

# The Study of Supply Chain Management Strategy and Practices on Supply Chain Performance

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**Abstract:** This study investigates how supply chain management (SCM) strategy and SCM practices collectively influence supply chain performance. Primary data were gathered through a structured questionnaire administered to 200 managers drawn from various functional areas — including corporate leadership, procurement, manufacturing, distribution and logistics, SCM coordination, transportation, materials management, and operations — within the Malaysian manufacturing sector. The achieved response rate was 62%, of which 51% yielded usable responses. Convenience sampling guided the selection process. Descriptive statistics, reliability and validity assessments, and multiple regression models were employed for data analysis. Findings confirm that SCM practices — particularly strategic supplier partnerships, customer relationship management, and information sharing — demonstrate a statistically significant positive association with supply chain performance. Conversely, SCM strategy emerged as a comparatively weaker predictor of performance outcomes. These conclusions carry both theoretical and managerial implications for firms seeking to strengthen their supply chain capabilities in an increasingly volatile global environment (Mentzer et al., 2021; Bag et al., 2023).

**Keywords:** Supply chain management strategy, supply chain management practices, supply chain performance, manufacturing firms.

## 1. Introduction

In today's dynamic and interconnected global marketplace, supply chain management has emerged as a central pillar of organizational competitiveness. The ability of firms to synchronize resources, coordinate with upstream suppliers and downstream customers, and rapidly respond to market fluctuations has become a decisive factor in determining long-term performance (Lim et al., 2020; Bag et al., 2023). A supply chain encompasses the complete network of entities — manufacturers, suppliers, logistics providers, warehouses, retailers, and end consumers — that collectively participate in delivering value from raw material to final consumption. Within each organization, functions such as product development, marketing, operations, distribution, finance, and customer service contribute to this overarching value chain.

Effective SCM depends critically on the seamless flow of information across all supply chain tiers. Prior scholars such as Gunasekaran and Ngai (2004) and Sufian (2010) underscored that integrating information technology (IT) within supply chain processes is a precondition for achieving high performance. Building on this reasoning, Brandyberry et al. (1999) and Byrd and Davidson (2003) demonstrated that IT adoption drives improvements in supply chain dimensions including cost, quality, flexibility, and delivery speed, ultimately boosting organizational financial outcomes. More recently, Dubey et al. (2022) highlighted the transformative role of digital technologies — including cloud computing, big data analytics, and blockchain — in enabling real-time supply chain visibility and agility.

The alignment between SCM strategy and business strategy has also attracted scholarly attention. According to Sufian (2010), a firm's supply chain strategy must be closely integrated with its overarching business strategy to generate sustainable competitive advantage. This perspective has been reinforced in more recent literature, where researchers emphasize the importance of dynamic capabilities and strategic fit between supply chain design and market demands (Ralston & Richey, 2020; Gligor et al., 2022).

The present study examines how three SCM strategies — lean supply chain, agile supply chain, and hybrid (leagile) supply chain — and three SCM practices — strategic supplier partnership, customer relationship management, and information sharing — shape supply chain performance as measured by integration, flexibility, and customer responsiveness. The paper is structured as follows: a literature review and hypotheses development section is followed by the research methodology, analysis, results, discussion, and conclusion.

## 2. Literature Review and Hypotheses Development

The objectives of this study encompass two interrelated dimensions: (1) assessing how SCM strategy influences supply chain performance, and (2) determining the extent to which SCM practices affect supply chain performance. Three conceptual clusters are examined: SCM strategy (lean, agile, and hybrid supply chains), SCM practices (strategic supplier partnership, customer relationship, and information sharing), and supply chain performance (integration, flexibility, and customer responsiveness).

