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Designing Supply Chain Performance Measurement Using SCOR and AHP in an Indonesian Packaged Drinking Water Company

Nurullaily Kartika[1*], Bima Karismanda Diantoro[2]

[1,2] Faculty of Economics and Business, Airlangga University, Indonesia, Jl Airlangga No.4-6 Surabaya

ABSTRACT

Purpose – This study aims to develop an appropriate Supply Chain performance measurement design for a packaged drinking water company (Company X) using the Supply Chain Operations Reference (SCOR) model.

Design/methodology/approach – The Supply Chain Operations Reference (SCOR) model was used to develop key performance indicators (KPIs) related to supply chain performance measurement, The identified Key Performance Indicators (KPIs) were validated and weighted by three experts directly involved in the company's supply chain activities, namely the Head of Candal and Warehouse Unit, the Head of Production, Maintenance and Laboratory Unit, and the Quality Control and Laboratory Staff, while the Analytical Hierarchy Process (AHP) method was applied to determine the weight of each KPI.

Findings/Results – The study produced 35 KPIs consisting of 6 Plan process KPIs, 8 Source process KPIs, 9 Make process KPIs, 5 Deliver process KPIs, 6 Return process KPIs, and 1 Enable process KPI. The AHP weighting results indicate that the Return activity has the highest priority among the six supply chain activities, with a weight value of 0.362.

Originality/Value – The study provides a Supply Chain performance measurement design for Company X by integrating the SCOR model and AHP method and identifies the Return activity as the most important supply chain activity.

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Analytical Hierarchy Process (AHP), Key Performance Indicator (KPI), Supply Chain, Performance Measurement, Supply Chain Operations Reference (SCOR).

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Corresponding Author at: vidyarton@fe.untar.ac.id
Faculty of Economics and Business, Airlangga University, Indonesia.
E-mail address: nurullaily@feb.unair.ac.id (Nurullaily Kartika)

1. Introduction

Supply chain performance measurement is crucial for a company's competitiveness. This is because it equips managers with the tools to identify strengths to maintain and weaknesses to address, ultimately enhancing overall performance. Limited knowledge remains a significant challenge for companies seeking to develop and propose a collaborative supply chain performance measurement system, as existing frameworks still exhibit considerable shortcomings in capturing the full complexity of supply chain operations (Frederico et al., 2020; Jouicha et al., 2025; Kamble & Gunasekaran, 2020). Several approaches can be used to design supply chain performance measures, such as the Balanced Scorecard (BSC) and the Supply Chain Operations Reference (SCOR). In this case, SCOR is a more appropriate approach to designing supply chain performance measurement. The main reason is that SCOR provides a standard framework for evaluating and improving supply chain performance that specifically focuses on the company's core supply chain activities, including planning, sourcing, making, delivering, and returning products (Bentahar & Belhadi, 2025; Nguyen, 2024; Prasetyaningsih et al., 2020).

The SCOR model has been developed to demonstrate business activities related to all stages of meeting customer demand. The SCOR model consists of six key management processes: Plan, Source, Make, Deliver, Return, and Enable. SCOR provides a unique framework that combines business processes, metrics, best practices, and technology into a coherent structure to support effective decision-making among supply chain partners, improve supply chain management effectiveness, and enhance related supply chain improvement activities (Nguyen, 2024; Nicoletti, 2023; Pourreza et al., 2022). In addition, the SCOR model serves as a standard framework that facilitates communication across supply chain partners and supports management in evaluating, configuring, and continuously improving supply chain operations to achieve strategic performance targets (Bentahar & Belhadi, 2025)

Currently, the packaged drinking water industry in Indonesia has not yet measured its supply chain performance, even though it is crucial for Bottled Drinking Water in Company X to do so, as the results can be used as a performance evaluation material. Measuring supply chain performance can help Bottled Drinking Water Company X identify solutions to improve their current supply chain activities and, in turn, increase competitiveness. One of the company's competitive advantages is evident in its sales value. Despite its growing market demand and competitive sales performance, Company X has not yet implemented a comprehensive supply chain performance measurement system. As a result, management lacks an objective basis for identifying inefficiencies across supply chain activities, including supplier delivery reliability, raw material quality conformity, production responsiveness, delivery performance, complaint handling, and product return management. This gap is particularly critical in the packaged drinking water industry, which possesses unique supply chain characteristics compared to other manufacturing sectors. The industry is highly dependent on the timely availability and quality of packaging materials, requires strict water quality control throughout production processes, relies on intensive distribution networks to ensure product availability in multiple locations, and faces potential return issues arising from product defects, packaging damage, or customer complaints. These characteristics increase the complexity of supply chain management and highlight the need for an integrated performance measurement framework capable of evaluating supply chain activities comprehensively and supporting continuous operational improvement.

