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THE IMPORTANCE AND NECESSITY OF LOGISTICS SYSTEM

A.S. ABDULLAYEVA, R.Z. SATYBALDIYEVA

International Information Technology University

Abstract: *This article from the analysis of the necessity of the development of the logistics system. Analyzes the problems of disorder in the development of logistics enterprises, information platform needs, logistics information standard lag.*
Today it is impossible to imagine a production or trading company that is not engaged in solving logistics problems. The logistics system is a relatively stable set of links (structural / functional divisions of the company, as well as suppliers, consumers and logistics intermediaries) interconnected and united by a single management of the corporate strategy of business organization. Logistics systems allow to optimize the functioning of commodity, information and financial flows, "significantly reduce the time interval between the acquisition of raw materials and semi-finished products and the delivery of the finished product to the consumer, contributes to a sharp reduction in inventories".
In the context of globalization, given the vastness of the territory of Kazakhstan, the competitiveness of the economy and the state will largely depend on the efficient operation of the transport and communications complex. The key to the competitiveness of domestic goods, services, and the economy as a whole is a high-tech transport infrastructure corresponding to the state transport and transit policy.
Thus, the solution to the problem of improving the efficiency of the transport sector is impossible without strengthening research to determine the future directions for the development of motor vehicles based on a systematic analysis of its state at the present stage.

Keywords: *transportation, logistics, system, transport, supply chain, cargo, drivers, scheduling, accounting*

ЛОГИСТИКАЛЫҚ ЖҮЙЕНІҢ МАҢЫЗДЫЛЫҒЫ МЕН ҚАЖЕТТІЛІГІ

Аңдатпа: *Бұл еңбек логистикалық жүйені дамыту қажеттілігін талдауға негізделген. Логистикалық кәсіпорындардың дамуындағы проблемалар, ақпараттық платформаға сұранысы мен логистикалық ақпараттардың стандартты кешеуілдеуі байқалады.*
Қазіргі таңда логистикалық мәселелерді шешумен айналысатын өндірісті немесе сауда компаниясын елестету мүмкін емес. Логистикалық жүйе ол бизнестің корпоративтік стратегиясының біртұтас басқаруымен біріктірілген және біріктірілген байланыстардың салыстырмалы тұрақты жиынтығы (компанияның құрылымдық-функционалдық бөлімдері, сондай-ақ жеткізушілер, тұтынушылар және логистикалық делдалдар). Осындай жүйелер тауардың, ақпараттың және қаржы ағындарының жұмысын оңтайландыруға мүмкіндік береді, «шикізат пен жартылай фабрикаттарды сатып алу мен дайын өнімді тұтынушыға жеткізу арасындағы уақыт аралығын едәуір азайтады, материалдық қорлардың күрт қысқаруына ықпал етеді».
Жаһандану жағдайында Қазақстан аумағының кең ауқымын ескере отырып, экономиканың және мемлекеттің бәсекеге қабілеттілігі көліктік-коммуникациялық кешеннің тиімді жұмысына тәуелді болады. Отандық тауарлардың, қызметтердің және тұтастай алғанда экономиканың бәсекеге қабілеттілігінің кілті – мемлекеттік көліктік және транзиттік саясатқа сәйкес жоғары технологиялық көлік инфрақұрылымы.
Осылайша, көлік секторының тиімділігін арттыру мәселесін шешу қазіргі кезеңде оның жағдайын жүйелі түрде талдау негізінде автокөлік құралдарын дамытудың болашақ бағыттарын айқындау үшін зерттеулерді нығайту ең өзекті мәселелердің бірі екеніне көз жеткіздік.

