

Supply Chain Management Strategies to Improve Distribution Efficiency

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Abstract

This study aims to analyse Supply Chain Management strategies to improve the efficiency of local product distribution. The background of this study is based on the low efficiency of the distribution system, characterised by high logistics costs, long delivery times, and a lack of coordination between supply chain actors. This condition impacts the low competitiveness of products in the market. The research method used is a descriptive approach with a combination of qualitative and quantitative analysis. Data were obtained through interviews, observations, and questionnaires distributed to supply chain actors, including farmers, collectors, wholesalers, and retailers. Data analysis techniques used include descriptive analysis, distribution efficiency analysis, and SWOT (Strengths, Weaknesses, Opportunities, Threats) analysis. The results show that long and poorly integrated supply chains are the main causes of distribution inefficiency. In addition, limited infrastructure, low technology utilisation, and weak coordination between actors also worsen distribution performance. Strategies that can be implemented to improve distribution efficiency include supply chain integration, utilisation of digital technology, institutional strengthening, and improvement of logistics systems. In conclusion, effective and integrated supply chain management can improve distribution efficiency, reduce costs, and accelerate the flow of products to consumers. Therefore, support is needed from various parties, both business actors and the government, to optimise the supply chain system.

Keywords— Supply Chain; Distribution Efficiency; Strategy; Agribusiness; Logistics.

Introduction

Globalization and technological advancement have intensified business competition, requiring companies to deliver products quickly, accurately, and efficiently to meet customer demands. Distribution efficiency has become a critical factor in maintaining competitiveness because inefficient distribution systems can lead to delivery delays, high logistics costs, and decreased customer satisfaction (Alshurideh, M., Al Kurdi, B., & Salloum, 2021)

Supply Chain Management (SCM) is an integrated system that manages the flow of goods, information, and finances from suppliers to end consumers. Effective SCM implementation improves coordination among supply chain actors and enhances operational performance (Nguyen, T. T., & Tran, 2022). In recent years, companies have increasingly adopted digital technologies such as *Enterprise Resource Planning* (ERP), *Internet of Things* (IoT), *Big Data*, and *Artificial Intelligence* (AI) to improve supply chain efficiency and distribution processes (Alsolbi, I., Farooque, M., & Zhang, 2023)

(Ivanov, D., & Dolgui, 2021) digital integration in supply chain operations improves information

accuracy, accelerates decision-making, and reduces operational costs. In addition, strategies such as *lean supply chain* and *demand-driven supply chain* help reduce waste and improve delivery accuracy (Tiedemann, 2021).

In Indonesia, distribution challenges remain significant due to high logistics costs, infrastructure limitations, and weak coordination among supply chain participants (Judijanto, L., Prasetyo, H., & Kurniawan, 2023). Therefore, implementing effective SCM strategies is essential to improve distribution efficiency and strengthen business competitiveness. This study aims to analyze Supply Chain Management strategies and their role in improving distribution efficiency.

Supply chain management (SCM) plays a critical role in coordinating the flow of goods, information, and financial resources among various stakeholders involved in the production and distribution process. Effective SCM enables organizations to optimize inventory levels, improve transportation systems, and strengthen collaboration among supply chain partners. (Chen, Y., & Paulraj, 2022)

Based on these considerations, the implementation of supply chain management strategies is essential for improving distribution efficiency and maintaining competitiveness in modern business environments. (Wibowo, A., & Hartono, 2022) Therefore, this study aims to examine various supply chain management strategies that can enhance distribution efficiency and contribute to organizational performance. The findings are expected to provide valuable insights for businesses, policymakers, and researchers in developing more effective and sustainable distribution systems. (Kumar, A., Singh, R. K., & Modgil, 2023)

Literature Review

1. Supply Chain Management (SCM) Concept

Supply Chain Management (SCM) is a systematic approach used to manage the flow of goods, information, and finances from suppliers to end consumers. (Yusuf, M., & Siregar, 2024) SCM aims to create effective coordination among all parties involved in the supply chain to improve customer value and operational efficiency.

Christopher Martin (2016), Supply Chain Management is the management of upstream and downstream relationships with suppliers and customers to deliver superior customer value at a lower cost to the entire supply chain. (Chopra Sunil, S., & Peter Meindl, 2019) define SCM as the coordination of all activities associated with the flow and transformation of goods from raw materials to final products delivered to customers.

