loading of goods onto the fleet.
3. Documentation Study: review of secondary data in the form of monthly sales target and realization reports for 2024, Delivery Order documents, Stock Forms, and the company's Standard Operating Procedures (SOP).

Data validity testing was carried out through technical triangulation (matching interview results with observations and documents) and source triangulation (confirming information from administrative staff with warehouse and logistics heads).

Data Analysis Techniques

Data was analyzed thematically through the stages of data reduction, data presentation, and drawing conclusions.(Nilam Sari et al., 2024). Quantitative data in the form of monthly sales target-realization achievements are used as an entry point to identify periods of performance fluctuations, which are then traced to the root causes through thematic analysis of the results of interviews, observations, and documentation, so that a coherent relationship is obtained between administrative obstacles and distribution performance achievements. To deepen the analysis, monthly data is also aggregated to the quarterly level to identify trend patterns that are not visible at the monthly level, and the thematic results of obstacles are then mapped against the five dimensions of supply chain agility as described in subsection 2.4.

Data Validity and Reliability

The credibility of the findings was maintained through triangulation of sources and techniques as described in subsection 3.2, as well as through member checking of the summary of interview results with key informants to ensure the researcher's interpretation aligns with the informants' intentions. Dependability was maintained by systematically documenting all stages of data collection and analysis, while

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confirmability was achieved by matching interview findings with quantitative documentary evidence (target-realization reports) so that interpretations do not rely solely on the informants' subjective perceptions. Transferability of the findings to the context of other FMCG distributors requires considering the similarity of commodity characteristics and organizational structures, as discussed further in the limitations section of the study.

RESULTS AND DISCUSSION

Evaluation of Distribution Performance and Sales Fluctuations

The effectiveness of the administrative function in supporting operations is indirectly reflected in the level of achievement of annual distribution targets. According to the company's 2024 internal report, coconut cooking oil distribution achieved 87.36% of the set target (Table 2).

Table 2. Monthly Sales Targets and Realizations for 2024

Month	Sales Target (Rp)	Realization (Rp)	Achievement (%)
January	720,000,000	685,777,524	95.25%
February	837,000,000	695,099,049	83.05%
March	855,000,000	630,823,286	73.78%
April	585,000,000	725,773,528	124.06%
May	603,000,000	597,248,337	99.05%
June	720,000,000	712,404,362	98.95%
July	630,000,000	782.460.162	124.20%
August	792,000,000	828,620,376	104.62%
September	828,000,000	424,200,555	51.23%
October	855,000,000	519,478,300	60.76%
November	810,000,000	694,823,698	85.78%
December	765,000,000	565,420,466	73.91%

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Month	Sales Target (Rp)	Realization (Rp)	Achievement (%)
TOTAL	**9,000,000,000**	**7,862,129,643**	**87.36%**

Data analysis shows significant performance fluctuations. The highest performance occurred in July (124.20%) and August (104.62%), while the sharpest declines occurred in September (51.23%) and October (60.76%). Based on triangulation of data from interviews and observations, the decline in the third quarter was not solely due to market demand factors but was exacerbated by internal administrative constraints, including:

1. *Lag Time*Data Processing: delays in manual transaction input cause physical stock availability information in the warehouse not to be updated in real-time in the ordering system.
2. Stock Discrepancy (Data Mismatch): a discrepancy between the number of items recorded in the administration system and the actual warehouse stock triggers order cancellations and delays in issuing shipping documents.

To clarify this fluctuation pattern, monthly data are aggregated to the quarterly level as presented in Table 3. This aggregation is important because the high achievement in July-August has the potential to mask the large decline in September, so a quarterly perspective is needed to assess the true trend.

Table 3. Quarterly Distribution Performance Summary (Derived from Table 2)

Quarterly	Target (Rp)	Realization (Rp)	Achievement (%)
First Quarter (Jan-Mar)	2,412,000,000	2,011,699,859	83.41%
Second Quarter (Apr-Jun)	1,908,000,000	2,035,426,227	106.68%
Third Quarter (Jul-Sep)	2,250,000,000	2,035,281,093	90.46%

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Quarterly	Target (Rp)	Realization (Rp)	Achievement (%)
Quarter IV (Oct-Dec)	2,430,000,000	1,779,722,464	73.26%
TOTAL	**9,000,000,000**	**7,862,129,643**	**87.36%**

Table 3 reveals findings not apparent from a purely monthly analysis: although the third quarter (July-September) saw a sharp decline in its final month, the quarter's aggregate performance (90.46%) was still better than the first quarter (83.41%) due to the July-August surplus. In fact, the fourth quarter (October-December) recorded the lowest aggregate performance of the year (73.26%), indicating that the administrative obstacles that emerged in the third quarter were not fully addressed and continued to burden performance in subsequent quarters. This pattern indicates that administrative integration issues are cumulative and ongoing, not merely temporary disruptions isolated to one or two specific months.

