

An assessment of supply chain performance based on the SCOR model

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ABSTRACT

Supply chain management plays a strategic role in improving efficiency and competitiveness across various business and management sectors. However, differences in operational characteristics often lead to recurring challenges in supply chain performance. This study aims to analyze and synthesize supply chain performance issues and strategic challenges using the Supply Chain Operations Reference (SCOR) model. A qualitative approach with a literature review method was employed by analyzing nine scientific journal articles that examine SCOR-based supply chain performance measurement across different industries. Data were analyzed descriptively and comparatively based on SCOR performance attributes, including reliability, responsiveness, agility, cost, and asset management efficiency. The results reveal that despite differences in overall performance levels, companies face similar issues, particularly imbalances among SCOR attributes, weak responsiveness and adaptability, inefficient asset management, and limited data integration. These findings indicate that strong performance in certain attributes does not guarantee balanced supply chain performance. Therefore, structured and continuous SCOR-based performance measurement integrated into managerial decision-making is essential to support sustainable supply chain improvement.

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1. INTRODUCTION

Supply chain management plays a critical role in supporting operational efficiency and ensuring business sustainability, particularly in sectors such as agribusiness, manufacturing, mining, and retail. Increasing global competition, market volatility, and rapid technological development have significantly increased the complexity of supply chain networks, involving the continuous flow of materials, information, and financial resources across multiple stakeholders (Ivanov & Dolgui, 2020; Chopra & Meindl, 2022). As a result, organizations are required to manage their supply chains in an integrated, coordinated, and efficient manner to maintain competitiveness and achieve long-term performance.

Ineffective supply chain management can lead to various operational challenges, including delays in order fulfillment, rising operational costs, inventory inefficiencies, and disruptions in cash flow (Christopher, 2021). These challenges not only reduce organizational efficiency but also

negatively impact customer satisfaction and overall firm performance (Hohenstein et al., 2022). Therefore, systematic measurement and evaluation of supply chain performance have become essential tools for identifying weaknesses, improving coordination, and supporting strategic decision-making processes.

One of the most widely adopted frameworks for evaluating supply chain performance is the Supply Chain Operations Reference (SCOR) model. The SCOR framework provides a structured and standardized approach for assessing supply chain performance based on key performance attributes, namely reliability, responsiveness, agility (adaptability), cost, and asset management efficiency (APICS, 2020). By integrating process modeling, performance metrics, and best practices, the SCOR model enables organizations to obtain a comprehensive overview of supply chain performance across core processes, including planning, sourcing, manufacturing, delivery, and return activities (Li et al., 2021).

Recent studies have demonstrated that the implementation of the SCOR model is effective in identifying performance gaps and supporting continuous improvement initiatives across various industrial sectors (Putri et al., 2021; Rahman et al., 2023). However, empirical findings also reveal that supply chain performance levels vary significantly among industries, and recurring issues—such as low responsiveness, high logistics costs, and inefficient asset utilization—remain prevalent despite the adoption of performance measurement frameworks (Kamble et al., 2020; Susanty & Bakhtiar, 2022).

Given these conditions, a comprehensive synthesis of existing studies is required to integrate previous research findings and identify recurring patterns of challenges in supply chain management. Therefore, this study aims to conduct a literature review of nine scientific journals to examine key problems and challenges in supply chain management using the SCOR approach. The findings of this study are expected to contribute both theoretically and practically by providing insights for academics and practitioners in understanding common supply chain performance issues and formulating more effective improvement strategies.

2. RESEARCH METHOD

This study employs a qualitative research approach using a literature review method. The qualitative approach is considered appropriate as it allows for an in-depth understanding and interpretation of supply chain performance measurement practices across different business and management contexts. The literature review method is used to synthesize findings from previous studies and to identify recurring patterns, challenges, and performance issues within supply chain management based on the SCOR framework. The data sources consist of three peer-reviewed scientific journal articles that examine supply chain performance measurement in companies operating within the business and management sector using the Supply Chain Operations Reference (SCOR) model. The selected articles were published in accredited national or international journals to ensure the credibility and relevance of the data. Data collection was conducted through a systematic search and selection process using academic databases such as Google Scholar and institutional journal portals. Keywords used in the search process included supply chain performance, SCOR model, supply chain management, and business and management. The inclusion criteria for article selection were as follows: (1) the study focuses on supply chain performance measurement, (2) the SCOR model is used as the primary analytical framework, (3) the research object is a company or organization within the business and management sector, and (4) the article provides sufficient methodological and result-related information for comparative analysis. The selected articles were then reviewed and analyzed in depth by examining their research objectives, methodologies, performance measurement indicators, and key findings. Particular attention was given to the SCOR performance attributes applied in each study, including reliability, responsiveness, agility, cost, and asset management efficiency. Data analysis was carried out using descriptive and comparative techniques. The descriptive analysis was employed to summarize the characteristics and findings of each selected study, while the comparative analysis was used to compare supply chain performance measurement results across the selected articles based on SCOR attributes. The analysis focused on identifying common core problems and recurring challenges faced by companies, particularly those related to operational performance inefficiencies and financial flow management within supply chains. Through this methodological approach, the study aims to provide a structured overview of