SCM focuses not only on the physical movement of products but also on information sharing, business integration, and strategic collaboration among supply chain members. According to (Mentzer John T, J. T., DeWitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., & Zacharia, 2001), SCM represents the systematic and strategic coordination of traditional business functions within and across organizations to improve the long-term performance of individual companies and the supply chain as a whole.

2. Objectives of Supply Chain Management

The primary objective of Supply Chain Management is to increase operational efficiency and effectiveness while creating competitive advantages for organizations.

According to (Heizer, J., Render, B., & Munson, 2020) the objectives of SCM include:

- 1) Reducing operational costs.

- 2) Improving customer service quality.
- 3) Accelerating distribution processes.
- 4) Enhancing coordination among supply chain partners.
- 5) Maximizing organizational profitability.

Furthermore, (Lambert Douglas M, 2008) states that SCM aims to create customer value through the effective integration of business processes across the supply chain.

3. Components of Supply Chain Management

According to Chopra Sunil and Meindl Peter (2019), the main components of SCM include:

1) Suppliers

Suppliers provide raw materials and other resources required for production.

2) Manufacturers

Manufacturers transform raw materials into finished products that add value to customers.

3) Distributors

Distributors facilitate the movement of products from manufacturers to retailers or customers.

4) Retailers

Retailers sell products directly to final consumers.

5) Customers

Customers are the final users or consumers of products and services.

4. Supply Chain Management Strategies

Supply Chain Management strategies refer to actions and policies designed to improve supply chain performance and organizational competitiveness.

According to (Christopher Martin, 2016), effective SCM strategies should balance cost, quality, flexibility, and delivery speed.

1) Supply Chain Integration Strategy

Supply chain integration focuses on improving coordination among suppliers, manufacturers, distributors, and customers.

According to (Lambert Douglas M, 2008), integrated supply chains reduce uncertainty, improve operational efficiency, and enhance customer satisfaction.

2) Collaboration Strategy

Collaboration involves sharing information, resources, and risks among supply chain partners.

According to (Christopher Martin, 2016), collaboration improves responsiveness, flexibility, and overall supply chain performance.

3) Digitalization Strategy

Digitalization refers to the adoption of digital technologies to support supply chain activities. (Rahman, M. A., & Islam, 2024) digital transformation enables organizations to improve efficiency, transparency, and decision-making processes through advanced technologies.

5. Distribution Efficiency Concept

Distribution efficiency refers to the ability of an organization to deliver products to customers using minimum resources, time, and cost while maintaining service quality.

According to (Kotler, P., & Keller, 2017), an efficient distribution system creates customer value and strengthens organizational competitiveness. distribution efficiency can be measured by the organization's ability to minimize logistics costs while maximizing customer service levels.

6. Indicators of Distribution Efficiency

According to (Heizer, J., Render, B., & Munson, 2020), the main indicators of distribution efficiency include:

1) Distribution Cost

The expenses incurred during the transportation and delivery of products.

2) Delivery Timeliness

The ability to deliver products according to predetermined schedules.

3) Order Accuracy

The ability to fulfill customer orders with the correct quantity and specifications.

4) Product Damage Rate

The percentage of products damaged during transportation and handling processes.

5) Customer Satisfaction

The level of customer satisfaction regarding distribution services and product availability.

7. Relationship Between Supply Chain Management and Distribution Efficiency

Supply Chain Management has a direct relationship with distribution efficiency. Effective SCM improves coordination among supply chain participants, resulting in lower costs, faster delivery, and better customer service.

According to (Christopher Martin, 2016), integrated supply chains contribute significantly to reducing logistics costs and improving distribution performance. organizations implementing effective SCM practices achieve higher levels of distribution efficiency and competitive advantage than those with less integrated supply chains.

Research Method

This research uses a descriptive approach with qualitative and quantitative methods. The descriptive approach aims to systematically describe supply chain conditions and distribution efficiency in the field. According to (Sugiyono., 2019), descriptive research is a method used to describe or analyze research results without the intention of drawing general conclusions.

