

INTEGRATING THE SUSTAINABLE DEVELOPMENT GOALS INTO GLOBAL SUPPLY CHAIN PERFORMANCE METRICS: AN INTERNATIONAL FRAMEWORK

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Abstract

The integration of the Sustainable Development Goals (SDGs) into global supply chain performance measurement has become a strategic priority for firms seeking long-term resilience and legitimacy. While existing sustainability metrics address environmental and social dimensions, they often lack alignment with internationally recognized SDG indicators. This study develops an internationally compatible framework for embedding SDGs into global supply chain performance metrics. Building on recent empirical and conceptual studies, particularly Alizada and Ibrahimov (2026), the paper synthesizes sustainability, operations, and governance perspectives. The findings indicate that SDG-integrated metrics enhance transparency, comparability, and strategic decision-making across global value chains, while also supporting regulatory and stakeholder alignment.

Keywords: Sustainable Development Goals, Global supply chains, Performance metrics, Transparency, International standards, Governance

Introduction

Global supply chains play a pivotal role in achieving sustainable development outcomes, as they significantly influence patterns of resource utilization, labor standards, environmental impacts, and economic value creation across national and regional boundaries (United Nations, 2015). In an increasingly interconnected global economy, supply chains determine not only how goods and services are produced and distributed, but also how social and environmental responsibilities are shared among countries, firms, and stakeholders. Consequently, the performance of global supply chains has become a critical determinant of progress toward the Sustainable Development Goals (SDGs), particularly in areas such as decent work, responsible consumption and production, and climate action. Despite this growing importance, traditional supply chain performance measurement systems have largely prioritized operational and financial indicators, including cost minimization, quality assurance, delivery speed, and flexibility. While these metrics remain essential for competitiveness, they often fail to capture the broader environmental and social externalities generated along global value chains (Carter & Rogers, 2008). As a result, many organizations lack a comprehensive understanding of how their supply chain activities contribute to—or undermine—long-term sustainability objectives. This limitation has led to fragmented sustainability initiatives that are weakly integrated into core operational decision-making processes. The adoption of the 2030 Agenda for Sustainable Development has fundamentally reshaped expectations regarding corporate responsibility and supply chain governance. Organizations are now under increasing pressure from governments, international institutions, investors, and civil society to align their operational performance with the SDGs and to demonstrate measurable contributions to global sustainability targets (UN SDGs, n.d.). This

shift has intensified the demand for performance measurement frameworks that go beyond voluntary reporting and enable systematic, transparent, and comparable assessment of sustainability outcomes within global supply chains. Recent academic and policy-oriented research highlights the urgent need for standardized and internationally comparable metrics that can effectively translate the SDGs into operational indicators applicable across diverse supply chain contexts (Seuring & Müller, 2008; Alizada & Ibrahimov, 2026). Such metrics are essential for reducing ambiguity in sustainability reporting, enhancing cross-border comparability, and supporting evidence-based decision-making at both firm and policy levels. In particular, aligning supply chain performance indicators with globally recognized SDG targets can strengthen coherence between corporate strategies and international sustainability governance frameworks. Addressing this gap, the present study proposes an SDG-integrated supply chain performance framework that is consistent with international guidelines and sustainability governance structures. By embedding SDG targets into core performance dimensions, the framework aims to enhance transparency, improve accountability, and facilitate strategic alignment between global supply chain operations and sustainable development objectives. In doing so, the study contributes to the evolving literature on sustainable supply chain management by offering a structured and internationally relevant approach to performance measurement in the context of the 2030 Agenda.

Literature Review

The literature on sustainable supply chain management (SSCM) reflects a clear evolution from a narrow focus on environmental compliance toward a more comprehensive and integrated approach encompassing economic, environmental, and social performance dimensions. Early contributions to the field were largely