Systemic Barriers and Internal Administrative Control

The results of the qualitative analysis identified four main obstacles that hinder the smooth distribution process:

1. The Information System is Not Fully Integrated: the sales administration module, warehouse inventory recording, and shipping logistics system still operate separately (silo system).
2. Manual Input Process and Risk of Human Error: reliance on manual data entry creates the risk of errors in recording lot numbers, carton counts, and shipping destination details.
3. Lack of Inter-Departmental Coordination: the communication flow between administrative staff, warehouse teams, and fleet drivers is not yet systematically structured, triggering idle time for the fleet before departure.
4. Inconsistency in SOP Implementation: the implementation of segregation of duties and tiered validation has not been running optimally across all operational units.

These four barriers are not isolated but mutually reinforcing. Systems that are not fully integrated force manual input processes as the only means of bridging disparate modules, while error-prone manual processes, in turn, increase the need for manual

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coordination between departments to validate data directly. When this coordination is also unstructured, the implementation of SOPs—which should be the final control mechanism—also becomes inconsistent because there is no system that automatically enforces the tiered validation flow. This interconnectedness explains why administrative barriers at one node tend to have a ripple effect across other nodes.

To clarify the relationship between these systemic barriers and the theoretical construct of supply chain agility, Table 4 maps the impact of each barrier on the five dimensions of supply chain agility as described in subsection 2.4. This mapping is based on the results of a thematic analysis of interviews and observations and reflects the researchers' interpretation of the most consistent impact patterns emerging across each dimension.

Table 4. Matrix of Interrelationships of Systemic Barriers and Dimensions of Supply Chain Agility

Systemic Barriers	Alertness	Accessibility	Decisiveness	Swiftness	Flexibility
The system is not yet integrated (silo system)	Hampered	Hampered	Affected	Hampered	Affected
Manual input & human error	Affected	Hampered	Affected	Hampered	Moderately affected
Weak inter-departmental coordination	Moderately affected	Affected	Hampered	Hampered	Hampered
Inconsistency in SOP implementation	Moderately affected	Moderately affected	Hampered	Affected	Hampered

The mapping in Table 4 shows that the decisiveness and swiftness dimensions are the ones most consistently hampered by the four systemic constraints, indicating that the primary issue lies not only in data availability (accessibility), but also in the speed with which organizations translate data into operational decisions and actions. This

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finding provides a more precise direction for formulating improvement strategies, namely that interventions should not only provide digital data but also be accompanied by strengthening decision-making mechanisms and faster execution. This is consistent with(Saputra & Yanti, 2025), which found that implementing tracking technology, optimizing delivery routes, and managing inventory appropriately can significantly improve distribution operational efficiency—emphasizing that administrative-logistics improvements need to address the execution aspect, not just data availability.

Discussion: Position of Findings on Research Gaps and Novelties

The findings in subsections 4.1 and 4.2 reinforce the theoretical propositions developed in sections 2.3 and 2.5, namely that weak integration of administrative information systems is an unmet prerequisite for achieving supply chain agility.Ariani (2025)AndMelawati & Wibowo (2025)While describing the role of administration normatively without empirical performance evidence, this study quantitatively demonstrates how four systemic barriers—silo systems, manual input, weak coordination, and inconsistent SOPs—correlate with a decline in target achievement to below 60% in certain periods, even burdening quarterly performance continuously until the fourth quarter. These findings also broaden the scope of the research.Jhohana (2023)which limits the analysis of Accounting Information Systems to internal transaction recording alone, by showing that the impact of administrative integration failures extends to the overall supply chain agility, from stock validation to fleet scheduling.

Compared withWardana et al. (2024) and Wildanika (2024)which respectively examine competitive strategies in the automotive sector and distribution optimization in the public utilities sector, this study shows that for essential food commodities with high demand volatility, internal administrative factors can be equally important—and even more dominant in certain periods—than external market factors in explaining fluctuations in distribution performance. This finding is also in line with a number of recent studies on MSMEs that consistently emphasize the positive influence of supply chain agility on supply chain performance.(Hadinda, 2025; Sofiah et al., 2025), but this study expands the context to the FMCG distributor scale by exploring the administrative root causes qualitatively-triangulatively, rather than simply confirming the relationship between variables quantitatively. Compared withJamaludin (2021)which designs an integrated supply chain information system on the raw material procurement side (upstream), this study shows that similar administrative integration issues also occur—and have equally serious impacts—on the distribution side to the end consumer (downstream), thus

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expanding the relevance of administrative integration issues throughout the supply chain, not just at one particular node.