Previous studies have widely applied the integration of the Supply Chain Operations Reference (SCOR) model and the Analytical Hierarchy Process (AHP) to develop supply chain performance measurement systems across various manufacturing and service sectors (Ayyildiz & Taskin Gumus, 2021; Rodríguez Mañay et al., 2022; Setyadi et al., 2022; Wulandari et al., 2023). However, most of these studies focus on general supply chain activities and do not adequately address the unique operational characteristics of the packaged drinking water industry. In particular, limited research has developed a comprehensive set of SCOR-based Key Performance Indicators (KPIs) that simultaneously considers packaging material dependency, strict product and water quality control requirements, intensive distribution activities, customer complaint handling, and product return management (Teymourifar, 2026a). Furthermore, studies focusing on the packaged drinking water sector in Indonesia remain scarce. Therefore, this study addresses this gap by developing and validating 35 supply chain performance indicators across the Plan, Source, Make, Deliver, Return, and Enable processes and determining their priorities using the AHP method in the context of a packaged drinking water company.

Based on this background, this study aims to design Supply Chain Performance Measurement using the Supply Chain Operations Reference (SCOR) model approach in the bottled drinking water Company X. The practical implications of this study for the Company can be a reference for others bottled drinking water company to design supply chain activities that still require performance improvement, as well as being a material for evaluating the company's supply chain performance activities. Meanwhile, the theoretical implications of this study for academics include an overview that will add to the body of scientific literature on the design of supply chain performance measurement and the application of the Supply Chain Operations Reference (SCOR) method.

2. Literature Review & Hypothesis Development

2.1 Supply Chain Performance Measurement

Supply chain activities within a company play a crucial role in ensuring the smooth movement of materials from the initial stage to the final stage of business operations. These activities involve a series of interconnected processes that must be managed effectively so that materials, information, and products can flow efficiently throughout the organization. Therefore, every company needs an appropriate supply chain performance measurement system to evaluate the extent to which its supply chain operates effectively. Through this measurement system, a company can identify whether its supply chain performance is good or still requires improvement. The results of this evaluation will ultimately influence the formulation of appropriate corrective actions, particularly for supply chain components that continue to show weak or unsatisfactory performance (Alkhawaldeh, 2025).

In relation to supply chain performance measurement, Khairul Akter et al. (2022) state that there are four levels of supply chain performance measurement systems. These levels are determined based on the complexity of the relationships among the processes involved in the supply chain. The more complex the interaction between processes, the more comprehensive the measurement system required by the company. The four levels consist of the functional measure level, internal integrated measure level, one-sided integrated measure, and total chain measure. Each level represents a different scope of measurement, ranging from performance evaluation within individual functions to a broader assessment that involves the entire supply chain network.

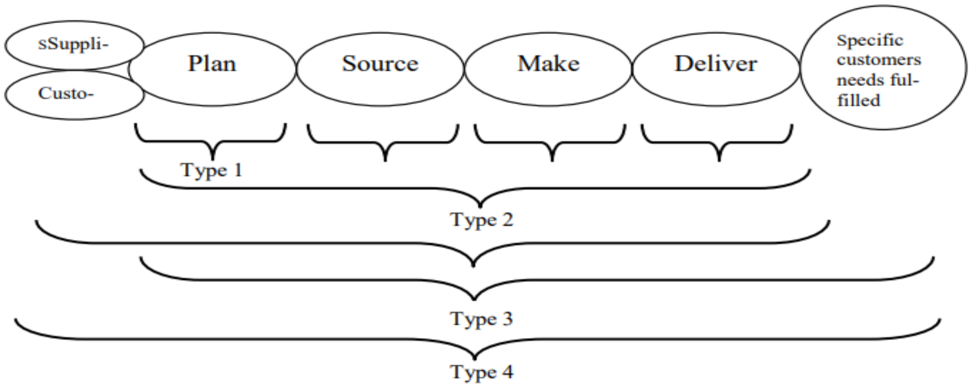

Figure 1. Four Levels of Supply Chain Performance System

2.2 Supply Chain Operations Reference (SCOR)

The Supply Chain Operations Reference (SCOR) is the most widely adopted standard model for modeling, diagnosing, and benchmarking supply chain performance (Mrad et al., 2026). The SCOR model provides a framework that connects business processes, metrics, best practices, and technology into a coherent structure. The framework is hierarchical, interactive, and interconnected. The SCOR model supports supply chain improvement by linking current supply chain conditions to desired outcomes. By accelerating data collection, SCOR can shorten the time it takes for company managers to find solutions to supply chain performance issues, explore related data, identify contributing factors, and quickly initiate corrective actions. The Supply Chain Operations Reference (SCOR) is the most widely adopted standard model for modeling, diagnosing, and benchmarking supply chain performance (Mrad et al., 2026).

