



DEVELOPMENT OF DIGITAL LOGISTICS AND TRANSPORT IN THE PROCESS OF GLOBALIZATION

Shadibekova Dildor*

Associate professor of “Infrastructure Development and Logistics”, Tashkent State University of Economics, e-mail:

d.shadibekova@tsue.uz Ismoilov Narimonjon Researcher at Tashkent State University of Economics, e-mail:

ismoilov.narimonjon1998@gmail.com

ABSTRACT

Digital Transformation is current burning process in the logistics industry not only in Uzbekistan but in the whole World as well. Every day, innovative and cutting-edge technologies are being developed to streamline products to the real customers as quick as possible. Likewise, Logistics companies are encountering large-scale automation of corporate information system and trying to be more resistant in the competitive market with the help of digitalization. In spite of the existence of myriads of research works in this field, there are still a bit uncertainty in understanding the essence and employing the digitalization in Logistics and Transportation. This article reflects the news and information on the development of digital logistics and transport in the process of globalization, and thus shows how to adapt the concept of information and communication technologies and modern logistics to the new digital economy in our country based on foreign experience.

CCS CONCEPTS

• key terms; • digitization; • logistics industry; • logistics management; • globalization; • cutting-edge technologies;

ACM Reference Format:

Shadibekova Dildor*. 2021. DEVELOPMENT OF DIGITAL LOGISTICS AND TRANSPORT IN THE PROCESS OF GLOBALIZATION. In *The 5th International Conference on Future Networks & Distributed Systems (ICFNDS 2021)*, December 15, 16, 2021, Dubai, United Arab Emirates. ACM, New York, NY, USA, 5 pages. <https://doi.org/10.1145/3508072.3508207>

1 INTRODUCTION

Globalization is now seen everywhere in Economic World as crucial and ongoing reason for any company improvement. As a part of globalization, Modern information base and technologies have a considerable impact on the life of the economy and society, under the influence of which the existing economy and the way of life of the people are changing. As the current and future modernization of the transport sector, it is now real time to apply new types and methods of relations between transport organizations and consumers. Moreover, the digitalization of the transport sector will serve to optimize transport and logistics costs. Modern information

systems are characterized by the creation of a single information space for all participants in the interaction. The breadth of the country's territory and the need to cover the most remote areas with transport services are increasing the dependence of the transport infrastructure on high information technology.

It is true in the sense that the use of digital and smart information technologies in the management of the Logistics sector brings a numerous useful features. For example, due to the active use of information technology, the receipt of new orders, as well as the delivery process and transportation of goods, warehouse management and fleet of vehicles, supply chain relations are significantly accelerated. As a result of increasing the speed of these processes, the order fulfillment time is reduced from the customer's point of view, the reduction of paper document flow reduces the role of human factor, which leads to lower material costs. In addition, Scientific discoveries embodied in digitalization create new opportunities for resources, provide business growth potential, mechanisms for interaction between economic entities, new markets, and industries.

2 LITERATURE REVIEW

As a result of globalization, trade growth, and the global regulation of transportation, logistics is becoming increasingly important. Today, many firms are outsourcing logistics services to logistics firms so that they can focus on the core business and take advantage of opportunities to reduce costs and improve flexibility. From an economic point of view, two macro factors emerge that drive the trend of globalization (Frankel, 2000). The first is the reduction of barriers to the flow of goods, services and capital that occurs. The second factor is technological change, mainly the dramatic changes in communication, information processing and transportation technologies in recent years. It is commonly argued that the most important link is the creation of a global information system that is a global network of IT connections using the Internet. The information technology system is supported by a conventional and mobile phone network via satellite communication.

According to Lianguang and Hertz (2017), “The logistics industry is constantly growing due to the growth of logistics firms and market integration. Some logistics companies are even among the largest in the world today.” (Page 1004). It is clear that the Internet is one of the key factors in the development of digital logistics. In addition, In the articles of European Scientists Flint, Larsson, Gammelgaard and Mentzer (2016), one of the main reasons why the logistics industry is considered backward is that “Logistics research, innovation, modern concepts are almost neglected”. (p.113) The world market, which continues its technological innovation, has forced enterprises to look for new ways of innovation. From

Permission to make digital or hard copies of all or part of this work for personal or classroom use is granted without fee provided that copies are not made or distributed for profit or commercial advantage and that copies bear this notice and the full citation on the first page. Copyrights for components of this work owned by others than ACM must be honored. Abstracting with credit is permitted. To copy otherwise, or republish, to post on servers or to redistribute to lists, requires prior specific permission and/or a fee. Request permissions from permissions@acm.org.

ICFNDS 2021, December 15, 16, 2021, Dubai, United Arab Emirates

© 2021 Association for Computing Machinery.

