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WAYS TO IMPROVE LOGISTICS PLANNING

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Abstract - Efficient logistics planning is essential for optimizing supply chains, reducing costs, enhancing customer satisfaction, and responding to dynamic market demands. In the era of globalization, e-commerce expansion, geopolitical instability, and digital transformation, logistics systems must become faster, more adaptive, and technologically integrated. This article provides a comprehensive and detailed examination of key strategies for improving logistics planning, including digital innovation, predictive analytics, infrastructure development, human capital investment, regulatory harmonization, and cross-sector coordination. While the study draws examples from multiple economies, the findings are universally relevant to both developed and emerging nations. Emphasis is placed on international best practices, advanced technologies, and the strategic role of logistics in national and corporate competitiveness. The logistics is determined as joint activities of various entities for integration of all processes connected with goal achievement of their business.

Keywords: logistics, logistic system, information systems in logistics, logistics and production companies.

Introduction

Logistics planning refers to the systematic process of organizing the efficient movement and storage of goods, services, and information across the supply chain. It involves forecasting demand, managing inventory, optimizing transportation, and coordinating warehousing and distribution operations. In the context of globalized trade, just-in-time delivery models, and customer-centric strategies, logistics planning has evolved from a tactical function to a core strategic activity.

As disruptions from pandemics, political conflict, and climate change impact global supply chains, logistics planning must adapt to ensure resilience, agility, and sustainability. Effective planning enables firms to minimize delays, reduce operating costs, meet service-level agreements, and enhance end-to-end visibility. Governments, too, recognize logistics as a critical enabler of economic development, especially in trade-reliant sectors such as manufacturing, agriculture, and retail.

Today, logistics issues remain relevant, the successful functioning of any organization, its competitiveness directly depend on the competent construction of the enterprise's logistics system. In Russia and abroad, there are various institutes whose goal is to apply the scientific potential of logistics in practice. For example, in the USA there is the American Society of Transportation and Logistics, in Great Britain - the Institute of Logistics and Distribution Management, in Spain - the Logistics Center and many others, all of them are part of the European Logistics Association. In addition, logistics issues are widely covered in such publications as Production and Inventory Management, Inbound Logistics, Distribution, International Journal of Logistics Management and many others. The main idea of \u200b\u200bmodern logistics was expressed by Martin Ashford, Deloitte & Touche. American Shipper: "One of the main characteristics of the new emerging economy will be fully consumer-oriented production "on order". Consumer demand for goods "on

order" has already led to the practice of "just in time" deliveries. Logistics ensures that you will receive the right product in the right place at the right time at the "right" price." Logistics combines supply, storage, production, and sales into one process. At the same time, the functions of logistics at the enterprise include analysis of the need for material resources to meet production needs, forecasting demand for products, and collecting data on market needs. Logistics at the enterprise should also consider issues of operational planning, which implies a reduction in stocks with the proper level of production and sales efficiency of the enterprise.

Methods

The methodology for this research is grounded in a comprehensive, interdisciplinary approach that combines theoretical and empirical elements:

- Literature Review: Systematic analysis of peer-reviewed academic journals, white papers, and industry publications on logistics planning and supply chain management.
- Case Study Analysis: Examination of logistics innovations and policies in leading logistics nations (e.g., Germany, the Netherlands, Singapore, Japan) and their applicability to other regions.
- Quantitative Metrics: Use of global benchmarks such as the Logistics Performance Index (LPI), the Global Competitiveness Index, infrastructure investment data, and digital readiness scores.
- Qualitative Assessment: Expert commentary, interviews, and reports from logistics practitioners, government bodies, and think tanks.
- Comparative SWOT Framework: Identification of internal strengths and weaknesses alongside external opportunities and threats in logistics planning across different economic contexts.

Research methodology. We conducted a study of the logistics system of a manufacturing enterprise that uses the ERP system "Alpha" - an integrated management system that coordinates the work of enterprise resources, logistics and supply chains, production management. In the course of drawing up a map of the flow of material assets using the brainstorming method, the following problems were identified that contribute to the accumulation of material assets in the warehouses of the enterprise's warehousing department:

1. There is no standard for transmitting information between departments on the receipt and acceptance of goods and materials, the information either does not reach the end user or is outdated. In the process of transmitting information, the information systems and programs of the enterprise are not used or are used to a small extent. There is a large volume of paper documentation.

2. There is no centralized management of the enterprise's logistics, each department works separately, fulfilling its specific goals. There is no coordination of the process of moving goods along the entire supply chain.

