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## TECHNOLOGICAL DEVELOPMENT IN THE WORLDWIDE LOGISTICS SECTOR. IS THE BUSINESS ENVIRONMENT GOVERNED BY UNCERTAINTY AND INSTABILITY?

*The logistics activity took shape many years ago, but lately, the digital impact has radically overhauled the traditional endeavor and led it on a new path. Accordingly, this study analyzes the digital logistics ecosystem, in terms of being sustainable or unsustainable, through the help of a quantitative method of research – a questionnaire. Logistics deals with the planning and control of material and information flow in public and private organizations. The fundamental role of logistics is to provide the necessary materials at the appropriate location and at a convenient time for satisfying a certain set of demands and aiming for optimizing a particular performance indicator. In a globalized economy, the costs generated by logistics will be increasingly important for environmental protection. Access to markets, workplaces, education, and all other services depends on one essential criteria: the existence of a functional transport system. Hence, logistics is seen as a tool that brings together time and space with the purpose of transferring goods. Specifically, the performance is a decisive element for the excellent functioning of the logistics sector.*

**Keywords:** logistics, technology, digital logistics.

**Introduction.** Technology is the crucial factor that allows the logistics sector to be upgraded. With or without human interaction, but certainly, with human intelligence, innovation is blooming worldwide. However, in some countries, transport infrastructure, of great importance for this field, has not been developed as fast as the digitalization of logistics.

On the other hand, in the logistics system, there are two central elements: storage and warehouses. While storage refers to the specified waiting time for work objects or any other good in the flow of transportation, warehouses is a physical area, where goods and work objects are stored in any state of aggregation. Also, in a warehouse, both the value of the objects and their quantity are taken into account.

Regardless of the production sector, technological innovation is imperative for the future of any successful business. Industry 4.0 represents the new outbreak in the technological evolution of production, pushing more and more companies to meet the new and advanced standards set by a constantly changing market, by transforming production entities into smart factories. Thus, this process involves the use of software that allows the integration of Computer Numerical Control, the use of big data, analytics, and different Internet of Things technologies, and the interconnection of systems used in factories.

Industry 4.0 is the industrial revolution, defined by cyber-physical systems, artificial intelligence and the Internet of Things, with everything stored in the cloud. Hence, the basis of production automation and interconnection of its processes is an integrated system of equipment, machines, employees, mobile devices, and IT systems, being able to communicate inside and outside the factory. (Ziarul Financiar, 2019) The use of advanced manufacturing capabilities and IT tools throughout the production process brings major advantages to the manufacturing companies – time, costs, integration, and flexibility.

**Logistics market. General aspects and trends.**

Logistics deals with the planning and control of material

and information flow in public and private organizations. The fundamental role of logistics is to provide the necessary materials at the appropriate location and at a convenient time for satisfying a certain set of restrictions and aiming for optimizing a particular performance indicator. In a globalized economy, the costs generated by logistics will be increasingly important for environmental protection. The access to markets, workplaces, education, and all other services depends on one essential criteria: the existence of a functional transport system.

Closer to the present, the 2000s highlight the emergence of companies specialized in logistics. Also, there should be noted the rise of Supply Chain Management. New digitalized tools are launched due to the rise of the internet, while product customization is becoming available. As such, the number of warehouses is limited, the stored quantities are well defined, which means an increase in transport demand regarding frequency and distance. Likewise, logistics has become a tool for enhancing competitiveness and market positioning. Worldwide, logistics is seen as one of the essential areas of the organization's activity. On the other hand, the concept of "supply chain" represents the link related to supply logistics – from purchasing, inventory management to transportation and handling.

Thus, logistics is seen as a tool that brings together time and space with the purpose of transferring goods. However, logistics is the management system of the chain relations between suppliers and customers, starting with raw materials. Also, it involves the process of obtaining, producing, and distributing the whole quantity of materials that are required. As it can be seen in the figure below, there are other elements that influence the connection between the suppliers and customers, such as human resources or finance departments.

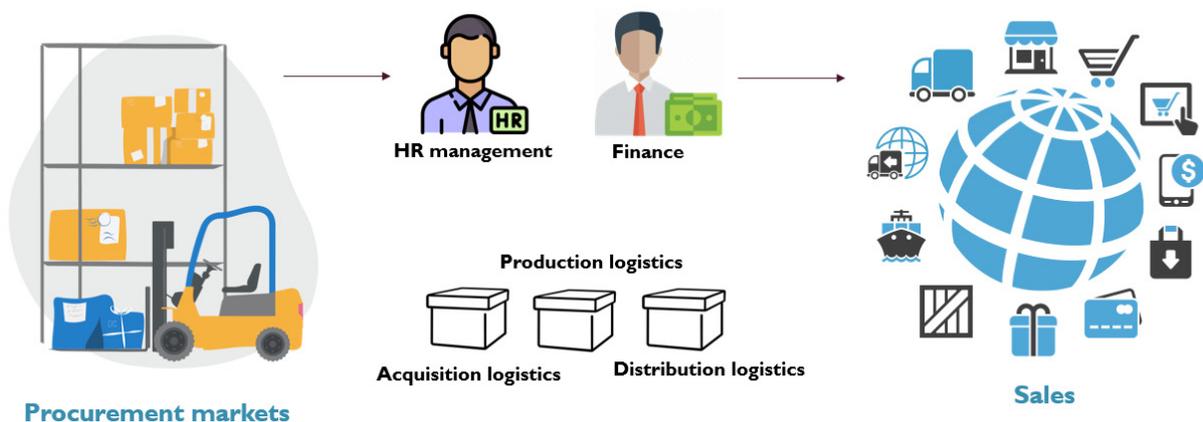


Fig. 1. Logistics between suppliers and customers

Source: Authors' sketching based on Belu, M.G., *Logistics – factor de competitivitate*, Jurnalul Economic, No. 28, 2008, pp. 197-210.

Therefore, there are the 7 R's that increase the value of logistics: right product, right quantity, right quality, right time, right place, right costs, the right consumer. (Silva, Cardoso, 1990).

**Innovation through digitalization in the logistics sector. Unusual challenges.** The benefits of using the Internet for buyers and sellers depend mostly on the characteristics of the goods, forming the basic level of differentiation between e-commerce models. (Windsor, Leisen, Leach, Liu, 2004) Nowadays, e-commerce is becoming more and more popular. Especially at this moment, when the COVID-19 pandemic has kept people at home and they have had to order online. Therefore, the logistics must continue to be well developed in order to meet high demands.