ACM ISBN 978-1-4503-8734-7/21/12...\$15.00

<https://doi.org/10.1145/3508072.3508207>

a strategic point of view, organizations (more precisely, logistics organizations) need to learn better and faster than their competitors through "proper coordination with the environment. As the industry concept evolves, so does the logistics concept. The logistics industry," emphasizing the development of key features of "continuous improvement of manufacturers' requirements for high efficiency and continuous improvement of customer requirements for high level of service" (Maslaric, Nikolicic, Mircetic 2016, p. 511). Current and future it is necessary to develop a new concept of logistics organizations facing industrial practice. The solution can be in a new operational, organizational and management standard - on the Internet. Digitization of business models can allow logistics companies to work in tandem to achieve a mutual goal.

The world economy has changed significantly in recent times, indeed. It is becoming increasingly clear that globalization is changing the new logistics to "digital logistics". Globalization has not only created opportunities to connect with new markets, but also influenced competitors from influential players who are struggling to gain the trust of those customers.

Today, shippers are demanding that the appearance of their businesses change the boundaries of their countries and regulate their costs in order to survive the choice of violence. Shipping has historically been an important human activity in which prosperity has largely depended on international and interregional trade. In fact, transport has been called one of the four pillars of globalization, along with communication, international standardization, and trade liberalization (Kumar and Hoffmann.). Logistics refers to the aggregation and storage of goods associated with information flows from the beginning to the end of the supply. There are many foundations in logistics, such as goods, materials management, processing strategy plan and similar data collection, storage and retrieval, reliable and cost-effective transportation system integrated logistics.

There are transparent ways for firms to integrate into transportation and distribution systems to increase efficiency in a global competitive environment. However, transport logistics systems vary depending on the environmental and production types of the raw materials, components and finished products market, different strategies have a main purpose. The overall goal is to deliver the right product to the right place on time, so storage costs are reduced.

Economic globalization means that the world's employment and financial markets are merging. From an economic point of view, two macro factors emerge that drive the trend of globalization (Frankel, 2000). The first is the reduction of barriers to the flow of goods, services and capital that occurs. The second factor is technological change, mainly the dramatic changes in communication, information processing and transportation technologies in recent years. Müller (2014) argues that the most important link is the creation of a global information system that is a global network of IT connections using the Internet. The information technology system is supported by both conventional and mobile phone networks.

The growth of the global transport system depends on the choice of the origin and direction of the increase in the volume of cargo,

making it possible to increase the speed of mass and cargo movement. It is no exaggeration to say that the economic growth in the Pacific Asia is still the result of the development of international transport.

Almost half of the world trade takes place between places longer than 3,000 km. Due to this geography, mainly international cargo movements perform some modes, but it is not possible to have physical strength in cargo flows. As a result, transport chains to support these flows, which support the importance of intermodal modes of transport and terminals in strategic locations, and therefore transport significantly support international economic associations and play an important role in creating a global network of trade, should create. transfer of capital goods between several modes of transport, two of which are related to international trade:

1. Ports and shipping. The importance of maritime transport in global trade is unique, mainly in terms of gravity, as it accounts for 90 percent of world trade.
2. Airports and air transport. Although in terms of tons, air transport is insignificant compared to sea (approx. 0.2% of the total tonnage).
3. Railways and highways tend to live in an insignificant portion of international transport because they outperform all types of national or regional transportation services (Rodrigue, 2013). Kozlak, (2008) large tankers), which significantly reduced the transportation costs of vehicles (including oil, natural gas, ore, grain). The processes of these global multinational corporations affect the size and structure of exports.

The growth of globalization has been influenced by many factors, as the most important individual development in the field of communication and transport, so the demand for transport is high and the value obligations of the services provided are stricter.

Globalization has an important link with transport and logistics, but if the impact of distribution is not felt in globalization research. To date, surprisingly, with some exceptions, the basic concepts of globalization have neglected any direction of transport or only made clear connections. affects the capacity, resulting in the amount of shares and the cost. The availability of space and transportation time depends on the duration and quantity of the transportation system of international logistics systems.

3 METHODOLOGY

The research methodology includes analysis, synthesis and systematization of foreign developments and domestic transport and logistics system on a digital platform that provides interaction of supply chain participants in order to improve the quality of customer service in the country.

3.1 Digital transformation in World Logistics Scene

If we look from background, Digital transformation in the global economy is not really a novelty. Businesses in all industries are gradually turning to technology and advanced software solutions to increase their product and service portfolios, digitize data, optimize processes, and reduce operating costs. In particular, it is no

Table 1: Four key trends of “Logistics 4”

Category	Digital innovations
Data	Data collection & treatment Logistics control tower Augmented reality
New methods of physical transportation	Driverless trucks/vehicles Handling robots Drones
Digital Platforms Marketplace	Big cross-border platform Shared transport capacity Shared warehouse capacity Crowdsourcing

secret that in recent years, the digital transformation is rapidly penetrating all areas. The coronavirus pandemic, which began in 2020 and is now almost exhausting many countries, which has shaken the global economy, and many organizations that have stopped digitizing are now rushing to digital solutions.

