

LOGISTICS, TRANSPORT AND COMMUNICATIONS IN THE GLOBAL ECONOMY

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Methods. The study uses general scientific and specific methods, including: theoretical generalizations - to generalize theoretical provisions and analyze international experience in the development of the transport logistics system.

Results. The purpose of the paper is to study the role of logistics, transport and communications in economic development. It is emphasized that the logistics system, transport and communication systems play a major role in the economic development of countries and influence the processes of globalization. Despite the recent economic and infrastructural changes in Georgia, certain problems arise in logistics and transport. As a result of the research, it is confirmed that the proper functioning of the logistics system is related to the proper functioning of transport and communications and all its elements.

Novelty. Quantitative and qualitative research methods were used. Our research is based on the materials of Samagide Kveleev, the results of local and international research conducted in this direction, the results of our previous research, scientific opinions, the National Transport and Logistics Strategy of Georgia for 2023–2030 and statistical data.

Practical value. A Transportation Management System plays a vital role in supply chain management, as it enables businesses to manage and optimize their logistics operations. By automating transportation planning, freight management, and shipment tracking, a TMS helps companies to reduce costs, improve delivery times, and increase customer satisfaction. Additionally, a TMS provides real-time visibility into the supply chain, enabling businesses to respond quickly to changes in demand or supply. Relevant conclusions have been drawn and recommendations have been proposed. The results of the study are useful for government and scientific circles, business representatives, students, and the interested public. Recently, all the data that characterize the logistics index have improved in Georgia. Therefore, the process of Georgia's inclusion in the global economy has improved. However, a number of problems still remain, including infrastructure problems. Georgia still lags behind the indicators of the European and Central Asian regions. Despite the progress achieved, the competitiveness and efficiency of the Georgian logistics sector still remains low.

Keywords: logistics, supply chain, transport, communications, globalization.

Statement of problem. The role of transport and communications is important in economic development. We consider increasing the intensity of transport use and the quality of management as one of the real ways out of the country's economic crisis (Kharabadze et al. 2016, 05). Efficient transport and logistics systems create opportunities and benefits for economic and social development, which lead to such positive multiplier effects as increased access to trade, education, employment and

additional investments. In developed countries, transportation and logistics account for an average of 6–12% of GDP (National Transport and Logistics Strategy of Georgia for 2023–2030).

In practice, existing logistics systems function like complete economic structures, where the management of objects and processes is built on different approaches. These include programmatic, direct and extreme management, situational management, etc. A systematic

approach to actually functioning logistics systems is based on the complexity, hierarchy, emergent nature and structuring of these systems (Veshapidze, 2015).

The perception of supply chains and logistics systems as being complex is emphasized by several authors (Bowersox and Closs, 1996; Christopher, 2000; Cox, 1999; Lambert et al., 1998; Lumsde'n et al., 1998; Tan, 2001). Furthermore, according to contemporary literature (Nilsson and Waidringer, 2004; Prater et al., 2001), the difficulties in controlling and coordinating logistics activities within and among firms are expected to increase, since the interdependence among interacting firms is intensifying (Axelrod and Cohen (2000, p.26) expect: systems to exhibit increasingly complex dynamics when changes occur that intensify interactions among the elements.

Thus, managing logistics in supply networks will create new demands on logistics management. This could imply that new approaches and methods are needed for (Fredrik Nilsson, 2006).

Modern logistics is a paradoxical phenomenon. What we call «logistics» today arose with the advent of civilization. In modern conditions, the most advanced achievements of this field of knowledge have found their full reflection in both modern business and the state management sector.

The world economy is the result of long-term development. It was formed as a unified system during the period of the rise of capitalism. The objective basis of the world economy is the international division of labor, which has conditioned the interconnections of national economies. Accordingly, the world economy is a set of national economies and other economic entities (firms, banks, unions of states) connected by industrial-trade, credit-financial, scientific-technical relations and the international division of labor (Mamuladze R., Gabaizze M. 2013.).