Accordingly, there can be observed a series of challenges that the market faces, directly burdening the supply chain:

- *The emergence of the latest technologies.* The launch of drones, the increasing degree of acquisition and use of autonomous cars, and the added value that comes from artificial intelligence, big data, and the internet of things cannot be ignored in supply chain development. Indeed, performance is also an important element, being essential to replace the old software and hardware systems with newer, more powerful ones that are compatible with intelligent technologies.

- *Amazon effect.* E-commerce has become an influential factor not only in monetary policy but also in logistics. There is a strategy of low prices, many and frequent reductions that go hand in hand with a huge coverage of the consumer market. Thus, central banks are going through a period of change, even including inflation that is seen differently. (Garner, 2018) Brick-and-mortar stores will be gradually replaced by online stores, but still, this process can be slowed down through various personalized offers for customers. (Grosman, 2018) Delivering online orders to the brick-and-mortar store with lower or even no shipping costs can be helpful. Therefore, the number of deliveries is constantly growing.

- *Acute lack of professional drivers.* The biggest problem is the limited labor force in terms of logistics. Frequently, transport companies cannot operate the entire truck fleet, being forced to keep vehicles in the garage. Regarding the salary, a professional driver who is hired

only for national deliveries has a lower income than one who works with international deliveries.

- *The uncertainty generated by the COVID-19 pandemic.* Logistics is severely affected by traffic restrictions imposed by different countries. There is no specific period to indicate the closure of borders, as restrictions may be extended. Although some countries accept unrestricted transit, there may be countries that completely close their borders.

- *Increased competitiveness.* Logistics can either be provided by a department within a company or a specialized logistics company, known as a third-party logistics provider (3PL). In the latest years, many businesses have expanded their services, covering logistics as well.

An element of innovation can be observed through the multitude of logistics services, from 1PL to 4PL or even 5PL in some cases. A first-party logistics provider (1PL) is a firm or individual who must transport goods from A to B. This concept refers to the consignor and the consignee at the same time. A 1PL can be a manufacturer, trader, importer or exporter, wholesaler, trader, or distributor on the international level. Interesting to point out is that 1PL can refer to an individual or a family that moves away from one place to another. In fact, anyone who has goods moved from their place of origin to their new place is a 1PL. On the other hand, a third-party logistics provider (3PL) contracts outsourced or third-party logistics services to companies for their entire supply chain management function or solely a part of it. Thus, transport, handling, and storage of shipment, warehouse management, and distribution, as well as a number of additional services are the main attributes of 3PL. The 3PL method is most often implemented by an entity that does not focus on logistics as its main field of activity, considering the high costs of logistics services.

Nowadays, the advantages of 3PL are appreciated by many companies – the possibility to focus on other important activities than those outsourced to the external company, reduced management costs, and improved price competitiveness, free resources, improved service quality, and experience. It may be considered inconvenient, but there is a limited-contact between the provider and the client.

Regarding the costs, it can be observed in the figure below, that the total costs of logistics as a percentage of the incomes from sales averaged at around 11 % in all

three years. Likewise, the costs generated by outsourcing increased gradually, from 50 % to 51 % and then to 52 %. Thus, there was only a slight increase in the costs of

outsourcing. Furthermore, the transportation managed by third parties generated higher costs in 2020, than in 2019. (3PL Central, 2020).

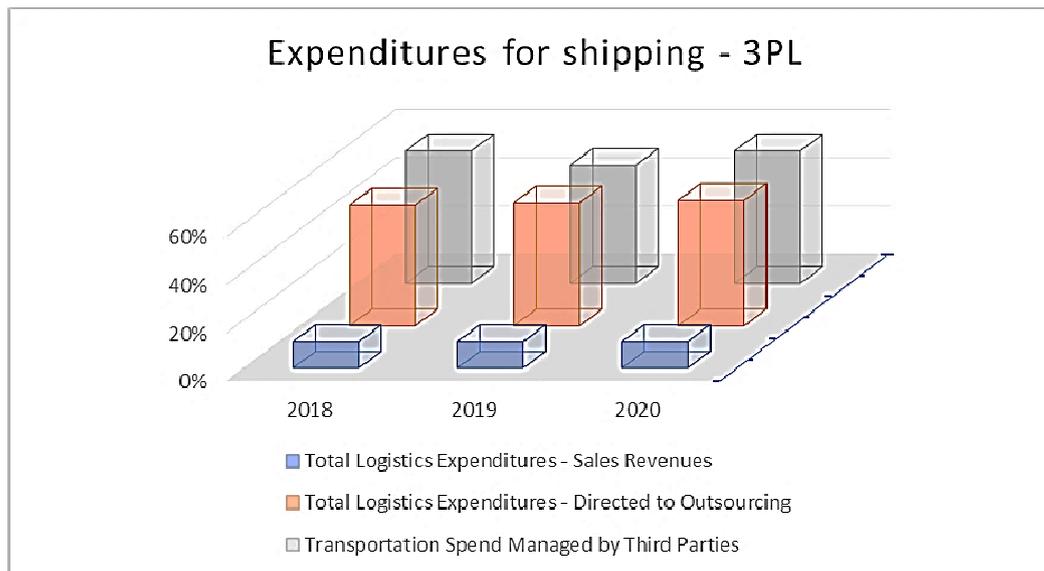


Fig. 2. Relevant financial information regarding the shipment through 3PL

Source: Authors' sketching based on 3PL Central, *2020 State of the Third-Party Logistics Industry Report*, <https://info.3plcentral.com/2020-state-of-the-third-party-logistics-industry-report-pillar> (2020), last accessed 2020/11/3

Moreover, the 3PL progressively emerged to 4PL, known as the fourth party logistics services provider. 4PL models may be distinguished through better integration. The client must indicate only what he would like to store, what and where he would like to transport, while the operator's responsibility is to design and manage the entire process. Withal, 4PL represents the outsourcing of logistics services, without owning a logistics department. In fact, all the operations are customized because they are designed from scratch, taking into account the needs of the customer. 4PL includes monitoring logistics processes, coordinating customer activities throughout the supply chain, from raw material suppliers to purchasers. The 4PL operator does not even need to have its warehouse or fleet, being enough to coordinate processes with the resources of other service providers.

