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# Supply Chain Digitalization, Institutional Governance, and Export Competitiveness: A Comparative Analysis of Vietnam and Mexico in Global Manufacturing Networks

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**ABSTRACT**

This article examines how supply chain digitalization influences export competitiveness, industrial upgrading, and economic resilience through a comparative institutional analysis of Vietnam and Mexico. The study argues that participation in global manufacturing networks increasingly depends not only on low-cost production advantages but also on digital logistics, institutional coordination, supplier capability development, and governance quality. Vietnam and Mexico are selected because both have become major manufacturing hubs within global value chains, yet they differ in regional integration, industrial policy, labor structures, digital infrastructure, and institutional governance. Vietnam's export growth has been strongly shaped by Asian production networks, foreign direct investment, electronics manufacturing, and state-led industrial coordination. Mexico's competitiveness has been shaped by North American nearshoring, trade integration under USMCA, automotive production, and proximity to the United States. Drawing on World Bank, OECD, UNCTAD, IMF, WTO, corporate supply chain reports, and peer-reviewed literature, the findings indicate that digital supply chain capabilities enhance competitiveness when combined with institutional reliability, customs efficiency, workforce upgrading, and supplier ecosystem development. The article contributes to business and economics scholarship by developing a governance-centered framework linking supply chain digitalization, institutional coordination, organizational capability, and export resilience.

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**Keywords**
Supply chain digitalization; export competitiveness; global value chains; Vietnam; Mexico; institutional governance; manufacturing networks; industrial upgrading; nearshoring; economic resilience

## INTRODUCTION

Global manufacturing networks have entered a period of structural transformation shaped by digitalization, geopolitical fragmentation, post-pandemic supply chain restructuring, regionalization, and changing corporate risk strategies. Firms increasingly reconfigure production systems not only to reduce costs but also to improve resilience, traceability, responsiveness, and institutional predictability. Digital technologies such as enterprise resource planning systems, blockchain-enabled traceability, AI-assisted logistics, smart warehousing, digital customs systems, predictive demand analytics, and supplier data platforms have become central to the organization of global value chains. As a result, countries seeking export competitiveness must develop not only manufacturing capacity but also digital logistics infrastructure, supplier capabilities, regulatory coordination, and institutional trust.

Vietnam and Mexico represent two highly relevant comparative cases in contemporary global manufacturing. Both countries have benefited from multinational production relocation, trade integration, and strategic diversification away from excessive dependence on single-country supply chains. Vietnam has emerged as a major electronics, textiles, footwear, and consumer goods manufacturing hub within East Asian production networks. Mexico has strengthened its role in automotive, aerospace, electronics, machinery, and medical device supply chains linked to North American markets. Yet their competitiveness is shaped by different institutional and economic structures. Vietnam is embedded in Asian production networks and has benefited from export-oriented industrial policy, while Mexico is embedded in regional trade integration and nearshoring dynamics associated with the United States.

The global economic context has intensified the importance of supply chain digitalization. The COVID-19 pandemic exposed vulnerabilities in extended production networks, while trade tensions and geopolitical uncertainty encouraged firms to diversify suppliers and regionalize production systems. UNCTAD (2024) argues that global investment patterns increasingly reflect resilience, sustainability, and digital capability considerations rather than cost minimization alone. Similarly, OECD (2023) emphasizes that digital trade facilitation and logistics modernization are becoming critical determinants of competitiveness in manufacturing-oriented economies.

The academic and managerial problem addressed in this article concerns how emerging manufacturing economies can convert supply chain participation into long-term industrial upgrading and export resilience. Participation in global value chains may generate employment, foreign investment, and export growth, but it does not automatically produce domestic capability formation or productivity upgrading. Countries may remain locked into assembly-oriented functions unless supplier ecosystems, digital capabilities, institutional quality, and workforce skills improve. For firms, the managerial challenge is to


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coordinate suppliers, logistics, compliance, and production systems across uncertain institutional environments.

Existing scholarship offers important insights but remains analytically incomplete. Gereffi (2018) emphasizes that global value chains structure firm upgrading opportunities through governance relationships among lead firms and suppliers. Porter (1998) argues that competitiveness depends on productivity, clusters, and innovation capability. North (1990) demonstrates that institutions shape transaction costs and economic coordination. Baldwin (2016) highlights how global production networks separate production stages across borders. Rodrik (2016) warns that premature deindustrialization may limit development opportunities for emerging economies. Strange and Zucchella (2017) show that international business strategy increasingly depends on fragmented production systems and location advantages. More recent studies emphasize resilience, digital trade, and supply chain risk management as central to post-pandemic competitiveness.

