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**LOGISTICS IN THE GLOBAL FOOD INDUSTRY**

**Annotation.** The modern system of the food industry faces a significant number of social and environmental problems of sustainable development. Consumers prefer geographically close food producers, and the regions concerned offer some answers to these challenges. However, all costs associated with the distribution of food from many small producers to consumers have become the main barrier to the long-term success of the food system. The best option in this case is the practical application of logistics, which has a huge potential for increasing the efficiency and optimality of supply chains. Management of today's supply chains is extremely complicated. Depending on the product, the supply chain can cover hundreds of stages, multiple geographic (international) locations, a multitude of invoices, and payments that are involved in a number of individuals and legal entities.

In order to determine the optimality of supply chains in world practice, various logistic indicators are widely used, among which the leading role belongs to the logistics performance index.

*Key**words:**logistics, global market, food industry, supply chains, transportation, logistics performance index.*

**Relevance of research.** Today, the global food system provides consumers with convenient and permanent access to an extremely diverse range of foods, regardless of season or region. However, despite these benefits, the consumer is looking for an alternative to the global system, and therefore, the demand for regional production is very high. The motivation of consumers to buy food is somewhat different and is based on certain benefits: lower prices, fresher, safer and / or more nutritious products, less dependent on transportation, and possibly the ability to support the local economy, as is typical for developed countries of the world. Many consumers also prefer the cooperation in which is direct interaction with farmers who produce their own food. Such interactions contribute to the transparency and trust of producers-consumers relations.

In such conditions, efficient logistics management requires sufficient infrastructure to support the consistent delivery of the required product, in the right amount, in the right place, at the right time, in the correct state for the right price. However, the logistic infrastructure of food chains is not optimally developed today.

**Analysis of recent research and publications.** In recent years, researchers have recognized the relevance of supply chain management and innovation for the food sector. As many industries reconfigure their activities around core competencies, it is extremely useful to respond quickly to changing competitive environments. It is the implementation and use of the logistics system that is important for effective and optimal activity.

**Selection of unexplored parts of the general problem.** Although logistics is not a new panacea today, some aspects of its use and operation remain unchallenged to the end. Thus, the issues related to the efficient use of labor in logistics need to be dealt with more deeply, since it is from human resources that the efficiency and reliability of suppliers depend, since such reliability is critical to the success of the entire logistics supply chain.

**Setting objectives.** Since the use of logistics in the food market contributes to increasing its competitiveness, it is advisable to determine the efficiency of logistics chains in transport flows, warehouse infrastructure, inventory management, labor utilization and reliability of suppliers. Evaluate the logistics performance index used, which identifies challenges and opportunities for improving logistics efficiency.

**Presenting main material.** Logistic management is not a new concept and is known to promote the change in the competitive environment in each separate economic sector. Increasing the level of transparency of the supply chain can significantly improve the brand loyalty, while strengthening business relationships. It is necessary to develop stronger relationships with suppliers and distributors and increase the level of transparency to manage the supply chain.

Over the past twenty years, the international food trade and foreign trade have grown in the food industry. This means that global competition is mounting, especially for those producers who relied on national rules to protect against international competition. The change in the competitive environment in the food industry is primarily due to changes in the food industry logistics. The food industry has some special characteristics that distinguish it from other industries. This is primarily due to seasonality in general and in material production, the demand for means of transportation, stocking and storage, the use of labor resources, reliability of suppliers.

Supply chains in each industry face a variety of transport problems, including lack of capacity, empty feedback, security and pollution problems, as well as concerns about the environmental impacts and consumption of non-renewable energy sources. The best thing to do in this case is to increase the efficiency of transportation in the supply chains, reduce empty feedback, the appropriate choice of vehicle, frequent and timely delivery, the involvement of third-party logistics providers and the development of cooperation in the field of transport. For example, by consolidating delivery routes and reducing stops, Kraft Foods Inc. has improved overall fuel efficiency by 7% [1].

Effective use of vehicles can be achieved through the management of the transport system (transport management system TMS). TMS software automates many of the major transport functions, including carrier selection, vehicle fleet management, routing and scheduling, and freight audits.

