

Logistics as a key factor in strengthening economic competitiveness and addressing global challenges

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Abstract:

In the evolving landscape of the global economy, logistics has moved beyond its traditional role as a support function to emerge as a strategic driver of competitiveness, innovation, and resilience. This paper examines the transformative role of logistics within the context of globalization, emphasizing its impact on trade flows, production networks, and regional development. Drawing on empirical data and theoretical insights, the study demonstrates how logistics facilitate spatial, market, and economic integration, serving as a connective tissue across borders, sectors, and systems. The European Union (EU) is analyzed as a case study, illustrating how logistics infrastructure, modal shifts, and policy frameworks have responded to and shaped globalization dynamics between 2002 and 2023. Particular focus is given to the Trans-European Transport Network (TEN-T), the inclusion of peripheral regions, and the strategic repositioning of ports and airports within the EU's spatial development agenda. The analysis reveals that logistics is not merely

reactive to global economic shifts but actively shapes globalization through its spatial and temporal dimensions. Operationally, logistics improves cost efficiency, inventory management, and service delivery, while strategically it supports market expansion, supply chain resilience, and the diffusion of innovation. The paper concludes that nations and regions investing in logistics infrastructure, digitalization, and human capital are better positioned within global value chains. In the EU context, logistics emerges as a cornerstone of Single Market functionality and external competitiveness, with harmonized customs procedures and digital platforms playing a pivotal role. By aligning global best practices with regional planning, logistics becomes a decisive factor in shaping Europe's economic future and its role in the global trade system.

Keywords: Logistics, Globalization, Supply Chain Management, Market Competitiveness, Trade Flow

Introduction

In the contemporary era of globalization, logistics functions as a strategic bridge connecting national economies to global value chains. The internationalization of production, the fragmentation of manufacturing processes, and the global division of labor all depend on the existence of efficient, resilient, and technologically advanced logistics systems. Without robust transport networks and integrated logistics infrastructures, the seamless movement of goods, services, and information across borders would be severely constrained (Rodrigue, 2020).

As a vital artery of the economic system, logistics underpins market integration, promotes balanced development, and facilitates technological and societal progress. The global economy has created a system in which products are manufactured across diverse locations, countries, and continents, and consumed worldwide.

Such a system would be unimaginable without efficient supply chains, strong global and regional logistics, and well-structured transport networks. It is widely acknowledged that logistics is a prerequisite for spatial, market, and economic integration. By transcending boundaries, logistics overcomes obstacles of distance, space, and time as efficiently as possible (Kilibarda, n.d.).

Ivanov and Dolgui (2021) conceptualize modern global supply chains as “complex networks of networks,” where logistics serves as the central integrator that synchronizes production, distribution, and consumption across geographically dispersed actors. This role is not merely operational but strategic, enabling firms and nations to respond to market volatility, geopolitical disruptions, and technological shifts with agility and resilience. The COVID-19 pandemic, for example, exposed the fragility of global supply chains and underscored the critical role of logistics in

sustaining economic continuity and societal well-being (Ivanov & Dolgui, 2021).

Empirical evidence shows that countries with advanced logistics capabilities demonstrate higher levels of competitiveness, trade performance, and economic growth. The World Bank's Logistics Performance Index (LPI) serves as a global benchmarking tool, assessing national logistics systems across six key dimensions: customs efficiency, infrastructure quality, ease of international shipments, competence of logistics services, tracking and tracing capabilities, and timeliness of deliveries (World Bank, 2018). Nations that consistently rank high on the LPI—such as Germany, the Netherlands, and Singapore—also occupy leading positions in global trade and innovation indices, reflecting the strong correlation between logistics excellence and economic leadership (World Bank, 2018).

Moreover, logistics infrastructure is increasingly recognized as a foundational component of national competitiveness strategies. In advanced economies, logistics is not treated as a passive support function but as a dynamic enabler of industrial policy, export diversification, and regional integration. For instance, Germany's logistics sector benefits from a dense multimodal transport network and a highly skilled workforce, while Singapore leverages its strategic geographic position and digital logistics platforms to maintain its role as a global hub (Rodrigue, 2020; World Bank, 2018).