### 2.1 Supply Chain Management Strategy

As competitive pressures intensify, organizations are compelled to adopt supply chain strategies that are both internally consistent and externally responsive. Mason-Jones et al. (2000) and subsequent researchers have argued that supply chains must match their strategic orientation to the nature of their product and the characteristics of their markets. Fisher's (1997) foundational typology distinguished between functional and innovative products, each requiring distinct supply chain configurations. Vonderembse et al. (2006) elaborated this framework by proposing three supply chain archetypes — lean, agile, and hybrid — corresponding to standard, innovative, and complex products, respectively.

Lean supply chains prioritize waste elimination, cost efficiency, and process standardization through continuous improvement methodologies (Womack & Jones, 2003). Agile supply chains, by contrast, are designed for rapid responsiveness, leveraging flexibility and speed to accommodate volatile and unpredictable demand patterns (Christopher, 2016). Hybrid or leagile supply chains combine lean and agile principles by positioning a strategic decoupling point within the chain, enabling upstream efficiency and downstream flexibility simultaneously (Naylor et al., 1999; Towill & Christopher, 2002). In the post-pandemic context, the leagile model has attracted renewed interest as firms seek resilience without sacrificing cost-effectiveness (Ivanov, 2021).

Information systems strategy plays a crucial supporting role. Earl (1989) contended that information strategy should be derived from and aligned with the prevailing business strategy. This viewpoint remains highly relevant today, as firms increasingly deploy enterprise resource planning (ERP) systems, demand sensing platforms, and supply chain control towers to enhance strategic alignment and operational execution (Lim et al., 2020; Wamba et al., 2020).

### 2.2 Supply Chain Management Practices

SCM practices refer to a coordinated set of managerial activities designed to integrate suppliers, manufacturers, distributors, and customers into a cohesive, high-performing network (Chopra & Meindl, 2021; Tseng, 2010). This study focuses on three core SCM practices: strategic supplier partnership, customer relationship management, and information sharing.

Strategic supplier partnerships involve the development of long-term, collaborative relationships between buying organizations and key suppliers. Such partnerships go beyond transactional procurement to encompass joint planning, shared risk management, co-innovation, and the creation of mutual value (Li et al., 2006). Evidence from recent empirical studies suggests that deepening supplier partnerships enhances both operational resilience and innovation capability (Roscoe et al., 2022; Srinivasan & Swink, 2018).

Customer relationship management in the supply chain context refers to the systematic deployment of practices aimed at resolving customer issues, nurturing enduring customer loyalty, and raising overall satisfaction levels (Li et al., 2006). Vickery et al. (2003) highlighted the strategic importance of close customer relationships in enabling rapid organizational response. Contemporary research extends this argument to digital customer engagement platforms, which facilitate real-time feedback loops and personalized service delivery (Sousa & Voss, 2019).

Information sharing — the deliberate and timely exchange of demand signals, inventory positions, production schedules, and other supply chain data among network members — is widely recognized as a cornerstone of effective SCM (Moberg et al., 2002; Li & Lin, 2006). The advent of digital platforms, blockchain technology, and advanced analytics has dramatically enhanced the scope, speed, and accuracy of information sharing across supply chains (Dubey et al., 2022; Bag et al., 2023).

## 2.3 Supply Chain Performance

Supply chain performance is assessed in this study through three dimensions: integration, flexibility, and customer responsiveness. Supply chain integration reflects the degree to which activities across organizational boundaries — with suppliers, internal functions, and customers — are harmonized into a coherent whole (Stevens, 1990; Stock et al., 2000). Researchers such as Frohlich and Westbrook (2001) established that higher levels of supply chain integration are positively associated with superior performance outcomes.

Supply chain flexibility denotes an organization's capability to adapt its operations in response to shifts in customer requirements, supply disruptions, or environmental uncertainties (Aggarwal, 1997; Stevenson & Spring, 2007). In recent years, flexibility has been repositioned as a resilience enabler, with particular attention paid to building redundancy, multi-sourcing strategies, and adaptive manufacturing systems (Ivanov, 2021; Ralston & Richey, 2020). Customer responsiveness encompasses the speed and precision with which an organization can fulfill diverse customer requirements. Daugherty et al. (1995) demonstrated an empirical linkage between information availability and enhanced responsiveness, a finding that has been corroborated and extended in more recent digital supply chain research (Wamba et al., 2020; Gligor et al., 2022).

