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G. Zhumatayeva, Z. Bitileuova, Zh. Bayburayeva, Zh. Zhanbirov

Kazakh Academy of Transport and Communication named after M. Tynyshpayev, Almaty

gaziza_zhumataeva@mail.ru, zuhra_kadesovna@mail.ru,

Janna76077@mail.ru, janbirov_jg@mail.ru

QUALITY MANAGEMENT OF TECHNICAL MAINTENANCE OF TRUCKS

Abstract. The problem of providing vehicles with high-quality and timely maintenance and repair reaches a critical level and is a barrier for the development of the car market in the republic. In this context, management of technical operation of trucks is complicated, which requires the improvement of maintenance system and repairs necessary to reduce the cost of maintenance. To improve the competitiveness of trucks, it is necessary to ensure a high level of quality at the stages of development and production, and maintain the achieved level of quality during operation.

One of the most promising ways to improve the operational reliability of trucks is quality management during maintenance and repairs.

An analysis of recent studies and publications devoted to this issue showed that studies of the technical condition of cars are associated with road safety, cost-effectiveness and comfort, and largely depend on operating conditions.

The available significant information base allows us to develop new process technologies to improve the operational reliability of cars.

Keywords: car, transport, system, transportation, supply, quality, service, logistics.

Introduction

Road transport plays a significant role in the transport sector of the country. They are regularly serviced over 1.1 million businesses, organizations and other collective clients of the national economy and population. Each year, motor vehicles of the national economy carried more than 80% of goods by public transport - more than 75 % of passengers. The volume of cargo in January-February 2017 amounted to 72.9 billion tons · km (based on an assessment of turnover of individual entrepreneurs engaged in commercial transportation), and increased by 18.3% compared with the corresponding period of 2016. [1,2].

This work, according to the current economic policy of the Republic, taking into account the specific conditions of development, aimed at improving the efficiency of trucks on the basis of a systematic approach to organizing garages trucks in Kazakhstan. Since the problem of vehicle quality and timely maintenance and repair beyond a critical level and is an obstacle to the development of automobile market in the country. For example, in Russia at the beginning of 2016 for one existing plant maintenance and repair account for 1436 vehicles. In the EU the figure is 586, but in general the calculated value is at 750 Park Road. In Kazakhstan, in the range -1 850-1 900, so we feel more than three times the lack of technical service companies in the Republic of Kazakhstan [3].

On the other hand, in the Republic of Kazakhstan, taking into account the lack of service centers and dealers of the specific manufacturing plants, the main and major factor in the organization of maintenance and repair is an effective management system for spare parts and consumables, so it is an important part of the operation of freight cars of foreign manufacture.

Poor organization of the supply does not allow to fully monitor the safety of operation and provide the technical readiness of vehicles. Therefore, in the region of the Republic of Kazakhstan more efficient supply of spare parts is an important technological and economic problems [4].

Main part: Planning for supply chain management of spare parts to support the operation of freight cars of foreign manufacture is based on the method of determining the need for them. The system is controlled by feedback, reflecting the true state of the service life of each brand of trucks.

In order to achieve the best balance between costs and results of searches for economic trade-offs between the interests of all participants in the supply of spare parts and consumables.

Search goes on the strategic, organizational and operational levels. At the strategic level is the solution of problems of fundamental nature: the search for and choice of provider. At the next level, organized the purchase of spare parts and consumables, their shipping, receiving, quality control, storage and subsequent transportation [5].

Competence of the operational level is to specify and detail the arrangements: vendor selection, country, manufacturer, route and mode of transport, depending on the size of shipments, ie, transport solution (optimization) problems, which is only one element in the support system operation.

On each of these levels of professionals in the field of logistics need to define and maintain a given level of service quality. This organizational and analytical optimization minimizes the total costs and therefore increases the efficiency of customer service.

Considered the organizational and functional model is based on the interaction of information flows shown in Fig. 1. The scheme identified actors involved in the maintenance and repair of trucks, and material and information flows that connect them together [6].

