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**INSTITUTIONAL UPDATE OF DIGITAL LOGISTICS OF THE**  
**REGION**

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**Abstract**

Authors suggest that successful development of digital logistics in the region is directly proportional to the development of digital institutional environment. The dominant role in this digital environment is assigned to a combination of planned and market methods of regulating institutions operating in the region, with both planning and market components being equally important. The study shows that digitalization of logistics activities will not automatically increase socio-economic development of the region. This process should be institutionally regulated through activation of internal and external stimuli for the development of digital environment in the region. The authors substantiate the importance of state participation in the process of institutional renewal of the region's logistics infrastructure. In order to solve the problems of stimulating digital transformation of logistics activities, the state should create an adequate institutional environment for logistics intermediaries, participate in existing institutions and support new, emerging ones. The necessary conditions for the institutional renewal of logistics sector of the region's economy are formal and informal institutions. Legislation and legal registration of digital innovations should take into account well-established national traditions, customs, and business ethics. The digital transformation of the region's logistics is considered by the authors as a set of legal and organizational support by government authorities for institutional transformations in commodity logistics systems. The article highlights development institutions, growth institutions and mechanisms for their launch in the context of digital transformation of logistics activities in the region.

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## 1. Introduction

The issues of institutional renewal of digital logistics in the region acquire special relevance in the context of the implementation of tasks related to the creation and development of competitive infrastructure in Russia.

Within the framework of the federal project "Information Infrastructure", tasks have been set based on domestic developments in the design of infrastructure for processing and storing data, the functioning of digital platforms and ecosystems based on domestic developments. The implementation of these tasks is strategic for the country's socio-economic development. The digital transformation of industries and regions of Russia depends on the successful solution of these tasks.

Strategically, the process of stimulating the informatization of the infrastructure of the region and its logistic component directly depends on the formation of rules and regulations by the state governing bodies for the work of economic entities with an information database, including control over their implementation. Actions to create rules for working in the updated information environment of the region should be accompanied by readiness of state regional authorities themselves to master digital technologies. The development of new information services and software products involves the development of digital competencies by state regional management. State digital management is already successfully operating in a number of Russian regions. New specialties have appeared in state regional government bodies, for example, the head of digital transformation (Chief Digital Transformation Officer – CDTO). The activities of these specialists are aimed at developing strategies for digital transformation in the region, including work with both enterprises and population.

Digital competencies play a special role in the logistics sector of regional economy since logistics activities are innovative. Digital logistics is emerging as a special direction in the theory of managing economic flows that are acquiring a digital format. This is reflected in the fact that the movement of an economic flow can be accompanied by a digital flow. In a number of cases, the priority role belongs to the digital flow when the logistics system becomes virtualized. The classical principles of managing such a system are complemented by network centrism and information superiority.

The digitalization of logistics is gaining momentum in the region's economy; logistics intermediaries cover a wider range of industries and fields of activity. There is an objective need for institutional renewal of digital logistics in the region. The effectiveness of such renewal largely depends on the implementation of institutional innovations, including the formation of institutions for growth and development institutions.

## 2. Problem Statement

Information infrastructure forms the basis for the development of digital logistics in the regions of Russia (Borisova, 2014). The scheme of functioning of communication networks and the possibilities of wireless interaction of participants in the distribution systems are presented in the government program "Creation of a global competitive infrastructure for storing and processing data of the Russian Federation for the period 2019–2024". This document formulates the main organizational and methodological

provisions for the creation of digital ecosystems in Russia, including the assessment of IQ territories and introduction of replicated technologies for digitalization of the economy.

Within the framework of the above-mentioned government program, the task was set to provide almost all households in the country with an access to broadband Internet by 2024 (97 %); equip key sectors of the economy with a 5G communications network; expand the use of cloud and cloud technologies and increase the volume of data storage and analytics services by Russian providers.

A high-speed and high-quality information and communication network is a basic condition for the digital renewal of regional logistics. Its key elements are territorial distribution networks of data transmission, wireless communication systems for data transmission and engineering devices and network communication equipment. Services and tools for increasing the efficiency of digital infrastructure of the region are developed on the basis of these key elements.