Түйінді сөздер: *тасымалдау, логистика, жүйе, көлік, жеткізу тізбегі, жүк, жүргізушілер, диспетчерлеу, бухгалтерлік есеп*

ВАЖНОСТЬ И НЕОБХОДИМОСТЬ ЛОГИСТИЧЕСКОЙ СИСТЕМЫ

Аннотация: *Эта статья основана на анализе необходимости разработки логистической системы. Анализируются проблемы в развитии логистических предприятий, потребности информационной платформы, стандартное отставание логистической информации.*

Сегодня невозможно представить производственное или торговое предприятие, которое не занимается решением логистических задач. Логистическая система – это относительно устойчивая совокупность звеньев (структурных/функциональных подразделений компании, а также поставщиков, потребителей и логистических посредников), взаимосвязанных и объединенных единым управлением корпоративной стратегии организации бизнеса. Такие системы позволяют оптимизировать функционирование товарных, информационных и финансовых потоков, «существенно сократить временной интервал между приобретением сырья и полуфабрикатов и поставкой готового продукта потребителю, способствуют резкому сокращению материальных запасов».

В условиях глобализации, учитывая обширность территории Казахстана, конкурентоспособность экономики и государства во многом будет зависеть от эффективной работы транспортно-коммуникационного комплекса. Ключом к конкурентоспособности отечественных товаров, услуг и экономики в целом является высокотехнологичная транспортная инфраструктура, соответствующая государственной транспортно-транзитной политике.

Таким образом, решение проблемы повышения эффективности транспортного сектора невозможно без усиления исследований по определению будущих направлений развития автотранспортных средств на основе систематического анализа его состояния на современном этапе.

Ключевые слова: *транспортировка, логистика, система, транспорт, цепочка поставок, груз, водители, диспетчеризация, учет*

1. INTRODUCTION

Automobile transport plays a significant role in the transport complex of the country, regularly serving a variety of enterprises of various forms of ownership, as well as the needs of the population of the republic. Every year, more than 80% of goods are transported by road, and more than 75% of passengers are transported by public transport.

At the same time, road transport is the main consumer of resources spent by the transport complex: 66% of fuels of petroleum origin, 70% of labor resources, and about half of all investments. A key objective of supply chain management is to ensure smooth and efficient operations at the production side of the chain. As the complexity of the production processes increases, involving, for instance, multiple products and distributed production sites, the design and the management of the logistic infrastructure become increasingly critical to the performance of the supply chain as a whole. Decision-makers need to assess and compare alternative logistic solutions accounting not just for their direct costs and benefits but, most importantly, for their impact on production performance. For instance, the main purpose of transportation logistics is to ensure that raw materials and intermediate products are timely delivered to the production sites, thus minimizing the production losses associated to stock-out/over-stock events at the different facilities.

When planning and scheduling transportation resources in terms of resource number, required capacity and routes, the direct costs of transportation are quite simple to estimate in terms of hourly/daily costs of resources and actual transportation times. However, much more significant from the perspective of the supply chain as a whole is the estimate of the potential production losses determined by the stochastic variability of the plant's production rates and of the arrival times of each resource at the designated production sites, in relation to the storage capacity available at each facility. In several instances, the costs of such production losses may well exceed the direct costs of transportation [1].

At the present stage, under the background of supply-side structural reform, the develop-

ment of traditional logistics industry is unsustainable. The way to reduce logistics costs has become an important issue for economic development. In order to promote healthier, more stable and sustainable development of logistics industry in the context of information age and to greatly improve the market competitiveness of logistics enterprises, it is necessary to accelerate the creation and introduction of advanced equipment and technologies, increase the rate of renewal of rolling stock and other technical means, strengthen material and technical base and develop objects of transport infrastructure and service.

Intensification of production, increase in labor productivity, the economy of all types of resources are tasks that are directly related to both motor vehicles and its subsystem - the technical operation of vehicles (TEA), which ensures the performance of the car fleet. Its development and improvement is dictated by the intensity of development of the automobile transport itself and its role in the transport complex of the country, the need to save labor, material, energy and other resources during transportation, maintenance (MOT), repair and storage of cars, the need to ensure the transport process reliably rolling stock, protecting the public, personnel and the environment [2].