As seen in Figure 3 below, the SCOR model provides an overview of business activities related to fulfilling customer demand. In this case, the SCOR model is organized into six main management processes: Plan, Source, Make, Deliver, Return, and Enable. (Teymourifar, 2026b) states that the scope of the SCOR model includes the first, all company interactions related to customers (order entry to invoice payment). Second, all interactions related to materials (physical products) from the initial supplier to the end customer. This also includes equipment, supplies, spare parts, mass products, software, and so on. Third, all interactions related to market activity. This begins with an understanding of aggregate demand related to the fulfillment of each order. The Supply Chain Operations Reference (SCOR) is the most widely adopted standard model for modeling, diagnosing, and benchmarking supply chain performance (Mrad et al., 2026). The SCOR model provides a framework that connects business processes, metrics, best practices, and technology into a coherent structure. The framework is hierarchical, interactive, and interconnected. The SCOR model supports supply chain improvement by linking current supply chain conditions to desired outcomes. By accelerating data collection, SCOR can shorten the time it takes for company managers to find solutions to supply chain performance issues, explore related data, identify contributing factors, and quickly initiate corrective actions. The Supply Chain Operations Reference (SCOR) is the most widely adopted standard model for modeling, diagnosing, and benchmarking supply chain performance (Mrad et al., 2026).

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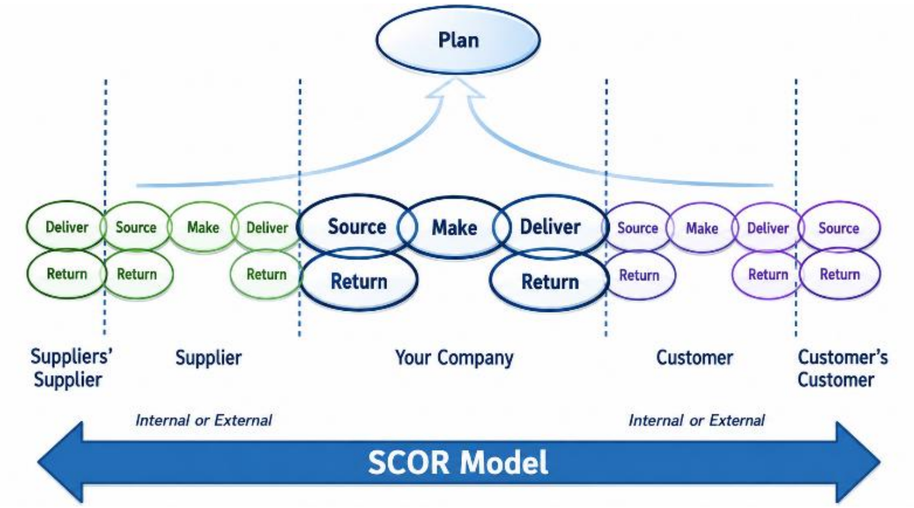

Figure 2. SCOR model mapping

Meanwhile, (Teymourifar, 2026b) also argues that there are four levels of process hierarchy related to supply chain analysis. In this case, levels 1 to 3 fall within the scope of SCOR. Level 4, however, is not. Level 4, which involves company-specific customization such as standard operating procedures and IT systems, lies outside the model's scope.