What is truly an innovative model is the 5PL model. It combines the already known 3PL with 4PL methods and controls all operations in the supply chain using information technology. The 5PL operator is a logistics service provider that plans, organizes, and implements logistics solutions on behalf of other entities. In addition to supply chain integration, management, and control, 5PL can provide services such as call centers or online payments. Altogether, the concept of 5PL emerged with the enlarged and enlarging popularity of e-commerce.

**Digital logistics ecosystem. Sustainable or unsustainable?** Starting from the origin of the term *ecosystem*, it represents both biotope and biocenosis, in which close relations are established between organisms and also between organisms and abiotic factors. (DEX) In an ecosystem, there are two fundamental elements – environment and species. Indeed, each and every organ inside the body of a particular specie should carry out its task. The entire body is working on supporting the collaboration between organs, with the purpose of being

healthy. In recent decades, through the progress of the internet, it is no longer possible to discuss a basic ecosystem in which people only live. More than that, two fundamental environments appeared – the digital environment and the ecological one, while species and technologies are the essential elements regarding the digital ecosystem.

Withing a cybernated ecosystem, there can be observed different types of species – biological, economic, and digital. In fact, people are considered a species, along with software and digital elements, being on their own in the ecosystem. All the species together provide effectiveness, power, balance and strength to the ecosystem. (Chang, West, 2006)

Therefore, an ecosystem that helps society function optimally is the logistics ecosystem. Certainly, logistics and warehousing methods are developed infrastructures that also require steady information and support systems. The launch of e-commerce marked the moment when the need for digitalization in logistics increased. National and international delivery companies offer to their customers the option to track the package, facilitating communication with the supplier. In the end, clients may evaluate the complete delivery service. Recently, various strategic alliances have begun to emerge between different companies in order to allow them to develop both retail and logistics services. Geographical constraints can be considered a problem in the case of brick-and-mortar stores. The launch of e-commerce has allowed customers to order products from foreign countries. Thus, the need for logistics has increased. In order for a customer from country X to be able to order and be shipped a good from country Y, a reliable and well-developed logistics is needed. In this case, it is important to note the need for secure information systems, both to facilitate the exchange of data, but also to support an online logistics cluster.

In addition, logistics includes planning, implementing and controlling the physical flows of materials and finished products from their points of origin to the points of use, with the desire to make a profit and meet customers' requirements. Indeed, an inadequate logistics system may destroy a qualitative product. Thus, the real purpose of logistics is to create supply chains, secure and with the lowest possible costs. (Kotler, 1994) Therefore, the aim is to study the use and implementation of a digital strategy within organizations, identifying the technological specificity towards which companies are heading.

An example of a company that has expanded its business and offered its customers a digital alternative is Siemens Digital Logistics GmbH. Their so-called "digital twin" consulting track provides clients a cybernated extent to the physical supply chains. It can be useful for both worldwide collaborations with supply chain providers or personalized and particular business solutions. (Siemens Digital Logistics, 2020)

On the other hand, a few decades ago, the most intrigued concepts used in relation to logistics were shelf availability and cost. Today, sustainability seems to be one of the main concerns of players in the industry. Thus, energy consumption, CO2 emissions, and congestions in traffic in more and more urban regions become critical determinants in the supply chain. Manufacturers, retailers, logistics and related service providers are all making efforts to reduce the awful impact on the environment. Electric mobility is a hot topic right now. Many companies are involved in the process of optimizing the performance and practicability of electric commercial vehicles. Indeed, pilot programs have set new standards in urban traffic.

Finally, it can be stated that the direction towards which the logistics sector is heading is completely redesigned. Involving analytics will only bring benefits. There may be a high cost of implementation, but in the long run, it can be helpful. Sustainability is a controversial topic. There is a desire to aim for a sustainable policy, but the costs involved are high. However, the future is green, while companies set elements of sustainability as their goals.

**Performance of the logistics companies.** Strategies and policies, drawn up by management specialists, play an important role in creating and consolidating the activities of

organizations. Companies are increasingly competing with each other regarding their know-how, processes, attitudes, and values. That is why their products, services, and technologies can be easily copied. Money, information and other resources can be helpful for companies with processes, attitudes, and values that can generate added value for their customers. At this time, more than ever, digitalization is bringing a serious change to all markets. The logistics sector is directly impacted, following a period of major changes.

Thus, based on the above-mentioned information, the research aims to study the use and implementation of a strategy within organizations, to identify the specific use of the strategy, its importance and highlight the problems faced by an organization in its implementation and organizational policies. In terms of digitalization, an adaptation to the current reality is needed. Thus, the research will follow the response of the logistics sector to innovation.

Therefore, the market research aimed to obtain information regarding:

- The existence of a development strategy;
- Areas targeted in setting strategic objectives, mainly in the logistics sector;
- The influences of the external and internal environment taken into account when elaborating the strategic plans;
- Frequency of review of strategic plans;
- The type of action taken by the organization in response to a competitor.

*Establishing strategy within a logistics organization through a transition period to digitalization* is the fundamental desire of the market research. In fact, it is a quantitative one, aiming to describe and determine the strategy, the strategic planning, and the strategic management. The target market consists of high-ranking employees, in management positions. There were 50 respondents of the online questionnaire, between 10<sup>th</sup> February and 10<sup>th</sup> March 2019. The analysis of the data collected was performed with the help of the SPSS statistical analysis program.

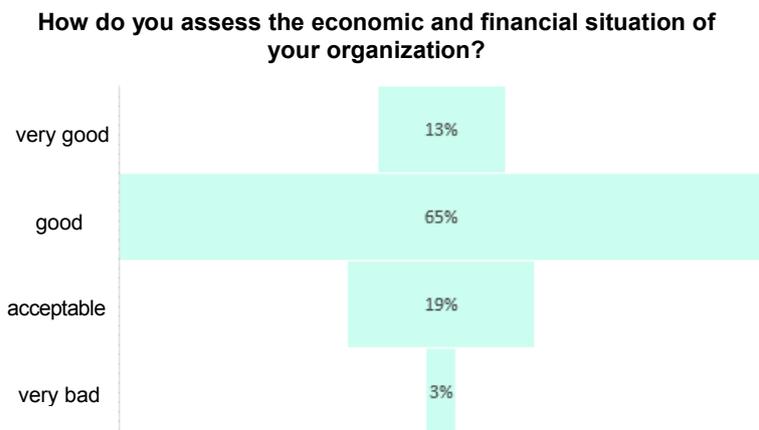


Fig. 3. How do you assess the economic and financial situation of your organization?