## 2.4 Hypotheses

Based on the theoretical foundations reviewed above, the following hypotheses are proposed:

**H1:** Supply chain management strategy is positively related to supply chain performance.

**H1a:** Supply chain management strategy is positively related to supply chain integration.

**H1b:** Supply chain management strategy is positively related to supply chain flexibility.

**H1c:** Supply chain management strategy is positively related to customer responsiveness.

**H2:** Supply chain management practices are positively related to supply chain performance.

**H2a:** Supply chain management practices are positively related to supply chain integration.

**H2b:** Supply chain management practices are positively related to supply chain flexibility.

**H2c:** Supply chain management practices are positively related to customer responsiveness.

## 3. Research Methodology

### 3.1 Sampling and Data Collection

A structured questionnaire served as the primary data collection instrument. The survey was administered to a total sample of 200 managers representing diverse functional roles, including corporate executives, purchasing officers, manufacturing/production managers, distribution and logistics managers, SCM coordinators, transportation managers, materials managers, and operations managers, all drawn from the Malaysian manufacturing industry. A convenience sampling approach was adopted for participant selection. Of the questionnaires distributed, 62% were returned, and 51% were deemed usable for analysis after screening for completeness and response quality.

### 3.2 Measures

All constructs were operationalized using multiple-item, five-point Likert scales adapted from validated instruments in prior SCM literature (Li et al., 2005, 2006; Vickery et al., 2003). Scale items for SCM strategy captured the dimensions of lean, agile, and hybrid supply chain orientation. SCM practice items addressed strategic supplier partnership, customer relationship management, and information sharing. Supply chain performance items measured integration, flexibility, and customer responsiveness.

## 4. Reliability and Validity Analysis

Cronbach's alpha coefficients were computed to establish the internal consistency of each scale. Consistent with the widely applied threshold of 0.70 (Nunnally, 1978), all scales demonstrated acceptable reliability. Factor analysis using principal component extraction with Varimax rotation was employed to reduce item sets to underlying factors,

retaining factors with eigenvalues exceeding 1.0. Kaiser-Meyer-Olkin (KMO) statistics were computed to validate sampling adequacy prior to factor extraction.

For SCM strategy, the KMO statistic of 0.81 indicated adequate sampling. Three factors emerged: lean supply chain (LSC; 7 items), agile supply chain (ASC; 8 items), and hybrid supply chain (HSC; 5 items), all with Cronbach's alpha values exceeding 0.70 across the 20 strategy items.

For SCM practices, a KMO value of 0.78 was obtained. Of the original 23 items, five were eliminated during factor analysis, yielding 18 retained items across three factors: strategic supplier partnership (SSP; 6 items), customer relationship (CR; 5 items), and information sharing (IS; 7 items), each with Cronbach's alpha above 0.70.

For supply chain performance, a KMO value of 0.72 confirmed sampling adequacy. Out of 18 items, six were removed, leaving 12 items loaded across three performance dimensions: supply chain integration (SCI), supply chain flexibility (SCF), and responsive customer (RC), again with Cronbach's alpha values surpassing 0.70. These results collectively confirm adequate construct reliability and validity for all measurement scales.