Transportation management systems help manage various transportation activities such as shipping, tracking, and delivery. A transportation management system (TMS) – also referred to as a transport order management system, transportation management solution, on demand transportation management system, 3pl

transportation management system, or integrated transport management system–benefits businesses by providing cost savings, improved efficiency, and enhanced visibility into transportation operations, and can bring benefits across the entire supply chain. These transportation solutions also help companies and their logistics service providers or third-party logistics providers manage transportation complexity, elevate their logistic transportation management, and provide reliable transportation data. (Transportation Management System: Meaning, Importance, and Benefits: 2025.01).

As a result of economic and infrastructural reforms carried out in recent years, the transport and logistics sector in Georgia has developed significantly. As a result of infrastructure modernization, simplification of customs procedures and liberalization of services in key sectors of the economy, the country's transit and logistics potential has increased, which ensures better international connectivity with global markets. In addition, legislative approximation with the European Union in the field of transport continues, which is a priority issue in the process of Georgia's European integration. Despite the successes achieved, a number of challenges remain for Georgia's transformation into a regional transit and logistics hub. Efforts to improve transport infrastructure and services should continue until the existing limiting factors are completely eliminated. Relatively low quality of service, outdated logistics infrastructure and equipment, inefficient supply chain management, as well as the lack of workforce organization and qualified personnel are an incomplete list of challenges in the field of transport and logistics (National Transport and Logistics Strategy of Georgia for 2023–2030.)

Analysis of recent papers. Classical economic doctrines in the context of a global economy cannot reflect all aspects of international economic relations, especially in the context of strategy and tactics. For example, the theory of comparative advantage (David Ricardo, (1772–1823) finds it very difficult to explain all the features that characterize global economic relations, since classical economic doctrines impose certain limitations on the modern global economy. To achieve economic strength, only knowledge of market factors and

having a significant geographical space cannot guarantee success, since non-market, technological and complex factors also play an equally important role in achieving economic goals. The success of such a small country as Georgia in international logistics is determined by the orderly development of many interconnected components, and at the modern stage, only a geographically transit location cannot provide an inevitable opportunity to become a logistics hub (Danelia, 2022).

Georgia's geopolitical location has always been important for the existence of transport routes. It is the shortest route connecting East Asia with Europe. Significant rail, road and pipeline transport passes through the territory of Georgia – using them, it is possible to transport cargo cheaply and efficiently (Osadze L., Sosanidze M., 2021).

Globalization and growing economic ties with the European Union create a unique opportunity for Georgia to fully integrate into international trade. The transport and logistics sector should play a crucial role in this process. In this regard, the integration of Georgia into the EU transport system is of particular importance, which implies the introduction of European standards and the improvement of transport connections. Through developed infrastructure and quality services, Georgia will become a more important part of the global supply chain, which will have a positive impact on the development of manufacturing and export activities in the country (National Transport and Logistics Strategy of Georgia for 2023–2030, 7).

In the conditions of the pandemic, it has once again become clear that cargo transportation and logistics are the main basis for the existence of the state. The pandemic has caused great damage to various sectors of the economy around the world. One of the areas that has not stopped functioning is transport services. In order to improve logistics services in the world, logistics clusters are being created. The date of their creation in Georgia is still unknown. Many supply chains in the world use logistics clusters. Clusters include: distribution companies, freight forwarding and logistics service providers. Large volumes of cargo are concentrated in clusters, as a result of which company costs are reduced,

transportation tariffs become cheaper, and more companies become active (Osadze, Sosanidze, 2021).

Role in supplychain management

A Transportation Management System plays a vital role in supply chain management, as it enables businesses to manage and optimize their logistics operations. By automating transportation planning, freight management, and shipment tracking, a TMS helps companies to reduce costs, improve delivery times, and increase customer satisfaction. Additionally, a TMS provides real-time visibility into the supply chain, enabling businesses to respond quickly to changes in demand or supply. This makes it an essential tool for companies looking to improve their supply chain efficiency and agility (Transportation Management System: Meaning, Importance, and Benefits, 2025, February).