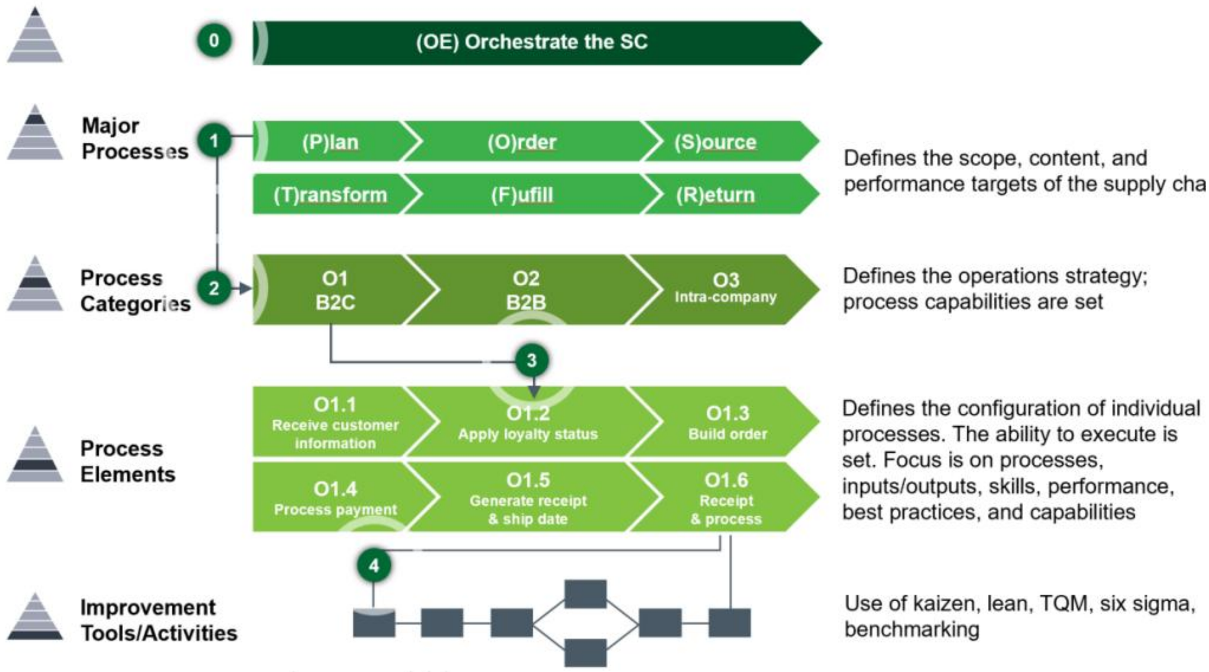

Figure 3. SCOR is a hierarchical process model.

3. Methodology

3.1 Data collection technique

The data used in the research is primary data obtained through questionnaires distributed to the human resources department of the packaged drinking water company X and through interviews with three parties related to supply chain activities at company X, namely Pts. Head of Candal and Warehouse Unit; Pts. Head of Production, Maintenance and Lab Unit; and quality control & lab staff. Pts. The Head of Candal and Warehouse Unit is responsible for activities in the factory warehouse, including the consumable material warehouse (raw materials and packaging materials) and the finished product warehouse.

The expert respondents involved in the validation and weighting processes were selected based on their direct responsibilities and experience in managing supply chain activities within Company X. The experts consisted of the Head of Candal and Warehouse Unit, who is responsible for inventory management, raw material procurement, and warehouse operations; the Head of Production, Maintenance and Laboratory Unit, who oversees production planning, quality assurance, equipment maintenance, and operational performance; and the Quality Control and Laboratory Staff, who is responsible for monitoring product quality, compliance with quality standards, and handling product-related issues. These experts were considered appropriate decision-makers because of their comprehensive understanding of the company's supply chain processes, ranging from sourcing and production to distribution and product return activities, thereby ensuring the relevance and reliability of the KPI validation and AHP weighting results.

The questionnaire was used to obtain data to validate the identified indicators (KPIs). In addition, the questionnaire was also used to obtain data on the importance of the criteria. The validation questionnaire and the weighting questionnaire were given to the patients. The Candal and Warehouse Unit is aware of all supply chain activities in the PACKAGED DRINKING WATER INDUSTRY IN INDONESIA business unit.

3.2 Data Analysis Techniques

The analysis technique used in this research is the Identification of Key Performance Indicators (KPIs) related to supply chain activities business unit of through interviews with internal parties. Then, also validation of Key Performance Indicators (KPIs) related to supply chain activities in the Bottled Drinking Water. Validation was carried out by the internal AMDK Bottled Drinking Water Company X party. In this regard, KPIs that were deemed less effective in presenting the supply chain performance of the Bottled Drinking Water (AMDK) business unit of the. Meanwhile, KPIs that have passed validation can be weighted in the next stage. After validation, the next step is Key Performance Indicator (KPI) weighting to determine the level of importance of each KPI using the Analytical Hierarchy Process (AHP) method. AHP method related to this research using Expert Choice software 11. Providing conclusions related to the research conducted. The conclusions are in the form of a supply chain performance measurement plan using the SCOR method, which consists of KPIs and their respective weights. It also reports which KPIs have the most influence on the supply chain activities that occur.

4. Result and Discussion

4.1 Identification of Supply Chain Key Performance

This research was conducted to design and develop a performance measurement model that encompasses all supply chain activities occurring in the AMDK Bottled Drinking Water Company X business unit. In this case, the performance indicators used are based on the SCOR Model. The SCOR model used encompasses six supply chain processes: plan, source, make, deliver, return, and enable, as well as five performance attributes: reliability, responsiveness, flexibility, cost, and assets (Singh, 2025).

