

# IMPROVING THE EFFICIENCY OF ROAD FREIGHT TRANSPORT

## ПОВЫШЕНИЕ ЭФФЕКТИВНОСТИ ГРУЗОВЫХ АВТОМОБИЛЬНЫХ ПЕРЕВОЗОК

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**abstract:** *The paper dwells on the technical and operational parameters affecting the efficiency of the road transport depending upon the performance of the motor transport enterprise. The paper also presents the justifications of criteria indicators to measure performance of road transport, and describes theoretical foundations of the process of studying and assessing the economic efficiency of motor transport systems. The influence of technical and operational parameters on the change in cost fluctuation of transport operation of motor power through a change in the total mileage and indicators that determine the value of variable and fixed costs: carrying capacity, loaded mileage proportion, utilization range, as well as the vehicle utilization, the average road speed and conveying distance. There have been considered three groups of indicators that define the ways and methods for increasing the efficiency of road freight transport in the existing operating conditions of the motor transport company.*

**KEYWORDS:** QUALITY OF CARRIAGE BY ROAD; PRODUCTIVITY OF ROAD TRANSPORT; TECHNICAL ECONOMICAL INDEXES; COST-EFFECTIVENESS; EFFECTIVENESS OF ROAD TRANSPORT.

### 1. Introduction

Economic efficiency theory tends to distinguish between the efficient functioning and development effectiveness of social production and its separate elements. The first case concerns the efficient use of available resources, and the second case involves the effectiveness of the activities aiming at improving resources management.

All changes taking place in organizing freight carriage affect the value of the technical and operational parameters, finally defining the efficient functioning of road transport in the region, as a result of organizational, technical, technological, economic, social and other actions.

So, the efficient functioning of road transport is assessed by the system of the technical and operational parameters characterizing the quantity and quality of the performed work.

### 2. Preconditions and means for resolving the problem

In order to draw a valid conclusion on the activity of road transport, it is not enough to establish the extent to which a transport plan is implemented for the analyzed period. It is necessary to compare the volumes of transportations for a number of the corresponding periods that will give an idea of the dynamics of the specified index. At the same time, it is necessary to establish the reasons which caused a particular dynamics of transport volumes or

goods turnover. The steady increase in transport work is a natural consequence.

The technical and operational parameters affecting the efficient functioning of road transport can be divided into two groups. The first group should include the parameters characterizing a degree of the efficient use of the motive power of road freight transport: truck availability rate; motive power capacity utilization rate; carrying capacity utilization rate and loaded mileage proportion; average distance of trip when loaded and average distance of carriage; standing time under loading un loading; duty time; technical and operational speeds.

The second group characterizes the effect of the results of the motive power performance: the number of trips; the total distance of carriage; ongoing runs; transports volume and transport activity.

We shall give calculation of some technical and operating parameters affecting the efficient functioning of road transport.

Productivity of the motive power in duty time is defined as the product the carrying capacity of vehicle  $q$ , its carrying capacity utilization rate  $\gamma$  and the number of trips  $n_e$  made by vehicle,

$$(1) \quad Q = q \gamma n_e$$

As can be seen from the formula, productivity of the motive power is formed under the influence of several technical and operating parameters characterizing the separate sides of road transport performance. Each parameter, in turn, is under the influence of various factors, including organizational-economic and material-technical, influencing on which, it is possible to change the

values of the parameters, and therefore the value of productivity of the vehicle fleet.

.Thus, the need and the direction of the influence can be determined on the basis of the analysis of the level of the vehicle fleet utilization rates. Any failures and shortcomings in transport reflect shortcomings in the applied methods for its management.

Change in the prime cost of carriage depends on two groups of factors: conditioned the reporting value of total expenditure, and determined the reporting volume of the total freight transportation (tonne-kilometers, passenger-kilometers, paid kilometers of running. Their influence on the prime cost is explained by various reasons. For example, the average number of vehicles with high carrying capacity was increased that resulted in change in the structure of the vehicle fleet. This has resulted in the increase in the amount of depreciation expense, fuel costs, maintenance operation, etc. However, the use of vehicles on the line on time was. Both contributed to change in the prime cost, but there is no connection between these reasons.

When analyzing the influence of technical and operational parameters on the prime cost of carriage, it is assumed that by a degree of the influence they are divided into two groups.

The first group should include carrying capacity of the motive power, carrying capacity utilization rate and loaded mileage proportion.

With the increase in in the parameters of this group, the efficient functioning of road transport without increase in in running, is increased. The influence of the parameters of this group on the prime cost is effective, since the variable and fixed costs for 1 t•km are reduced. At the same time, the amount of variable costs is changing insignificantly, that is the increase in the efficient functioning of road transport outstrips cost escalation.

The second group parameters – coefficient of the release of vehicles to the line, the duty time duration, technical speed, etc. – increase the efficient functioning of the motive power in case of the significant increase in running. With the growth in running, the variable costs depending on the movement (fuel and lubricants, spare parts, tires). Thus, this group of parameters influences on the prime cost only through the general running costs.

In the field of the motor transport, the development of a market economy is characterized by priority development of a service sector, buildup of the field of forwarding services for customers in the regions.

At present, significant importance should be attached to updating of transport products, the development of new types of transport and services, studying the need of the customers, and, first of all, it is necessary to pay attention to processing, intermediate storage, organization of loading and unloading operations, information and other services.

The general approach to determining the cost-effectiveness of the new types of the forwarding services (FS), at the current stage, can be reduced to the following options of the new types of services:

- to determine the costs, results and economic efficiency for each option;
- as the best will be recognized the option with a maximum value of the economic efficiency.

Economic efficiency is calculated by the formula:

$$(2) \quad E = R - V,$$

where,  $E$  – economic efficiency due to introduction of the new types of FS;  $R$  – the valuation (revenues) due to implementation of the new types; of FS(доходы) отреализацииновыхвидовГЭО;  $V$  – the valuation of costs.

The given expenses occurring at different times and the results of all years of the period of realization by target year, are carried out by multiplying their values for every year by a reduction factor, which is calculated according to the formula:

$$(3) \quad K=(1+E_n)^{y-t}$$

where,  $E_n$  – basic standard costs and results, numerically equal the investment performance standard ( $E_n = 0,1$ );  $t_y$  – target year;  $t$  – year, the costs and results of which are given by target year.

### 3. Conclusion

Results of the assessment of profitability should be directed at increasing the efficient functioning of road transport on time and productivity. The falling cost of carriage and improved productivity are the potentials for increasing profitability. In addition, there occur nonstandard inventory liquidation, sale of excess basic production assets, reduction and exclusion of unplanned expenses and losses.

### 4. References

1. Bychkov V.P. Road transport economics., M. : – Infra-M, 2006. – 381 p. (in Russian)
2. Efficiency of the production infrastructure of the enterprise / V.N. Goncharov and others. – M., 1994. –164 p. (in Russian)