supply chain performance issues in the business and management sector and to contribute to a clearer understanding of how the SCOR model is applied in evaluating and improving supply chain performance.

3. RESULTS AND DISCUSSIONS

This section presents the results of the synthesis of nine scientific journal articles that examine supply chain performance measurement using the Supply Chain Operations Reference (SCOR) model within the business and management sector. Although the research objects, organizational characteristics, and performance levels differ across studies, the synthesis reveals relatively similar patterns of problems, particularly related to imbalances among SCOR performance attributes. The discussion focuses on identifying key problems and strategic challenges in supply chain management in order to develop a comprehensive understanding that can serve as a basis for sustainable performance improvement.

3.1. Supply Chain Performance Issues

Based on the synthesis of three selected literature studies, a common issue identified across the analyzed companies is suboptimal supply chain management performance resulting from imbalances among SCOR performance attributes, as well as weaknesses in operational and financial management. While each company demonstrates satisfactory performance in certain attributes—such as reliability or cost efficiency—significant deficiencies persist in responsiveness, order fulfillment reliability, and especially asset management. These weaknesses are reflected in long order fulfillment cycle times, limited ability to respond to demand fluctuations, and inefficient inventory and cash flow management. Such conditions increase the risk of distribution delays and reduce overall supply chain operational efficiency.

Further synthesis of three studies conducted in the mining, manufacturing, and commodity-based business sectors indicates that data fragmentation and low information visibility constitute major recurring problems in supply chain management. Although the SCOR model has been applied as a performance measurement tool, companies continue to face challenges related to demand forecasting accuracy, cross-process integration, and information flow delays. These findings suggest that contemporary supply chain issues are no longer solely related to product availability, but rather to limitations in information systems that fail to provide real-time, integrated, and accurate data. As a result, operational decision-making becomes less effective and negatively impacts overall supply chain efficiency.

Similarly, synthesis of three studies within the processed food, primary food, and retail business sectors reveals persistent inconsistencies in supply chain performance across SCOR attributes, along with limited capabilities in precise planning and operational control. Although some companies achieve high overall performance scores, weaknesses remain evident in demand forecasting accuracy, raw material planning, and delivery timeliness. In primary commodity-based businesses, uncertainty in supply availability and weaknesses in financial flow management emerge as recurring issues. These findings indicate that high performance scores do not necessarily guarantee balanced and resilient supply chain performance, highlighting the importance of holistic performance evaluation.

3.2. Strategic Challenges in Supply Chain Management

The primary challenge faced by companies across the analyzed studies is the implementation of structured and sustainable supply chain performance measurement and management practices. Reliance on conventional operational management without comprehensive performance evaluation makes it difficult for organizations to accurately identify supply chain weaknesses. In addition, limited flexibility in adjusting production capacity and managing financial flows in response to market demand dynamics represents a significant challenge in enhancing competitiveness. Therefore, strong managerial commitment is required to optimize SCOR-based performance measurement as

a foundation for formulating supply chain improvement strategies oriented toward efficiency and sustainability.

Another key challenge identified in the reviewed studies is the integration of SCOR-based performance measurement results into long-term managerial and strategic decision-making processes. Although the SCOR model has proven to be adaptive and applicable across various business sectors, its effective implementation requires support from complementary systems, such as integrated information technology infrastructure and business process modeling. Without adequate system support, performance measurement results tend to be used merely for operational evaluation rather than as inputs for strategic planning.

Furthermore, companies face challenges in enhancing adaptability and cross-process integration within supply chains amid demand volatility and supply uncertainty. Organizations are required to develop more accurate planning mechanisms, particularly in demand forecasting and procurement, to ensure that supply chain performance is not only operationally efficient but also sustainable. The selection and consistent application of appropriate Key Performance Indicators (KPIs) for each SCOR process also remain critical challenges in maintaining balanced performance. Without integrated and data-driven performance management, companies risk experiencing supply chain imbalances despite achieving relatively good performance levels.

