Digitalization of the EAEU Transport and Logistics Sector and Its Role in Improving the Euro-Asian Cargo Transportation

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Abstract—Russia and the other Member-states of the Eurasian Economic Union (EAEU) have a key advantage of their geographical position being a connection between the European Union countries and the Asia-Pacific region. This advantage provides a unique opportunity for cargo transit transportation between those regions and getting positive effect for overall economic development through increasing transport and logistic services sectors. At the same time, this opportunity poses certain challenges for Russia and the other EAEU countries, such as the need to better utilize the existing transport networks, to promote further development of transport infrastructure, to improve the quality of already existing transport and logistics services and increase their competitiveness particularly but not exclusively by introducing more efficient and up-to-date technologies.

Keywords: economy, transport, transport and logistics sector, Euro-Asian cargo transportation, customs operations, digitalization, Eurasian Economic Union

I. INTRODUCTION

The potential of the transport and logistics sector in the EAEU countries currently remains underutilized and its further development will not only increase the volume of cargo flow among the European Union, the EAEU and the Asia-Pacific countries but also facilitate international trade among those three regions and make significant contribution to the socio-economic development of the territories along the main traffic flows. This being especially important for landlocked countries and, first of all, for the EAEU itself as five of the six EAEU countries are landlocked. Maritime transport currently dominates trade between the European Union and the Asia-Pacific countries and for landlocked countries in the absence of direct access to maritime routes land transport corridors are crucial as they provide opportunity to increase their own trade with other European and Asia-Pacific countries and participate in cargo transit between those two regions.

The potential of the transport and logistics sector in the EAEU countries currently remains underutilized and its further development will not only increase the volume of cargo flow among the European Union, the EAEU and the Asia-Pacific countries but also facilitate international trade among those three regions and make significant contribution to the socio-economic development of the territories along the main traffic flows. This being especially important for landlocked countries and, first of all, for the EAEU itself as five of the six EAEU countries are landlocked. Maritime transport currently dominates trade between the European Union and the Asia-Pacific countries and for landlocked countries in the absence of direct access to maritime routes land transport corridors are crucial as they provide opportunity to increase their own trade with other European and Asia-Pacific countries and participate in cargo transit between those two regions [1]. For example, according to the International Institute for Applied Systems Analysis (IIASA) maritime transport accounting for about 98% of all cargo carried between EU countries and China.
II. FOCUS AREAS FOR THE EAEU TRANSPORT AND LOGISTICS SECTOR DEVELOPMENT

Analyzing the potential of the transport and logistics sector in the EAEU countries we should point out that the existent physical transport and logistics infrastructure available in the EAEU countries is essentially sufficient to cope with cargo flows from the European Union to and from the Asia-Pacific region. For example, according to the estimates of the Centre for Integration Studies of the Eurasian Development Bank the internal railway networks of the EAEU countries and China, and their throughput and carrying capacity, essentially meet the current needs of international cargo transit along the China - EAEU - EU axis. [2]

At the same time, in order to attract additional cargo traffic, it is necessary, as noted above, to further develop and improve the transport and logistics infrastructure, as well as to remove the barriers and restrictions of various kinds that exist today and could potentially affect the efficiency and volume of cargo transportation in the event of increased traffic flow.

For example, currently, the long-term growth of cargo traffic in international transit container transportation between the European Union and China, according to experts of the Center for Integration Studies of the Eurasian Development Bank, is constrained by both external and internal restrictions, as well as the risk of Chinese provinces canceling export container traffic subsidies. Further growth of the sector requires investments into the expansion of the EAEU physical railway infrastructure and bottlenecks removal [3]. And it is also contingent upon lower freight tariffs and guarantees of continuing transport subsidies from the People’s Republic of China (PRC) [4] [5].

Both transport networks and logistics infrastructure on the Euro-Asian landmass have been developed and restructured for several decades. Suffice it to mention the ongoing Euro-Asian Transport Links (EATL) project, supported by the United Nations Economic Commission for Europe (UNECE). This Project going on in close cooperation with the United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP) and with about forty countries of European and Euro-Asian regions as well as with private sector stakeholders, transport companies, railroad operators, transport associations, investment and development banks, etc. has made it possible to implement an idea of creating the basis for transportation network between Europe and Asia, which would meet to-date demands for facilitation of international trade.

Implementation of the Project has included a number of comparative studies of different modes of transportation (including maritime transport), identification of transport routes and investment priorities for infrastructural development, creation of Geographical Information System (GIS), studies of nonphysical barriers and limitations for Euro-Asian cargo traffic flows, development of a framework for uniform schedules and tariffs, introduction of means and measures for simplification and facilitation of the procedures for the transportation of goods and logistics services, etc.