Transport and Economic Opportunities

Transport developments that have occurred since the Industrial Revolution have been associated with increasing economic opportunities. At each stage of the development of the global economy, specific transport technologies have been developed or adapted with a range of impacts. Economic cycles are associated with a variety of innovations, including those in transport, that affect the economic opportunities of production, distribution and consumption. Historically, six major waves of economic development can be suggested, in which specific transport technologies create new economic, market and social opportunities:

Seaports. The historical importance of seaports in trade is constant. With globalization and containerization, seaports have increased their importance in supporting global trade and supply chains. Rivers and canals, railways, roads, airways and information technology. In the second half of the 20th century, global air and telecommunications networks developed in tandem with economic globalization. New organizational and managerial forms became possible, especially in the rapidly developing field of logistics and supply chain management. While maritime transport is the physical backbone of globalization, air transport and IT facilitate the accelerated mobility of

passengers, specialized cargo, and the associated information flows.

No single mode of transport was responsible for economic growth. Instead, modes were linked to the economic functions they supported and the geography in which growth took place. The first trade routes established a rudimentary system of distribution and transactions that would eventually be expanded by intercity maritime shipping networks and the first multi-

national corporations to manage these flows. Since the 18th century, major flows of international migration have been linked to the expansion of international and continental transport systems, which have radically shaped emerging economies such as North America and Australia. Transport has played a catalytic role in these migrations, changing the economic and social geography of many countries (Jean-Paul Rodrigue, Theo Notteboom, 2025).

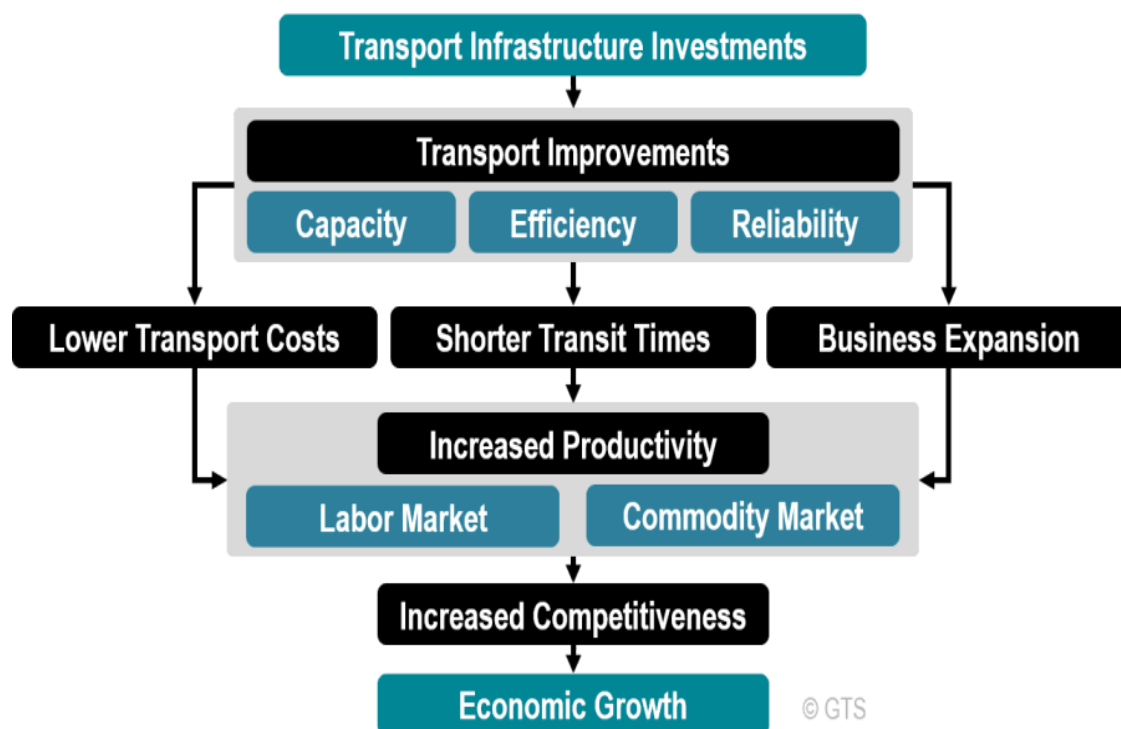


Fig. 1. The impact of transportation on economic opportunities (Jean-Paul Rodrigue, Theo Notteboom)