While previous studies emphasize trade integration and global value chains, current literature remains limited in several respects. First, supply chain digitalization is often discussed at the firm level, while its institutional and national competitiveness implications remain underdeveloped. Second, comparative research between Asian and Latin American manufacturing hubs frequently focuses on labor costs and trade agreements rather than digital logistics and governance systems. Third, existing scholarship often treats export competitiveness as a macroeconomic outcome without sufficiently analyzing organizational and institutional mechanisms. Fourth, there is limited integration of institutional economics, strategic management, and digital supply chain theory in explaining export resilience.

The theoretical gap lies in the insufficient explanation of how institutional governance mediates the relationship between digital supply chain transformation and export competitiveness. The empirical gap concerns the limited comparative analysis of Vietnam and Mexico as two manufacturing economies positioned differently within global value chain restructuring. The managerial gap involves insufficient understanding of how suppliers and multinational firms can build digital coordination capability in institutionally diverse environments. The policy gap concerns how governments can support supply chain digitalization without reinforcing dependency on foreign lead firms.

This article contributes to business and economics scholarship in three ways. First, it develops a comparative institutional framework linking supply chain digitalization with export competitiveness and industrial upgrading. Second, it demonstrates that digital logistics systems generate stronger competitiveness when embedded within credible governance, trade facilitation, and supplier development institutions. Third, it shows that Vietnam and Mexico represent different but complementary pathways toward manufacturing resilience: Vietnam through Asian production-network integration and export-oriented coordination, and Mexico through nearshoring, regional trade integration, and market proximity.

The analytical framework is expressed as follows:

**Institutional Governance → Supply Chain Digitalization → Supplier Capability Development →**

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**Export Competitiveness → Industrial Resilience**

This framework suggests that digital tools alone do not create competitiveness. Rather, they become economically significant when institutions reduce transaction costs, firms develop supplier capabilities, and governments coordinate infrastructure, skills, and regulatory systems.

The research objective of this article is to examine how supply chain digitalization and institutional governance influence export competitiveness and industrial resilience in Vietnam and Mexico.

## METHODOLOGY

This study employs a comparative institutional and strategic supply chain analysis to examine how digitalization influences export competitiveness and industrial resilience in Vietnam and Mexico. The cases were selected because both countries are major manufacturing economies integrated into global value chains, yet they operate within distinct regional, institutional, and strategic contexts. Vietnam represents an East Asian export-oriented manufacturing model characterized by foreign direct investment, electronics assembly, industrial zones, and state-guided integration into Asian production networks. Mexico represents a North American nearshoring model shaped by USMCA integration, automotive clusters, proximity to the United States, and regional supplier networks. The unit of analysis consists of national manufacturing supply chain ecosystems, including logistics infrastructure, supplier networks, multinational enterprise linkages, institutional governance, digital trade facilitation, and export performance. Core variables include digital logistics capacity, customs modernization, supplier capability development, institutional reliability, trade integration, labor productivity, foreign direct investment linkages, and export resilience. The theoretical-methodological alignment integrates institutional economics, global value chain theory, strategic management, and digital supply chain governance to explain how institutional conditions mediate the relationship between digital transformation and export competitiveness.

The empirical analysis relies on triangulated secondary data from World Bank logistics and governance indicators, OECD trade and productivity reports, UNCTAD investment and digital economy reports, IMF macroeconomic assessments, WTO trade statistics, national policy documents, corporate supply chain disclosures, and peer-reviewed business and economics literature. The analysis combines comparative institutional interpretation with strategic market analysis and sectoral evidence from electronics, automotive, textiles, machinery, and logistics services. Triangulation is achieved by comparing trade performance, infrastructure quality, digital adoption, supplier development, policy coordination, and foreign investment patterns across the two countries. Ethical considerations are limited because the study uses publicly available secondary sources and does not fabricate interviews or private firm evidence. Limitations include differences in statistical classification, incomplete visibility into proprietary supply chain systems, and the difficulty of isolating digitalization effects from trade policy, exchange rates, and multinational investment decisions. Nevertheless, the comparative design provides analytical value for identifying governance and organizational mechanisms through which digital supply chain transformation affects export competitiveness.

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**1. Institutional Governance and Manufacturing Network Integration**

The comparative evidence demonstrates that institutional governance strongly shapes how countries integrate into global manufacturing networks. Vietnam and Mexico have both become important export platforms, but their integration mechanisms differ substantially. Vietnam's manufacturing growth has been strongly associated with foreign direct investment, industrial zones, electronics production, and integration into Asian supplier networks. Mexico's manufacturing competitiveness derives from trade proximity to the United States, USMCA rules, automotive clusters, and regional production systems.