Source: Authors' sketching.

Regarding the economic-financial situation of the organization among those who answered the questionnaire, a percentage of 65 % appreciated this situation as a good one. Only 13 % considered that the financial situation is very good, while 19 % answered that they have a satisfactory economic situation. Fortunately, barely 3 % are dissatisfied with the

economic and financial situation. This specific question is relevant in the context of logistics, in order to make long-term forecasts of the company. In particular, if employees consider that the company has an exceptional economic and financial situation, then the forecasts can be positive in terms of digitalization.

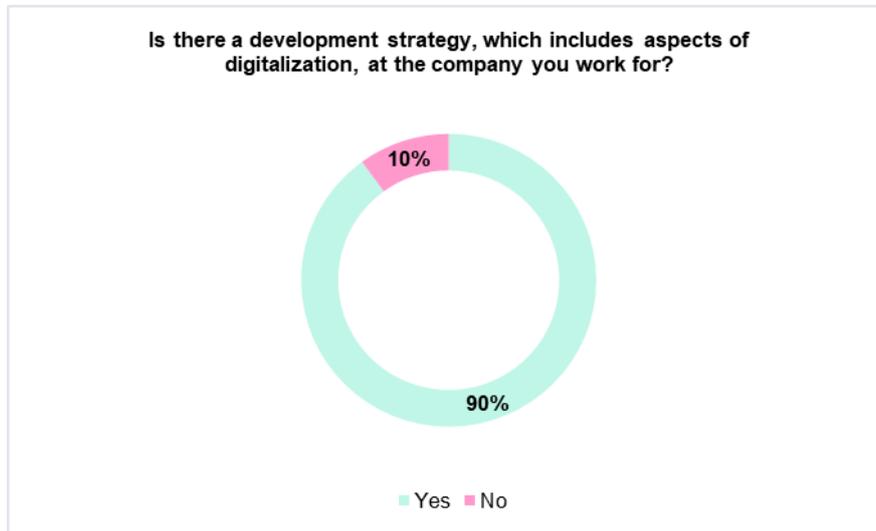


Fig. 4. Is there a development strategy, which includes aspects of digitalization, at the company you work for?

Source: Authors' sketching.

Establishing a strategy is a necessity in most organizations. Certainly, 90 % of the respondents agreed that the company they work for planned a strategy, while only 10 % did not plan one. Likewise, these strategies are established for certain periods of time. Based on the data collected, 30 % of the respondents establish the strategy for a period of two years, while 23 % for one year, 20 % set strategies for three years and 7 % for over four years.

Among the most important trends that will be decisive in the logistics and transport sector are online communication, intelligent interfaces, transparent monitoring, and data exchange and security. Some companies have already pointed out these elements in their strategies, following the process. However, other firms did not implement them but surely will have to consider them in the long run, in order to remain competitive on the market.

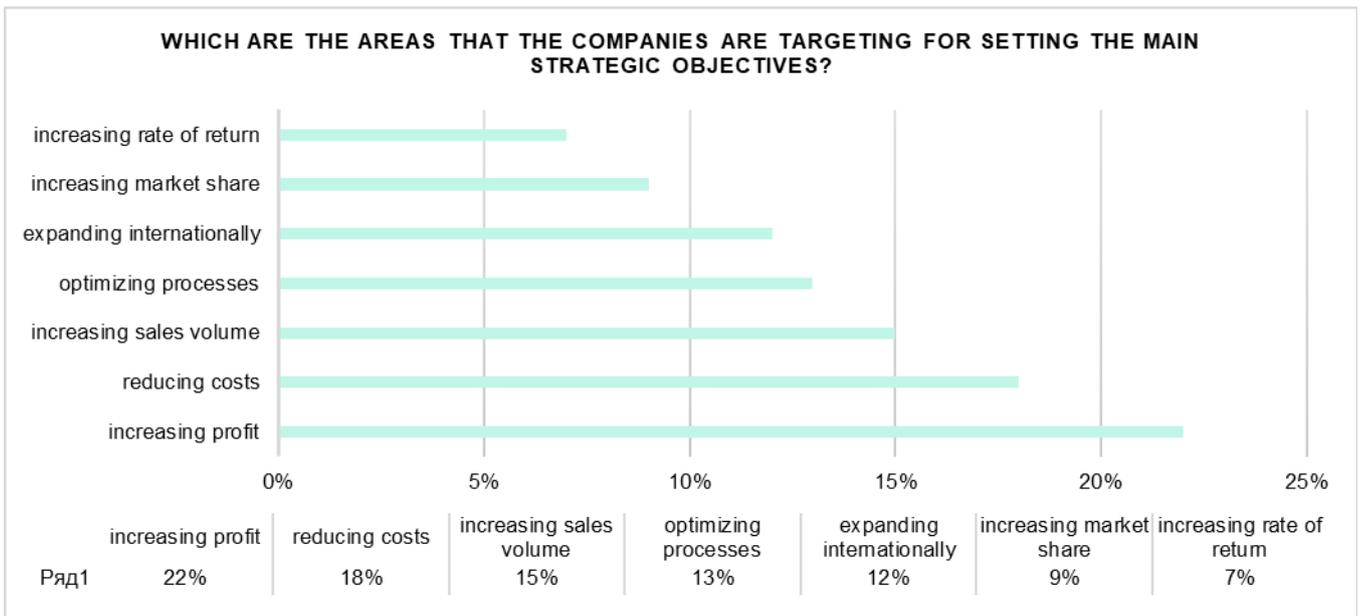


Fig. 5. Which are the areas that the companies are targeting for setting the main strategic objectives?

Source: Authors' sketching.

The main areas targeted by respondents in setting strategic objectives are increasing profit – 22 %, reducing costs – 18 %, increasing sales volume – 15 %, optimizing

processes – 13 %, expanding internationally – 12 %, followed by a lower percentage of: increasing market share – 9 % and increasing the rate of return – 7 %.

