STRUCTURAL FEATURES OF OPERATING COSTS

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ABSTRACT

The article presents the system distribution of operating costs, their structure and grouping according to the nomenclature adopted by the JSC «Russian Railways» for each type of selected activities. Items for aggregate activity types are highlighted. Detailed examples of calculations related to the accounting and expenditure items for freight transportation and the provision of infrastructure services for them, including sectoral units, groups and elements of costs are given. Analysis of the used typical schemes and the results obtained on simulated railways makes it possible to evaluate the potential of existing methods in terms of growing demands for cost management, improvement of regulatory framework of budget sector of the railway holding.

ENGLISH SUMMARY

Background. *Operating costs are a key performance indicator for railway transport. Financial and economic results and stability of the industry development depend on their consistency with income. With account for it and under conditions of a high competition of railways with other modes of transport for the traffic volumes at ever-increasing prices of consumable resources the holding company «Russian Railways» needs a system of regulation and control of expenses, which would allow not only providing a uniform procedure for the formalization and cost accounting but would be useful for analysis, forecasting, would imply adaptive means.*

Objective. *The objective of the authors is to analyze operating costs of railways on the basis of different indicators.*

Methods. *The authors use comparison and system, organization and financial.*

Results.

System distribution

As for considered category of operating costs, it includes ordinary activities' expenses and nonoperating expenses.

Business ordinary expenses are related to manufacture and sale of products, purchase and sale of goods, performance of a certain type of works, rendering of services.

Directly at JSC «Russian Railways» they involve:

– Expenses on rendering of services and performance of works;

– Expenses on production of goods and semi-finished products made in the reporting period;

– Expenses on providing its assets under the lease contract (in accordance with the accounting policy of «Russian Railways») for payment for temporary use (temporary possession and use);

– Cost of goods purchased for resale.

Expenses come into account in the branches and structural divisions as well in the context of items and elements of costs.

Depending on the relation to the production process ordinary business expenses are divided into directly initiated by this process (production realted expenses) and general business expenses, i. e. related to service of production process and management. In turn, costs initiated by production process are divided into specific (direct production) and general production expenses. Specific expenses in the classifier are grouped for aggregated activity types (hereinafter – AAT) (this is a group of items, united by function nature), types of activity, sectoral units.

General business expenses comprise two groups:

1. General business expenses without expenses on the administrative apparatus.

2. Expenses on the administrative apparatus (see Pic. 1).

Types of activity of JSC «Russian Railways» are divided into two groups:

1) Transportation, provision of infrastructure and locomotive traction services (see Pic. 2);

2) Operations that are not related to transportation, provision of infrastructure and locomotive traction services (see Pic. 3).

A distinctive feature of the first group is an integrated (network) nature of provision of services.

Separate accounting of expenses for types of specified activity includes distribution of a share of costs to maintain railway infrastructure, locomotive traction, rolling stock repairs, etc. Expenses of this group can be differentiated correspondingly only at the branch level (territorial and functional) and at the central level of «Russian Railways», as statistics on the basis of which the distribution is carried out, is formed only at a particular railway or within the entire network. Income and financial results for the types of activities are also determined solely within the holding company.

While types of activity of the second group are concerned, the classifier provides for itemized separate accounting of specific (direct production) expenses in subdivisions and other structural entities. Income, expenses and financial results are determined within each unit performing particular work.

Items of specific (direct production) expenses in the classifier are to be further separated into two groups: items- resources and items- functions, which in turn are grouped for AAT.

Itemized calculation

Aggregate activity types are a group of items, united on a functional basis. Let us consider in more detail AAT of the first group.

Aggregate activity type «Provision of services for freight transportation» includes items:

– Preparation of freight cars and containers for carriage of goods;

– Displacement of cars;

– Handling, reception and delivery, reclassification, weighing;

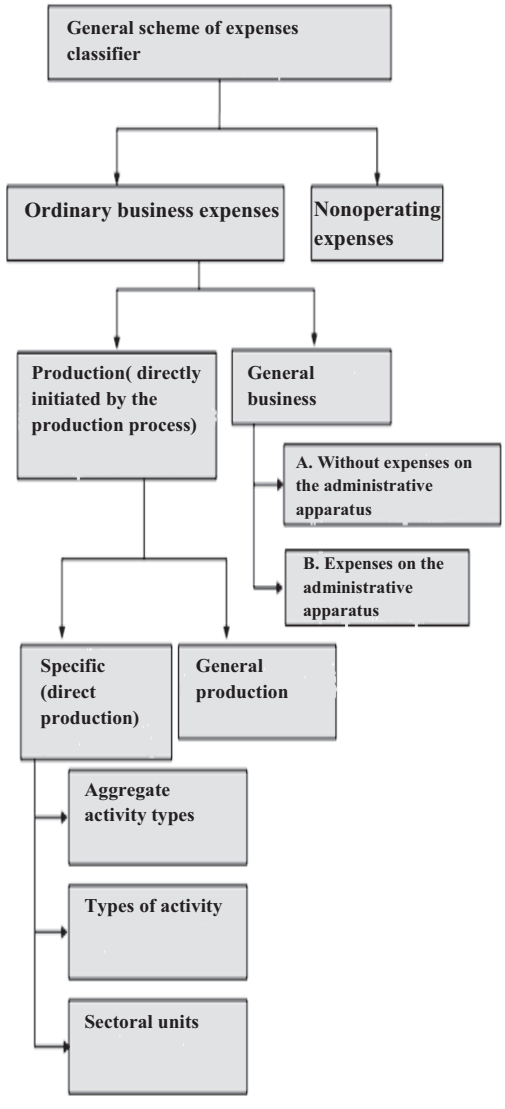
– Additional services to clients, etc.