Call Center (PI) is a structure created by the manufacturer of trucks and carrying out planning and management. From diagnosis to a specialized repair company receives design and engineering specifications and regulations for MRO goods (consumption of spare parts for repairs at the rate of MRO, the designated service life).

From the operator at the center of PIs regularly receive information about the intensity of service parts and node operational experience accumulated share a car, the number of cars with the turned out service life. Based on these data, the order of the logistics system (logistics), consisting of warehouses, from the production of PI receives orders for reimbursement of stocks in warehouses. From the center of PIs in the logistics system receives data about the delay of information flow reports of shipments.

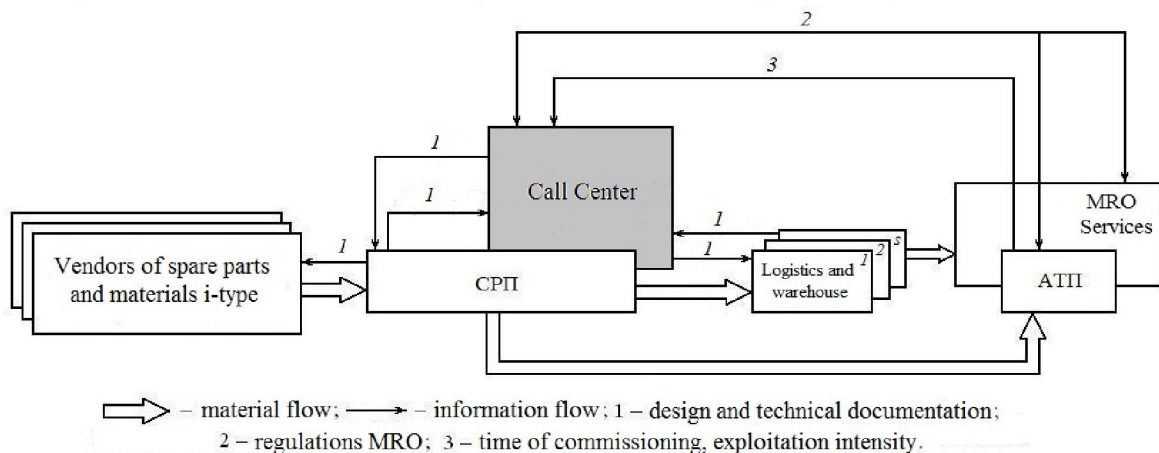


Figure 1 - The scheme of organizational and functional model of a system of information support of financial security

From the producers of the center of IP data is transmitted on the delay of information flow on the supply of communications and orders not completed the production, in order to prevent deficiency. In addition, the material flow enters the system logistics: deliveries of parts from manufacturer to the warehouse, the number of parts in transit from the factory to the warehouse. Further material flow system reaches MRO for future use.

In the context diagram management information model for the maintenance of the technical condition of vehicles are the input data and statistics on the operation, maintenance and repair regulations coming

from the manufacturers, developers, operators of orders, stock data in the logistics, the transport organizations, suppliers, output - the technical documentation, orders for the supply, procurement plans, information on shipments, shipments.

Control is based on standards, regulations, and control algorithms through the personnel departments of individual entrepreneurs and operators.

Context diagram in accordance with the purpose of modeling is decomposed into the following functions [7,8]:

- forecasting the intensity of exploitation and development of the resource;
- Warehouse Management;
- supply chain management;
- management of MRO.

Plan your transportation and shipment of spare parts and consumables on the basis of ordering, data on the supply and transport organizations.

Based on the novelty of such a structural-institutional education in the regions, as the system IP life cycle of trucks must be regarded set of challenges organizations that focus on the task of developing its organizational structure.

In modern management at the organizational structure means a series of separate components of the organization entrusted with certain functions, rights, duties and powers of the defining relations between them.

The organizational structure should create conditions for an effective combination of manufacturing and administrative functions, forming a close relationship and rational interaction. The main objective of management, which consists in coordinating the administrative organization of separate elements, is achieved in the organizational structure by creating a system of governance, management and distribution problems in the structure of the system hierarchy.