The proposed and identified performance indicators are derived from direct observation of supply chain activities occurring in the Bottled Drinking Water Company X IN INDONESIA business unit and through interviews conducted with three parties directly involved in supply chain activities. 35 KPIs were obtained, consisting of 6 plan process KPIs, 8 source process KPIs, 9 make process KPIs, 5 deliver process KPIs, 6 return process KPIs, and 1 enable process KPI. All performance indicators have been checked and validated by Ms. Widiyatul Mufidah. Below is the Key Performance Indicator Identification Table for the Supply Chain Process in the AMDK Bottled Drinking Water Company X Business Unit:

Table 1. Identification of Key Performance Indicators for the Supply Chain Process

Process	Code	Name	Information
Plan (A)	**A.1**	**Reliability Performance Attributes**	
	A.1.1	Perfect Order Fulfilment	Indicators related to customer order fulfillment
	A.1.2	Forecast accuracy in planning	Indicators used to determine the accuracy of product demand estimates with actual product demand.
	A.2	**Responsiveness Performance Attribute**	
	A.2.1	Order fulfilment cycle time	This performance indicator is used to determine the amount of time used to fulfill customer orders.
	A.2.2	Planning time cycle	This performance indicator is used to determine the amount of time a company spends making a plan.
	A.3	**Flexibility Performance Attributes**	
	A.3.1	Planning flexibility	This performance indicator is used to measure the flexibility of the company and team regarding the planning that has been made.
	A.3.2	Flexibility of planning changes	This performance indicator is used to determine the level of flexibility if there is a change in plan.
Source	**B.1**	**Reliability Performance Attributes**	
	B.1.1	Supplier delivery capability	This performance indicator is used to determine the supplier's performance in providing raw materials on time.
	B.1.2	Supplier Raw Material Quantity Level	This performance indicator is used to determine whether the amount of raw materials received is in accordance with the agreed amount.

Process	Code	Name	Information
	B.1.3	The level of raw materials that are free from product defects	This performance indicator is used to determine how many raw materials are free from product defects.
	B.1.4	The level of raw materials that meet specifications	This performance indicator is used to determine whether the actual raw material specifications match those agreed upon.
	B.2	**Responsiveness Performance Attribute**	
	B.2.1	*Sourcing Cycle Time*	This performance indicator is used to determine the amount of time used for procuring raw materials.
	B.3	**Flexibility Performance Attributes**	
	B.3.1	Supplier flexibility	This performance indicator is used to determine the supplier's ability to provide raw materials if there are orders for raw materials at any time (unexpectedly)
	B.3.2	safety stock	This performance indicator is used to determine the amount of raw material inventory stored to prevent shortages of raw material inventory.
	B.4	**Cost Performance Attributes**	
	B.4.1	Raw material costs	This performance indicator is used to determine the amount of costs incurred to purchase raw materials (raw material prices)
Make	**C.1**	**Reliability Performance Attributes**	
	C.1.1	Production employee capabilities	This performance indicator is used to determine the ability of employees to carry out the production process (transforming raw materials into finished goods).
	C.1.2	Accuracy of production volume	This performance indicator is used to determine the number of finished products that have been successfully produced.
	C.1.3	Product quality accuracy	This performance indicator is used to determine the number of finished products that have successfully passed quality control.
	C.2	**Responsiveness Performance Attribute**	
	C.2.1	Production cycle time	This performance indicator is used to determine the amount of time used in the production process.
	C.2.2	Quality control cycle time	This performance indicator is used to determine the amount of time spent on quality control of finished products.
	C.3	**Flexibility Performance Attributes**	
	C.3.1	Production flexibility	This performance indicator is used to determine the level of flexibility in fulfilling additional orders if requests arise at any time (suddenly).
	C.3.2	Flexibility of production employee schedules	This performance indicator is used to determine the level of flexibility regarding

Process	Code	Name	Information
			production employee schedules and employee availability in carrying out the production process.
	C.4	**Cost Performance Attributes**	
	C.4.1	Production cost	This performance indicator is used to determine the total costs associated with carrying out the production process.
	C.5	**Asset Performance Attributes**	
	C.5.1	*Capacity Utilization*	This performance indicator is used to determine how optimally the company is using or utilizing its capacity during the production process.

Deliver	**D.1**	**Reliability Performance Attributes**	
	D.1.1	Product delivery capability	This performance indicator is used to determine the company's ability to deliver products according to agreements with customers.
	D.1.2	Delivery employee capabilities	This performance indicator is used to determine the employee's ability to carry out the product delivery process to the customer's hands.
	D.2	**Responsiveness Performance Attribute**	
	D.2.1	Delivery cycle time	This performance indicator is used to determine the amount of time spent on delivering products to customers.
	D.3	**Cost Performance Attributes**	
	D.3.1	Product shipping costs	This performance indicator is used to determine the total costs associated with product delivery.
	D.4	**Asset Performance Attributes**	
	D.4.1	Delivery Asset Utilization	This performance indicator is used to determine how optimally the company in question utilizes the assets used in the product delivery process.

