

Issues in Operations and Supply Chain Management: Contemporary Insights and Research

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Introduction

Defining the Business Issue

Operations and supply chain management underpin modern business success, ensuring the efficient flow of materials, information, and products from suppliers to consumers. Current global volatility—charged by geopolitical tensions, regulatory changes, climate impacts, labor shortages, and rapid technological advances—has redefined the risk landscape for supply chain and operations professionals. In recent years, unexpected disruptions have challenged traditional approaches, making resilience, sustainability, and digital innovation central to competitive advantage.^{[1][2][3][4]}

Relevance in the Current Context

As of 2024–2025, supply chains are experiencing unprecedented disruptions: droughts affecting crucial transit routes (Panama Canal), shifting geopolitical alliances and trade sanctions, sudden regulatory mandates on labor practices, cybersecurity threats, and rising consumer demand for greener operations. These issues have led to delays, inflated costs, and lost revenue—driving a paradigm shift toward agility, risk mitigation, and digital transformation.^{[2][5][3][6]}

Companies such as Nike, Unilever, and global logistics firms are taking proactive measures including supplier diversification, adoption of AI-driven visibility tools, and investment in sustainability. The academic, professional, and policy-making communities alike are focused on how operations and supply chains can remain nimble, responsible, and resilient amid this turbulence.^{[7][6]}

Statement of Research Problem

Research Objectives

This research aims to:

- **Identify and analyze contemporary challenges** in operations and supply chain management, focusing on disruption, risk, resilience, sustainability, and technological change.
- **Evaluate current mitigation strategies and innovations** being deployed across industries to address those challenges.
- **Explore the implications for managerial decision-making and future research directions.**

Research Questions

1. What are the most significant operational and supply chain management challenges prevalent in today's global business environment?
2. How are organizations adapting to disruptions, and which resilience strategies prove most effective?
3. What role do digital technologies (AI, analytics, automation) and sustainability initiatives play in shaping future-ready supply chains?
4. What are the measurement frameworks, ethical concerns, and managerial insights driving modern operations and supply chain research?

Literature Review Summary

Article 1: Supply Chain Disruptions and Their Effect on Suppliers and Consumers (Bateh, 2024)

Bateh (2024) explores global disruptions—from the COVID-19 pandemic to climate-induced events—that have drastically altered supply chain functioning. The rise in uncertainty has forced businesses to localize supply chains, invest in technology, and revisit demand management tactics. The study highlights the need for robust contingency planning and adaptive business models.^[8]

Article 2: Enhancing SCM with Deep Learning and Machine Learning (2024)

Recent research demonstrates that AI and deep learning (DL/ML) applications, such as supplier selection and predictive inventory management, are driving supply chain optimization. These technologies enable real-time insight into bottlenecks, automate complex decision-making, and improve resilience to disruptions.^{[9][10][11]}

Article 3: Macroeconomics of Supply Chain Disruptions (Acemoglu & Tahbaz-Salehi, 2025)

This model-based study emphasizes how minor shocks in firm-customer supply networks can trigger massive discontinuities in aggregate output, revealing an inherent supply chain fragility. The paper underscores the inefficiency in current network designs, where small disruptions ripple disastrously through broader systems.^[12]

Article 4: Achieving Sustainable Operations (SHS Web Conf., 2024)

Unilever's sustainability-driven operational strategies are studied in depth, providing evidence of how environmental innovation, clear sustainability targets, and supplier collaboration significantly enhance operational resilience. The research stresses that financial, institutional, and cultural challenges need to be overcome for scalable sustainability in operations.^{[13][14][7]}

Article 5: Literature Review on Overcoming Supply Chain Disruptions (Sage Journals, 2025)

This review synthesizes best practices in resilience and efficiency, highlighting virtual inventory, lateral transshipment, and expedited shipping as critical levers. Flexibility and transparent communication are emphasized as keys to handling disruptions while maintaining high service levels.^[15]

Research Design

Type of Research

The study utilizes a **descriptive and explanatory survey-based research design** complemented by semi-structured interviews.

Target Population and Sampling Method

The target population comprises:

- Operations and supply chain professionals across manufacturing, retail, logistics, and technology sectors.

Sampling Method:

Stratified random sampling—ensuring industry, size, and geographic diversity. Supplemented by expert sampling for follow-up qualitative interviews.

Hypothesis

H1: Contemporary supply chain disruptions (geopolitical, technological, regulatory, environmental) significantly affect operational performance and resilience.

H2: Adoption of digital technologies (AI, ML, big data) and sustainability initiatives correlates with improved supply chain resilience and overall business performance.

Data and Measurement

Types of Data to be Collected

- **Quantitative data:** Impact assessment of disruptions, adoption rates of resilience strategies, performance metrics (lead times, fill rates, cost).
- **Qualitative data:** Insights into organizational decision-making, challenges in implementation, and ethical concerns.

Measurement Tools and Sources

- **Survey questionnaires** delivered online and via email, using rating scales for disruption impact and adoption of practices.^{[16][17]}
- **Structured interviews**—for deeper insight into strategic responses and ethical deliberations.
- **Key Performance Indicators (KPIs):** Number of disruptions mitigated, recovery speed, inventory turnover, cost savings, customer satisfaction.^{[18][19]}

Ethical Considerations

Ethics in supply chain management research and practice span:

- **Informed consent:** Clear communication of research purpose and confidentiality assurance.
- **Data privacy:** Secure handling of respondent identities and business-sensitive information.
- **Transparency and truthfulness:** Accurate reporting of findings, avoiding bias or manipulation.
- **Responsible sourcing:** Scrutiny of suppliers' labor and environmental practices, given new global regulations.^{[20][6]}
- **Avoidance of harm:** Ensuring research and business practices do not negatively impact people or the environment.

Expected Outcomes and Managerial Usefulness

Expected Outcomes

- Clear identification of the most pressing operational and supply chain challenges in 2024–2025.
- Benchmarking of best resilience and risk management practices across industries.
- Evaluation of the transformative role of AI, ML, and digital platforms in supply chain visibility, forecasting, and optimization.
- Case studies and quantitative evidence demonstrate that investment in sustainability, diversification, and technology yields measurable gains in agility, cost reduction, and customer satisfaction.

Managerial Usefulness

Managers are equipped with:

- Anticipate and respond rapidly to disruptions across global supply chains.
- Implement effective risk management and resilience strategies.
- Tap into digital intelligence for real-time asset monitoring and scenario planning.

- Align operational practices with sustainability and compliance directives, safeguarding reputation and regulatory standing.
- Foster ethical supply chain cultures, supporting robust, fair, and transparent operations.

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[sample_questionnaire.txt]

Note:

The research paper follows APA referencing format and provides a detailed, organized framework for postgraduate research into the current and emerging issues in operations and supply chain management, integrating global trends, technological advancement, and ethical best practices.

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