At the same time, there are still enough problems to solve and restrictions to eliminate for further development of transport links, including cargo transit traffic, along the EU - EAEU – Asia-Pacific axis. A year ago, in September 2018, at the "Making Euro-Asian Transport Corridors Operational" Conference in Geneva, the following priority areas for joint work on further development of the Euro-Asian Transport Links Project were highlighted:

- The elimination of bottlenecks, inefficiencies and missing links along EATL routes;
- The development of logistics centres and hubs as well as dry ports and the modernization of border crossing points;
- The introduction of public-private partnerships and other market-oriented and innovative ways of financing transport infrastructure;
- The reform of the railway sector, both in terms of streamlining administrative requirements and encouraging harmonization of infrastructure, equipment and facilities along the routes in order to enhance technical and operational interoperability;
- The enhancement of efforts in digitalization, standardization and harmonization of trade and transport documents, including through a shift to electronic documentation and the introduction of one-stop-shops, single windows and electronic payment systems.

As we can see from this list restrictions and barriers in the development of cargo transportation vary and range from physical (infrastructure, equipment, logistics, etc.) and technological to non-physical, such as border and customs barriers and delays, administrative and legal barriers, information flow and exchange limits, etc.

The similar list of main problems and basic tasks for further development of transport links along the EU - EAEU – Asia-Pacific axis can be drawn from the research conducted by the Centre for Integration Studies of the Eurasian Development Bank, which divides non-tariff barriers in the field of international railway transportation along the transport corridors of the ‘Silk Road’ into three groups:

- Infrastructural (transport and logistics infrastructure);
- Border and customs;
- Administrative and legal.

The World Bank in its country profile of the Logistics Performance Index 2018 for the Russian Federation shows rather medium level in on the six key dimensions (or sub-indexes) that are weighted when determining the Index:
• Efficiency of the clearance process (i.e., speed, simplicity and predictability of formalities) by border control agencies, including customs;
• Quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology);
• Ease of arranging competitively priced shipments;
• Competence and quality of logistics services (e.g., transport operators, customs brokers);
• Ability to track and trace consignments;
• Timeliness of shipments in reaching destination within the scheduled or expected delivery time [6].

As we see, the World Bank also identifies both physical and non-physical constraints and barriers for further growth of international cargo transportation in Russia, including gaps in digitalization and insufficient use of the latest information and communication technologies.

The World Bank Logistics Performance Index results of the other EAEU countries are at the same level or even lower than that of the Russian Federation with its 75th LPI Rank. Belarus has been ranked 103rd in 2018, Kazakhstan 71st, Armenia 92nd, and Kyrgyzstan 108th. And as well as the Russian Federation all these EAEU countries have problems in all the six key dimensions including level of digitalization and the use of the latest information and communication technologies [7].

Thus, digitalization of the transport and logistics sector and broader introduction of constantly updated information and communication technologies within the sector not only can improve the other performance parameters affecting the efficiency and growth of international freight traffic, including transit traffic, in the EAEU countries but also constitute separate criteria directly affecting the state of modern transport and logistics infrastructure of international freight traffic and the level of transport and logistics services.

III. DIGITALIZATION OF THE EAEU TRANSPORT AND LOGISTICS SECTOR

Digital and information and communication technologies have long been closely linked to transportation services both cargo and passenger.

Today, it is hard to imagine using any means of transportation and managing passenger or cargo traffic flows without computer equipment, software, without data transmission via mobile communications and the Internet, etc. The entire modern transport industry today - from the production of all types of vehicles to the preparation of transport documents for shipment - is based on digital and information and communication technologies.

Arranging integrated supply and logistics chains, maximizing the security and safety of cargo and passenger transport, improving the convenience and speed of payment for transport services, and reducing costs by automating processes are just some of the areas where the widespread introduction of digital and information and communications technologies has long yielded tangible benefits.

These technologies are actively employed by consumers of transport and logistics services: manufacturers, trade, transport and logistics companies, which use them to place orders for transport services, to track movement of their goods and various transport, to make electronic payments for transport and logistics services, payments of customs and other mandatory duties and taxes, etc.