Today, companies in every industry are embracing digital technologies and reshaping their models based on new digital transformation trends. Companies continue to offer new processes or change existing ones. In addition, creating a culture of new companies, and even introducing new customer experiences to meet the changing needs of consumers and the market, customer requirements. In particular, digital change in logistics and transportation will help network companies take advantage of new technologies and stay competitive in an ever-expanding market.

In recent years, companies have undergone significant changes in their logistics and supply chain management tools and technologies. Companies have begun to move to large-scale automation of corporate information systems and have become participants in e-commerce platforms and e-commerce services, forming their own virtual databases. being evaluated.

Digital innovation enables logistics players to drive efficiency and lower costs, as well as pursue new business opportunities. This transformation is leading to a new paradigm called “Logistics 4.0,” which is based on four key trends.

If we take the United States logistics market as an example, it is no exaggeration to say that this market is currently witnessing a huge digitalization. For example, Major suppliers such as Amazon, J.B. Hunt and Ch. Robinson use digital technology, drones, and cloud technology in their operations. It is no secret that it is financing large projects on All of these are efforts to meet consumer demand. The logistics industry is a huge market with revenues of more than \$ 4 trillion worldwide, affecting a variety of business sectors, from e-commerce to manufacturing and high technology.

In the digitization of logistics, the introduction of a number of modern technologies is currently relevant.

Automation. Automation in production and services requires to be one of the key solutions in the digitalization of the transport sector. A clear example of this is the port of Rotterdam in the Netherlands. This port is called “the most advanced port in the

world” because the port is a leader in adopting modern technology. The port’s fully automated container terminals use computer-programmed cranes to unload cargo, serve to increase production, improve processing performance, and reduce labor costs. According to the Wall Street Journal, automation will allow the Dutch port to increase overall productivity by 30 percent.

Robotics. Robots, unlike automated mechanisms, are designed to perform multiple tasks at the same time, making their applications in the field of logistics almost limitless. This is especially true for e-commerce transactions, which require high speed and efficiency to meet the rapid growth of online sales.

Gadget technologies. Gadget technologies are an integral part of the logistics industry.

Drones. Drones have many promising applications for the logistics industry, especially the ability to coordinate new forms of fast delivery to consumers. It is not uncommon in the coming years for drones to become the main means of delivering goods to densely populated urban and rural areas.

Companies and startups around the world are striving to establish themselves as early adopters of this growing technology. For example, UPS recently partnered with Zipline, a medical unmanned medical delivery company, to begin deliveries in Africa. It will also contribute to improving healthy lifestyles and improving the health of the population in Africa.

3.2 Implementing Digital transformation in Uzbekistan

Currently, logistics is one of the digital networks in both the world and in Uzbekistan, which is reflected in foreign sources studying logistics. Most of the new trends in logistics will not be possible without innovations in the development of digital technologies in the field of logistics. At the same time, the use of modern digital technologies in the field of logistics is a targeted factor in increasing the economic competitiveness of the country. Information-logistics systems are important to ensure well-coordinated logistics work, because the performance of the entire logistics system depends entirely on their work.

In accordance with the Decree on approval of the Strategy “Digital Uzbekistan - 2030” and measures for its effective implementation [1], the active development of the digital economy in the country, modern information and communication in all sectors and industries, especially in transportation, logistics, public administration, education, health and agriculture Comprehensive measures are being taken to widely introduce technologies.

In addition, in order to further increase the effectiveness of ongoing reforms, to create conditions for the comprehensive and rapid development of society and the economy, to implement the priorities for modernization and liberalization of all spheres of life:

1. Develop a fundamental framework for increasing competitiveness through the digitization of the economy in the service sector.
2. Development of software that will allow digitizing the economy in the service sector.
3. Priorities have been identified in the service sector, such as the formation of a single electronic platform for digitization of the economy.

Analyzing the experience of developing and implementing innovative products in transport logistics, noting that there are a number of shortcomings in the existing systems in Uzbekistan. Under consideration, we conclude that:

- human factors affect the performance of both the user of the product and the driver of the vehicle;
- Insufficient attention is paid to the development of innovations in the transport logistics system for the integration of warehouses and vehicles.