concerned with reducing negative environmental impacts and ensuring regulatory compliance. However, the introduction of the triple bottom line framework by Elkington (1997) marked a critical turning point by emphasizing the need to balance economic viability with environmental stewardship and social responsibility. Building on this foundation, Ahi and Searcy (2013) demonstrate that contemporary definitions of SSCM increasingly recognize sustainability as a multidimensional and strategic concept rather than a purely operational or compliance-driven concern. Carter and Rogers (2008) provide one of the most influential conceptualizations of SSCM by defining it as the strategic integration of sustainability objectives into key supply chain processes, including sourcing, production, logistics, and distribution. Their framework highlights the interdependence between sustainability initiatives and traditional supply chain goals such as efficiency, risk reduction, and competitive advantage. Complementing this perspective, Pagell and Wu (2009) focus on the inherent trade-offs and managerial decision-making challenges associated with implementing sustainable supply chain practices. They argue that achieving sustainability often requires organizations to rethink established performance priorities and accept short-term costs in exchange for long-term resilience and value creation. More recent strands of the literature extend the SSCM discourse by explicitly linking supply chain sustainability to global policy and governance frameworks, most notably the Sustainable Development Goals (SDGs). International organizations such as the OECD (2021) and the World Economic Forum (2022) emphasize the role of global supply chains as critical transmission mechanisms through which international sustainability objectives can be operationalized. These studies highlight the growing expectation that firms align their supply chain strategies and performance measurement systems with internationally recognized sustainability targets, thereby strengthening accountability and policy coherence across borders. Within this emerging research stream, Alizada and Ibrahimov (2026) make a significant contribution by empirically mapping SDG targets to specific supply chain performance dimensions. Their framework demonstrates that SDG-aligned metrics can enhance strategic coherence, improve measurability, and facilitate clearer communication between firms and external stakeholders. By translating abstract global goals into operationally relevant indicators, their study addresses one of the key limitations identified in earlier SSCM research. Despite these advances, the literature consistently points to several unresolved challenges in integrating SDGs into supply chain performance measurement. Scholars note persistent difficulties related to data availability, particularly in multi-tier and geographically dispersed supply chains, as well as problems of indicator harmonization across different regulatory and institutional contexts (Brandenburg et al., 2014). Furthermore, cross-country comparability remains a major concern, as variations in reporting standards, technological capacity, and institutional quality can undermine the consistency and reliability of sustainability metrics (Dubey et al., 2017). These chal-

lenges underscore the need for internationally compatible and governance-aligned frameworks capable of supporting robust and comparable sustainability performance assessment in global supply chains.

Research Questions and Hypotheses

RQ1: How can SDGs be systematically integrated into global supply chain performance metrics?

RQ2: Does SDG-aligned measurement improve transparency and comparability across global value chains?

RQ3: What institutional factors support effective SDG integration?

H1: SDG-integrated performance metrics positively influence supply chain transparency.

H2: Alignment with international sustainability standards enhances cross-border comparability.

H3: Firms adopting SDG-based metrics demonstrate stronger long-term supply chain resilience.

Methodology

This study employs a qualitative integrative research design based on systematic literature review and framework synthesis. Peer-reviewed journal articles, international organization reports, and sustainability standards were analyzed (Seuring & Müller, 2008; ISO, 2017). Particular emphasis was placed on the empirical framework proposed by Alizada and Ibrahimov (2026), which was evaluated against international sustainability guidelines (UN, OECD, ISO). The analysis focused on identifying convergent indicators and governance-compatible performance dimensions.

Results and Discussion

The analysis reveals that SDG-integrated supply chain metrics improve strategic alignment between corporate operations and global sustainability agendas. Metrics linked to SDGs 8, 12, and 13 are most frequently operationalized through procurement, logistics efficiency, and emissions management indicators (Genovesi et al., 2017; Fahimnia et al., 2015). The framework adapted from Alizada and Ibrahimov (2026) demonstrates strong compatibility with international standards when contextualized within ISO 20400 and UN Global Compact principles. Nevertheless, challenges remain, including data standardization across regions and the cost of monitoring complex global value chains (Sarkis et al., 2011; OECD, 2021). Addressing these issues requires stronger institutional coordination and digital reporting infrastructures.

Conclusion

Integrating SDGs into global supply chain performance metrics represents a critical step toward sustainable and resilient global value chains. This study shows that internationally aligned SDG-based frameworks enhance transparency, comparability, and strategic coherence. Building on Alizada and Ibrahimov (2026), the paper contributes to SSCM literature by offering a governance-compatible measurement perspective. Future research should focus on quantitative validation and sector-specific indicator development.

Materials

Policy documents, sustainability standards, and secondary datasets from international organizations were used in this study.

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