Digital and information and communication technologies have become so deeply embedded in and have so strongly affected all spheres of modern life that it allows to call this process digital transformation, or digitalization. Digitalization means not only introducing digital technologies but rather changing the structure of affected objects and spheres, their core models of functioning and developing. When it comes to the economy its digitalization means changing business models and service delivery means and structure, increasing availability of goods and services, raising awareness of participants, increasing safety of business transactions, expanding sales markets and target audiences, reducing the cost of promoting goods and services and transaction costs, etc.

As it is noted in the Program "Digital Economy of the Russian Federation", approved by the Resolution of the Government of the Russian Federation on July 28, 2017 № 1632-r, is represented by three levels:

• Markets and sectors of the economy (spheres of activity), where economic agents (suppliers and consumers of goods, works and services) interact;
• Platforms and technologies where competencies for the development of markets and sectors of the economy (spheres of activity) are formed;
• Environment that creates conditions for the development of platforms and technologies and for the effective interaction between market agents and economic sectors (spheres of activity) and that covers regulatory framework, information infrastructure, human resources and information security [8].


The rate of digitalization varies across industries and sectors of the economy. The transport industry according to experts is not a leading sector in this process, rather is among the catching-up industries along with trade, insurance, education, and the automotive industry [9].
With consideration to further integration within the EAEU and strengthening the common economic space and deepening cooperation between the Russian Federation and other EAEU member-states, the work on digitalization of the Russian economy is carried out in parallel with the implementation of the Digital Agenda adopted by the EAEU. This Digital Agenda itself sets rather ambitious goals of transitioning the member-states' economies to a new technological paradigm [10].

The objectives of the formation and development of the Digital Space within the EAEU include:

- Using opportunities provided by digital transformation of the public administration, economy and social sphere to strengthen competitiveness of countries and business entities of the EAEU and to facilitate economic growth of the EAEU countries;
- Ensuring involvement of EAEU countries and the Eurasian cooperation in global, macro-regional and regional processes of transformation related to developing new industries and markets;
- implementing the multiplier positive effect of digital transformation on the existing common markets of the EAEU;
- developing human assets in the process of implementing digital economy within the EAEU territory;
- ensuring the attractiveness of the Digital Space for consumers and business entities (first of all, technological entrepreneurs, talents, principals [11].

At the current stage of implementation of the Digital Agenda of the Eurasian Economic Union, the quality strategic guidelines for the formation and development of the Digital Space in the EAEU include systemic digital transformation of the economy, "seamless" conversion of economic processes and the service environment into digital form, creation and launch of joint digital tools, reduction of economic risks, etc.

A positive effect assumed to be not only from the direct contribution of the digital economy to the GDP of the EAEU member-states but also from increasing the efficiency of economic processes through the digital transformation of infrastructures and management systems. In order to achieve that increase in efficiency the digital transformation should involve transport, logistics, energy and other infrastructures, and the provision and expansion of the use of interstate (cross-border) digital services for both the population and economic entities of the member-states (including the use of the open data) should be supported at all levels.

Both the Digital Agenda of the Eurasian Economic Union and the Russian National Program "Digital Economy of the Russian Federation" are aimed not only at domestic markets, but also at the participation of the national business entities in the world trade and at facilitation of the international trade in goods and services. In order to make it possible digitalization should encompass those areas of economy that ensure the simplification and facilitation of international trade while preserving national economic interests and ensuring national security. In other words, digitalization should encompass transport and logistics infrastructure, transport and logistics services, customs services and customs clearance process and control, document exchange, payment systems and procedures, etc.

One of the most direct and immediate area for digitalization is information exchange, circulation, and distribution at all levels. In connection to transport and logistics sector these levels might be described as follows:

- At the private level - among transport and logistics services providers, between transport and logistics services providers and users, and among transport and logistics services users;
- At the level of state authorities - exchange of information between customs authorities and other state authorities within the country, exchange of information among customs authorities of different countries, exchange of information between customs and other state authorities of different countries;
- Between the state and business – performance by the governmental bodies of their state function of informing and consulting business and community.

It should be noted that the exchange of information, or rather its insufficient development, is included by the Centre for Integration Studies of the Eurasian Development Bank, among other things, into the list of the significant barriers for increasing efficiency and growth of transit cargo traffic along the EU – EAEA - China axis. As the Centre's analytics believe European shippers do not have sufficient information about the advantages and conditions of transportation along the trans-Eurasian land transport corridors (terms of delivery, number of transport modes used, door-to-door delivery, delivery costs, etc.), the level of development of transport corridors, and existing routes (primarily railway routes). The survey of European shippers showed that companies without any experience in trans-Eurasian cargo transportation estimate the delivery time of a 40-foot container at 20-30 days and the transportation and logistics costs at $10-15 thousand, which is much higher than the actual figures [2]. That demonstrates the importance of popularization of trans-Eurasian railway freight traffic, which includes preparing and distributing data and information concerning the above-mentioned issues. This will help attract additional cargo flows from the EU to China and, accordingly, reduce the share of empty containers.