The need for an integrated systemic approach to the problem of forming transport and logistics structures and investment decisions in the supply chain of goods with the participation of road transport, as well as the need for new theoretical and practical generalizations and optimization of freight traffic from a regional perspective, determined the relevance of the research. The recommendations arising from the conducted scientific-theoretical and practical research can be used by state and economic bodies in developing methods for regulating investment processes, regulating activities and improving the work of transport and logistics structures for managing the supply chain of goods, reforming motor vehicles taking into account regional peculiarities of the country , as well as in the development and improvement of legislation regulating transport and logistics activities.

2. THE NECESSITY OF LOGISTICS INFORMATION SYSTEM

In the supply chain of goods with the participation of motor transport, various structures of the transport and logistics system interact. Logistics information platform is to provide information exchange and sharing services to all types of users open network information system. In the process of logistics development, the information platform construction has become the essential embodiment of core competence [3].

According to analyzes, at present, some leading logistics enterprises in our country have initially established the smart logistics system through the information technology innovation, but the logistics enterprises are relatively few in the full implementation of information technology. First of all, small and medium-sized logistics enterprises are more difficult to get effective products and technical support, and only stay in the release and receiving stage of information, the monitoring and auditing role of information has not been played out and the role of the platform has been limited, resulting in logistics information scattered, fragmented. Difficult sharing of information resources, enterprises can't timely obtain the important information for their own development, and can't give full play to the advantages of information in the logistics industry, leading to the increase of total logistics cost.

Secondly, the smart logistics is mainly based on the information system, and enterprises can't grasp their own favorable policy information, which will lead to difficulties in the implementation of related links, and it is difficult to form the integration of resources. From the overall development of the logistics industry, most enterprises still lack the overall optimization of the information system of the company, and part of the function is not fully realized, for example, according to data taken from journal of "Transportation on Systems Engineering and Information Technology" a large number of logistics resources are idle phenomenon, China's freight vehicle empty driving rate above 30%, the vacancy rate of about 15% in the warehouse. Incremental resources are constrained by asymmetric information, and it is difficult to create new requirements [4].

The transportation process is very complex and responsible operations. Since a lot of money is invested in this process and a large number of people are involved. Technological scheme of the process of transportation of goods by one mode of transport (Fig.1).

Given the significant product volumes involved, transportation occurs mainly by autos: an entire to be managed defining the number of autos, their individual capacities, their routes, and scheduling their trips according to product quantities and transportation requirements (compatibility etc.). In this context, the first objective of transportation logistics is that of maximizing autos capacity utilization by defining autos missions that involve the simultaneous transportation of multiple products where both loading and unloading operations may take place.

A second objective is that of minimizing the variability of delivery/pick up times while keeping transportation costs within a specified budget. Ideally, as the number of autos employed on a given route increases, holding total capacity constant, the impact of time delays for one particular transport become less and less significant from the perspective of the performance of the whole production system. However, the corresponding transportation costs rise significantly as economies of scale are being traded for less variability in the delivery/pick up the process: it is necessary to keep in mind that the cost of auto hire, as well as fuel costs, do not vary linearly with capacity. The complexity of the trade-off among capacity utilization, transportation costs, and process variability leads to the identification of multiple logistic solutions, which can be assessed in terms of overall costs, including both actual logistic costs and expected production losses. In order to calculate all this process, we need a system. However, the existing logistics planning and scheduling solutions only partially covering the modern needs of companies (e.g. SAP and Oracle) are too expensive (to buy and to maintain) for the small and medium-size companies. That is why it is important to create separate modules which will be work as intended [5].