Logistics management is implemented through the center of the FE functional subsystems, which are divided between the respective roles that make up the Directorate of Logistics Support [9].

One of the factors showing the effectiveness of supply chain management, this decrease in transport costs due to centralized organizations, the supply of spare parts and consumables from overseas. It was therefore decided to organize a regional transport and logistics and distribution center (RTLRTS), the main and additional tasks that have been identified [10]:

- centralization of receiving orders for spare parts for the transportation of goods;
- receipt of goods, packaging, labeling, temporary storage and loading;
- Reducing the impact of human factors on the timeliness and quality of services;
- choice of transport-technological scheme of the cargo;
- selection of the carrier and mode of transport;
- routing of traffic and control the movement of goods in transit;
- preservation of the cargo during transport;
- joint planning of the various modes of transport in case of multimodal transport.

Results: Based on the study objectives there were formulated principles of logistics management concept of material flows and freight transport in the regions of the Republic of Kazakhstan in different messages: the integration of information technologies used in various modes, synchronous movement in logistic chain transport, cargo and information flows, completeness and timeliness of information transfer, the reconciliation of reference data, used in various transport companies, clientele, banks, customs and executive bodies (Fig. 2).

Implementation of the above principles logistic concept of materials management, and freight on the basis of regional communications networks will develop a common information space is available to all organizations forwarding structure and not only in a particular region, but also for the Republic of Kazakhstan.

The economic effect of implementing the proposed center is achieved by eliminating the time lost due to organizational reasons, to reduce operating costs and reduced total costs. In forming the organizational structure of Directorate of Logistics Support for the basis is the organizational and functional model defined above.

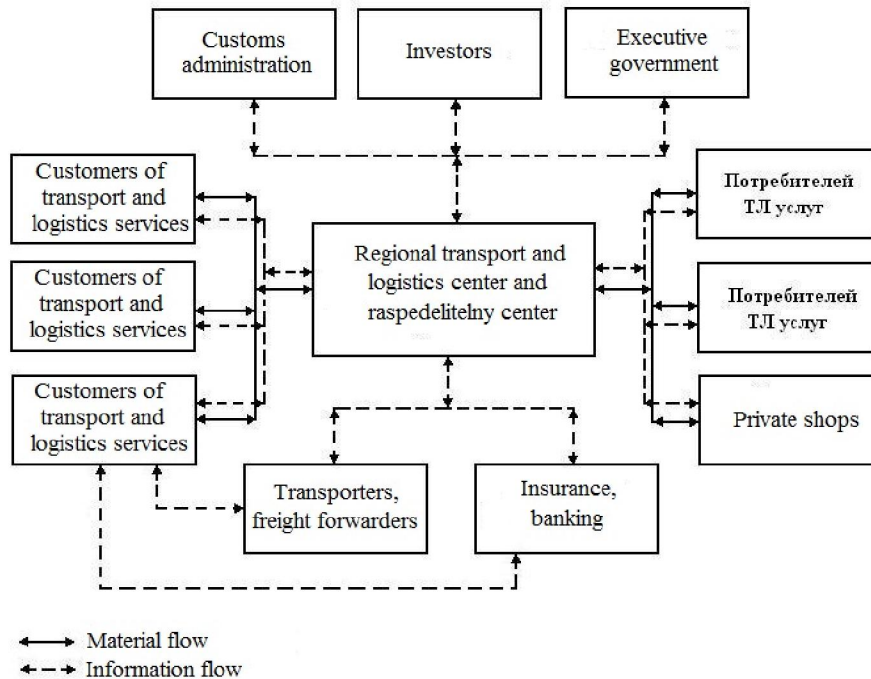


Figure 2 - The scheme of regional transport and logistics and distribution center

Management of logistics support is a separate structural unit providing direct links to the manufacturers and suppliers of vehicles, appropriate equipment and tools, as well as necessary spare parts and consumables for the ATP region of the Republic of Kazakhstan. It is headed by the director of logistics support, which reports directly to the Deputy Director General. The basic structure of the center of FE is shown in Fig. 3.