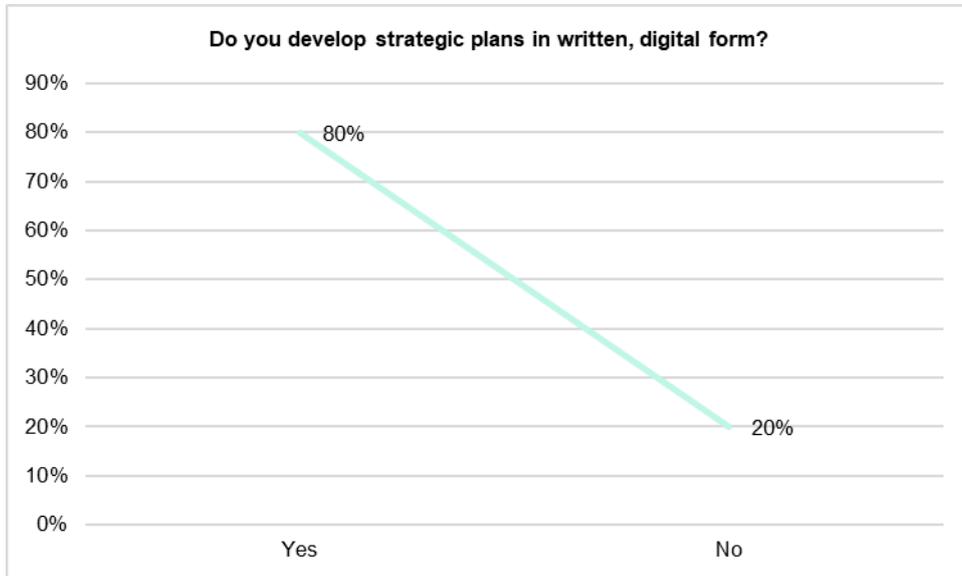


Fig. 6. Do you develop strategic plans in written, digital form?

Source: Authors' sketching.

Most of the respondents (80 %) mentioned that they draw up strategic plans in a digital form, while only 20 % did not include a device in this process. The habit of the respondents to involve technology in their daily life can be

observed through this question. It is relevant to use different devices, as this shows the digitalization orientation of employees in particular and the company in general.

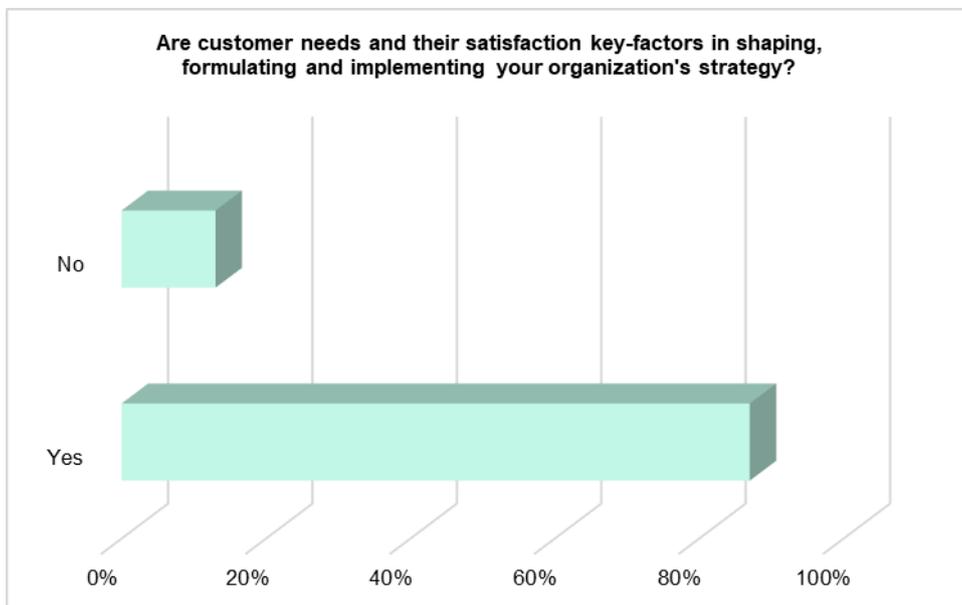


Fig. 7. Are customer needs and their satisfaction key factors in shaping, formulating, and implementing your organization's strategy?

Source: Authors' sketching.

As it can be observed in the chart above, 87 % of the interviewees consider as determinant factors of the strategy the customer satisfaction and needs, while 13 % do not take that into consideration.

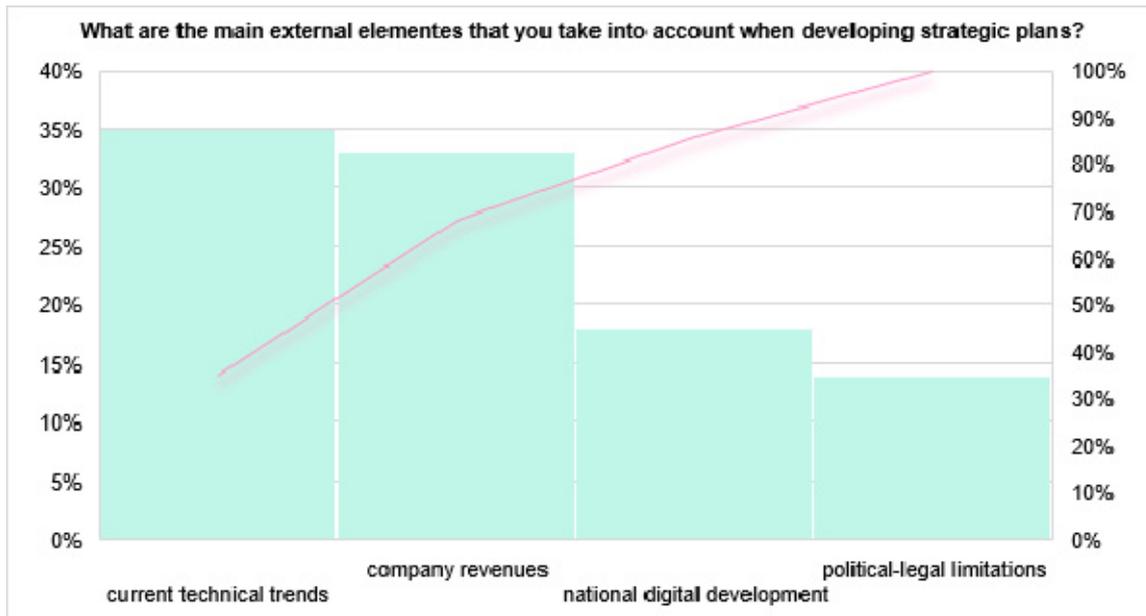


Fig. 8. What are the main external elements that you take into account when developing strategic plans?