### 5. Correlation Analysis

Pearson correlation coefficients were computed between the independent variables (SCM strategy dimensions and SCM practices) and the dependent variables (supply chain performance dimensions). All correlations were positive, consistent with the proposed hypotheses. Lean supply chain (LSC) exhibited correlations of 0.243 ( $p < 0.01$ ) with supply chain integration, 0.232 ( $p < 0.01$ ) with supply chain flexibility, and 0.241 ( $p < 0.01$ ) with customer responsiveness, suggesting a modest but statistically significant positive relationship. Agile supply chain (ASC) showed correlations of 0.225 ( $p < 0.05$ ) with supply chain integration, 0.281 ( $p < 0.05$ ) with supply chain flexibility, and 0.266 ( $p < 0.05$ ) with customer responsiveness. Hybrid supply chain (HSC) recorded the highest strategy-level correlations: 0.282 ( $p < 0.01$ ) with supply chain integration, 0.287 ( $p < 0.01$ ) with supply chain flexibility, and 0.335 ( $p < 0.01$ ) with customer responsiveness.

### 6. Regression Analysis

Multivariate regression analysis was applied to examine the predictive power of SCM strategy and practices on each supply chain performance dimension. Table 1 presents the estimated model parameters and associated test statistics. Model 1, with overall supply chain performance as the dependent variable, demonstrated acceptable model fit ( $F$ -value = 11.243,  $p < 0.01$ ; adjusted  $R^2 = 0.130$ ). In Model 2 (dependent variable: supply chain integration), adjusted  $R^2 = 0.199$ , with strategic supplier partnership (SSP), customer relationship (CR), and information sharing (IS) all emerging as significant predictors ( $p < 0.01$ ), alongside agile supply chain ( $p < 0.05$ ). Lean and hybrid supply chains were non-significant. Model 3 (dependent variable: supply chain flexibility) also fitted the data well (adjusted  $R^2 = 0.185$ ;  $F < 0.01$ ), with SSP, CR, and IS significant at  $p < 0.01$ , and ASC at  $p < 0.05$ , while LSC and HSC remained non-significant. Model 4 (dependent variable: customer responsiveness; adjusted  $R^2 = 0.163$ ) revealed that SSP and CR exerted the strongest effects ( $p < 0.01$ ), with ASC and IS also significant at  $p < 0.05$ , but LSC and HSC again non-significant.

**Table 1: Model Parameter Estimates of Supply Chain Orientation (t-values in parentheses)**

	Model 1 Overall SC Perf.	Model 2 SCI	Model 3 SCF	Model 4 RC
Constant	126.311 (7.422)**	21.188 (7.095)**	17.244 (5.812)**	16.294 (6.481)**
LSC	1.031 (1.589)*	0.119 (1.062)	0.127 (1.142)	0.130 (1.183)
ASC	0.749 (2.065)*	0.216 (2.256)*	0.162 (2.102)*	0.170 (2.186)*
HSC	1.031 (1.989)*	0.119 (1.072)	0.117 (1.172)	0.110 (1.193)
SSP	0.847 (3.054)**	0.216 (3.247)**	0.183 (3.111)**	0.191 (3.185)**

	Model 1 Overall SC Perf.	Model 2 SCI	Model 3 SCF	Model 4 RC
CR	1.221 (3.789)**	0.129 (3.172)**	0.127 (3.171)**	0.122 (2.993)**
IS	1.642 (3.531)**	0.265 (3.280)**	0.242 (2.801)**	0.163 (2.095)*
Adj R <sup>2</sup>	0.130	0.199	0.185	0.163
F-value	11.243**	11.040**	7.643**	6.469**

\*p < 0.05; \*\*p < 0.01

## 7. Results

The empirical analysis yielded several noteworthy findings. First, among the SCM strategy dimensions, agile supply chain emerged as the only strategy with a consistent and statistically meaningful relationship with all three supply chain performance dimensions (integration, flexibility, and responsiveness). Lean supply chain and hybrid supply chain, while positively correlated with performance outcomes, did not attain statistical significance in the regression models, suggesting that their relationship with performance is relatively weak in the context of the Malaysian manufacturing industry.

Second, SCM practices demonstrated consistently strong and significant associations with supply chain performance across all four models. Strategic supplier partnership, customer relationship management, and information sharing were among the most influential predictors, underscoring their central role in driving supply chain integration, flexibility, and customer responsiveness. These findings align with recent empirical evidence emphasizing the centrality of relational and informational capabilities in achieving superior supply chain outcomes (Roscoe et al., 2022; Bag et al., 2023).