Efficiency and agility of information communications are the most important characteristics for logistics intermediaries. An omnichannel contact center for interaction with customers has become a new communication tool for logistics operators.

The use of omnichannel technology by logistics intermediaries contributes to the smooth functioning of digital communications in the goods distribution system, maintains communication with customers through mobile applications, websites, and other devices, including analytical analysis of customer behavior using digital signage control.

Regional state governance structures are included in the national digitalization system as part of the digital transformation of state infrastructure being carried out in Russia. The operator and coordinator of this process is PJSC Rostelecom. State funding for digital projects of the electronic government of Russia, including connecting remote territories to the Internet, amounted to 54 billion rubles from 2017 to 2020. Government projects for the implementation of digital technologies (big data analytics) in the tax administration system are being successfully implemented. Industry digital platforms that coordinate the entire cycle of work of enterprises and organizations are being created both within the industry and interdepartmental relations, ensuring the interaction of partners at the federal, regional, and municipal levels.

The digital agenda in the logistics sector of the economy is supported by state targeted programs, grants and subsidies. Government authorities are developing new tools for the development of digital competencies. Among them, we highlight digital platforms for testing innovations, test sites and sites for launching pilot projects.

A significant part of government projects to support digital transformation are focused on small and medium-sized enterprises; assistance in finding partners and financial investors. The most effective was the block of government measures associated with stimulating demand for digital innovations. The spread of digital technologies is facilitated by concessional lending, tax incentives, accelerated amortization, etc. To purchase digital products, it is advisable to develop the practice of concessional loans and develop the possibility of using targeted industry digitalization funds.

Among the government measures to regulate the demand for digital innovations, we highlight the procedures for standardizing technologies, the use of “regulatory sandboxes”, the development of “road maps” and tools for supporting pilot digital projects. Institutional renewal of digital transformations in

various sectors of the economy removes restrictions and eliminates gaps in legislative acts that impede the development of new technologies. For example, that is expanding the list of virtual services, regulating the use of personal data, creating infrastructure research platforms, etc.

Institutional renewal of digital logistics in the region is characterized by the emphasis on import substitution of digital products (equipment, electronic components, software, etc.). At the same time, in the context of the globalization of world economic relations, the purchase of digital products is also possible when they are produced abroad. However, only if the share of the cost of domestic intellectual property in this product exceeds the total incurred production costs for its development.

Experts state that “the evolution of the modern world, in contrast to political geography (how we officially divide the world), has transformed into functional geography (how we actually use the world: from nations and borders to infrastructure and supply chains). Our world system is developing from the vertically integrated empires of the 19th century through the horizontally interdependent countries of the 20th century into the global network of civilizations of the 21st century.

In this hyper-connected world economy, modern logistics supply chains are being formed, supported by a network of ultra-high-speed railways and highways, new airports and fiber and power grids (Hannah, 2019).

New logistics alliances are taking on the role of "infrastructure link" of regions, maintaining the spatial unity of territories using innovative digital models. There is a need to reevaluate the issues of adapting digital logistics models to the modern conditions of regional development and to implement their appropriate institutional renewal.

### **3. Research Questions**

Institutional renewal of digital logistics in a region is legal and organizational support for transformational transformations in regional commodity distribution logistics systems, which leads to the establishment of new social institutions (Afanasenko & Borisova, 2019).

The logistic institute expresses diverse phenomena. They can be a certain form of organization, regulation and ordering of logistics activities; the form of interaction between participants in the movement of goods; a group of interrelated homogeneous economic or social relations; specific methods of organizing and managing material and related information, financial, service flows; elements of the social structure of society. These can include both private and public organizations that implement logistics functions and operations (purchase and sale, transportation, warehousing, cargo handling, etc.) (Afanasenko & Borisova, 2019).

The implications of the digital transformation of logistics are reflected in the following:

- complication of the organizational forms of an economic flow and its transformation into a digital flow;
- legislative institutionalization and legal basis for the legal status of new logistic organizational forms.

The institutional infrastructure of digital logistics unites the Internet, artificial intelligence, growth institutions, development institutions, virtual supply systems, etc. In contrast to the classical understanding of the institutional logistics infrastructure – commodity exchanges, logistics centers,

warehouses, roads, bridges, pipelines, etc., digital institutions are not so tangible, but their influence is very significant in the development of the region.