Return	**E.1**	**Reliability Performance Attributes**	
	E.1.1	*Return employee reliability*	This performance indicator is used to determine the ability of employees to return raw materials to suppliers, as well as to provide responses regarding product returns made by customers.
	E.2	**Responsiveness Performance Attribute**	
	E.2.1	*Time to Solve a Complain*	This performance indicator is used to determine the amount of time a company spends responding to customer complaints regarding products.

Process	Code	Name	Information
	E.2.2	Raw material return cycle time	This performance indicator is used to determine the amount of time required to return raw materials to suppliers.
	E.3	**Cost Performance Attributes**	
	E.3.1	*Returns Cost*	This performance indicator is used to determine the total costs incurred in managing the returns process.
	E.4	**Asset Performance Attributes**	
	E.4.1	Defective Inventory	This performance indicator is used to determine the level of defective inventory that must be returned and replaced.
	E.4.2	Product return rate	This performance indicator is used to determine the number of product returns.
Enable	**F.1**	**Reliability Performance Attributes**	
	F.1.1	Rule's reliability	This performance indicator is used to measure the accuracy of regulations and SOPs that apply to each company activity.

Source: Processed Data

4.2 Key Performance Indicator Specifications for Supply Chain

After validating each performance indicator, the next step is to create specifications for each indicator. The specifications for the KPIs obtained are based on the model in Table 2. The specifications for each KPI can be found in the appendix:

Table 2. Key Performance Indicator Specifications Perfect Order Fulfillment in the Plan

Element	Details
Name	Perfect Order Fulfillment
Code	A.1.1
Type	Larger is better
Unit	Percentage
Definition	Indicator related to customer order fulfillment
Period	1 month
Formula	Number of fulfilled orders/Total orders × 100%

Source: Processed Data

4.3 Weighting of Supply Chain Key Performance

The next step after KPI validation is to weight each performance indicator related to the supply chain activities. KPI weighting uses the Analytical Hierarchy Process method. This weighting aims to determine the level of importance of each performance indicator, as each performance indicator has a different level of importance than the others (Ryandono et al., 2025). The weighting data was processed using Expert Choice 11 software. During the data processing process of the weighting questionnaire, initially, there were several inconsistent performance indicators because they had a pairwise comparison value of more than 0.1. Because of this, corrections were made to the weighting questionnaire, especially to performance indicators that had inconsistent values to make them consistent (Khan et al., 2022).

There are three levels of weighting for these performance indicators. Level 1 is the weighting associated with the six supply chain activities or processes that occur. Level 2 is the weighting associated with the performance attributes of each supply chain activity. Finally, Level 3 is the weighting of performance indicators related to the supply chain activities and performance attributes that occur in the AMDK Bottled Drinking Water Company X business unit (Mardesci et al., 2021). Table 3 below shows the weighting results related to the performance indicators of each attribute and supply chain activity.

Table 3. Key performance indicator weighting

Activity	Code	Name	Weight
Plan (A) 0.050	**A.1**	**Reliability Performance Attributes**	**0.290**
	A.1.1	Perfect Order Fulfilment	0.900
	A.1.2	Forecast accuracy in planning	0.100
	A.2	**Responsiveness Performance Attribute**	**0.055**
	A.2.1	Order fulfilment cycle time	0.875
	A.2.2	Planning time cycle	0.125
	A.3	**Flexibility Performance Attributes**	**0.655**
	A.3.1	Planning flexibility	0.875
	A.3.2	Flexibility of planning changes	0.125
Source (B) 0.103	**B.1**	**Reliability Performance Attributes**	**0.131**
	B.1.1	Supplier delivery capability	0.042
	B.1.2	Supplier Raw Material Quantity Level	0.078
	B.1.3	The level of raw materials that are free from product defects	0.602
	B.1.4	The level of raw materials that meet specifications	0.278
	B.2	**Responsiveness Performance Attribute**	**0.274**
	B.2.1	*Sourcing Cycle Time*	0.274
	B.3	**Flexibility Performance Attributes**	**0.551**
	B.3.1	Supplier flexibility	0.125
	B.3.2	safety stock	0.875
	B.4	**Cost Performance Attributes**	**0.044**
	B.4.1	Raw material costs	0.044
Make (C) 0.052	**C.1**	**Reliability Performance Attributes**	**0.105**
	C.1.1	Production employee capabilities	0.055
	C.1.2	Accuracy of production volume	0.290
	C.1.3	Product quality accuracy	0.655
	C.2	**Responsiveness Performance Attribute**	**0.217**
	C.2.1	Production cycle time	0.125
	C.2.2	Quality control cycle time	0.875
	C.3	**Flexibility Performance Attributes**	**0.284**
	C.3.1	Production flexibility	0.125
	C.3.2	Flexibility of production employee schedules	0.875
	C.4	**Cost Performance Attributes**	**0.324**
	C.4.1	Production cost	0.324
	C.5	**Asset Performance Attributes**	**0.070**
	C.5.1	*Capacity Utilization*	0.070
Deliver (D) 0.184	**D.1**	**Reliability Performance Attributes**	**0.097**
	D.1.1	Product delivery capability	0.875
	D.1.2	Delivery employee capabilities	0.125
	D.2	**Responsiveness Performance Attribute**	**0.643**
	D.2.1	Delivery cycle time	0.643