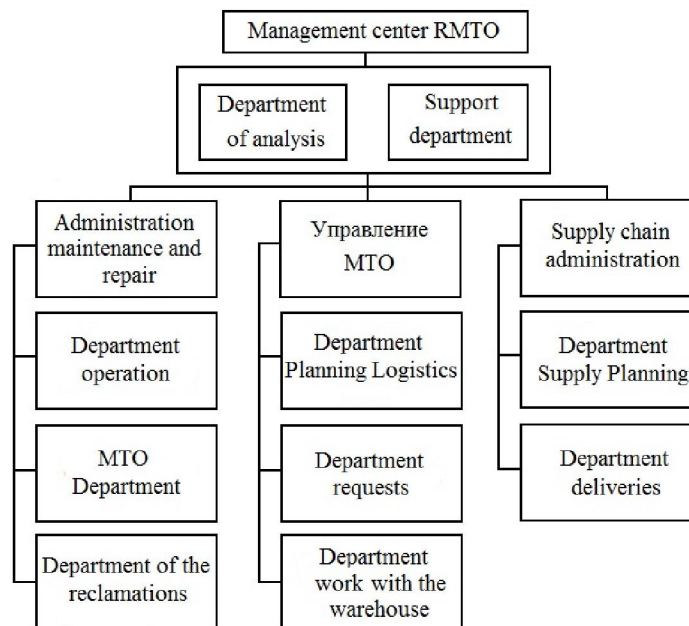


Figure 3 - Schematic diagram of the structure of the IP Center

Tasks for management logistics support:

- to provide support during the operational phase of trucks;
- organization of interaction between enterprises and companies, as well as enterprises in the process of cooperation to support operation, storage, maintenance and disposal.

When the logistics management information comes in the logistics center, where it is processed and, depending on the direction of the problem to be solved, is sent to the appropriate department. As part of its directorate of logistics support performs the following functions:

- organization and management of works on creation of IP;
- organization and management of work on the implementation and maintenance of IP customers;
- coordination and management of the holding of IP;
- organization and provision of information interaction of logistics center with the subjects of IP;
- organization of work to analyze the formation of logistic support, and safety;
- organization works to create interactive electronic technical manuals and online catalogs;
- organization of interaction between enterprises on the development of standard documentation system IP;
- participation in marketing activities for the provision of services;
 - organization of work and provision of services by the customer for technical operation of production;
 - organization of repairs and modernization;
 - organization of work on the establishment and operation of service centers of service;
 - organization of work on the logistics operation, maintenance and upgrading of products by customers;
 - elaborate customer requests for technical assistance in the operation, repair and modernization of production;
 - preparing bids;
 - the preparation and signing of contract and contract documents for the provision of technical assistance in the operation, repair and modernization;
 - implementation of contracts and agreements for the provision of services for logistical support.

In carrying out these functions the management of logistics support to interact with many other departments, enterprises, suppliers and external organizations.

Directorate of logistics support are subject to:

- Management of maintenance and repair;
- Management of logistics;
- Supply Chain Management.

Maintenance and repair department consists of operation, maintenance and repair, complaint.

Logistics Management has in its subordination to the planning department, the department requests, the department warehouse. Performs logistics management planning, orders, collect information on expenditure and replenishment of stocks, the calculation of spare parts, intake and performance of applications, grouping and ranking orders, transfer orders for production.

Supply management is made up of parts supply and supply planning. Planning for the supply of spare parts for the operation is built on the basis of the calculation of requirements, and management - based on a dynamic model. Supply management is carried out at the strategic, organizational and operational levels.

At the strategic level is the solution of problems of fundamental nature: the search for and selection of suppliers. At the next level, organized the purchase of spare parts and supplies, shipping, receiving, quality control, order picking, storage and subsequent transportation. Competence of the operational level is the choice of route and mode of transport.

Conclusions

The implementation of a centralized logistics concept of materials management (spare parts, supplies for repair and maintenance of vehicles) and freight transport on the basis of regional communications networks will develop a common information space is available to all organizations forwarding structure and not only in a particular region but also in Republic of Kazakhstan.