Currently, the institutional foundations of digital logistics in the region are formed by structures that create and reproduce information and communication technologies, science-intensive services, artificial intelligence technologies and robotics, including the construction of digital platforms.

Development institutions provide a specific form of integration of participants in logistics supply systems into a digital ecosystem. By their content, they create the basis for a new institutional environment for digital logistics in the region. Many of the currently existing development institutions, although borrowed from the institutional practice of foreign countries, have quite successfully adapted to the Russian economic conditions.

#### **4. Purpose of the Study**

Digital transformation of regional logistics systems of commodity circulation is the main change in the current institutional environment. They generate competitive interaction of institutions based on increased investment in knowledge.

The effectiveness of regional digital logistics is shaped by new growth institutions. These include cluster forms of organizing an economic flow. Practical experience shows that within the framework of regional logistics clusters, there is a neutralization of the institutional imbalance that hinders the development of digital technologies (Borisova et al., 2018).

#### **5. Research Methods**

The methods used in this study are a set of provisions and principles that form the basis of economic theory, scientific provisions of logistics and supply chain management, commerce, and management. To reveal the problem of institutional renewal of digital logistics in the region, we addressed the ideas of macroeconomics, regional economics, system analysis tools and information flow management. In addition, we relied on regulatory documents and legislative acts regulating the development of the regional infrastructure and digital economy in Russia.

The issues of studying the integration ties of the participants in the supply system and assessing the possibility of combining them into a regional digital ecosystem, are based on the study of the scientific provisions of the theory of institutionalism. In particular, it is a section as the formation of development institutions. The totality of the above scientific provisions determined our position, as well as theoretical and applied substantiation of the problem under study.

#### **6. Findings**

New formal and informal institutions arise at will and in spite of will of the state. In both cases, regulatory and legislative restrictions play an important role in the institutional renewal of digital logistics in the region. "Experts agree that proactive legislation is needed, that is, proactive emergence of problems and risks." In practical terms, this can be realized by launching experimental sites, "legislative

sandboxes” for industries and territories under the control of authorized regulators. This is needed for unmanned vehicles, for fintech, for big data analysis (Borisova, 2018).

One of the institutions that stimulate the development of digital logistics is the digital platform. For the formation of digital technology platforms in Russia, there is significant potential that must be realized. In recent years, digital platforms have been created at the federal and regional levels, which are comparable to the platforms of leading countries and, in some cases, have become an example for other states.

It seems promising to stimulate mechanisms to support the security of commodity distribution systems aimed at balancing and coherence of growth institutions and institutions for the development of digital logistics in the region.

## 7. Conclusion

The institutional renewal of digital logistics of the region is becoming a key asset in the modern competitive struggle of territories. The renewal of institutions in the logistics sector of the region's economy and their compliance with the global digital transformations contributes to the implementation of the principle of information superiority, characteristic of the work of such digital giants as: Apple, Google, Amazon, Alibaba, Facebook, Microsoft, Baidu, Tencent. The information resource of these world giants allows them to work successfully in a significant share of the world market. Their experience shows that companies with advanced digital communications and constant access to a multi-million audience of mobile consumers and suppliers gain competitive advantages.

An analysis of the institutional environment of digital logistics in the region showed that modern transformations in this sector of the economy are due to "the integration into a single digital space of 'social' networks, industry, interdepartmental and international databases, the formation of giant intermediary network-centric structures" (Borisova, 2019, p. 12).

We correlate the institutional renewal of digital logistics in the region with the interaction of planned and market regulation methods in this process; the formation of development institutions as the basis of a new digital institutional environment.

It can be concluded that quantitative and qualitative changes in information often lead to changes in the parameters of the reliability of communication links in the logistics services market. Consolidation of digital competencies of government agencies, the business community and research centers is required (Tasueva, 2019).

When updating institutions in the region's logistics sector, it is important to identify critical digital infrastructures (shared and ensure integration processes), develop a general procedure for ensuring their security, including (if necessary) the creation and implementation of international protection of protocols and procedures for the joint use of digital platforms.

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