Results

The research identified six primary pillars for enhancing logistics planning, each with detailed sub-components:

1. Digital Transformation:

- Advanced Software Tools: Implementation of cloud-based Transportation Management Systems (TMS), Enterprise Resource Planning (ERP), and Warehouse Management Systems (WMS) for real-time decision-making.
- Internet of Things (IoT): Integration of smart sensors in vehicles, cargo, and warehouses to track location, temperature, and security conditions.
- Artificial Intelligence (AI): AI-driven forecasting models predict fluctuations in demand, traffic conditions, and labor needs.
- Blockchain Applications: Secure documentation, smart contracts, and fraud prevention

through distributed ledger technologies.

- Digital Twins: Simulation of logistics networks for scenario testing, capacity planning, and stress testing.

2. Infrastructure Development:

- Intermodal Logistics Hubs: Development of inland dry ports, container terminals, and freight villages to support efficient modal transfer.
- High-Capacity Corridors: Investment in rail and road freight corridors with intelligent traffic systems.
- Smart Warehousing: Use of automated guided vehicles (AGVs), robotics, and real-time inventory systems.
- Last-Mile Logistics: Urban consolidation centers, drone deliveries, and electric vehicle fleets to reduce delivery times and emissions.

3. Workforce and Education:

- Logistics Education: Expansion of university programs and vocational training in supply chain analytics, operations research, and logistics IT.
- Skill Development: Lifelong learning programs for warehouse workers, drivers, and planners to adopt digital tools.
- Certifications and Standards: Promotion of global standards such as ISO 28000 and certifications like SCPro, CLTD, and Lean Six Sigma.

4. Strategic Coordination and Governance:

- Integrated Policy Frameworks: Creation of national logistics masterplans aligned with industrial policy and digital strategy.
- Regulatory Harmonization: Streamlining cross-border customs, digital documentation, and international trade agreements.
- Public-Private Partnerships: Joint infrastructure projects and digital platform development involving private sector expertise.
- Data Governance: Ensuring secure and standardized data sharing among logistics stakeholders.

5. Sustainability and Resilience:

- Green Logistics: Transition to low-emission transport modes, carbon footprint monitoring, and eco-friendly packaging.
- Circular Supply Chains: Reverse logistics systems for product returns, recycling, and reuse.
- Risk Management: Implementation of business continuity planning (BCP), real-time alert systems, and diversification of supplier bases.

6. Performance Monitoring and KPIs:

- Key Metrics: On-time delivery rates, cost per order, order cycle time, carbon emissions, and warehouse efficiency.
- Benchmarking Tools: Use of global indices and internal dashboards for continuous improvement.
- Customer Feedback Integration: Leveraging customer data to fine-tune logistics operations and improve satisfaction.

During the study, a scheme for the acceptance, placement and storage of material and technical assets (MTC) was developed, which will help the warehouse storage department, the division (hereinafter referred to as the Expedition) and the purchasing department to solve the above problems.

The scheme shows that the information system, having received an instruction from the purchasing department about the arrival of cargo, provides information to the Expedition, the warehouse storage department, the motor transport department and the customer divisions about the

expected time of arrival of the cargo. The Expedition hires a car from the motor transport department (MTO), can predict the volume of delivery, the number of cargoes in advance, determine the need for transport, thereby saving time on loading and unloading operations and avoiding the storage of cargoes. The Expedition reports through the information system on the amount of cargo, urgency, gives information to the warehouses, which warehouse and what cargoes are waiting. Warehouses inform departments, the receiving group informs the purchasing department about the receipt of the cargo, questions and problems are resolved without losing time. The cargo is issued to departments based on a request previously generated in the system, transport for the cargo is ordered from the UAT. Thus, there is a saving of time for the acceptance of goods and receipt by the end user. Model of the purchasing management process. The model is built on the basis of the process approach ("input - raw materials", "output - industrial product"), which allows coordinating the purchasing management process.

The novelty of this model is that a block in the structure has been revised and allocated, which is provided by outsourcing - attracting consultants for specialized projects.

The subsystem of operational purchasing management receives from strategic management (stage 1) initial and adjusted plans for the acquisition and use of external resources and criteria for the formation of a production order (flows "Applications", "Preliminary schedules").

Discussion

The findings suggest that logistics planning is entering a new phase driven by intelligence, connectivity, and sustainability. However, implementation remains uneven:

- Developed Countries: Benefit from mature infrastructure, capital availability, and strong digital ecosystems. Examples include Germany's logistics corridors, Japan's integrated rail systems, and Singapore's Smart Logistics Zone.

- Developing Countries: Face constraints such as infrastructure deficits, fragmented regulatory environments, and a lack of skilled personnel. Despite this, countries like India and Vietnam have made notable progress through digital freight platforms and investment-friendly policies.