The economic effect of implementing the proposed center is achieved by eliminating the time lost due to organizational reasons, to reduce operating costs and reduced total costs.

Г. Жуматаева, З. Битилеуова, Ж. Байбураева, Ж. Жанбирова

М. Тынышпаев атындағы Қазақ көлік және коммуникация академиясы, Алматы

ЖҮК АВТОМОБИЛЬДЕРІН ТЕХНИКАЛЫҚ ҰСТАУ САПАСЫН БАСҚАРУ

Аннотация. Соңғы жылдары Қазақстанда тәуліктік жүгірістер мен жүк автомобильдерінің жүктемесі айтарлықтай өсті.

Қазақстанның көптеген аймақтары үшін автожолдар мен автокөлік жалғыз көлік қатынасы болып табылады.

Айта кету керек, 2018 жылғы жағдай бойынша автокөлік құралдарының (АКК) Республикалық паркi жүк көлік құралдарының 4048 бірлігін құрайды.

2018 жылдың басындағы жағдай бойынша Қазақстанда бір жұмыс істеп тұрған техникалық қызмет көрсету және жөндеу кәсіпорнына 1850-1900 көлік құралы келеді, ал Еуроодақ елдерінде бұл көрсеткіш – 586 бірлікті құрайды, жалпы есептік шама автомобиль паркінің 750 бірлігі деңгейінде болып отыр. Осылайша, біз техникалық қызмет көрсету кәсіпорындарының үш есе жетіспеушілігін сезінеміз. Осы фактілерді негізге ала отырып, көлік құралдарын техникалық жарамды күйде пайдалануды ұйымдастыру түбегейлі реформалауды талап ететінін атап өтуге болады, өйткені мамандандырылған Автосервис тапшылығы қазақстандық экономиканың дамуын Елеулі инфрақұрылымдық шектеуге әкелуі мүмкін.

Көлік құралдарын сапалы және уақтылы техникалық қызмет көрсетумен және жөндеумен қамтамасыз ету проблемасы күрделі деңгейге шығады және республикада автомобиль нарығын дамытуға кедергі болып табылады. Бұл жағдайларда жүк автомобильдерін техникалық пайдалануды басқару күрделенуде, бұл оларға қызмет көрсетуге арналған шығыстарды азайту үшін қажетті техникалық қызмет көрсету (ТКжЖ) және жөндеу жүйесін жетілдіруді талап етеді. Жүк автомобильдерінің бәсекеге қабілеттілігін арттыру үшін әзірлеу мен өндіру сатыларында жоғары сапа деңгейін қамтамасыз ету және пайдалану процесінде қол жеткізілген сапа деңгейін қолдау қажет.

Жүк автомобильдерін пайдалануда сенімділікті арттырудың ең перспективалы жолдарының бірі – сапаны басқару (ТКжЖ).

Осы тақырыпқа арналған соңғы зерттеулер мен жарияланымдарды талдау автомобильдердің техникалық жай-күйін зерттеу жол қозғалысы қауіпсіздігін, үнемділігін мен жайлылығын қамтамасыз етумен байланысты және көбінесе олардың пайдалану жағдайына байланысты екенін көрсетті.

Жұмыс Қазақстан Республикасының аймақтарындағы жүк автомобильдеріне техникалық қызмет көрсету және жөндеу жүйесін ұйымдастыру мен сапасын басқаруды зерттеуге арналған. Техникалық қызмет көрсету және жөндеу жүйесін (ТКжЖ) құру және енгізу, жүк автомобильдерінің техникалық жай-күйін қолдау үшін пайдаланудың нақты шарттарын ескере отырып, ұйым процесінің кешенді ұйымдық-экономикалық моделі (ТКжЖ) әзірленді. Қолда бар елеулі ақпараттық база автомобильдерді пайдалануға деген сенімділікті арттырудың жаңа технологиялық процестерін әзірлеуге мүмкіндік береді.