The latest structure of warehouse infrastructure is needed to maintain effective logistics for large volumes of regional food segments. The best way in this case is to increase the productivity of warehousing and distribution centers, which include effective work optimization of site selection, proper infrastructure development, effective storage, collection and packaging policies, as well as cooperation and resource sharing within and outside the supply chain for warehouses. Package provides the opportunity to save money and improve the stability of the worldwide supply chain.

Balancing demand and supply is a major supply chain problem. This imbalance in supply and demand is partly due to poor coordination between marketing and production, demand planning and inventory management. An important task of inventory management in the logistics chain is food tracking. One of the biggest advantages of the logistics supply chain is the ability to provide customers with detailed information on the sources of supply and production methods through their relatively shorter supply chain structure.

Effective use of labor in logistics is extremely important. Improper training of workers can lead to a variety of negative consequences, including frustration of workers and frequent turnover. Therefore, the implementation of effective training programs is a critical point for success in all logistics operations. A well-structured employee training plan brings increased operational efficiency as well as improved service levels [1]. In particular, cross-training of employees is improved, which allows them to execute a wider spectrum of tasks, improves the flexibility of work planning and all this leads to greater satisfaction of each individual employee and maintenance in the workplace.

Effective logistics plays an important role in the reliability of vendors. This reliability is critical to the success of the supply chain, since stock availability has a significant impact on customer satisfaction and loyalty. This is especially important with suppliers of perishable goods, which is typical of the food industry. As a rule, today we have two kinds of perishable losses, loss of quantity and quality. Technological advances can help to increase the reliability of deliveries.

Logistics, as well as supply chain management, are considered critical factors for companies to gain competitive advantage. In fact, logistics, as well as supply chain management began to be effectively implemented since the early 80's. Food logistics usually involves the integration of information flow, material handling, production, packaging, inventory, transportation, warehousing, and often security. The complexity of logistics can be simulated, analyzed, visualized and optimized by special software. Minimizing resource utilization is a general motivation in logistics for import and export.

Nowadays an important issue in managing supply chains is that companies do not seek to reduce costs or improve profits at the expense of their supply partners, but are keen to make the supply chain more competitive [2].

Therefore, to assess the efficiency of logistics in developed countries, various indexes have been launched and implemented; one of such important indexes is the logistics performance index.

Based on a worldwide survey of global freight forwarders and express carriers, the Logistics Performance Index is an interactive benchmarking tool developed by the World Bank that measures performance along the logistics supply chain within a country. The index can help countries identify challenges and opportunities and improve their logistics performance. The World Bank conducts the survey every two years.

The**Logistics Performance Index (LPI)**summarizes the performance of countries in six areas that capture the most important aspects of the current logistics environment:

     1. Efficiency of the customs clearance process.

     2. Quality of trade and transport-related infrastructure.

     3. Ease of arranging competitively priced shipments.

     4. Competence and quality of logistics services.

     5. Ability to track and trace consignments.

     6. Frequency with which shipments reach the consignee within the scheduled or expected time.

 The aim of the LPI is to determine how efficient supply chains are established in the logistics market. Logistics plays an important role in countries because trade and transport are foundational elements for economic growth. The LPI is an excellent benchmarking tool as it compares more than 160 countries.

The LPI examines topics like the effectiveness of customs procedures, infrastructure, transport organization, time issues, quality control and tracking services. Since being implemented, the results have been relatively similar. The gap between the highest and the lowest scoring countries has fluctuated, and over the past few years, this gap has become even smaller (The scores of the top 10 are falling while the lowest scoring countries are improving). The top 10 is predominantly comprised of countries with a high per capita income, 80% are European countries. Scandinavian countries also do well, with Sweden and Finland in the top 10 (table 1). Major economies like India and Indonesia can be found more in the middle of the scale, but they are performing well. Their position is often related to the presence of seaports or their connections to major logistics hubs. The rating of a country’s logistics performance stems from confidence in supply chains and the quality of their services. This is usually dependent on the quality of the transport system and not on matters of time or money. Recent studies show that this trend will become increasingly more important [3].