Logistics is therefore no longer a peripheral concern but a central pillar of globalization. Its development and strategic deployment determine not only the efficiency of supply chains but also the capacity of nations to engage meaningfully in the global economy. As global challenges intensify—from climate change to geopolitical fragmentation—the role of logistics as a

driver of resilience, sustainability, and competitiveness will become even more critical.

2. Logistics in the Globalisation Discourse and Strategic Importance for EU Competitiveness

Transport represents a cornerstone of the European Spatial Development Perspective, designed as an integrated and unified approach to spatial planning across European institutions. To ensure coherent development across the continent, it is essential to strengthen infrastructure planning, improve accessibility, and remove the technical barriers that fragment existing national transport systems. The inclusion of peripheral regions in economic and social development has compelled planners and policymakers to prioritize the design and construction of essential infrastructure, including roads, railways, and airports, particularly in insular and geographically isolated territories. Expanding the role of ports further integrates waterways into the global transport network. By investing in such regions, the European Union aims to maximize the benefits of their integration into the Trans-European Transport Network (TEN-T).

Europe currently occupies a pivotal position on the global political and economic stage. Many analysts argue that the developed countries of the EU represent key actors in the global economy, exerting significant influence on the international economic system. Indeed, it now appears that, after more than a century, the United States has fallen to second place in terms of global economic leadership. As Dicken and Oberg (1996, p. 101) asserted: *"On the world market, the European house will write the rules of world trade in the twenty-first century, and the rest of the world will only learn to play its economic game."*

Traditionally, globalization has been conceptualized through trade liberalization, capital mobility, and technological diffusion. However, logistics defined as the planning, execution, and control of the movement and storage of goods has increasingly been recognized as a foundational enabler of these processes (Christopher, 2016). Efficient logistics systems reduce transaction costs, expand market access, and enable firms to respond flexibly to demand fluctuations and supply disruptions.

Furthermore, logistics is deeply embedded in the spatial and temporal dimensions of globalization. It determines the speed, reliability, and cost of connecting production with consumption across borders. In this sense, logistics does not merely respond to globalization but actively shapes its trajectory.

From a competitiveness perspective, logistics generates both operational and strategic benefits. Operationally, it reduces costs, optimizes inventory, and supports service differentiation. Strategically, it drives market expansion, strengthens supply chain resilience, and facilitates innovation diffusion. Countries and firms that invest in logistics infrastructure, digitalization, and human capital consistently outperform their peers in global trade rankings (World Bank, 2023).

Within the EU, logistics is central to the functionality of the Single Market and to the external competitiveness of member states. The Trans-European Transport Network (TEN-T), harmonized customs procedures, and digital logistics platforms remain key pillars of the EU's strategy to.

3. Methodological Approach and Research Objectives and Scope

This study employs a mixed-methods framework, combining Eurostat transport data with strategic literature to investigate logistics as a driver of competitiveness in the era of globalization. The Eurostat dataset on extra-EU trade by transport mode provides the empirical foundation, while secondary sources from UNCTAD, the World Bank, and academic scholarship add analytical depth. The research design follows a thematic progression from theory to practice, culminating in actionable recommendations.

The main objectives of this study are to examine the role of logistics in shaping competitiveness under globalization, with a specific focus on:

- Theoretical foundations linking logistics, economic development, and globalization;
- Modal shifts in EU trade and their strategic implications;
- Cost structures and technological innovations in logistics;

- Challenges faced by transport and logistics companies;

- Policy recommendations for enhancing competitiveness.

This study aims to enrich literature by positioning logistics as a strategic domain within globalization research. By integrating modal data with strategic analysis, it offers a nuanced understanding of how logistics choices both reflect and influence global economic patterns. For practitioners and policymakers, the findings underscore the importance of investing in multimodal infrastructure, digital platforms, and regional logistics clusters as a means of strengthening competitiveness.

The analysis draws upon empirical data from the World Bank, the European Commission, and national transport institutions, complemented by comparative benchmarking against global and regional trends, as well as a synthesis of academic and policy literature.