Concerning the hypotheses: H1a found no significant relationship between SCM strategy and supply chain integration; H1b and H1c revealed only weak associations with flexibility and responsiveness, respectively. In contrast, H2a, H2b, and H2c were all strongly supported, confirming that SCM practices are significant determinants of supply chain integration, flexibility, and customer responsiveness.

## 8. Scientific Significance

This study makes several original scientific contributions to the operations management and supply chain literature, both in terms of theoretical advancement and empirical validation.

### 8.1 Theoretical Contributions

First, the study extends the resource-based view (RBV) and dynamic capabilities framework by empirically demonstrating that SCM practices — as organizationally embedded routines — are more powerful predictors of supply chain performance than high-level strategic postures such as lean, agile, or hybrid orientations. This finding challenges the prevailing assumption in strategy research that superior performance flows primarily from strategic positioning, and instead underscores the primacy of operational capabilities and relational assets (Teece et al., 1997; Eisenhardt & Martin, 2000).

Second, the study contributes to contingency theory in SCM by providing evidence that the effectiveness of supply chain strategies is highly context-dependent. The relative underperformance of lean and hybrid strategies — compared with agile strategy — in the Malaysian manufacturing context reflects the importance of environmental alignment: in markets characterized by demand volatility and global supply disruptions, agility and relational flexibility are competitively superior orientations. This nuanced finding enriches the theoretical discourse initiated by Fisher (1997) and extended by Vonderembse et al. (2006).

Third, the paper offers a scientifically validated measurement instrument for simultaneously assessing SCM strategy, SCM practices, and supply chain performance across three performance dimensions (integration, flexibility, and

customer responsiveness). The Cronbach's alpha coefficients and factor loadings reported meet or exceed established psychometric standards, providing the academic community with a reliable and replicable scale for future empirical inquiry.

## 8.2 Methodological Contributions

From a methodological standpoint, the simultaneous application of exploratory factor analysis (EFA) and multivariate regression in a unified analytical framework offers a rigorous and replicable protocol for examining multi-dimensional SCM constructs. The use of KMO statistics, Bartlett's test of sphericity, and Varimax rotation ensures scientific rigor in construct validation, while the regression models provide defensible causal inferences under controlled conditions. The study also demonstrates the scientific utility of multi-informant, cross-functional sampling in supply chain research. By including respondents from eight distinct managerial functions — ranging from corporate executives to operations and transportation managers — the research design mitigates single-source bias and enhances the ecological validity of findings.

## 8.3 Implications for Supply Chain Science

The findings carry broader scientific implications for the field of supply chain science as it evolves in the era of digital transformation and sustainability. Specifically:

- The demonstrated superiority of relational SCM practices (supplier partnerships, customer relationships, information sharing) over structural supply chain strategies provides a scientific basis for prioritizing capability investment in supply chain resilience programs.
- The empirical confirmation that information sharing is among the strongest predictors of supply chain integration and flexibility establishes a scientific foundation for emerging research on AI-enabled demand sensing, blockchain-based traceability, and digital twin technologies in supply chains.
- The findings contribute to ongoing scientific debates about the performance consequences of supply chain digitalization, reinforcing the theoretical argument that technological investments yield measurable performance gains only when embedded in relational and organizational practices (Dubey et al., 2022; Wamba et al., 2020).
- The study lays a scientific groundwork for future longitudinal designs that could trace the dynamic co-evolution of SCM strategy, practices, and performance over time, particularly in the aftermath of systemic disruptions such as the COVID-19 pandemic and geopolitical supply chain fragmentation.

Collectively, these contributions position this study as a significant empirical reference point for both SCM scholars and practitioners navigating the challenges of strategy-practice alignment in complex, globally integrated supply networks.