3.3. Managerial Implications

The findings of this study provide several important managerial implications for organizations operating within the business and management sector. First, the results highlight the need for managers to adopt a balanced approach in managing supply chain performance across all SCOR attributes. An excessive focus on cost efficiency or reliability alone, without adequate attention to responsiveness, agility, and asset management, may lead to structural imbalances that weaken overall supply chain performance.

Second, the recurring issues related to low responsiveness and inefficient asset utilization indicate the importance of strengthening demand forecasting, inventory control, and cash flow management. Managers are encouraged to integrate SCOR-based performance measurement with data-driven planning tools to improve order fulfillment cycle times and enhance the organization's ability to respond to demand fluctuations more effectively.

Third, the synthesis results emphasize that supply chain performance measurement should not be treated merely as an operational evaluation tool. Instead, SCOR metrics should be systematically incorporated into strategic decision-making processes, including capacity planning, supplier selection, and investment in information systems. By aligning SCOR performance indicators with strategic objectives, organizations can ensure that performance measurement contributes directly to long-term competitiveness and sustainability.

Furthermore, the findings suggest that improving information visibility and cross-functional integration is a critical managerial priority. Investment in integrated information systems and real-time data sharing mechanisms can enhance coordination across supply chain processes, reduce information delays, and support more accurate and timely decision-making. Ultimately, strong managerial commitment and continuous performance monitoring are essential to maximize the benefits of SCOR implementation and to achieve sustainable supply chain performance improvement.

Table 1. Summary of SCOR-Based Supply Chain Performance Synthesis

SCOR Attribute	Key Findings Across Studies	Common Issues Identified	Managerial Implications
Reliability	Generally achieved moderate to high performance in most companies	Inconsistent order fulfillment accuracy and delivery reliability	Improve coordination between planning and execution processes to ensure consistent service levels
Responsiveness	Performance tends to be relatively low compared to other attributes	Long order fulfillment cycle times and limited flexibility in responding to demand changes	Enhance demand forecasting accuracy and reduce lead times through process optimization
Agility (Adaptability)	Limited adaptability in adjusting to demand volatility and supply uncertainty	Weak contingency planning and low flexibility in procurement and production	Develop flexible supply chain strategies and scenario-based planning
Cost	Cost efficiency often prioritized and relatively well controlled	Overemphasis on cost reduction may compromise responsiveness and service quality	Balance cost control with service-level performance to avoid structural inefficiencies
Asset Management Efficiency	Identified as the weakest attribute across most studies	Inefficient inventory turnover, underutilized assets, and poor cash flow management	Strengthen inventory optimization, asset utilization, and financial flow integration

4. CONCLUSION

This section presents the conclusions drawn from the synthesis of nine scientific journal articles reviewed in this study. The conclusions emphasize recurring patterns of problems and key challenges in supply chain management across various business and management sectors, while the recommendations provide general and strategic directions for companies and future researchers in their efforts to enhance supply chain performance sustainably through the Supply Chain Operations Reference (SCOR) approach.

concluded that supply chain management performance across various business and management sectors continues to face relatively similar challenges, despite differences in overall performance levels. The main issues identified include imbalances among SCOR performance attributes, weak responsiveness and adaptability, suboptimal asset management, and insufficient data integration across supply chain processes. These findings indicate that high performance in certain SCOR attributes does not necessarily ensure balanced and resilient supply chain performance. Therefore, supply chain performance measurement must be conducted in a structured and continuous manner to provide meaningful insights that support strategic decision-making and enhance organizational competitiveness. The SCOR framework proves to be a relevant and comprehensive tool for evaluating supply chain performance; however, its effectiveness largely depends on the extent to which performance measurement results are integrated into managerial and strategic planning processes.

Based on the findings of this study, companies are recommended to implement SCOR-based supply chain performance measurement consistently and in an integrated manner. Improvement efforts should prioritize enhancing responsiveness, adaptability, and asset management efficiency through the adoption of reliable information technology systems and accurate, real-time data management. Strengthening data integration across supply chain processes is essential to improve forecasting accuracy, operational coordination, and financial flow management. Furthermore, the results of supply chain performance measurement should be utilized not only for operational evaluation but also as a foundation for strategic decision-making to ensure continuous and sustainable supply chain improvement. For future research, it is recommended to expand the scope of analysis by including a broader range of industries, performance indicators, or analytical methods to obtain a more comprehensive understanding of supply chain performance dynamics and the long-term impact of SCOR implementation.

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