Specific tools used to achieve the goals of digitalization of the EAEU economies may vary. For transport and logistics sector such tools include the product traceability project, the project of formation of the Trans-Eurasian Logistics Platform, the EAEU digital railways project, and the project of creation of distributed infrastructure to ensure the security of the digital economy assets and ensure trust on the basis of the EAEU digital platform. And they also
include several cross-industry projects like creation of new digital platforms for digital finance, smart-contract management systems and payments, etc.

The digitalization of the economy can bring benefits to both business entities and state. And it also allows for the establishment of a relationship between the business and the state in terms of exchanging information and receiving feedback, which may help developing tools that are essential for mutual growth.

These mutual benefits of the digitalization of the economy can be illustrated with the product traceability system.

Product traceability systems give been already tested in other countries and in the international trade. Large commodity producers and trade enterprises in order to build efficient logistics chains and be able to trace the movement of goods throughout their entire life cycle - from production to consumption – have already been using systems of digital marking of goods with the functions of traceability of their movement. The digital labeling and the traceability system captures the transition of a labelled product along the entire supply chain from production to consumption. It assigns a unique code to each item so that the manufacturer (or importer in the case of international trade) can place it on the packaging. And when the product is sold to an end consumer the product traceability system provides information that this particular item has been taken out of the circulation.

This not only allows providing efficient supply chain management but also reduces costs, decreases response and decision-making time, and reduces transaction costs thereby increasing overall business competitiveness.

It is rather obvious what benefits such digital labelling and traceability systems can give to a state. First, the introduction of such systems can make it possible to improve customs and practically any other types of state control over international trade, import to and export from a customs territory, compliance with transit traffic regulations, etc. Fiscal effect of digital labelling and traceability systems is also important as their introduction allows to increase the collection of duties, taxes and other state imposed fees. Such systems increase the transparency of the flow of goods and the activities of enterprises, and thus contribute to the fighting against "shadow" trafficking and the spread of counterfeit trade. In addition, taking into account the specifics of the common customs territory within the EAEU and the existence of a number of economic sanctions and countersanction the system of digital labeling of goods with the possibility to trace them allows to control the flow of goods and to check shipments whether or not intended for the consumers of the respective countries.

Taking into account that bona fide economic agents are also interested in transparency and the tracing of counterfeit goods introduction of such tools as a part of the digitalization of the economy also helps to strengthen the interaction of parties within the public-private partnerships frameworks.

There is one more practical aspects of the digitalization of various sectors of the economy including trade, transport, and logistics – it allows involving the end consumers (customers), be it businesses or citizens, in the process of improving the sector. Digital and information and communication technologies facilitate the collection of information from end consumers. Tools for collection of information range from surveys on consumer satisfaction with goods or services to suggestions for improving a particular aspect of doing business. In case of traceable digital labels this also enables a consumer to use mobile devices to read a product history, verify the legality of the product, etc.

As for the Russian Federation the system of digital labeling of goods with traceability functions is still at the stage of development. Voluntary experimental labeling of tobacco products, some medication products for medical use, and footwear products has been already introduced and checked in practice.

This year the labeling of tobacco products, footwear products footwear products, and some medication products for medical use has become obligatory. And some more obligatory labeling will be introduced as in 2020 and 2024.

In the context of the EAEU economic integration full implementation of digital labelling of goods with traceability functions will require monitoring within the framework of the single market of the EAEU countries.

Currently there is a decision of the Eurasian Economic Commission (EEC) Council according to which a pilot project on labeling and traceability of goods has been launched on the basis of the Union's digital platform for the commodity group "tobacco and tobacco products". This project is being implemented initially in Russia and Kazakhstan. The rest of the EAEU countries will join the project as soon as they are ready.

It should be noted that labeling of goods at the level of pilot projects began within the framework of the EAEU in August 2016 when a pilot project on labeling fur products was launched, which resulted in preparing and signing the Agreement on the labeling of goods by means of identification in the Eurasian Economic Union [12].

Currently the EAEU is working on crating and adopting a common digital platform that would allow national segments within the EAEU to use the uniform digital technologies. The information system for labeling of goods is already in operation within the framework of the pilot project of Belarus, Russia, and Kazakhstan. Armenia is testing its information system and will join later.