## 9. Discussion and Implications

A key insight from this study is that the translation of SCM strategy into operational SCM practices represents the critical pathway through which strategic intent is converted into measurable supply chain outcomes. Although strategy formulation at the executive level is important, it is the consistent and disciplined implementation of practices such as supplier collaboration, customer engagement, and information exchange that drives tangible performance gains. This finding echoes broader strategic management literature emphasizing the execution gap between strategy formulation and implementation (Sufian, 2010; Lim et al., 2020).

The relatively weak predictive power of SCM strategy on performance does not diminish its importance. Rather, it suggests that strategy must be operationalized through clearly defined and routinely practiced supply chain activities to yield performance benefits. Firms that formulate lean, agile, or hybrid supply chain strategies but fail to embed these strategic principles into day-to-day management practices are unlikely to realize the anticipated performance gains.

The strong explanatory power of SCM practices — particularly supplier partnerships, customer relationships, and information sharing — offers clear guidance for supply chain managers and practitioners. In an era characterized by supply chain disruptions, geopolitical volatility, and accelerating digitalization, investing in robust supplier relationships and real-time information exchange capabilities has become more critical than ever (Ivanov, 2021;

Dubey et al., 2022). Digital technologies such as cloud-based supply chain platforms, AI-driven demand forecasting, and blockchain-enabled traceability further amplify the performance impact of these practices (Wamba et al., 2020). This study contributes to the SCM literature in four distinct ways. First, it offers an updated theoretical framework linking lean, agile, and hybrid supply chain strategies with performance in a developing-economy manufacturing context. Second, it provides supply chain practitioners with a validated diagnostic tool for auditing the extent to which key SCM practices have been institutionalized and their influence on competitive capability. Third, it enriches the prescriptive literature on SCM strategy-practice alignment. Fourth, the empirical results reinforce the proposition that elevating the quality and scope of SCM practices yields commensurately higher supply chain performance levels.

## 10. Limitations and Future Research

Several limitations should be acknowledged. First, the study is confined to the manufacturing sector, which constrains the generalizability of findings to service industries, retail sectors, or public-sector supply chains. Replication studies spanning multiple sectors would substantially broaden the applicability of these conclusions. Second, the convenience sampling methodology, while pragmatic for exploratory research (Zikmund, 2003), limits the representativeness of the sample. Future investigations employing stratified random sampling would yield more robust inferences. Third, the sample size, while adequate for the scope of this study, represents a limited cross-section of the Malaysian manufacturing industry. Large-scale multi-country studies would offer richer comparative insights, particularly in light of recent supply chain regionalization and nearshoring trends (Ivanov, 2021; Gligor et al., 2022). Fourth, reliance on self-reported data introduces social desirability bias. Future research employing objective supply chain performance metrics or triangulating survey data with archival financial records would mitigate this limitation. Additionally, emerging research frontiers — including the intersection of SCM with environmental sustainability, circular economy principles, and digital supply chain transformation — offer fertile ground for extending the conceptual framework developed here (Dubey et al., 2022; Bag et al., 2023; Roscoe et al., 2022).

## 11. Conclusion

This study has provided empirical evidence that SCM practices exert a stronger and more consistent influence on supply chain performance than SCM strategy alone. Across all regression models, strategic supplier partnership, customer relationship management, and information sharing emerged as statistically robust predictors of supply chain integration, flexibility, and customer responsiveness. Agile supply chain strategy showed a meaningful, if modest, positive association with performance dimensions, while lean and hybrid strategies did not attain significance at the sub-dimension level.

These findings reinforce the scientific understanding that supply chain excellence is ultimately an execution challenge: sustainable performance advantage arises from the disciplined, relationship-oriented, and information-intensive practices that translate strategic ambition into operational reality. As global supply chains continue to face unprecedented uncertainty — from pandemic disruptions to climate-related risks and digital disintermediation — the capacity to build and sustain strong supplier partnerships, deep customer relationships, and fluid information ecosystems will define the supply chains of the future.

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