In addition, a quantitative approach is used to measure the level of distribution efficiency through numerical data. a quantitative approach emphasizes variable measurement and statistical data analysis to test the relationship between variables.

Location and Time of Research

This research was conducted in Berastagi, Karo Regency, North Sumatra Province, an area with relatively developed agribusiness activity. The location was selected purposively, based on specific considerations. According to (Sugiyono., 2019) purposive sampling is a sampling technique based on specific considerations.

The research period was ±2–3 months, including the preparation stage, data collection, data analysis, and report preparation.

Sampling Method

The sampling method in this study used a **non-probability sampling technique**, specifically **purposive sampling**, which is the selection of samples based on certain considerations that are in accordance with the research objectives. According to (Sugiyono., 2019) purposive sampling is a sampling technique with certain criteria that are considered to best understand the required information.

The use of purposive sampling in this study aims to obtain respondents who are truly involved in the Supply Chain Management system, so that the data obtained is more relevant and accurate. A total of **50 respondents** were selected for this study. The sample size is considered sufficient for descriptive and strategic analysis and is expected to provide representative information regarding supply chain management practices and distribution efficiency.

Table 3.1 Distribution of Respondents

No.	Respondent Category	Number of Respondents
1	Suppliers	10
2	Distributors	15
3	Retailers	15
4	Logistics Personnel	10
Total		50

Data Collection Method

The data collection method was carried out by distributing questionnaires, with the aim of ensuring that the answers provided by the farmer respondents were precise and accurate. The data collection method is explained in detail as follows:

a. Primary Data

Primary data is data collected directly from the research location, namely farmers in Sei Beras Sekata Village, Sunggal District, Deli Serdang Regency. The primary data obtained in this study were collected through questionnaires, interviews, and observations, as explained below:

b. Questionnaire

It is done by giving questions to respondents with a questionnaire guide or providing a list of questions to be filled out by respondents, and the data obtained can be processed and provide certain information to researchers. In this study, researchers provided a list of closed

and open questions to respondents. The closed questions in the questionnaire present a question that must be responded to by respondents in a structured manner accompanied by questions regarding the responses that have been given in the form of open questions expressed in writing.

c. Interview

An interview is a method used to obtain information by asking respondents directly. Researchers use this technique to obtain data related to information from farmers relevant to the research topic.

Secondary Data

Secondary data is data that has been processed from business entities or other parties related to the research being conducted. The secondary data in this study include documents or archives, the Central Statistics Agency (BPS), and literature studies.

Data Analysis Methods

1. Descriptive Analysis

The analysis used in this study is descriptive and quantitative methods. Descriptive Analysis Used to describe the condition of the supply and distribution chain. Step: 1. Calculating the average, 2. Determining the percentage, 3. Describing the results. According to (Sugiyono., 2019) descriptive analysis is used to explain data without broad generalizations.

2. Distribution Efficiency Analysis

Efficiency is measured based on: Distribution costs, Delivery time, Distribution accuracy

Simple formula for efficiency:

$$Efisiensi = \frac{Output}{Input}$$

According to (Heizer, J., Render, B., & Munson, 2020) efficiency shows the system's ability to minimize costs and time.

3. Marketing Margin Analysis

Used to see the price difference between producers and consumers:

$$Margin = HargaKonsumen - HargaProdusen$$

According to Philip Kotler (2017), marketing margin reflects the efficiency of distribution channels.

4. SWOT Analysis (Main)

SWOT analysis is used to formulate strategies.

Internal / External	Opportunities	Threats
Strength	SO Strategy	ST Strategy
Weakness	WO Strategy	WT Strategy

Strategy Formulation

- **SO** → leveraging strengths for opportunities
- **WO** → overcome weaknesses with opportunities
- **ST** → using force to face threats
- **WT** → defensive strategy

Results and Discussion

Supply Chain Condition Analysis

Based on the research results, the local product supply chain system at the research location remains traditional and has not been optimally integrated. The distribution flow generally goes through several stages, from farmers as producers, then to collectors, wholesalers, retailers, and finally to consumers. This condition indicates that the established supply chain is still quite long, resulting in increased distribution costs and long delivery times. According to (Chopra Sunil, S., & Peter Meindl, 2019), a long supply chain without proper integration will reduce distribution efficiency.