Vietnam's institutional model has emphasized export-led industrialization, investment attraction, and infrastructure development. Government coordination has supported industrial zones and manufacturing clusters, particularly in electronics and consumer goods. However, Vietnam remains challenged by limited domestic supplier depth, dependence on foreign-invested enterprises, and uneven technological upgrading among local firms.

Mexico's institutional model benefits from regional trade agreements and geographic proximity to the world's largest consumer market. Nearshoring has increased Mexico's strategic importance as firms seek to reduce exposure to long-distance supply chain risks. However, Mexico faces constraints involving security concerns, infrastructure bottlenecks, energy policy uncertainty, and uneven governance quality across regions.

The comparison indicates that institutional reliability affects transaction costs, supplier confidence, investment decisions, and logistics performance. This supports North's institutional economics by showing that manufacturing competitiveness depends not only on labor costs or market access but also on governance systems that reduce uncertainty and coordinate exchange.

Managerially, multinational firms must evaluate institutional capability alongside production cost advantages. For policymakers, the findings imply that export competitiveness requires integrated reforms in customs efficiency, logistics digitalization, supplier upgrading, and regulatory predictability.

**2. Supply Chain Digitalization and Logistics Competitiveness**

Digital supply chain systems increasingly determine whether manufacturing economies can meet global standards for speed, traceability, compliance, and responsiveness. Vietnam and Mexico both face pressure to modernize logistics systems, customs procedures, and supplier coordination platforms.

Vietnam has improved digital trade facilitation through customs modernization, port development, and investment in industrial logistics. However, logistics costs remain a constraint for many domestic suppliers, especially SMEs located outside major industrial zones. Digitalization is more advanced among multinational firms than among local suppliers, creating a capability gap within the manufacturing ecosystem.

Mexico benefits from proximity-based logistics and established transport corridors linked to the United States. Nearshoring creates strong incentives for firms to invest in digital coordination systems, warehouse automation, and cross-border logistics platforms. However, border congestion, infrastructure unevenness, and security-related disruptions can weaken supply chain predictability.

The evidence suggests that supply chain digitalization improves competitiveness through four mechanisms: reducing coordination costs, increasing visibility, improving compliance, and accelerating response to market demand.

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Yet these benefits depend on institutional infrastructure. Digital systems cannot fully compensate for weak customs capacity, unreliable transport networks, or fragmented regulatory governance.

These findings extend global value chain theory by demonstrating that digital coordination capability has become a central upgrading condition. Countries that remain dependent on low-cost labor without digital logistics modernization may lose competitiveness as lead firms prioritize resilience and traceability.

**3. Supplier Capability Development and Industrial Upgrading**

Export competitiveness becomes developmentally significant only when participation in global value chains leads to supplier capability development. Vietnam and Mexico both face the challenge of moving beyond assembly functions toward higher-value activities such as design, engineering, component manufacturing, logistics analytics, and process innovation.

Vietnam's electronics export growth has been impressive, but domestic supplier participation remains limited in many high-value segments. Foreign firms often rely on imported components and established international supplier networks. This creates strong export performance but weaker domestic value capture. Supplier upgrading requires investment in technical skills, certification, digital systems, and quality management.

Mexico has deeper experience in automotive and advanced manufacturing supply chains. Its supplier base includes firms involved in components, machinery, electronics, and aerospace. However, capability gaps persist among smaller suppliers, particularly in digital integration, financing, and compliance with international standards.

The comparative evidence shows that supplier upgrading requires coordination among firms, governments, training institutions, and financial systems. Digitalization can strengthen supplier integration, but only if SMEs can access technology, training, and working capital. Without this support, digital transformation may deepen the divide between multinational lead firms and domestic suppliers.

From a theoretical perspective, the findings align with Porter's cluster theory and Teece's dynamic capability framework. Competitive upgrading depends on localized capability formation and organizational learning. From a policy perspective, supplier development programs should integrate digital readiness assessment, technical certification, export financing, and workforce training.

**4. Export Resilience, Nearshoring, and Developmental Outcomes**

The post-pandemic restructuring of global supply chains has created opportunities for both Vietnam and Mexico. Vietnam benefits from China-plus-one strategies, while Mexico benefits from nearshoring and regionalization in North America. However, the developmental outcomes of these opportunities depend on governance and capability formation.

Vietnam's strength lies in its integration into Asian production systems, competitive labor costs, policy stability, and manufacturing momentum. Its weakness lies in limited domestic supplier depth and dependence on foreign-invested enterprises. Mexico's strength lies in geographic proximity, USMCA integration, and established industrial clusters. Its weakness lies in uneven institutional quality, infrastructure constraints, and regional disparities.