Source: Authors' sketching.

During the transition period, which the whole world is currently going through, technical trends remain the most important element when developing a strategic plan.

Likewise, the company revenues are taken into account in the process of elaborating a strategy. Thus, depending on income, certain higher or lower targets can be set.

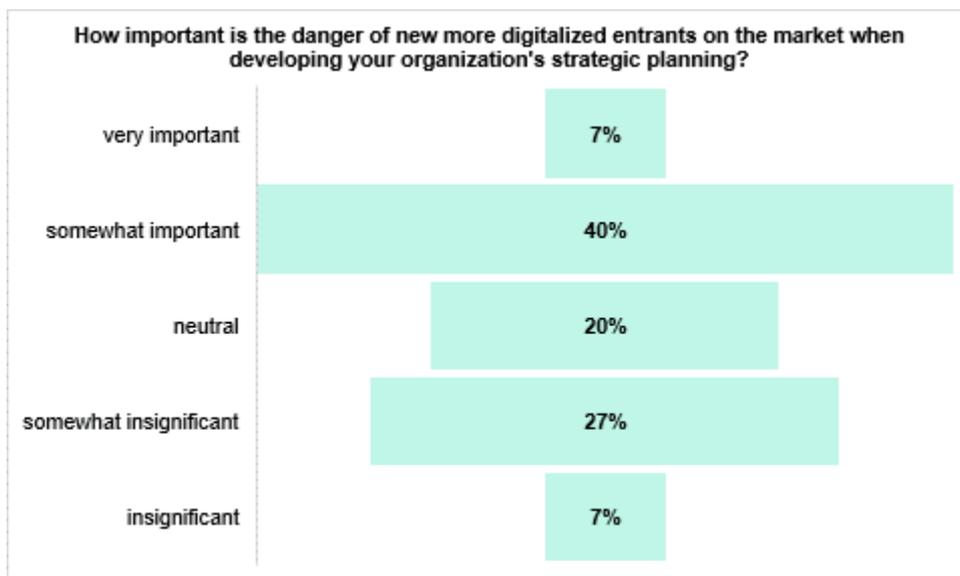


Fig. 9. How important is the degree of new more digitalized entrants on the market when developing your organization's strategic planning?

Source: Authors' sketching.

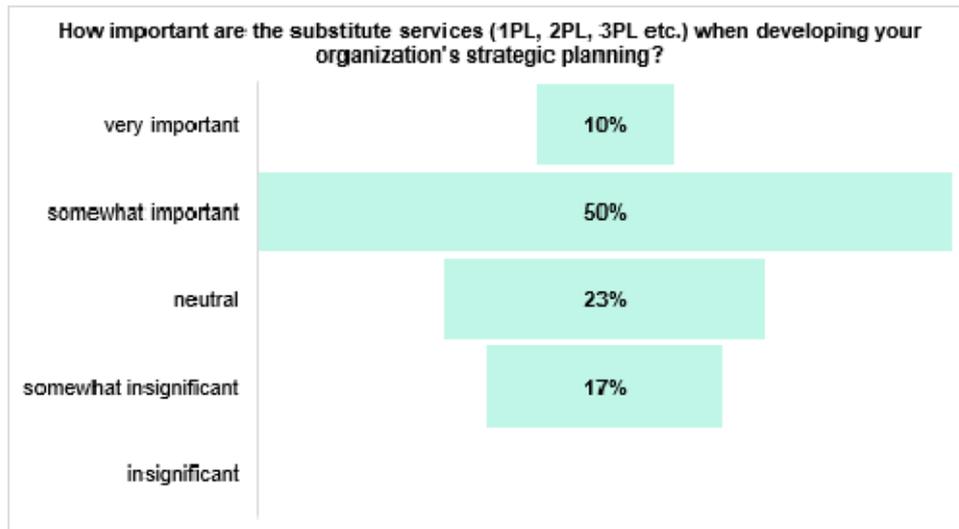


Fig. 10. How important are the substitute services (1PL, 2PL, 3PL, etc.) when developing your organization's strategic planning?

Source: Authors' sketching.

Furthermore, with the desire to understand the rationality of the decisions taken at the administrative level by each organization, respondents were asked to identify the importance of two competitive elements in today's business in terms of the strategic planning of their logistics organization. The danger of the new, more digitalized,

entrants on the market was considered by 40 % important, while 7 % see as an insignificant element. Regarding the modern services that can replace the activity of logistics companies, 50 % of the respondents consider the face somewhat important, while none of them insignificant.

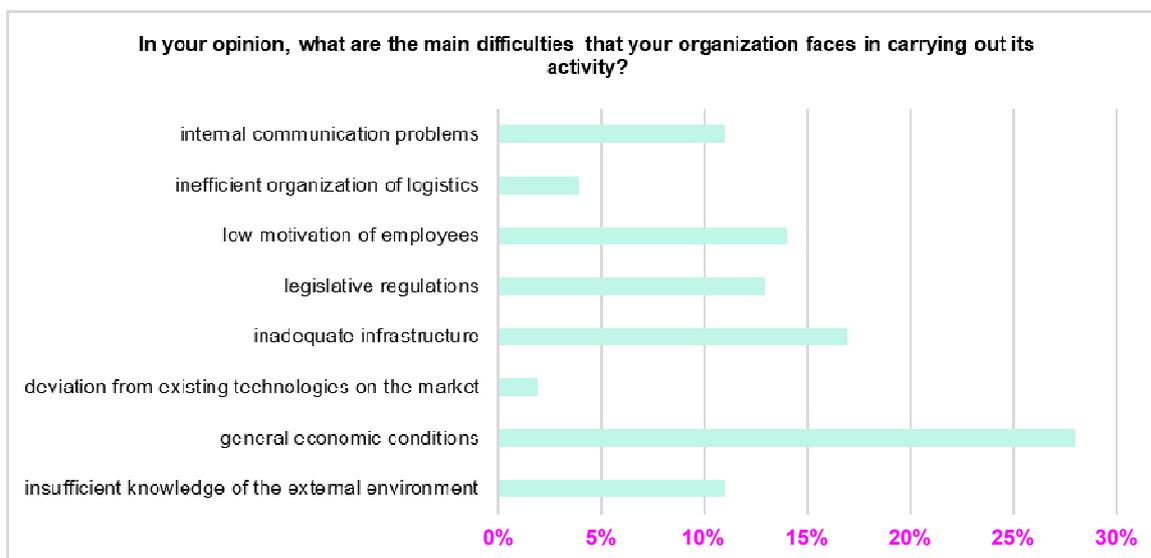


Fig. 11. In your opinion, what are the main difficulties that your organization faces in carrying out its activity?