	D.3	**Cost Performance Attributes**	**0.209**
	D.3.1	Product shipping costs	0.209
	D.4	**Asset Performance Attributes**	**0.051**
	D.4.1	Delivery Asset Utilization	0.051
Return (E) 0.362	**E.1**	**Reliability Performance Attributes**	**0.220**
	E.1.1	*Return employee reliability*	0.220
	E.2	**Responsiveness Performance Attribute**	**0.109**
	E.2.1	*Time to Solve a Complain*	0.875
	E.2.2	Raw material return cycle time	0.125
	E.3	**Cost Performance Attributes**	**0.619**
	E.3.1	*Returns Cost*	0.619
	E.4	**Asset Performance Attributes**	**0.052**
	E.4.1	Defective Inventory	0.875
	E.4.2	Product return rate	0.125
Enable (F) 0.250	**F.1**	**Reliability Performance Attributes**	**0.250**
	F.1.1	Rules reliability	0.250

Source: Expert Choice 11 Processed Data

4.4 Discussion

4.4.1 Plan

Regarding planning activities, the most influential performance attribute is flexibility, with a weighting of 0.655 for flexibility in planning activities. There are two performance indicators within the flexibility attribute in planning activities. The first and most influential performance indicator is planning flexibility, with a weighting of 0.875. The planning flexibility performance indicator is used to determine the level of company and team flexibility regarding the planning that has been made. The second performance indicator is the flexibility of planning changes, with a weighting of 0.125. The flexibility of the planning changes performance indicator is used to determine the company's level of flexibility if a change in plans occurs, as strategic flexibility enables a firm to generate and maintain alternative options that allow it to instantly realign and readjust its plans and strategies in response to environmental changes (Agostini et al., 2025).

4.4.2 Source

Regarding source activities, the most influential performance attribute is the flexibility attribute, with a weighting of 0.551 for the flexibility attribute in source activities. There are two performance indicators within the flexibility attribute in source activities. The first most influential performance indicator is safety stock, with a weighting of 0.875. The safety stock performance indicator is used to know the amount of raw material inventory stored to prevent shortages of raw material inventory. The second performance indicator is supplier flexibility, with a weighting of 0.125. The supplier flexibility performance indicator measures the supplier’s ability to fulfill unexpected raw material demands and respond effectively to uncertainties in supply chain requirements (Mannaperuma et al., 2025).

4.4.3 Make

Regarding the make activity, the most influential performance attribute is the cost attribute, where the cost attribute in the make activity has a weight of 0.324. The most influential performance indicator in the cost attribute in the make activity is the production cost performance indicator. The production cost performance indicator does not have a comparison indicator, so it has the same weight of 0.324. The production cost performance indicator is used to evaluate the total costs incurred throughout the production process, including all direct and indirect expenses associated with operational activities (Chen et al., 2024; Psarommatis et al., 2024; Stefana et al., 2022).

4.4.4 Deliver

Regarding the delivery activity, the most influential performance attribute is the responsiveness attribute, where the responsiveness attribute in the delivery activity weighs 0.643. The most influential performance indicator in the responsiveness attribute in the delivery activity is the delivery cycle time performance indicator. The delivery cycle time performance indicator does not have a comparison indicator, so it has the same weight of 0.643. The delivery cycle time performance indicator is used to measure the total time required to deliver products to customers, reflecting the efficiency and responsiveness of the distribution process (Rasool et al., 2021; Zhang et al., 2023)

4.4.5 Return

Regarding return activities, the most influential performance attribute is the cost attribute, where the cost attribute in return activities has a weight of 0.619. The most influential performance indicator in the cost attribute in return activities is the return cost performance indicator. The return cost performance indicator does not have a comparison indicator, so it has the same weight of 0.619. The return cost performance indicator is used to measure the total costs incurred in managing product return processes, including handling, transportation, and reprocessing activities (Liu et al., 2022).