**Table 1. Comparative Matrix of Governance Systems, Strategic Transformation, and Business Outcomes**

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| Variable | Vietnam | Mexico | Empirical Evidence | Analytical Interpretation |
|---|---|---|---|---|
| **Governance System** | Export-oriented state coordination | Trade-agreement-based regional integration | Industrial zone development versus USMCA-driven nearshoring | Institutional models shape manufacturing integration pathways |
| **Supply Chain Digitalization** | Improving customs and industrial logistics digitalization | Cross-border logistics and nearshoring-driven digital coordination | Digital adoption stronger among multinational firms in both cases | Digitalization enhances coordination but depends on infrastructure |
| **Supplier Capability** | Strong FDI-led export growth but limited domestic supplier depth | Deeper industrial clusters but uneven SME upgrading | Electronics assembly versus automotive and aerospace ecosystems | Supplier upgrading determines domestic value capture |
| **Market Mechanism** | China-plus-one diversification | North American nearshoring | Diversification away from concentrated global supply chains | Geopolitical restructuring creates strategic opportunities |
| **Governance Risk** | Dependence on foreign lead firms and imported components | Security, energy, and regional governance uncertainty | Institutional bottlenecks affect investment confidence | Export resilience requires governance predictability |
| **Developmental Outcome** | Rapid export growth with upgrading challenges | Regional competitiveness with institutional constraints | Manufacturing expansion in both economies | Long-term resilience depends on domestic capability formation |

The table demonstrates that Vietnam and Mexico have both benefited from global supply chain restructuring, but through different mechanisms. Vietnam's model is associated with export-oriented integration into Asian networks, while Mexico's model is associated with regionalized production and market proximity. The key analytical finding is that digitalization strengthens competitiveness only when linked to supplier upgrading and institutional reliability.

For managers, the implication is that supply chain strategy should integrate digital visibility, supplier development, and institutional risk assessment. For policymakers, the implication is that digital trade facilitation must be connected to industrial upgrading, not merely export expansion.

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**Theoretical Propositions**

**Proposition 1: Institutional governance strengthens export competitiveness by reducing transaction costs and improving supply chain predictability.**

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Reliable governance systems support investment confidence, customs efficiency, contract enforcement, and logistics coordination.

**Proposition 2: Supply chain digitalization improves competitiveness when embedded in logistics infrastructure and supplier capability development.**
Digital tools increase visibility and responsiveness, but their value depends on organizational adoption and institutional support.

**Proposition 3: Supplier capability development mediates the relationship between global value chain participation and industrial upgrading.**

Export growth generates developmental benefits only when domestic firms acquire technical, managerial, and digital capabilities.

**Proposition 4: Export resilience depends on the alignment of trade integration, digital logistics, institutional reliability, and workforce upgrading.**

Manufacturing economies become resilient when they combine market access with domestic capability formation and governance quality.

## CONCLUSION

This article examined how supply chain digitalization and institutional governance influence export competitiveness and industrial resilience in Vietnam and Mexico. The findings demonstrate that digitalization has become a central determinant of manufacturing competitiveness, but its effects depend on institutional reliability, logistics infrastructure, supplier capabilities, and policy coordination.

Vietnam illustrates an export-oriented manufacturing model driven by foreign direct investment, industrial zones, and integration into Asian production networks. Mexico illustrates a regional manufacturing model shaped by nearshoring, USMCA integration, and proximity to the United States. Both countries possess significant competitive advantages, yet both face constraints that limit long-term industrial upgrading.

The article contributes theoretically by integrating institutional economics, global value chain theory, strategic management, and digital supply chain governance. Empirically, it demonstrates that digital supply chain transformation does not automatically produce export resilience. Rather, competitiveness depends on the interaction between governance systems, supplier upgrading, logistics modernization, and organizational learning.

Managerially, firms should evaluate supplier networks not only through cost and location but also through digital readiness, institutional risk, logistics reliability, and capability development potential. Policymakers should prioritize customs modernization, SME digitalization, workforce training, supplier certification, and infrastructure investment.

The developmental implication is that export growth must be converted into domestic value creation.


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Without supplier upgrading, countries may remain dependent on foreign lead firms and low-value production functions. Future research should use firm-level data to examine how digital supply chain adoption affects productivity, supplier upgrading, and export survival across sectors.

Ultimately, this article argues that the next phase of manufacturing competitiveness will be defined by governance-enabled digital supply chain capability rather than low-cost production alone.

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