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ROAD FACTORS TO ALIGN THE ECONOMIC CONDITIONS

Summary. The principle of quantity and the type of cargoes is based on the analysis of market characteristics which allows adjusting easily and raising the effectiveness of using and exploiting possibilities.

АВТОТРАНСПОРТНЫЕ ФАКТОРЫ ДЛЯ ВЫРАВНИВАНИЯ ЭКОНОМИЧЕСКИХ УСЛОВИЙ ХОЗЯЙСТВОВАНИЯ

Аннотация. В основе анализа характеристики рынка лежит принцип выбора количество и марок грузовых автомобилей, позволяющих легче приспособиться и повысить эффективность использования их эксплуатационных возможностей.

We have studied and determined the main cost-performance ratio of the effectiveness of cartage organization and management.

In terms of market the principal cost estimation or the effectiveness of vehicle service is a tariff shifts. The tariff for the transportation services varies according to the demand volume, the number of proposals and pricing policy of motor transport enterprises. Moreover, as the results of research on the transport services market there are different forms of competition in tariffs among private entrepreneurs and transport companies of various forms of ownership. The tariff can be set in reliance to 1 ton per hour of car operation depending on mark and for 1 km of run. The carrier cost is determined by the formula [1]:

$$C_m = \frac{\left\{ C_{f.a.s.} \frac{L_{dis}}{g} + C_{fix.a.s.} \left(\frac{L_{dis}}{V_m} + t \right) \right\}}{G_s} \quad (1)$$

where: $C_{f.a.s.}$ – floating assets sum, required for 1 km of car run, tenge; L_{dis} – distance, km; g – percentage of miles laden; $C_{fix.a.s.}$ – fixed assets sum, required for 1 km of car run, tenge; V_m – average schedule speed car, km/h; t – downtime for loading and unloading of the car, h; G – capacity, t; s – load factor.

Returns of transport per 1 ton of cargo is determined by formula:

$$R_m = \frac{Dm - Cm}{Cm} * 100 \quad (2)$$

where: Dm – transport tariff for 1 ton of cargo.

The tariff and the prime cost of the transportation services depend on proper and timely maintenance organization of vehicles. For more efficient use of load carrier vehicles depending on the volume, duration and number of vehicles involved in the transport processes, as well as the distance of the object from the transport company main base, it is necessary to arrange temporary or movable stations of maintenance and repair providing distribution parts and POL. The results of the

questionnaire studies and preliminary calculations revealed that it is economically viable to arrange temporary stations of maintenance and repair if the object is est. the cargo loading point out lies from the transport company main base for over 40 km long and involved more than 25 load carrier vehicles.

Organization chart of temporary stations of maintenance and repair is shown on the fig. 1.

This system of transport processes organization has been used in the large object construction in Almaty region. The fig. 2 shows a schematic diagram of load carrier vehicles organization and management at the facility. Where (PP) - sand quarry, (LPP) – cement shed, (FP) - finished building blocks and bricks, (FPP) - delivery schedule of finished building materials. The construction schedule of a particular object is targeted in such a way that builders must deliver finished building materials timely in the required volume and number. At the facility there is no space or warehouses for storage of building materials. To serve the construction object 38 load carrier vehicles were involved, including 20 dumping trucks of KamAZ mark, 8 board KamAZ cars, 5 cars of GAZELLE mark and 3 dumping trucks of GAZ-53 and 2 auto cranes on the basis of ZIL.