4.4.6 Enable

The enable activity has only one performance attribute, reliability, and one performance indicator, rules reliability. Because it has no comparator, the weight value assigned is the same as the weight value of the enabled activity. The rules' reliability performance indicator is used to assess the accuracy and consistency of regulations and standard operating procedures (SOPs) applied across organizational activities, ensuring compliance and process reliability (Khairul Akter et al., 2022).

The weighting results provide several important managerial implications for Company X. The finding that the Return activity has the highest priority weight (0.362), particularly through the Returns Cost indicator, suggests that management should prioritize efforts to reduce return-related expenses by strengthening product quality control, improving packaging integrity, and implementing more effective customer complaint handling procedures. In addition, the high importance of the Time to Solve a Complaint indicator indicates that faster response mechanisms should be established to improve customer satisfaction and minimize the escalation of product return cases. From the sourcing perspective, the importance of safety stock and raw material quality indicators highlights the need to strengthen supplier evaluation and return procedures for non-conforming materials, ensuring production continuity while reducing the risk of defective products entering the production process.

The results also reveal the existence of trade-offs among supply chain performance attributes. While cost-related indicators receive the highest priority in the Return and Make activities, excessive cost reduction efforts may negatively affect reliability, responsiveness, and flexibility if not managed appropriately. For example, reducing inventory levels to lower holding costs may weaken safety stock availability and reduce the company's ability to respond to unexpected demand fluctuations. Similarly, efforts to maximize asset utilization may improve operational efficiency but could limit flexibility in handling urgent production or delivery requirements. Therefore, Company X should adopt a balanced supply chain management approach that simultaneously considers cost efficiency, product and process reliability, responsiveness to customer needs, operational flexibility, and optimal asset utilization to achieve sustainable supply chain performance improvements

5. Conclusion and Suggestion

Based on the research results above, it can be concluded that the return activity is the most influential activity of all supply chain activities in the PACKAGED DRINKING WATER INDUSTRY IN INDONESIA business unit. However, this does not make other activities unimportant. The company must still pay attention to the plan, source, make, deliver, and enable activities, because all supply chain activities in the PACKAGED DRINKING WATER INDUSTRY IN INDONESIA business unit are a continuous unit that influences each other. The planned activity, being the activity with the lowest priority weight, does not allow the company to ignore this process. This is because the planning process is very important to carry out the company's other activities more focused and precisely according to the plan that has been made previously. The make activity is the activity with the second-lowest priority weight, but this activity cannot be ignored either. This is because the make activity, which is an activity related to the production of raw materials into finished products, also affects other company activities. Without production activities, the company's overall business activities will also not run.

On the other hand, the implementation of the SCOR Model has an impact related to measuring and evaluating performance on supply chain activities in the PACKAGED DRINKING WATER INDUSTRY IN INDONESIA business unit. Therefore, suggestions for further research are to create a performance measurement design in the PACKAGED DRINKING WATER INDUSTRY IN INDONESIA business unit using other methods, such as the Balanced Scorecard method. The Balanced Scorecard method not only evaluates performance on supply chain activities, but also focuses on four perspectives: financial, customer, internal business process, and learning & growth. Furthermore, future studies may compare the SCOR-AHP approach with other decision-support and performance measurement methods, such as the Balanced Scorecard (BSC), Analytic Network Process (ANP), Decision-Making Trial and Evaluation Laboratory (DEMATEL), or integrated SCOR-BSC frameworks. Such comparisons would provide a deeper understanding of the strengths and limitations of each approach and support the development of more comprehensive supply chain performance measurement systems for the packaged drinking water industry

6. Declaration of AI and AI-assisted technologies in the writing process

During the preparation of this manuscript, the authors used AI-assisted language technology to support language refinement, grammar improvement, sentence restructuring, and readability enhancement. The use of AI tools was limited to assisting the writing process and did not replace the authors' intellectual contribution, data analysis, interpretation of findings, or scientific decision-making. All conceptual development, research design, data collection, statistical analysis, interpretation of results, and final conclusions were conducted entirely by the authors. The authors carefully reviewed, edited, and validated all content generated or assisted by AI technologies to ensure academic accuracy, originality, integrity, and compliance with ethical publication standards. The authors also take full responsibility for the content of this manuscript, including the accuracy of the data, interpretations, and conclusions presented in the study.

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