Source: Authors' sketching.

Regarding the main difficulties that a logistics organization faces in carrying out its activity, it can be seen that the first place is occupied by general economic conditions – inflation, bank interest rates, exchange rate fluctuations, etc. On the other hand, there is a problem with the low motivation of employees. Thus, productivity is decreased with frequent new employments. If there are no software solutions and specific tools to optimize

warehouses, pickers encounter difficulties in identifying products. In fact, new employees need months of training. By improving the operational structure, the picking processes become easy to be learned even by new workers, not requiring to employ only specialized people. Through suitable software, the period of training can be reduced to even two-three days.

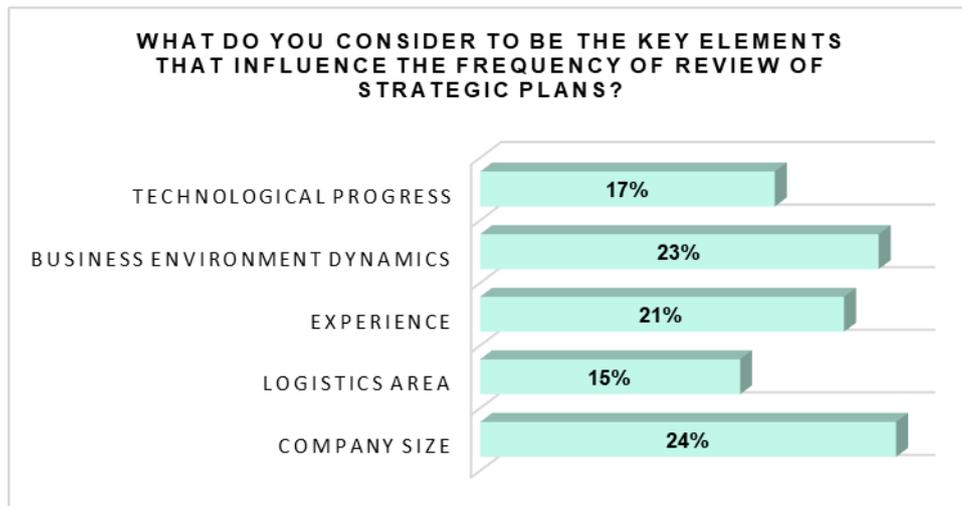


Fig. 12. What do you consider to be the key elements that influence the frequency of review of strategic plans?

Source: Authors' sketching.

Through the current questionnaire, the respondents were asked about the frequency of review of strategic plans. Thus, it resulted that a percentage of 41 % of those surveyed annually review their strategic plan, while 24 % every six months. This review depends on certain factors – 24 % of respondents agreed that it should be taken into

account the size of the company, 23 % considered important the dynamics of the business environment, 21 % believe that it depends on the experience of the organization, while 17 % considered relevant the technological progress and 15 % the logistics area.

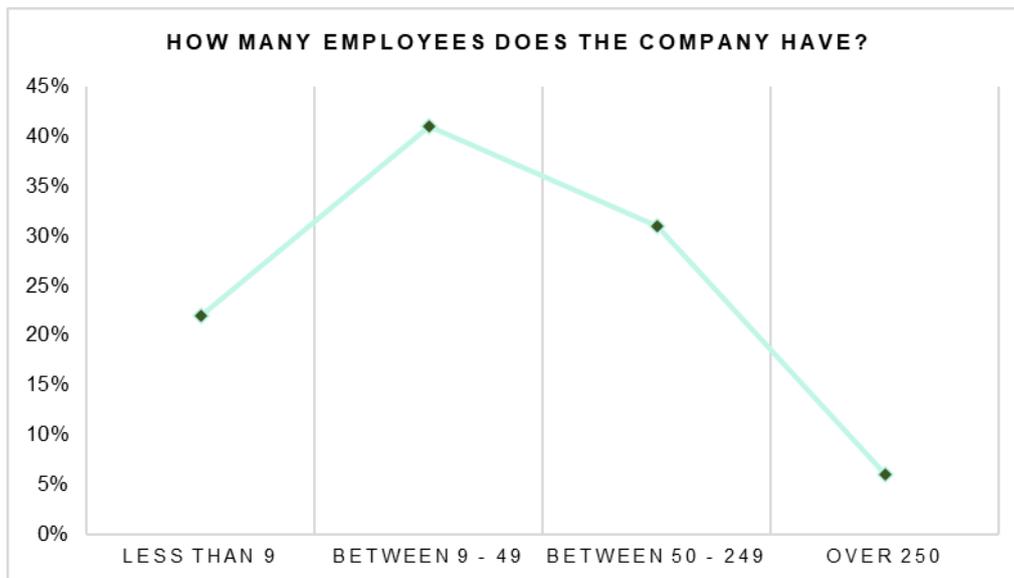


Fig. 13. How many employees does the company have?

Source: Authors' sketching.

Following the above figure, there can be seen that 41 % of the logistics companies have between 9 – 49 employees, 31 % have between 50 – 249, 22 % have less than 9 employees, while only 6 % have over 250 employees. The chosen companies were mixed, based on the desire to create a complex analysis of the logistics sector.

Through the current market research, it was concluded that logistics companies need to define their strategic objectives and implement an appropriate strategy to support their evolution in the long run. This might be an engine for achieving market competitiveness. To be

successful, each and every logistics company should determine its identity and its place in the market. Three aspects should be considered before establishing a strategy that is likely to bring favorable results – logistics organization, economy, and competitiveness.

According to the questionnaire, the main areas targeted in establishing the strategy, the first place is occupied by an increase in profit (22 %), followed by cost reduction (18 %) and an increase in sales volume (15 %). Likewise, customer needs are a key factor in building the strategy. In this regard, the income of the population has been and still

is a sensitive subject, especially in the current context of the COVID-19 pandemic, clearly reflecting the problems that exist in a country's economy.