4. Globalisation and the Reconfiguration of Competitiveness

Anthony Giddens describes globalization as a phenomenon that emerged suddenly yet rapidly became central to contemporary economic and political debates. A central dilemma in these debates is whether globalization increases inequality among countries worldwide or, conversely, reduces disparities and promotes economic development (Pantelić et al., 2003).

Globalization, as a process enabling the free movement of people, goods, services, capital, and information, leaves a profound imprint both positive and negative on the European, Balkan, and Macedonian economic, political, cultural, and demographic landscape. The dynamics of global competition are marked by clarity, decisiveness, and unpredictability. Actors unable to adapt to the demands of the

international market are relegated to the margins of development, becoming incidental "victims of globalization."

Debates over whether globalization is unjust, exploitative, or a mechanism for deepening inequalities are unlikely to yield practical benefits (Prvulović, 2001). On one side, proponents view globalization as a desirable and beneficial driver of development. On the other, critics argue that global processes exacerbate inequality, contributing to the peripheralization and economic backwardness of many countries including the Republic of Macedonia relative to the developed world. In these dynamic global conditions, failure to adapt to contemporary realities results in isolation for individuals, firms, and states alike.

The aspirations of young people in emerging countries to experience

civilizational achievements on par with their peers in the United States or Western Europe have motivated many to migrate or seek opportunities abroad, facilitated by globalization-driven mobility of people and enterprises.

Broadly defined as the intensification of cross-border flows of goods, services, capital, and information, globalization has undergone significant transformations since the early 2000s. Scholars such as Dicken (2015) and Scholte (2005) emphasize that globalization is dynamic, uneven, and continuously restructures economic space.

The rise of regionalization, nearshoring, and digital trade points to an increasingly fragmented and multi-scalar global economy.

Within this evolving context, logistics plays a pivotal role in enabling and shaping globalization. Gereffi (2018) highlights its importance in coordinating global value chains (GVCs), where production is dispersed across multiple countries but integrated through transport, communication, and control systems. The efficiency and reliability of logistics networks determine the viability of global production strategies.

4.1 Conceptualising Logistics within Globalisation and Competitiveness

The intersection of logistics and globalization has become a focal point in both academic debate and policy formulation. As global trade networks expand and evolve, logistics is increasingly recognized not merely as a technical function but as a strategic enabler of competitiveness, regional development, and economic resilience. This chapter provides a theoretical foundation for understanding logistics within the globalization paradigm, drawing on concepts such as global value chains (GVCs), competitiveness strategy, and transport economics.

Once viewed primarily as a cost center, logistics has evolved into a strategic domain that directly influences firm performance, customer satisfaction, and market access. Christopher (2016) defines logistics as “the process of strategically managing the procurement, movement, and storage of materials, parts, and finished inventory.” This

definition underscores its integrative role across supply chain functions.

Porter’s (1990) value chain framework situates logistics as a lever for competitive advantage, particularly in globalized production systems. Efficient logistics reduce transaction costs, enhance responsiveness, and enable differentiation. In global markets, logistics capabilities frequently determine whether firms can compete on the basis of speed, flexibility, and reliability.

Porter (2008) further highlights a paradox within spatial economics: while advanced economies enjoy fast transportation, communications, and global market access, location remains crucial for competitiveness. Technological advancements and global sourcing mitigate some disadvantages but do not create sustained advantages. Competitive local logistics centers consistently outperform dispersed global sourcing strategies in terms of productivity and innovation.

5. Logistics in the Context of Political and Military Turbulence

In recent years, global logistics systems have experienced a series of profound and unforeseen disruptions. The COVID-19 pandemic represented the first major shock, severely impeding international transport

flows and exposing structural vulnerabilities in supply chain resilience (Freightify, 2023). This was followed by the Russia–Ukraine conflict, which further destabilized trade routes, raised energy prices, and triggered

widespread shortages of commodities and transport capacity (GEP, 2022; GMK Center, 2024). At the same time, escalating tensions in the Middle East and U.S. trade tariffs on key global partners have compounded the volatility of international logistics (Freightify, 2023).