Uzbekistan, while still developing its logistics ecosystem, has demonstrated potential through strategic initiatives such as the Silk Road logistics corridor and special economic zones. The country must focus on accelerating digital adoption, fostering public-private partnerships, and aligning its logistics plans with regional connectivity goals.

Globally, collaboration among governments, academia, and industry is essential for standardizing logistics processes and enabling interoperability. As supply chains become more complex and vulnerable to external shocks, resilience planning and sustainability considerations must be embedded in all aspects of logistics planning.

In order to study the ways of improving the logistics system of a manufacturing enterprise, we will study the world experience in this matter using the Logistics Performance Index rating, which determines the index of development of the country's transport and logistics complex based on the development of the national customs system of international transportation, legal regulation of logistics activities, the level of provision of logistics services, the efficiency of customs clearance, the ability to track and control cargo. The rating of countries on a 5-point scale is published on the World Bank website. The rating is calculated every two years and includes about one hundred and sixty countries. The top 10 countries by the logistics performance index in 2014-2016 are mainly European countries. Germany ranks first with a rating of 4.23 points, Luxembourg is in 2nd place with a score of 4.22. European countries are characterized by the development of transport and logistics infrastructure, innovations in the information system and technological schemes of logistics. Innovations in the logistics information system include the formation of databases and logistics

communication systems that allow for the management of material flows, control systems and remote monitoring of the quality of operations at different stages of the logistics system. Modern European enterprises focus on meeting the growing needs of consumers and preventing additional costs associated with this, due to the optimal placement of warehouses, rationalization of transport routes (selection of the most optimal delivery routes), the use of information technologies, the optimal size of product batches, improvement of warehousing systems, loading and unloading operations. In addition, modern enterprises offer a number of logistics services, such as additional warehouse processing, packaging, consolidation. China, which occupies 27th place in the LPI rating with a score of 3.66, has a leading position in the Asia-Pacific region. To date, four logistics centers have formed there: the logistics ring around Beijing, Shanghai, Guangzhou and Shenzhen, the Taiwan Strait. The process of developing China's logistics capabilities is associated with the acquisition of experience of foreign logistics companies operating in the country, as well as through the introduction of advanced information technologies, increasing the level of automation and informatization of logistics, and the use of innovative technologies. The experience of Western European countries and the Asian region shows that the development of the logistics sector is based on the existing level of productive forces in the country, the level of development of market relations, the traditions of countries, the political and economic situation, and the level of technological development. Russia is in 99th place, with an index of 2.37 points. Experts attribute this to the unstable economic and political situation, the economic crisis, sanctions against the Russian Federation, and the low efficiency of the customs clearance process remains a problem for Russia. In addition, Russia has a low rating for the delivery time of goods. However, at present, a positive trend has emerged in the area of increasing the efficiency of logistics systems. Interregional transport companies are actively developing, the logistics of the Federal State Unitary Enterprise Russian Post is being modernized, toll roads are being built, hub ports and large logistics complexes for the provision of logistics services are being built. Thus, the formation of a logistics system in Russia can be facilitated by the use of international experience in implementing logistics models taking into account their own realities. According to the joint logistics committee of the Chamber of Commerce and Industry of Russia, companies are actively implementing information technologies in business, including in the logistics sector, which has reduced transportation costs [5–7]. However, experts note that the use of information technology, i.e. software, is possible only when it is adapted to a specific organization and developed by its specialists.

Conclusion

Logistics planning is no longer a background function but a strategic lever for growth, innovation, and resilience. To thrive in today's volatile global environment, organizations and governments must adopt a holistic approach encompassing technology, infrastructure, people, and policy.

Enhancing logistics planning requires:
- A commitment to continuous innovation and digital transformation.
- Investments in physical and digital infrastructure.
- Human capital development and professional certification.
- Institutional collaboration and governance reform.
- Metrics-driven performance monitoring and adaptability.

A forward-looking logistics strategy grounded in these principles will position any economy—regardless of development stage—for long-term competitiveness in the global supply

chain landscape.

Coordination of actions and interrelation between all divisions of the enterprise, establishment of business relations with suppliers and consumers ensure the introduction of the enterprise into a single macrologistics system, as well as economic, production and organizational effects.

The positive effects of using the information system as a basis for managing logistics flows within the enterprise can be called the regulation of the process of acceptance, receipt and storage of MTC, standardization of the process of transferring information between divisions, receiving up-to-date information in a short time, defining the boundaries of responsibility of the process participants, increasing the level of automation of the processes of acceptance, placement and storage of MTC, reducing the influence of the human factor, reducing time losses, reducing paperwork. During the brainstorming, the idea of allocating a separate logistics division of the enterprise was also proposed, since the volumes of transportation both within the country and abroad are increasing, there is a need for clear coordination of the movement of material assets both at the enterprise and from suppliers.

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