2.1 DRAWBACKS OF KAZAKHSTAN'S LOGISTIC SYSTEM

As the expert of the consulting company Logistics Systems notes "Today, the underdevelopment of the logistics infrastructure significantly affects to the economic development of Kazakhstan." Now the logistics are facing very important tasks like: - to ensure the availability and competitiveness of services, to increase

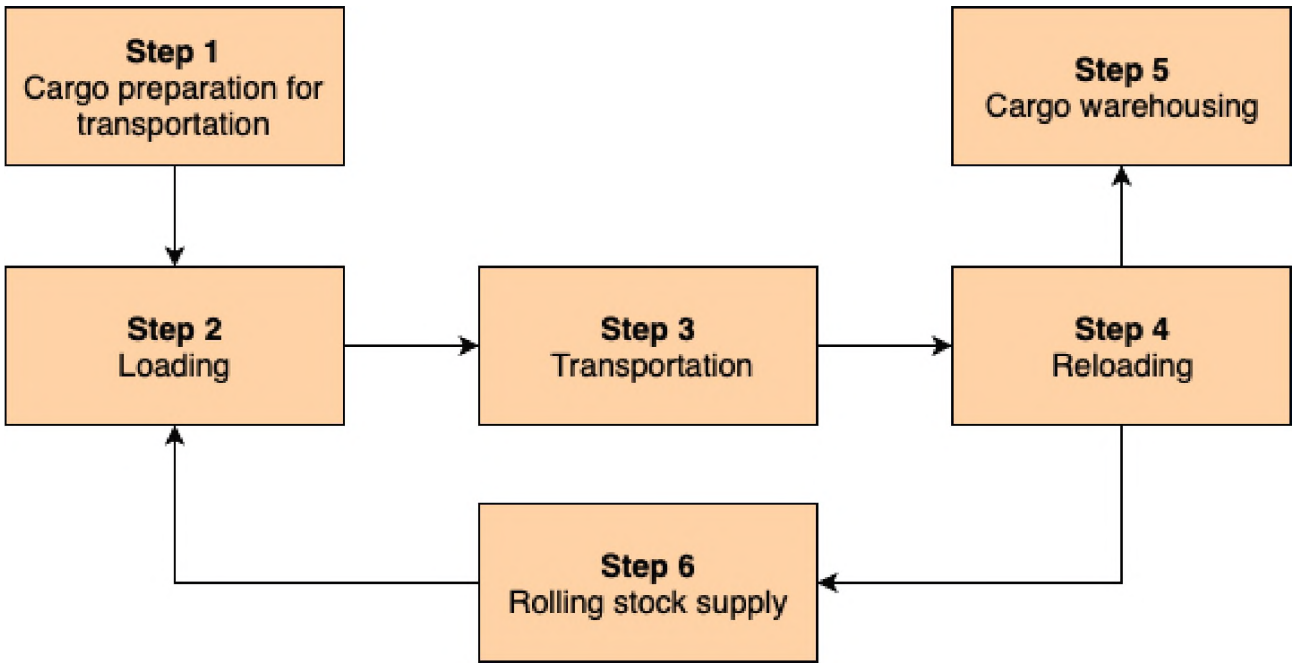

Figure 1- Transportation process of cargo

capacity, to eliminate imbalances, - to create an integrated system of logistics centers and to provide information support. The cost of logistics in Kazakhstan is very high and many times higher than the level of expenses in developed countries. The share of logistics costs reaches 25% of the cost of production, which is much higher than the world average, which is at the level of 11%, while in Canada and the United States it is 10 percent. The dynamics of economic development requires the evolution of the transport system, which can effectively serve the logistics requirements of the new economy. Kazakhstan urgently needs a developed transport and logistics system that will be able to serve the country's economy. In logistics, transportation efficiency, as is known, is determined by three factors: cost, speed and continuity. All these criteria in railway transportation are very lame [6].

The low efficiency of the national operator in the form of car fleet shortages and irregular supply, the constant increase in tariffs are a real brake on the development of manufacturers and the entire economy. Shortage of wagons was a seasonal problem and now it is becoming almost daily. During this time, the volumes of Kazakhstani producers have grown multiply and the expectations of consumers which we lose due to the irregularity of shipments in favor of foreign manufacturers have also grown.

The transit potential of Kazakhstan should be considered as a point of the country's economic growth. For this, it is necessary to ensure the increase of attractiveness and creation of the most modern efficient transport and logistics system in the CIS. As well as the improvement of transport operations on any type of transport taking into account the provision of a wide range of services offering competitive tariffs; further improvement of corridors for transit cargo traffic on a permanent linear basis, where the dates of passage, cost and systematic use of these corridors will be clearly defined; organization and development of optimal conditions and infrastructure for incoming and outgoing cargo traffic with subsequent local distribution to final destinations, etc [7].