Furthermore, coordination between supply chain actors remains relatively low. Information regarding pricing, market demand, and distribution is not effectively communicated. This aligns with (Christopher Martin, 2016) opinion, which states that a lack of information integration within the supply chain can lead to operational inefficiencies.

Respondent Characteristics

A total of 50 respondents participated in this study, consisting of suppliers, distributors, retailers, and logistics personnel involved in supply chain activities.

Table Distribution of Respondents by Category

Category	Number	Percentage (%)
Suppliers	10	20.0
Distributors	15	30.0
Retailers	15	30.0
Logistics Personnel	10	20.0
Total	50	100.0

The table shows that distributors and retailers represent the largest proportion of respondents (30% each), indicating their significant role in the distribution process.

Distribution Cost Analysis

The distribution cost consists of transportation, warehousing, labor, administration, and miscellaneous expenses.

Table Average Distribution Cost per Month

Cost Component	Amount (USD)
Transportation	1,200
Warehousing	600
Labor	800
Administration	250

Miscellaneous	150
Total	3,000

Transportation accounts for the largest portion (40%) of total distribution costs, indicating that logistics optimization could significantly improve efficiency.

Delivery Performance

Table Delivery Time Performance

Indicator	Target	Actual
Average Delivery Time	3 days	4 days
On-Time Delivery Rate	95%	88%
Order Accuracy	98%	92%

The results indicate that actual delivery performance is below the established targets. Delays are primarily caused by transportation constraints and inadequate coordination among supply chain members.

Distribution Efficiency Analysis

Distribution efficiency was measured using the ratio between total revenue generated and total distribution costs.

Table Distribution Efficiency Calculation

Description	Value (USD)
Total Revenue	4,500
Total Distribution Cost	3,000
Efficiency Ratio	1.50

Calculation:

$$Efficiency = \frac{4500}{3000} = 1.5$$

Results:

$$Efisiensi = 1,5 \times 100\% = 150\%$$

Interpretation of Results

Based on the calculation results, the distribution efficiency value was **150%**. This value indicates that the distribution system is efficient because the output value is greater than the input used.

Efficiency criteria:

Efficiency Value Information

- >100% Efficient
- =100% Break even
- <100% Not efficient

Because the efficiency value is **150% > 100%**, the distribution is declared efficient.

According to (Heizer, J., Render, B., & Munson, 2020), an efficient distribution system is able to generate greater revenue than the operational costs incurred.

Distribution efficiency in this study was analyzed based on three main indicators, namely distribution costs, delivery time, and distribution accuracy.

1. Distribution Costs

Research results show that distribution costs are relatively high, primarily due to the large number of intermediaries in the supply chain. Each actor takes a profit margin, driving up product prices for consumers. A long distribution channel will increase marketing costs and reduce efficiency.

2. Delivery Time

Distribution times tend to be long because the process of collecting products from farmers to collectors takes considerable time. Furthermore, limited transportation facilities are also a constraint. Long distribution times indicate low operational efficiency.

3. Distribution Accuracy

Distribution accuracy is suboptimal, especially during the peak harvest season. This is due to a lack of distribution planning and limited storage capacity.

Marketing Margin Analysis

Marketing margins indicate the price difference between producers and consumers. Research shows that marketing margins are quite large, indicating inefficiencies in the distribution system. The larger the marketing margin, the smaller the share received by producers. According to (Kotler, P., & Keller, 2017) high marketing margins indicate an imbalance in the distribution channel.

Marketing margin is calculated from the difference between producer price and consumer price.

Formula:

$$\text{Margin} = H_k - H_p$$

Information:

- H_k = Consumer prices
- H_p = Producer price

Example:

- Producer price = Rp. 5,000/kg
- Consumer price = Rp9,000/kg

So:

$$\text{Margin} = 9.000 - 5.000 = 4.000$$

High margins indicate that distribution is not yet efficient.

excessively large marketing margins indicate distribution inefficiency.

SWOT Analysis

SWOT analysis is used to formulate supply chain management strategies.

SWOT is an analysis tool to identify internal and external factors.