These overlapping disruptions have diverted logistics from traditional trade routes, intensifying uncertainty as the global economic and political equilibrium continues to deteriorate. Rising fuel costs—particularly for oil, the dominant energy source in global freight transport—have exacerbated the crisis, alongside a persistent shortage of qualified drivers in the freight sector (GEP, 2022). Traditional oil supply routes, especially those involving Russia, have become increasingly unreliable. In addition, maritime security threats, including Houthi attacks in the Red Sea, have rendered strategic corridors such as the Suez Canal hazardous for commercial navigation (GMK Center, 2024).

The strategic vulnerability of the Strait of Hormuz highlights the geopolitical dimension of logistics, where maritime chokepoints can recalibrate global energy flows and destabilize trade. Located between the Arabian Peninsula and mainland Asia, this narrow corridor is critical for oil exports from Persian Gulf nations such as Iran, Iraq, Saudi Arabia, Kuwait, Qatar, Bahrain, and the UAE. Stretching 195 kilometers in length, with depths ranging from 27.5 to 229 meters, the strait accommodates the passage of the world's largest oil tankers. At its narrowest point, it measures just 33 kilometers, with shipping lanes in each direction restricted to three kilometers (Al Jazeera, 2019; EnergyNow, 2025).

6. Conclusion

This paper has shown that logistics is no longer a peripheral concern but a central pillar of economic strategy in the era of globalization. As global supply chains grow

According to Article 37 of the 1982 United Nations Convention on the Law of the Sea (UNCLOS), the Strait of Hormuz qualifies as a strait used for international navigation, granting vessels the right of unimpeded transit through territorial waters (UNCLOS, 1982). Jurisdiction is shared between Iran and Oman, with Iran controlling the northern sector. The passage handles approximately 20 million barrels of oil per day—around one-fifth of global production—and nearly 30% of global liquefied natural gas (LNG) shipments (EIA, 2025).

Historically, the strait has been a flashpoint for conflict, most notably during the 1980s “Tanker War” between Iran and Iraq, which disrupted maritime traffic and affected vessels from more than 30 nations, including the United States and the former USSR (Wikipedia, 2025). More recently, it has again become a zone of confrontation involving Iran, Israel, and the United States, raising concerns about its potential closure. In the first quarter of 2025, China imported 5.4 million barrels of oil per day via the strait, followed by India (2.1 million b/d) and South Korea (1.7 million b/d). By contrast, the United States and Europe imported far less—400,000 and 500,000 barrels per day, respectively (EIA, 2025; Zaidi, 2025).

Industry analysts caution that even a temporary blockade of the Strait of Hormuz could push global oil prices to \$100–150 per barrel. A prolonged closure exceeding six months could raise prices to \$250–300 per barrel, with severe consequences for global energy markets and economic stability (Economy Middle East, 2025; Independent, 2025).

more complex and interdependent, logistics functions as both a facilitator and a determinant of competitiveness, innovation, and resilience. The European Union

illustrates how strategic investments in transport infrastructure, policy harmonization, and digital platforms can strengthen regional connectivity and global integration. The evolution of transport modes in extra-EU trade from 2002 to 2023 reflects not only quantitative shifts but also qualitative transformations in Europe's engagement with the global economy.

Logistics is deeply embedded in the spatial logic of globalization, shaping the speed, reliability, and cost of cross-border exchanges. It enables peripheral regions to participate more fully in economic and social development, thereby contributing to territorial cohesion and balanced growth. The EU's focus on the Trans-European Transport Network (TEN-T), the integration of ports and airports, and the digitalization of logistics systems exemplifies a forward-looking approach to spatial planning and competitiveness.

Operationally, logistics reduces transaction costs and enhances supply chain agility. Strategically, it empowers firms and regions to expand markets, withstand shocks, and innovate. Countries that prioritize logistics infrastructure and human capital development consistently outperform peers in global trade rankings. In this regard, logistics must be recognized not simply as a technical function but as a strategic asset that shapes long-term economic trajectories.

In conclusion, logistics is both a foundational enabler of globalization and a decisive determinant of the economic positioning of nations and regions. For the European Union, sustained investment in logistics systems—aligned with sustainability, digitalization, and inclusivity—will be crucial for maintaining leadership in the global economy and for shaping the rules of twentyfirst century trade.

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