Thus, the effective management of the performance of other functions that facilitate the process of delivery of goods to the customer today has not provided an active platform for the introduction of innovative technologies. There are many technologies, systems, programs that allow you to track and identify both the vehicle and the cargo separately. One of the problems of transport logistics is that freight is not connected to the supply chain using a single digital platform. The creation of a single platform will save money and optimize the supply of goods from China as one of the priorities of the transport industry in Uzbekistan.

The company's programmers develop and modify their systems every year. The lack of a single digital platform for the transport industry in Uzbekistan is currently hampering the rapidly developing transport logistics sector. This is a convenient platform for implementing an innovative approach to the process of modeling the transport and logistics system to serve a certain range of customers on a common digital platform.

In the creation of innovative transport and logistics systems, it is proposed to implement step-by-step recommendations on the organization of the process of formation of innovative transport and logistics systems on the basis of a common digital platform. The stages are considered by the authors as the basis for the creation of an innovative transport and logistics system based on modern digital technologies.

In our opinion, the following work should be done to study the digital platform in the transport and logistics system in our country:

- creation of a single access point for digital platforms in the supply chain in the field of innovative transport and logistics interaction;
- support for the effective exchange of transport and logistics information between supply chain participants;
- common standards required for joint innovative research in the field of transport and logistics, allowing participants to use external distributed systems to store and process the necessary data;
- integration with external information systems, including foreign systems, to identify participants in supply chains and ensure their interaction;
- Ensuring the management of mutual settlements for transport and logistics operations, the joint use of infrastructure in the study of transport and logistics among the participants of the digital platform;
- implementation of technological interfaces for interaction with digital platforms of participants of supply chains and leading logistics centers.

If we look at the developed foreign countries, we can see that the above-mentioned processes were fully implemented several decades' years ago. In particular, the transport sector is fully automated in the United States, Germany, France, England, Turkey,

Singapore, UAE, China, Malaysia, Korea, Japan and other countries. As a result, we can see that the transport sector has been developing in all directions over the years, and the processes are carried out through digital technologies. Nowadays, we can see that these countries are moving to a new level using artificial intelligence based on the concept of Smart City.

So, if we want to make our country one of the developed countries, first of all, we can solve the problems and achieve the set goals only by developing each sector separately. The following problems with the introduction of digitization in the transport sector should be noted:

- The fact that the main passenger and freight locomotive in the country is not digitized in almost all regions;
- digitization of the public transport system serving the population to a single database and the absence of 3D maps covering all areas;
- Lack of unified information integration between organizations and customers engaged in passenger and cargo transportation;
- Lack of a national system of transport services and their almost complete lack of electronic payment systems;

There are many problems in the country, such as the lack of a single digital platform for road transport, rail and air transport, which creates the need to further accelerate the reform of digitization.

In the current period and in the near future, the introduction of promising developments in the transport system in the country, such as digital infrastructure, intermodal services, will increase the volume of passenger and freight traffic and have a significant impact on economic stability. The reason is the convenient geographical and transit location of our country. Given the fact that we are deprived of waterways, and transport is only on land, the importance of railways and road transport in our country is growing by itself, and we need to address the problems we have caused.

4 CONCLUSION

The field of logistics and transportation is experiencing significant changes caused by the digitalization. Technologies of stream processes management that involve a high degree of human physical labor which do not allow interactive monitoring of operations and quality control of their execution, and paperwork flow, become inefficient and outdated already. Cutting -edge Application of Information and communication technology increasingly determines the level of competitiveness of logistics companies. The degree of digitalization largely determines the speed, accuracy of operations, and provides opportunities to develop adaptability and flexibility of supply chain. This leads to new perspectives for companies and their customers: risk management based on rating and user community engagement, joint developments, forms of self-service and complex outsourcing. Smart logistics becomes a reliable basis for the development of international business supporting the optimization of the involvement of world resources. These changes also help to enhance the role of logistics in our country and trigger us to try hard to implement digitalization in this sector deeply among the whole area of Uzbekistan.

REFERENCES

- [1] Decree of the President of the Republic of Uzbekistan. On approval of the Strategy "Digital Uzbekistan - 2030" and measures for its effective implementation. PF-6079

05.10.2020.

- [2] Shadibekova Dildor. "Prospective Development Analysis of Small Business and Entrepreneurship of Uzbekistan" 2020 ISSN: 0193-4120 Page No. 1733 – 1743
- [3] Werner, H. (2019). "Supply Chain Management"
- [4] Alias, C., Zahlmann, M., Olalla, F. E. A., Iwersen, H., & Noche, B. (2019). "Design of intelligent logistics processes using cyberphysical systems and complex processing

of events."

- [5] Journal "Prospects of the transport industry" 2020. Germany
- [6] "Logistics 4.0 Towards Digitization". Vincent Bamberger, Florent Nansé, Bernd Schreiber, Michael Zintel. 2018