In general, modern logistics in Kazakhstan should be an integrated complex, designed to provide the necessary amount of quantitative and quality services, to ensure unimpeded transportation to any direction, at any distance, for any goods and services. In addition, like other infrastructure systems, the logistics system should contribute to improving the competitiveness of domestic products by reducing delivery time, reducing cost, diversifying destinations, etc. At the same time, logistics should remain profitable, self-sustainable with a high level of reinvestment in its own development.

3. THE PROFIT AND EXPENCES OF CARGO TRANSPORTATION

Accelerating the research and development of logistics information technology, safety, management and service standards, and promoting standardization of related information technology, management and services is an important measure to promote the of logistics. Standardization and data interface standardization make the exchange and cooperation between enterprises more convenient and quick. For example, the creation of such modules as the accounting of drivers ' work will give the opportunity to calculate the costs that the company should allocate.

With reference to the application context described in the previous section, a tactical mission is defined as a transportation route consisting of a defined sequence of points and specified groupings of compatible product quantities to be loaded and unloaded in each point of the sequence. The logistics performance of each tactical mission can be evaluated as the combined performance of each individual auto mission for all the autos allocated to that route. The actual cost of each auto mission is driven by autos capacity, navigation times, waiting and operations times [8].

Another relevant measure of performance is actual capacity utilization, which can be expressed in the form of a cost as the cost of non-utilized capacity. As the final objective of transportation logistics is that of feeding a multiplicity of production processes geographically distributed across multiple production sites with specified quantities of raw materials and intermediate products, a third measure of performance

can be built based on the so-called mission risk, intended as the cumulative probability that the defined mission will cause the occurrence of stock-out and over-stock situations at any of the storage facilities involved, with corresponding production losses and/or additional costs due to unaccounted for delays and wait times.

Resource allocation is an ongoing continuous decision-making process in real time where criteria are changing "on the fly". To be able to correctly calculate the time, profit, costs, as well as to form the correct schedule for customers and drivers.

An effective road transportation scheduler must handle transportation instructions (TI) from many different loading points to many different destinations (e.g. customer locations and cross-docks where cargoes are offloaded and consolidated) and many different routes by which orders can be delivered. Choosing the best route based on consolidation or other criteria is referred to as dynamic routing. The scheduler must also be able to allocate cargos of many different sizes and weights to many different types of trucks and trailers; take into account preferences of owners, operators and drivers and fit the schedule into numerous constraints imposed by warehouse working hours, driver work rules, safety regulations and enterprise policies, eg, on choosing between own fleet and third-party carriers. Different companies have different critical constraints, e.g. permission to override time or other constraints to achieve a more efficient schedule. The schedule created must be not only feasible but also efficient, i.e. possibilities for backhauls and consolidations should be found.

Complexity is also defined by the number and variety of orders (and other events that affect scheduling) per day and the number and variety of transportation resources such as trucks.

In addition, the scheduler is expected to rapidly reschedule orders and transportation resources affected by unexpected events such as the arrival of new orders, cancellations, failures, bad weather conditions, road works and no-show of drivers or loading crews [9].

At the planning stage, orders are assigned to the truck and its trip is built. At this stage, orders can be added or deleted, and the route planned for the truck can be changed as a result of subsequent events.

At some point, the scheduler should lock in the truck. This will initiate communication with the warehouses, schedulers for changing drivers, servicing trucks, etc., in order to prepare the truck for its trip. At this stage, changes in the schedule of trucks are undesirable, as this may affect the warehouse, the driver's appointment, etc.

The execution stage begins with the driver performing his checks before the trip and continues until his debriefing is completed at the end of the shift. At this stage, a high level of complexity will be required to change the schedule of trucks during transportation. It is worth remembering that when transporting goods, the driver plays a big role as the schedule is based on drivers. Respectively, the calculation of the salary of drivers is based on the schedule.