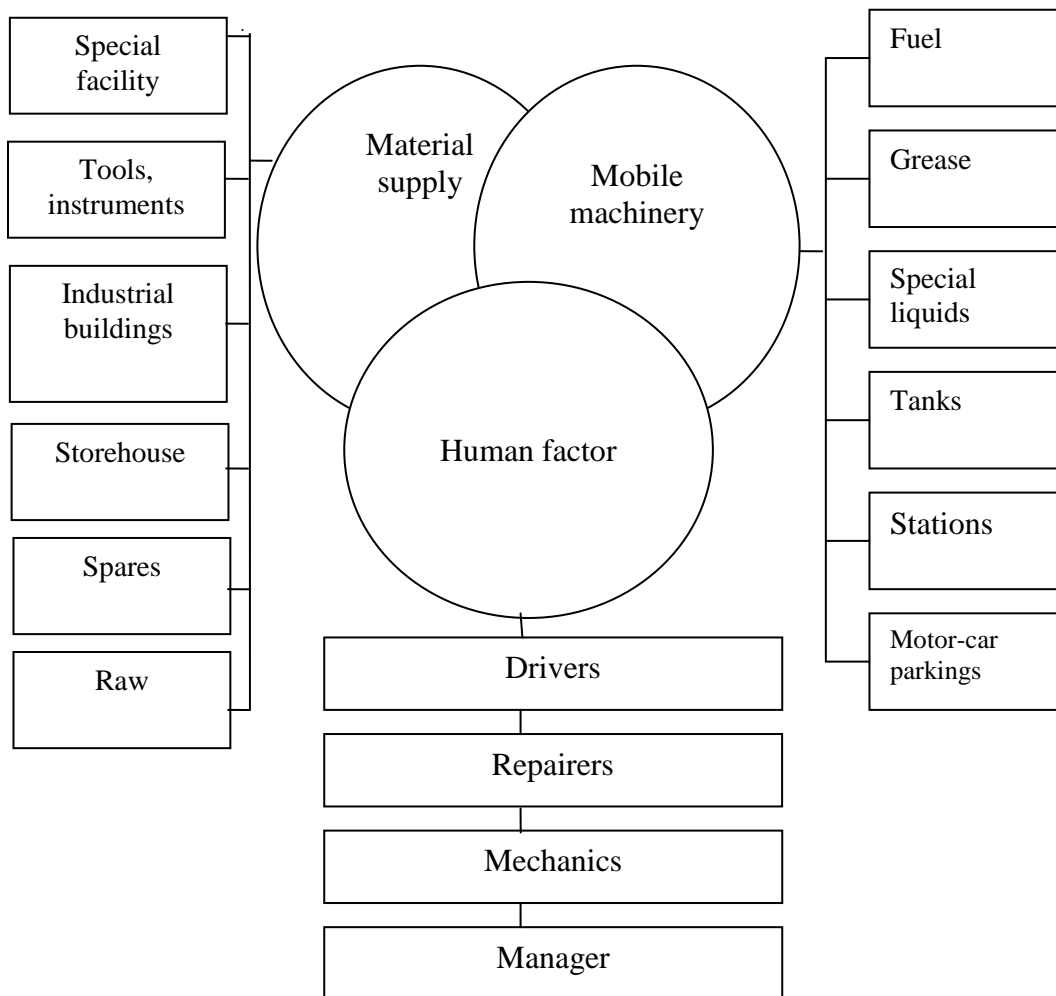


Fig. 1. Key factors affecting on reliability of motor transport enterprises management

Рис. 1. Основные факторы, влияющие на надежность управления автотранспортного предприятия

In practice it is widespread that the main base of motor transport enterprises is located in the town or district center, and modern construction objects are located outside the city or district center. Therefore, to improve the operational efficiency of load carrier vehicles by empty running reducing we offer the following controlling system of Motor Park, involved cars with the organization of temporary or movable stations of maintenance and repair of load carrier vehicles. The fig. 3 shows the

organization scheme of load carrier vehicles operation, where (A_i)- Building Company, (B_i)-motor transport company, (C_i) -works stores and (l_i) (*i* = $\overline{1,7}$) - a distance between the objects, located near or at a distance not exceeding 40 km. If the distance exceeds 40 km (option 2), the motor transport company management organizes special maintenance points and auto service, the items for rest and meals for drivers and repairmen, and others involved in specific tasks.