Decisively, the ability to quickly change plans when the situation requires it, and the awareness that the interpretation of the strategy is different from one situation to another are the two elements that reflect an entrepreneurial mindset. In an unstable business environment dominated lately by deep economic turbulences caused by COVID-19, it is vital to find a viable solution to achieve flexible strategic planning. It should provide an organizational development framework, not limiting the possibilities of identifying solutions that quickly take opportunities or avoid the dangers of this unstable environment.

It is interesting to note that, at the level of the interviewed logistics organization, 53 % of the respondents agreed with tactical or operational planning, while only 47 % have long-term strategic plans, according to various strategic management methodologies. The recommendation is to pay attention to the strategic managerial culture among the top management of business organizations. Another fundamental recommendation is to include digital aspects in all strategic plans of all logistics companies. As the COVID-19 pandemic brought many changes to the world, it also accelerated digitalization. Thus, the logistics sector must adapt as quickly as possible to the reality of the moment.

**Conclusion & Discussion.** As the European economy grows, companies continue to grow production and sales. As a result, transport demand is increasing. The current market requires the implementation of new solutions. Although the COVID-19 pandemic limited production, the need for transportation increased. However, social distancing brings into discussion the technologization and implementation of new communication systems as efficiently as possible. Logistics is one of the segments most in need of specialists and they are hard to find. Only experienced employees can ensure the stability of processes related to the distribution chain. One of the areas that are developing now is e-commerce, which seems to be the industry that will increase in popularity with each year.

The logistics sector is of utmost importance in the economy. The events of recent years require a profound transformation in this sector, in order to increase productivity, reduce costs and accelerate delivery times. Digitalization has a key role in achieving these goals of increased efficiency. The development of technologies that support the information society is accelerating through the convergence of new information and communication technologies and markets. Innovation is facilitated by the growing importance of the content that removes cultural boundaries and technologies that separated telecommunications and information technology. In this context, the concept of FreightTech is also introduced. Which, while some people use this term to refer to the technology sector in freight and goods transport, others are not even used with the word. FreightTech describes the digital elements along the value chain in logistics: through digital applications, it creates new solutions for optimizing the supply chain. This includes all digital applications, from intralogistics and transport logistics to warehousing logistics. It is all about intelligence, automation, and integration. (Pisoke, 2020)

In the end, there are several digital technologies that play a key role in transforming logistics organizations. The focus is on location, device connectivity, analytics, cognitive computing, and cloud. Last but not least, due to

the high-security requirements, digital transformation means the increasing use of digital authentication technologies and asset traceability.

The challenges of the moment are the key factors that determine or not the success of companies. As the accelerated need to buy considerable volumes online, along with the lack of professional drivers and the uncertainty of the worldwide environment are factors that cause organizational difficulties, the logistics sector is under pressure. Increased competitiveness is not only a challenge but also a strength. In a globalized economy, logistics and logistics costs are increasingly relevant factors for competitiveness, innovation, and valuable for environmental protection. Access to markets, workplaces, education, and services depends on an essential factor – the existence of a functional transport system. Thus, logistics are a staple in society, especially since e-business has grown exponentially. In order to have an orientation based on long-term objectives, a strategy must be established. For this reason, the idea of market research on the development strategy of national logistics companies has emerged.

Consequently, it is suggested for logistics companies to frequently check the market and its development. Being up to date with everything that happens in the international environment is a necessity for harmonious growth, for the retention of existing clients and to appeal to potential ones. Upcoming, the whole world will be governed by technology.

Absolutely, an exceptional recommendation is to make further analysis on the impact of digital technologies on the logistics sector. Hence, it is imperative to observe the worldwide evolution in logistics

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### ТЕХНОЛОГІЧНИЙ РОЗВИТОК У ГЛОБАЛЬНОМУ ЛОГІСТИЧНОМУ СЕКТОРІ. ЧИ КЕРУЮТЬ ДІЛОВИМ СЕРЕДОВИЩЕМ НЕВИЗНАЧЕНІСТЬ ТА НЕСТАБІЛЬНІСТЬ?

*Логістична діяльність сформувалася багато років тому, але нещодавно ефект цифрових технологій радикально змінює традиційну практику та вивів її на новий шлях. Саме тому це дослідження через кількісний метод вивчення – опитування аналізує екосистему цифрової логістики з погляду її стабільності або нестабільності. Логістика займається плануванням та управлінням потоками матеріалів та інформації у державних та приватних організаціях. Основна місія логістики полягає в тому, щоб забезпечити наявність необхідних матеріалів у певному місці і в зручний час для забезпечення потреб та оптимізації конкретного показника продуктивності. У контексті глобалізації економіки витрати, пов'язані з логістикою, будуть дедалі важливі для захисту навколишнього середовища. Доступ до ринків, робочих місць, освіти та всіх інших послуг залежить від одного суттєвого критерію – наявності функціональної транспортної системи. Отже, логістика вважається інструментом, який об'єднує час і простір для переміщення товарів. Зокрема, продуктивність є вирішальним елементом для бездоганного функціонування логістичного сектора.*

*Ключові слова: логістика, технологія, цифрова логістика.*

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### ТЕХНОЛОГИЧЕСКОЕ РАЗВИТИЕ В ГЛОБАЛЬНОМ ЛОГИСТИЧЕСКОМ СЕКТОРЕ. УПРАВЛЯЮТ ЛИ ДЕЛОВОЙ СРЕДОЙ НЕОПРЕДЕЛЕННОСТЬ И НЕСТАБИЛЬНОСТЬ?

*Логистическая деятельность сформировалась много лет назад, но в последнее время влияние цифровых технологий радикально изменило традиционную деятельность и вывело ее на новый путь. По этой причине данное исследование анализирует экосистему цифровой логистики с точки зрения ее устойчивости или неустойчивости с помощью количественного метода исследования – анкетирования. Логистика занимается планированием и контролем материальных и информационных потоков в государственных и частных организациях. Главная миссия логистики заключается в поставке необходимых материалов в нужное место и в удобное время для обеспечения определенных потребностей и оптимизации конкретного показателя эффективности. В условиях глобализации экономики, затраты, связанные с логистикой, будут иметь все большее значение для охраны окружающей среды. Доступ к рынкам, рабочим местам, образованию и всем другим услугам зависит от одного существенного критерия – наличия функциональной транспортной системы. Таким образом, логистика рассматривается как инструмент, объединяющий время и пространство с целью перемещения товаров. В частности, производительность является решающим элементом для безупречного функционирования логистического сектора.*

*Ключевые слова: логистика, технология, цифровая логистика.*