After an extensive information exchange, a financial flow arises: the customer pays for the goods and their delivery. The information system must link information flows together, ranging from the delivery application to the drivers' payroll. (Fig.2).

In modern conditions, the importance of providing remote customer service, the transition to an automated system of electronic processing of various types of documents necessary for the implementation of transportation [10].

The international agreement "European Agreement Concerning the Work of the Crew of Vehicles Carrying International Transportation" (AETR), to which the Republic of Kazakhstan joined by the Decree of the President of the Republic of Kazakhstan No. 2272 of May 12, 1995, fixed the wide distribution of tachographs, by means of which the driver's working time is fixed. For vehicles of countries that are not members of the AETR, access to Europe was prohibited without tachographs [11].

IV. CONCLUSION

The transit potential of Kazakhstan should be considered as a point of the country's economic growth. For this, it is necessary to ensure the increase of attractiveness and creation of the

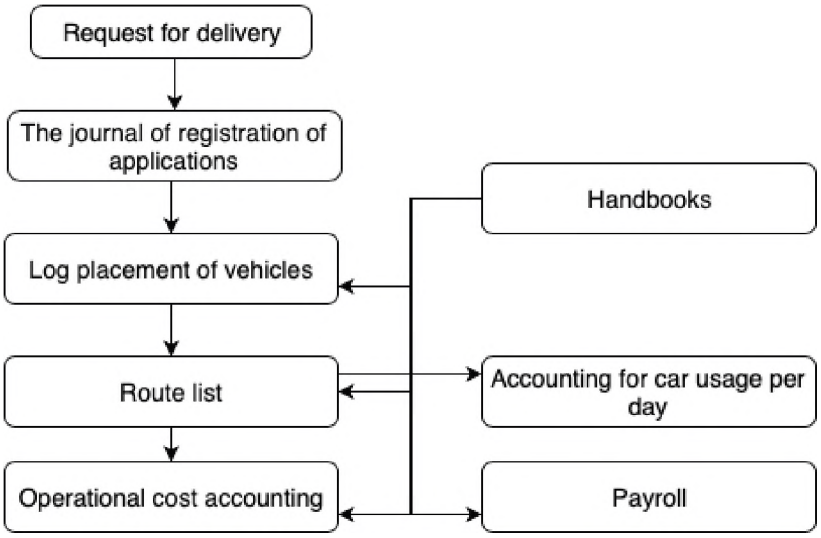

Figure 2 - Fragment of the interconnection scheme of documents of the information system

most modern efficient transport and logistics system in the CIS. As well as the improvement of transport operations on any type of transport, taking into account the provision of a wide range of services, offering competitive rates. To achieve this goal were formed such tasks as;

- formation of an effective system for analyzing, regulating and monitoring the market for transport and logistics services, improving the quality of customer service for transport and logistics fields;
- achieving the maximum efficiency of transport and logistics processes and reducing the transport component in the value of the final product in the internal transit and export-import communication, increasing the competitiveness of domestic exports;
- achievement of world standards in transport infrastructure and coordination of regulatory frameworks and control systems in the field of logistics and ecology to international standards;
- consolidation the single economic space and the development of interregional relations;
- development and effective use of transit potential through the establishment of an intermodal transport TLC;
- implementation of a unified investment and economic policy in the field of transport and logistics services, development of the infrastructure of the transport system of the country and a separate region.

Improving the efficiency of the transport system will make it a competitive element of the Kazakh economy. There will be a substantial increase in passenger and freight traffic.

In addition, like other infrastructure systems, the logistics system should contribute to improving the competitiveness of domestic products by reducing delivery time and cost, diversifying destinations, etc. At the same time, logistics should remain profitable, self-sustainable with a high level of reinvestment in its own development. Today, the governments of many countries rely on the development of logistics, which is the main factor for stimulating economic development. Therefore, the development of logistics systems is the most important assignment for all countries of the world.

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