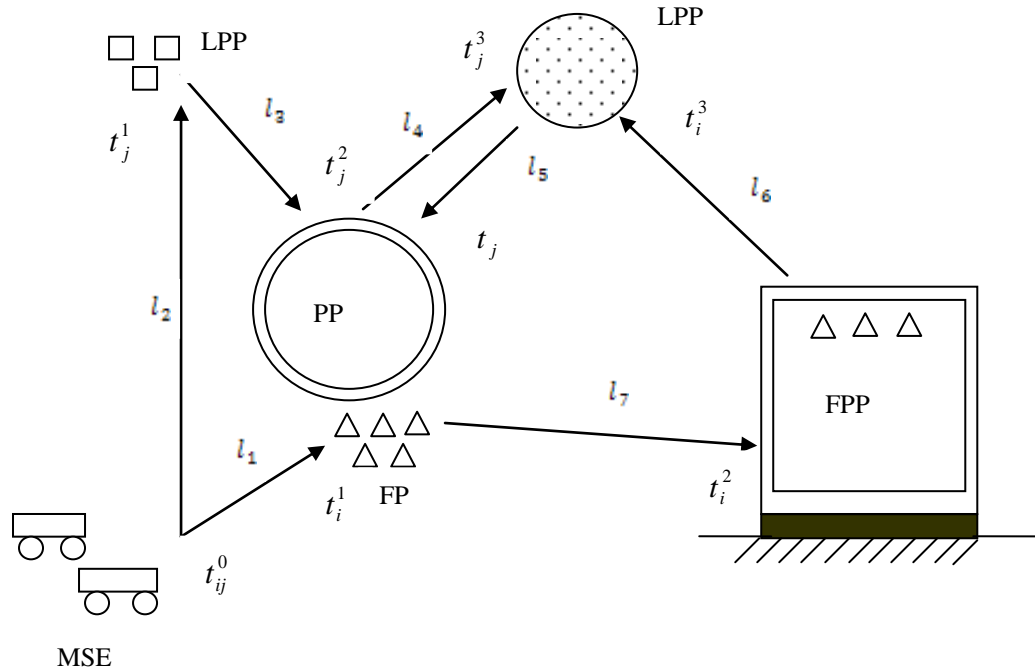


Fig. 2. Logistic scheme of transport process organization on the major construction object (MSE– motor transport enterprise; PP – prime producer; FPP – finished products producer; FP–finished products; LPP – location of necessary semi-finished products and prime producer)

Рис. 2. Логистическая схема организации перевозочных процессов на объекте крупного строительства (MSE – автотранспортное предприятия; PP – производители сырья; FPP – производители готовой продукции; FP – готовая продукция; LPP – месторасположение производителя необходимых полуфабрикатов и сырья)

Organization of temporary or movable stations of maintenance and repair requires additional charges, sum of which is computed using the following formula:

$$P_i = \sum_{i=1}^k m_i L_{ij} = A_i \tag{3}$$

and intensity of transport processes is determined by the formula:

$$I_i = \sum_{i=1}^k m_i L_{ij} / t_i = A_i / t_i \tag{4}$$

where: *k* - index of necessary material and technical values for organization of temporary or movable stations of maintenance and repair; *m* - transport capability of motor transport enterprise;

$$L_{ij} = \sum_1^j l_i .$$

According to the proposed formulas we can determine the necessity and effectiveness of the organization of temporary or movable stations of maintenance and repair on the basis of the customer.

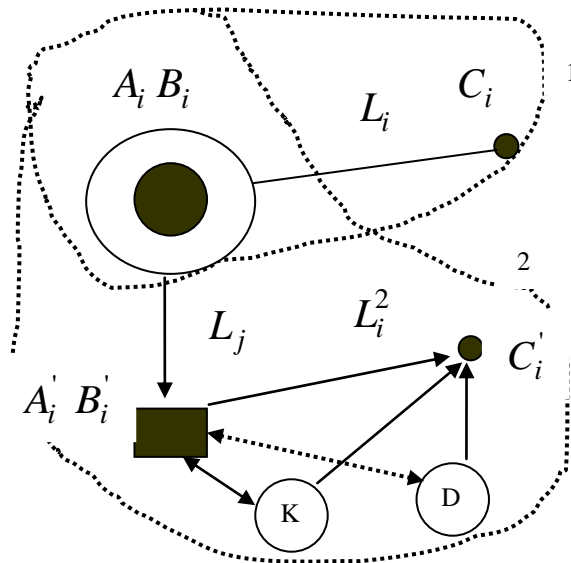


Fig. 3. Proposed scheme of organization of load carrier vehicle service (K – organization of temporary or movable stations, D - base of customer)

Рис. 3. Предложенная схема организации эксплуатации грузовых автомобилей (К – организация временных стоянок, D – база заказчика)

In accordance with the general systems theory the local transport system can be defined as an extended integrated transit system. Therefore, the results of the study suggest the following conclusions:

1. Theoretical research and practical experience of the international motor transport enterprises development testified that their activity is connected with optimization of all types of work and individual stand-alone companies taking into account the development of the surrounding economic regions.
2. Analysis of vehicles operating performance allows summarizing that the main methodological principle in determining the economic impact of road transport is the principle of a systematic approach, involving the economic effect of logistics activity management reliability improving of all participants.
3. Research of the opportunities and conceptual baseline of logistic organization of planning of the processes of motor transport enterprises industrial activity it is necessary to produce:
 - on the basis of complex systems analysis, maintenance and determination of the mechanism, their logistic organization of operation activity processes;
 - concept definition on form of its realization in transport systems by combining of material, informative and fund flows and respectively stock holdings, storage facilities as well as interacting transportation vehicles of cargo owners in a single material conducting and self-organizing system.
4. Carried out as a part of the study analysis of existing traditional technical approaches to improve the reliability of the control of complex production systems operation shows that the basic requirement for such systems is their high controllability under changing environmental conditions of operation, while guaranteeing achievement of a given result for the motor transport enterprises.

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