Due to demographic pressures and urbanization, developing economies are characterized by a mismatch between the limited supply and growing demand for transport infrastructure. While some regions benefit from the development of transport systems, others are often marginalized by conditions in which inadequate transportation plays a role. Transport by itself is not a sufficient condition for development. However, the lack of transport infrastructures can be a constraining factor in development. The lack of transportation infrastructures and regulatory impediments are jointly impacting economic development by conferring higher transport costs, but also delays rendering supply chain management unreliable. A poor transport service level can negatively affect the competitiveness of regions and their economic activi-

ties and thus impair the regional added value, economic opportunities, and employment. Tools and measures are being developed to assess and compare the performance of national transportation systems. For instance, in 2007, the World Bank published its first-ever report ranking nations according to their logistics performance based on the Logistics Performance Index. Logistic performance is commonly associated with economic opportunities (Jean-Paul Rodrigue, Theo Notteboom, 2025).

According to the World Bank's 2023 report 2, Georgia ranks 79th out of 139 countries in the Logistics Performance Index (LPI) (Georgia has improved its position by 40 places compared to 2018, although it should be noted that 160 countries were included in the previous study).

The LPI is an international rating with six assessment criteria that cover the most important issues of the efficiency of countries' logistics. These criteria are:

- Customs – efficiency of border crossing procedures and customs clearance;
- Infrastructure – efficiency of logistics and transport-related infrastructure;
- International Transportation – ease of organizing international transport shipments with competitive prices;
- Logistics Competence – quality and competence of logistics services;
- Trackability and Traceability – The ability to track and trace a shipment;
- Time – The rate of timely delivery of cargo within the scheduled time. (National Transport and Logistics Strategy of Georgia for 2023–2030, 7–8).

Christian O'Meara (Strategic Initiatives SVR) publishes a 10-step agenda for the supply chain: Delivering success by 2025.

10-Step Agenda for Your Supply Chain: Securing a Successful 2025:

1) Achieving cost efficiencies – Reducing costs and achieving efficiencies remains at the top of the corporate agenda. We must keep a watchful eye on proposed tariffs and monitor the impact of higher costs and their potential to erode margins.

2) Supplier relationship management – Achieving cost efficiencies without compromising quality and compliance depends on solid, transparent relationships with suppliers. Leveraging technology to enable stronger, mutually beneficial partnerships with suppliers will be key to driving success in 2025.

3) Reshoring – With a consideration of tariffs being top of mind, many inbound logistics decision makers are currently enabling their companies to stockpile goods, but this is not a long-term option. To risk-proof the business, buyers need to consider nearshoring or reshoring, opting for suppliers with production facilities in locations that are not affected by tariffs or choosing U.S.-based businesses.

4) Diversifying – In 2024, savvy teams were already working on diversifying their supply chain to help contain disruption. Many chose to look to emerging markets, for example, as new sources of raw materials, components, and products.

5) Risk management – Houthi attacks on vessels in the Red Sea, continued conflict in the Ukraine, Canadian rail strikes, and the closure of Ningbo Port in China exposed the vulnerabilities of the supply chain like only Covid-19 had before. Leveraging real-time data insights for strategic decision making has become a necessity. Fortunately, AI-driven supply chain visibility tools are now available to support businesses wanting to de-risk their operations.

6) Artificial intelligence (ai) – AI/Machine Learning (ML) is playing an increasingly important role in streamlining, automating, and simplifying tasks for supply chain managers. Whether it's certification updates or proactively suggesting more favorable contract conditions, AI is helping analyze huge amounts of data at speed, while improving efficiency and timely decision making.

7) Managing security threats – As businesses become more reliant on data and the Cloud, they are inevitably more susceptible to cyber threats. Cybersecurity investments are therefore increasingly critical to help safeguard business data and remain compliant.

8) Regulatory compliance – As the geopolitical situation continues to evolve under the influence of new elections, global conflicts, and more, businesses need to remain highly receptive to potential changes in regulations that affect them or their suppliers further down the chain. Organizations do not want to fall foul of regulators or accidentally make buying decisions that are in contrast to their own ethical and sustainability policies.