Use of the uniform digital technologies within the EAEU may have very important effect of reducing costs. This applies to digital labeling and product traceability information systems as well as to more expensive digital tools such as the so-called "navigation seals", which are being tested at the pilot project level for monitoring transit traffic. The use of such seals and the monitoring of the transit traffic through the EAEU countries can significantly increase
the efficiency of customs control over such goods but at the same time it increases the cost of transportation, and the reduction of such costs is an urgent task.

In addition to pilot projects on digital labeling of goods, the EAEU has launched a digital initiative “Introduction of electronic accompanying documents and their mutual recognition in EAEU member-states”. As the Chairman of the EEC Board Tigran Sargsyan notes: "In fact, it is a work on implementing two types of traceability: on the basis of physical control over the movement of labeled goods by checking the means of identification and on the basis of documentary traceability as the control of commodity flows by quantitative indicators of consignments of goods (through electronic accompanying documents)".

It should be noted that the electronic document system is yet another tool for the digitalization of cargo transit traffic and rather efficient one. For example, during the third phase of the Euro-Asian Transport Links Project carried out under the auspices of the United Nations Economic Commission for Europe, the first trials of TIR’s fully paperless digital transit service, or e-TIR, were successfully conducted between Iran and Turkey. The tests were run by IRU, UNECE, the Turkish and Iranian customs authorities, pioneering volunteer transport operators, as well as IRU members and TIR guaranteeing associations from the two countries, ICCIMA and TOBB respectively [13]. The pilot tests demonstrated not only that the system worked in a live transit situation, but also how risk of fraud and the customs’ administrative burden could be reduced. The services were highly rated by the transport operators, customs officials and TIR associations. Following the success of the pilots, other countries expressed interest in organizing e-TIR pilots, including Kazakhstan.

The experts of the Centre for Integration Studies of the Eurasian Development Bank also refer to introduction of electronic documentation as one of the most effective tools for the development of international transport and logistics services. According to the Center’s studies, implementation by EAEU customs authorities of electronic document management systems and extensive use by all EAEU railways of uniform consignment notes have contributed to unrestricted growth of transit railway cargo traffic between China and the EU [2] [14].

The electronic document management system has proved to be an effective tool and the EAEU currently works on its improvement and ways for its scaling up within the EAEU countries. It is about so-called digital transport corridors, the introduction of which will help to automate the formation and application of legally significant electronic documents. This system also implies the conversion of all related public services into electronic form.

Work on the creation of digital transport corridors is now at the stage of research on the theme “Development of the concept of ecosystem of digital transport corridors of the Eurasian Economic Union”. The issue is quite complex, as it requires not only cross-industry solutions, but also the unification of approaches of all five EEU member states. In addition, we believe that such a system should include all relevant documents, from smart contracts for transport documentation to electronic payments, so the construction of a truly full-fledged digital transport corridor is very complicated because already at the stage of signing foreign trade and transport contracts it is necessary to take into account the requirements of all state control aspects, not only customs but also currency and tax control. This means that the general ecology of digital transport corridors should include additional, currently not directly controlling the trade in goods at the stage of cargo delivery, state authorities as well as commercial banks as agents of currency control.

IV. CONCLUSION

The digitalization of the EAEU transport and logistics sector plays important role in improving the Euro-Asian Cargo Transportation along the EU - EAEU – Asia-Pacific axis. Its positive effect can be derived not only from the direct contribution of the digital economy to the GDP of the EAEU member-states but also from increasing the efficiency of economic processes through the digital transformation of infrastructures and management systems, the main transformation tools in case of the transport and logistics sector being electronic documentation exchange and management systems, the digital labeling and traceability of goods system, smart-contract management systems and payments, information exchange systems, and creation of digital transport corridors.

The digitalization of the EAEU transport and logistics sector can also reduce barriers for international trade, simplify unified measures, documents, and methods of state control over trade, transportation and logistics within the EAEU countries, involve all possible participant and interested parties into the process of improving the sector by allowing information exchange, participation of end consumers, etc.

Use of the uniform digital technologies within the EAEU may also reduce cost of transport and logistics services and cost of state control measures, increase awareness of the potential users of the transport and logistics services (primarily, European users), increase transparency and provide additional tools in struggle against illegal trade in counterfeit goods, increase safety of transportation and trade. At last, the digitalization of the EAEU transport and logistics sector may help to solve rather specific tasks of the EAEU countries such as tracing shipments of goods whether or not intended for the consumers of the respective countries due to economic sanctions and countersanction.

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