Internal Factors

Strengths

1. Strong relationships with suppliers.
2. Reliable product availability.
3. Experienced workforce.

Weaknesses

1. High transportation costs.
2. Limited warehouse capacity.
3. Inadequate information systems.

External Factors

Opportunities

1. Growing market demand.
2. Expansion of digital technologies.
3. Government support for logistics development.

Threats

1. Increasing fuel prices.
2. Rising competition.
3. Supply chain disruptions.

IFAS Matrix

Table Internal Factor Analysis Summary (IFAS)

Internal Factors	Weight	Rating	Score
Strong supplier relationships	0.15	4	0.60
Product availability	0.15	4	0.60
Experienced workforce	0.10	3	0.30
High transportation costs	0.20	2	0.40
Limited warehouse capacity	0.20	2	0.40
Weak information systems	0.20	2	0.40
Total	1.00		2.70

EFAS Matrix

Table External Factor Analysis Summary (EFAS)

External Factors	Weight	Rating	Score
Market growth	0.25	4	1.00
Digitalization opportunities	0.20	4	0.80
Government support	0.15	3	0.45
Fuel price increases	0.20	2	0.40
Competition	0.10	2	0.20
Supply chain disruptions	0.10	2	0.20
Total	1.00		3.05

Strategic Position

The IFAS score of **2.70** and EFAS score of **3.05** indicate that the organization is positioned in the **Growth and Development Quadrant**. This suggests that aggressive growth strategies should be implemented to improve distribution efficiency.

Conclusion

Based on the analysis and discussion of the study entitled “Supply Chain Management Strategies to Improve Distribution Efficiency,” several conclusions can be drawn:

1. The implementation of Supply Chain Management (SCM) strategies has contributed positively to distribution efficiency. Based on the study results, the distribution system achieved an efficiency ratio of 1.50 (150%), indicating that every unit of distribution cost generated a higher return. This finding demonstrates that the existing supply chain system has operated efficiently, although there is still room for improvement.
2. Transportation costs represent the largest component of distribution expenses. The results showed that transportation accounted for approximately 40% of total distribution costs. This indicates that transportation management is a critical factor influencing overall distribution efficiency. Therefore, route optimization and logistics planning are essential to reduce operational costs.
3. The distribution performance has not fully met organizational targets. The findings revealed that the average delivery time was four days, exceeding the targeted three days. In addition, the on-time delivery rate reached only 88%, which is below the desired target of 95%. These results suggest that improvements in coordination, scheduling, and logistics management are still required.
4. Supply chain integration and collaboration among stakeholders play an important role in improving distribution performance. The study found that strong relationships between suppliers, distributors, retailers, and logistics personnel contributed to product availability and smoother distribution activities. Effective communication and information sharing were identified as key factors supporting operational efficiency.
5. The SWOT analysis indicates that the organization is in a growth and development position. The IFAS score of 2.70 and EFAS score of 3.05 demonstrate that the organization possesses sufficient internal strengths and favorable external opportunities to enhance its supply chain performance. Therefore, aggressive growth strategies such as digital transformation, expansion of distribution networks, and stronger partnerships should be prioritized.

6. Digitalization offers significant opportunities for further efficiency improvement. The study identified inadequate information systems as one of the major weaknesses affecting distribution performance. The adoption of digital technologies can improve real-time information sharing, inventory control, demand forecasting, and decision-making processes throughout the supply chain.
7. Overall, the study confirms that effective Supply Chain Management strategies can improve distribution efficiency through cost reduction, improved delivery performance, stronger stakeholder collaboration, and better utilization of technological resources. These improvements ultimately contribute to enhanced organizational competitiveness and customer satisfaction.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

1. Organizations should invest in digital technologies and information systems to improve supply chain visibility and operational coordination.
2. Supply chain stakeholders should strengthen collaborative relationships and information-sharing mechanisms to reduce inefficiencies and improve responsiveness.
3. Companies should optimize transportation routes and logistics planning to minimize distribution costs and delivery delays.
4. Inventory management systems should be improved to reduce stock shortages and excess inventory costs.
5. Future researchers are encouraged to examine the impact of emerging technologies such as Artificial Intelligence (AI), Internet of Things (IoT), and Big Data Analytics on supply chain performance and distribution efficiency.

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