These findings reinforce a new frontier in the distribution management literature: the administrative function is no longer merely a clerical appendage behind a desk, but rather a structural determinant driving supply chain agility. Empirical evidence, including agility matrix mapping and quarterly trends in this study, demonstrates that the integrity of data governance at the distributor level is as crucial as the physical availability of goods in the market.

Digitalization-Based Supply Chain Agility Enhancement Strategy

To overcome these limitations, companies need to transform administrative functions from conventional systems to integrated digital-based systems.(Ariani, 2025; Melawati & Wibowo, 2025). The recommended improvement framework includes:

1. Implementation of Enterprise Resource Planning (ERP) Cloud: enables real-time integration of sales, inventory, and finance modules so that supply chain decision-making can be carried out precisely.
2. Document Processing Automation: use of barcode/QR code systems in warehouse management to speed up stock validation and automatic issuance of Delivery Orders.
3. Strengthening SOPs and Internal Controls: establishing administrative governance that requires cross-authorization to minimize the risk of errors and data discrepancies.

Given the resource constraints typically faced by mid-sized distribution companies, it is recommended that this digital transformation be implemented in stages so that it can be implemented immediately without disrupting ongoing operations. Table 5 outlines a phased implementation roadmap, prioritized from low-cost, quick-win interventions to more comprehensive system integration.

Table 5. Roadmap for Implementation of Improvement Strategy

Phase	Time Horizon	Key Initiatives	Person responsible
Phase 1 – Quick Win	0-3 months	Enforcement of existing SOPs, scheduling daily stock reconciliations, creation of cross-functional validation checklists	Administration Supervisor & Warehouse Manager

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Phase	Time Horizon	Key Initiatives	Person responsible
Phase 2 – Partial Digitization	3-6 months	Implementation of barcode/QR code in warehouse, digitalization of issuance of Delivery Order	Warehouse Manager & Logistics Coordinator
Phase 3 – Full Integration	6-12 months	Migrate to a cloud ERP platform that connects sales, inventory, and finance modules in real-time.	Top Management & Accounting/Internal Control Staff
Phase 4 – Strengthening Governance	Sustainable	Periodic internal audits, cross-authorization evaluations, administrative HR training	Accounting & Internal Control Staff

This phasing is designed so that Phase 1 can immediately improve the decisiveness and swiftness dimensions through SOP enforcement and daily reconciliation without requiring major technology investments. Phases 2 and 3 progressively strengthen the accessibility and alertness dimensions through digitalization and system integration. Phase 4 ensures that the improvements achieved are not reversed through ongoing audit mechanisms and strengthened governance.

CONCLUSION

Administration plays a crucial role as a controlling node in the supply chain and the effectiveness of coconut cooking oil distribution. The study concluded that the limited integration of real-time administrative information systems was one of the root causes of the company's suboptimal distribution target achievement (87.36% in 2024) and the sharp fluctuations in monthly and quarterly performance, with the weakest point occurring in the fourth quarter (73.26%). The main obstacles identified were manual data processing, delays in stock updates, and weak inter-departmental coordination, which collectively most significantly hampered the decisiveness and swiftness dimensions within the supply chain agility framework.

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Theoretical and Practical Implications

Theoretically, this study enriches the literature on Accounting Information Systems and supply chain management by confirming the direct link between the quality of administrative integration and supply chain agility in the context of essential food distribution, and offers a more granular framework for mapping barriers to supply chain agility dimensions—a link that has not been empirically explained in many previous studies.

Managerially, the gradual improvement framework based on cloud ERP integration, document automation, and SOP strengthening formulated in this study can be a reference for other FMCG distribution companies, especially those handling food commodities with volatile demand characteristics, in improving operational reliability and internal control without requiring large technology investments at the initial stage.

From a policy perspective, these findings are also relevant for stakeholders concerned with maintaining the stability of the distribution of essential food commodities, as they demonstrate that distribution disruptions do not always stem from supply or price factors at the macro level, but can also stem from weaknesses in administrative governance at the distributor level that escape the attention of food supply stabilization policies.

Research Limitations and Suggestions for Further Research

This study is limited by its single-case study scope in a single distribution company, so generalization of the findings requires caution, particularly to companies with different organizational structures or levels of information system maturity. The mapping of barriers to supply chain agility dimensions in Table 4 is also interpretive based on qualitative thematic analysis and has not been statistically tested.

Further research is recommended to conduct multi-case studies on several FMCG distribution companies with different commodity characteristics to test the transferability of findings, as well as considering quantitative or mixed-methods approaches, for example through a Likert-scale survey on the dimensions of supply chain agility.

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