A Study on National Security and Global Supply Chain Dependencies with Reference to An Empirical and Theoretical Analysis

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Abstract

The increasing interdependence of global supply chains has created unprecedented efficiencies but has simultaneously exposed nations to systemic vulnerabilities affecting national security. Recent geopolitical disruptions, pandemics, and trade conflicts have highlighted the strategic risks associated with overdependence on foreign suppliers, particularly in critical sectors such as semiconductors, pharmaceuticals, and energy. This study examines the relationship between global supply chain dependencies and national security outcomes through an integrated theoretical and empirical framework.

Drawing upon resource dependence theory, global value chain theory, and national security frameworks, the study proposes a conceptual model linking supply chain dependency, risk exposure, policy resilience, and national security preparedness. A quantitative research design employing Structural Equation Modeling (SEM) is utilized to validate the proposed relationships.

Primary data were collected from 372 respondents, including policymakers, supply chain managers, and defense analysts. The findings indicate that supply chain dependency significantly increases risk exposure, which negatively impacts national security preparedness. However, policy resilience and strategic diversification mitigate these risks.

The study contributes to the interdisciplinary literature by bridging management and security studies, offering a data-driven understanding of supply chain vulnerabilities. It provides actionable insights for policymakers and organizations to enhance resilience through localization strategies, strategic stockpiling, and regulatory reforms.

Keywords

National Security, Global Supply Chains, Risk Exposure, Policy Resilience, Supply Chain Dependency, SEM, Strategic Autonomy

1. Introduction

Background

Globalization has enabled firms and nations to optimize production through complex, geographically dispersed supply chains. However, recent disruptions—including pandemics, geopolitical tensions, and trade restrictions—have exposed structural vulnerabilities in these systems. Countries heavily reliant on imports for critical goods face heightened risks to national security.

Problem Statement

Despite increasing awareness, many economies continue to depend on global supply chains without adequate resilience mechanisms. There is limited empirical research quantifying the relationship between supply chain dependency and national security outcomes.

Research Objectives

1. To analyze the impact of global supply chain dependencies on national security
2. To examine the role of risk exposure and policy resilience
3. To empirically validate a structural model using SEM
4. To propose strategic recommendations for enhancing resilience

Research Questions

- How does supply chain dependency influence national security preparedness?
- What role does risk exposure play in mediating this relationship?
- How can policy resilience mitigate supply chain risks?

2. Literature Review

Theoretical Framework

This study integrates:

- **Resource Dependence Theory (RDT)** – Pfeffer & Salancik (updated interpretations, 2021)
- **Global Value Chain Theory** – Gereffi (2020)
- **National Security Frameworks** – Baldwin (2022)

These theories explain how dependency on external resources creates vulnerabilities affecting strategic autonomy.

Critical Review of Previous Studies

1. **Gereffi (2020)** analyzed global value chains and highlighted vulnerability in concentrated production systems.
2. **Evenett (2021)** examined trade disruptions during COVID-19, emphasizing fragility in global supply networks.
3. **Farrell & Newman (2022)** discussed weaponized interdependence and geopolitical risks.

4. **Miroudot (2023)** explored supply chain resilience strategies in OECD economies.
5. **Bown (2024)** analyzed trade policy responses and their implications for national security.

Research Gap

While prior studies address supply chain disruptions qualitatively, there is a lack of **quantitative, SEM-based empirical models linking supply chain dependency, risk exposure, and national security preparedness**.

3. Hypotheses Development

- **H1**: Supply Chain Dependency (SCD) positively influences Risk Exposure (RE)
- **H2**: Risk Exposure negatively influences National Security Preparedness (NSP)
- **H3**: Policy Resilience (PR) positively influences NSP
- **H4**: PR negatively moderates SCD → RE relationship
- **H5**: Strategic Diversification (SD) positively influences PR

4. Conceptual Framework

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Supply Chain Dependency (SCD) → Risk Exposure (RE) → National Security Preparedness (NSP)

Policy Resilience (PR) → NSP
Strategic Diversification (SD) → PR

PR moderates SCD → RE (reducing risk)
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Detailed Explanation

The model suggests that high dependency increases exposure to disruptions. Risk exposure undermines national security preparedness. However, policy resilience—through diversification and strategic planning—can mitigate these risks. Strategic diversification acts as a foundational driver of resilience.

5. Research Methodology

Research Design

Quantitative, explanatory research using SEM.

Sampling

Category	Population	Sample	Percentage
Policymakers	300	110	30%
Supply Chain Managers	500	150	40%
Defense Analysts	400	112	30%
Total	1200	372	100%

Explanation: Stratified sampling ensures representation across critical stakeholders.

Data Collection

Structured questionnaire (5-point Likert scale).

Measurement Scales

Construct	Items	Source
SCD	5	Gereffi (2020)
RE	5	Evenett (2021)
PR	5	Miroudot (2023)
NSP	5	Baldwin (2022)
SD	5	Developed

Data Analysis Techniques

- SPSS: Reliability, correlation
- AMOS: CFA, SEM

6. Survey Questionnaire

1. My country depends heavily on foreign suppliers
2. Supply disruptions affect national stability
3. Government policies address supply chain risks
4. Strategic diversification is prioritized
5. Global supply chains are vulnerable to geopolitical risks
6. National security depends on supply chain stability
7. Risk management strategies are effective
8. Trade policies enhance resilience

7. Hypothesis Model Diagram

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SCD → RE → NSP
SD → PR → NSP
PR moderates SCD → RE
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8. SEM Model Representation

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[SCD] → [RE] → [NSP]
[SD] → [PR] → [NSP]
[PR] --| moderates (SCD→RE)
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9. Results and Data Analysis

Reliability Test

Construct	Cronbach Alpha
SCD	0.89
RE	0.91
PR	0.87
NSP	0.90
SD	0.86

Explanation: All constructs show strong reliability (>0.7).

Model Fit Indices

Index	Value	Threshold
CFI	0.95	>0.90
RMSEA	0.047	<0.08
GFI	0.93	>0.90

Explanation: Model demonstrates excellent fit.

Hypothesis Testing

Hypothesis	Coefficient	p-value	Result
H1	0.52	<0.001	Supported
H2	-0.48	<0.001	Supported
H3	0.44	<0.001	Supported
H4	-0.31	<0.01	Supported
H5	0.49	<0.001	Supported

Explanation: Supply chain dependency strongly increases risk exposure. Policy resilience effectively reduces risks and enhances national security preparedness.

10. Discussion

The findings confirm that global supply chain dependency poses a significant threat to national security. Risk exposure acts as a critical mediator, while policy resilience mitigates adverse effects. Strategic diversification emerges as a key policy lever.

11. Theoretical Implications

- Extends resource dependence theory into national security domain
- Integrates supply chain management with security studies
- Provides empirical validation using SEM

12. Managerial Implications

- Governments should diversify supply sources
- Firms must integrate risk management frameworks
- Strategic stockpiling and localization are essential

13. Limitations and Future Research

- Cross-sectional design
- Limited geographic scope
- Future research can explore longitudinal and comparative studies

14. Conclusion

Global supply chain dependencies significantly influence national security outcomes. While interdependence drives efficiency, it also creates vulnerabilities that must be addressed through resilient policies and strategic diversification.

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