Table 1

**Top 10 LPI economies, 2018**

|  |  |  |
| --- | --- | --- |
| **Economy** | **Rank** | **Score** |
| Germany | 1 | 4,20 |
| Sweden | 2 | 4,05 |
| Belgium | 3 | 4,04 |
| Austria | 4 | 4,03 |
| Japan | 5 | 4,03 |
| Netherlands | 6 | 4,02 |
| Singapore | 7 | 4,00 |
| Denmark | 8 | 3,99 |
| United Kingdom | 9 | 3,99 |
| Finland | 10 | 3,97 |

Source: <https://lpi.worldbank.org/international/global/2018> [3]

Once more, high-income economies solidify their past performance by occupying the top 10 positions of the ranking in 2016 (picture 1). This empirical regularity has been present in all editions of the LPI.



# Picture 1. Logistics Performance Index 2016

Source: <http://chartsbin.com/view/41356> [4]

In fact, the composition of the top 15 on the list of best performing countries has only changed marginally since 2014 and even 2010 (table 2). This is not surprising. These countries have been traditionally recognized as dominant players in the supply chain industry, with a global footprint in transportation and logistics services provision. The bottom 10 countries in the ranking are composed of low-income and lower-middle-income countries. Generally speaking, these are either fragile economies affected by armed conflict, natural disasters, and political unrest, or landlocked countries that are naturally challenged by economies of scale or geography in connecting to global supply chains. The lower-middle-income group continues to be led by large economies such as India and Indonesia and emerging economies such as Kenya and Vietnam. Meanwhile, the top-performing uppermiddle-income economies show mixed performance, although the overall group composition remains similar to previous editions, with South Africa and China leading the group. Within the low-income group, East African countries are leading the performance in this year’s edition [5].

Table 2

**LPI, top economies overall 2012-2018**

|  |  |  |  |
| --- | --- | --- | --- |
| **Economy** | **Mean rank** | **Mean LPI score,****2012-2018** | **% of highest performer** |
| Germany | 1 | 4,19 | 100 |
| Netherlands | 2 | 4,07 | 97,2 |
| Sweden | 3 | 4,07 | 97,2 |
| Belgium | 4 | 4,05 | 96,9 |
| Singapore | 5 | 4,05 | 96,6 |
| United Kingdom | 6 | 4,01 | 95,7 |
| Japan | 7 | 3,99 | 95,3 |
| Austria | 8 | 3,99 | 95,2 |
| Hong Kong SAR, China | 9 | 3,96 | 94,6 |
| United States | 10 | 3,92 | 93,7 |

Source: <https://www.controlpay.com/blog/top-10-logistics-performance-index-lpi-2018/> [5]

**Conclusion.** The use and implementation of logistics management supply chains today is one of the most important aspects of food business. Management of the logistics supply chain is the center of a major product business revolution, since it gives the opportunity to get products on the market faster at a lower cost. The logistic system of economic activity is effective for coordinating the order formation, accepting and execution; distribute products, services and / or information. Efficient supply chain management goes beyond narrow functional areas tailored to customer needs. For example, such firms as Amazon, Walmart have consistently outperformed competition due to the large supply capability [6].

Logistic management implies effective consideration of market demand, optimal allocation of food enterprises' resources to meet consumer demand. The main focus of this is to ensure fast, accurate and reliable compliance with customer orders. This process seeks to ensure:

- time reduction of drafting and ordering;

- cooperation with suppliers and customers;

- transportation optimization for maximization, reliability of transportations and minimization of expenses;

- optimization of managerial decisions, placing in the client priority.

Logistics management in the food industry, as well as the evolution of the marketing sector, has profoundly influenced the procurement and supply chain management function. What once traditionally belonged to the operational function (acquisition and distribution), which had a short-term and structural vision, changed to a holistic strategic function that requires long-term planning with a wide range and effects of the entire organizational system.

The growth of the logistics function, especially in products and their components, has a significant impact not only on the relations within the enterprise but also on the external ones. In addition, the traditional concept of simple management between the supplier and the client has increased, including relationship management covering the logistics supply chain (suppliers), as well as customer network. Such a growing set of relationships is part of the integrated links required by most of the complex food producer organizations to maintain competitive advantage. The complicated relationship in the efficiency of the food sector has led to the concept of supply chains and supply chain management, when the interdisciplinary focus, which includes a number of functions in the organization, is crucial for managing the entire logistics chain.

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