Түйін сөздер: техникалық қызмет көрсету, жөндеу, автокөлік, көлік тасымалдау, жеткізу, сапа менеджмент жүйесі, сервис, логистика.

Г.Жуматаева, З.Битилеуова, Ж.Байбураева, Ж.Жанбирова

Казахская академия транспорта и коммуникации имени М. Тынышпаева, Алматы, Казахстан

УПРАВЛЕНИЕ КАЧЕСТВОМ ТЕХНИЧЕСКОГО СОДЕРЖАНИЯ ГРУЗОВЫХ АВТОМОБИЛЕЙ

Аннотация. В последние годы в Казахстане существенно выросли суточные пробеги и загруженность грузовых автомобилей. Автодороги и автотранспорт для многих регионов Казахстана являются единственным транспортным сообщением.

Стоит отметить, что по состоянию на 2018 год Республиканский парк автотранспортных средств (АТС) насчитывает 404848 единиц грузовых транспортных средств. Немаловажным является факт, что в Казахстане более 64% грузовых автомобилей приходится на автомобили старше 10 лет.

По состоянию на начало 2018 года в Казахстане на одно действующее предприятие технического обслуживания и ремонта приходится 1850 - 1900 транспортных средств, тогда как в странах Евросоюза этот показатель составляет – 586, а вообще расчетная величина лежит на уровне 750 единиц автомобильного парка. Таким образом, мы ощущаем трехкратную нехватку предприятий технического сервиса. Исходя из данных фактов, можно констатировать, что организация эксплуатации транспортных средств в технически

исправном состоянии требует коренного реформирования, поскольку дефицит специализированные автосервисов может вылиться в серьёзное инфраструктурное ограничение развития казахстанской экономики.

Проблема обеспечения транспортных средств качественным и своевременным техническим обслуживанием, и ремонтом выходит на критический уровень и является препятствием для развития автомобильного рынка в республике. В этих условиях усложняется управление технической эксплуатацией грузовых автомобилей, что требует усовершенствования системы технического обслуживания (ТОиР) и ремонта, необходимой для уменьшения расходов на их обслуживание. Для повышения конкурентоспособности грузовых автомобилей необходимо обеспечить высокий уровень качества на стадиях разработки и производства, и поддерживать достигнутый уровень качества в процессе эксплуатации.

Одним из наиболее перспективных путей повышения эксплуатационной надежности грузовых автомобилей является управление качеством при (ТОиР).

Анализ последних исследований и публикаций, посвященных этой теме показал, что исследования технического состояния автомобилей связаны с обеспечением безопасности дорожного движения, экономичности и комфортабельности и во многом зависит от их условий эксплуатации.

Работа посвящена исследованию управления качеством и организацией системой технического обслуживания и ремонта грузовых автомобилей в регионах Республики Казахстан. Для создания и внедрения системы технического обслуживания и ремонта (ТОиР), поддержки технического состояния грузовых автомобилей разработана комплексная организационно-экономическая модель процесса организации (ТОиР) с учетом конкретных условий эксплуатации. Имеющаяся значительная информационная база позволяет разработать новые технологические процессы повышения эксплуатационной надежности автомобилей.

Ключевые слова: техническое обслуживание, ремонт, автомобиль, транспорт, перевозки, поставки, система менеджмента качества, сервис, логистика.

Information about authors:

Zhumatayeva G.- master of science, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; gaziza_zhumataeva@mail.ru, <https://orcid.org/0000-0002-3835-1346>;

Bitileuova Z. - Assistant Professor, Candidate of Technical sciences, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; zuhra_kadesovna@mail.ru, <https://orcid.org/0000-0001-9260-7034>;

Baiburaeva Zh. - master of science, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; Janna76077@mail.ru, <https://orcid.org/0000-0002-7848-7782>;

Zhanbirov Zh. - Professor, Doctor of Technical sciences, Kazakh Academy of Transport and Communications, Almaty, Kazakhstan; janbirov_jg@mail.ru, <https://orcid.org/0000-0002-6444-0836>

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