9) Sustainability – Sustainability and broader ethical accountability are key to customer loyalty and long-term brand credibility. Whatever the sector, investors and stakeholders will continue to see businesses' sustainability efforts as critically important. Logistics teams must work alongside suppliers to improve their ethical sourcing all along the supply chain. Collaboration to identify new, more sustainable materials or processes and innovating together can be transformative.

10) Scope 3 – Many businesses still struggle to monitor and manage Scope 3 emissions. These are emissions indirectly resulting from the supply chain and typically account for the majority of a corporation's carbon footprint. Visibility rarely extends beyond Tier 1 suppli-

ers, leaving businesses exposed to potential noncompliance. We will see many more businesses ensuring that technology is in place to help increase visibility to GHG emissions (Kristian O'Meara :2025).

Conclusions. The analysis revealed that the means of transport and communication that make up the logistics system have a significant impact on the development of the economy and the integration of countries. Recently, all the data that characterize the logistics index have improved in Georgia. Therefore, the process of Georgia's inclusion in the global economy has improved. However, a number of problems still remain, including infrastructure problems. Georgia still lags behind the indicators of the European and Central Asian regions. Despite the progress achieved, the competitiveness and efficiency of the Georgian logistics sector still remains low.

The current situation is caused by the following main factors:

- Outdated logistics infrastructure and low level of automation of logistics processes;
- Low quality of logistics services;
- Insufficient knowledge of supply chain management;
- Weak regulatory framework of the logistics sector. (National Transport and Logistics Strategy of Georgia for 2023–2030, 2023).

The Georgian government and business representatives need to properly assess the existing challenges and take into account the experience of the European Union and developed countries, which will promote the inflow of investments and economic development in Georgia.

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ЛОГІСТИКА, ТРАНСПОРТ ТА ЗВ'ЯЗОК В ГЛОБАЛЬНІЙ ЕКОНОМІЦІ

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Методологія дослідження. У дослідженні використовуються загальнонаукові та спеціальні методи, зокрема: теоретичні узагальнення – для узагальнення теоретичних положень та аналізу світового досвіду розвитку системи транспортної логістики.

Результати. Метою роботи є дослідження ролі логістики, транспорту та зв'язку в економічному розвитку. Підкреслюється, що логістична система на транспорту та комунікаційні системи відіграють важливу роль в економічному розвитку країн і впливають на процеси глобалізації. Незважаючи на останні економічні та інфраструктурні зміни в Грузії, виникають певні проблеми в логістиці та на транспорті. У результаті проведених досліджень підтверджено, що проблеми функціонування логістичної системи пов'язані з не належним функціонуванням транспорту і зв'язку та всіх його елементів.

Новизна. Під час дослідження використовувались кількісні та якісні методи дослідження. Наше дослідження базується на матеріалах Самагіде Квелесева, результатах місцевих і міжнародних досліджень, проведених у цьому напрямку, результатах наших попередніх досліджень, наукових висновках, Національній транспортно-логістичній стратегії Грузії на 2023–2030 роки та статистичних даних.

Практична значущість. Система управління транспортуванням відіграє життєво важливу роль в управлінні ланцюгом постачання, оскільки дозволяє підприємствам керувати та оптимізувати свої логістичні операції. Автоматизуючи планування транспортування, управління вантажами та відстеження відправлень, TMS допомагає компаніям скоротити витрати, скоротити час доставки та підвищити рівень задоволеності клієнтів. Крім того, TMS забезпечує видимість ланцюга постачання в реальному часі, дозволяючи підприємствам швидко реагувати на зміни в попиті чи пропозиції. Зроблено відповідні висновки та надано рекомендації. Результати дослідження є корисними для державних і наукових кіл, представників бізнесу, студентів, зацікавленої громадськості. Останнім часом у Грузії покращилися всі дані, що характеризують індекс логістики. Таким чином, процес включення Грузії у світову економіку покращився. Проте низка проблем все ще залишається, зокрема проблеми з інфраструктурою. Грузія все ще відстає від показників європейського та центральноазіатського регіонів. Незважаючи на досягнутий прогрес, конкурентоспроможність та ефективність логістичного сектора Грузії все ще залишається низькою.

Ключові слова: логістика, ланцюг поставок, транспорт, комунікації, глобалізація.

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