This type also includes operations related to amortization of freight cars and containers.

«Maintenance and operation of the railway infrastructure» includes items related to maintenance, service, repair, operation and amortization of facilities of the designated sphere.

AAT «Locomotive traction» includes the following items of expenditure:

– Operation of locomotives for freight and passenger traffic, as well as provision of locomotive traction services;



Pic. 1. Classifier of expenses in the nomenclature of income and expenditures for types of activity of JSC «Russian Railways».

– Operation of trains, diesel trains, railcars and rail buses;

– Equipping, servicing and cleaning of locomotives operating in freight and passenger traffic, of trains, diesel trains, railcars and rail buses;

– Locomotive operations at shunting operations;

– Equipping shunting locomotives;

– Amortization of locomotives, electric trains, diesel trains, railcars and rail buses.

«Provision of services for passenger long-distance transportation» and «Provision of services for passenger commuter transportation» have similar items of expenditure. They are related to passenger services, maintenance of rolling stock and services to carriers.

As for «Repair of rolling stock and transport equipment», this section refers to expenditure on maintenance, all types of repair and overhaul of freight and passenger cars, containers, electric locomotives, diesel locomotives, electric and diesel trains, railcars, rail buses, performed at the depot, and plants for JSC «Russian Railways», and for other enterprises.

Separate accounting of specific (direct production) expenses in activity related to provision of infrastructure services includes distribution of the shape of costs according to the type of movement:

1) freight transportation;

2) passenger long-distance transportation;

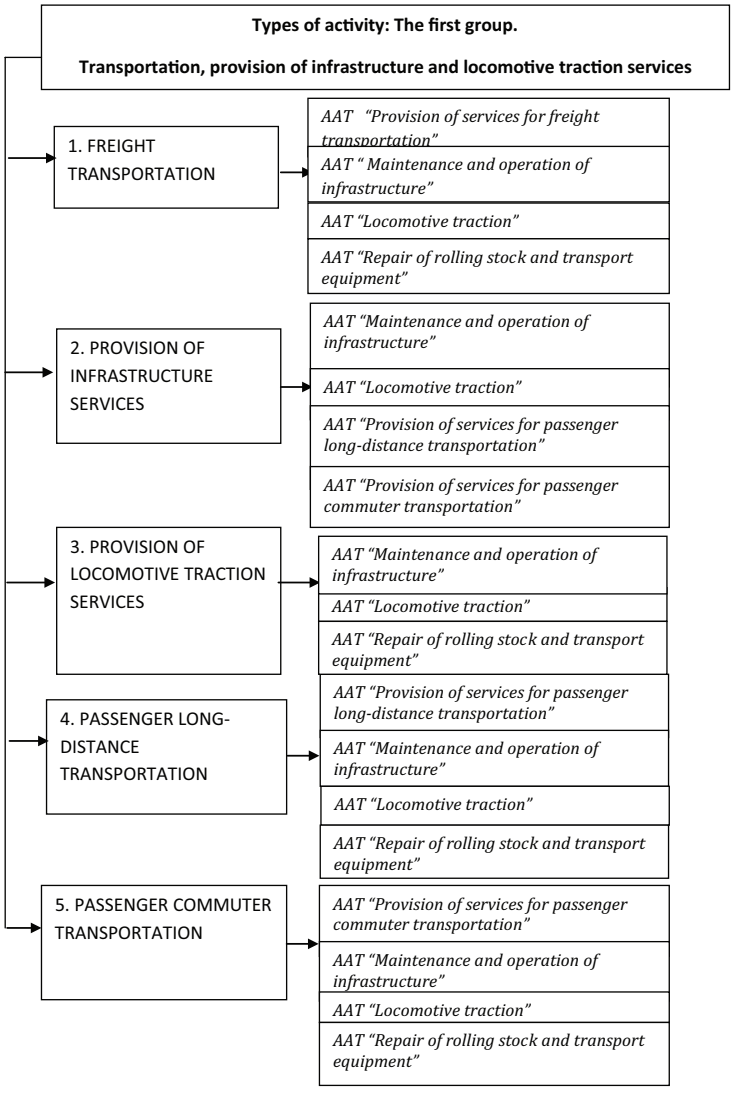
3) passenger commuter transportation.

The need for the distribution of specific (direct production) expenses among types of activity is justified by inability (or economical unviability) of separate accounting for some items at the level of a linear (local) entity.

In that sense an example of calculation of expenses for two constantly required types of activity which are «Freight transportation» and «Provision of infrastructure services for freight transportation» according to data of a simulated railway can be considered as a good supporting argument.

Analysis of simulated data

The value of operating costs is calculated for items of the classifier for each AAT (Table 1). The largest share of expenses falls into category «Maintenance and operation of the railway infrastructure» that represents respectively 63,4% and 93,4% of operation



Pic. 2. Scheme of formation of expenses of normal business activities for AAT (types of activity 1–5).

expenses within activities, «Freight transportation» and «Provision of infrastructure services for freight transportation».

Table 2 shows the structure of expenses for considered types of activity in sectoral units. The largest share in freight transportation is occupied by locomotive unit – 32,2% and track unit – 31,5%, and in the provision of infrastructure services the largest expenses relate to electrification and energy supply unit – 36,2% and track unit – 26,7%.

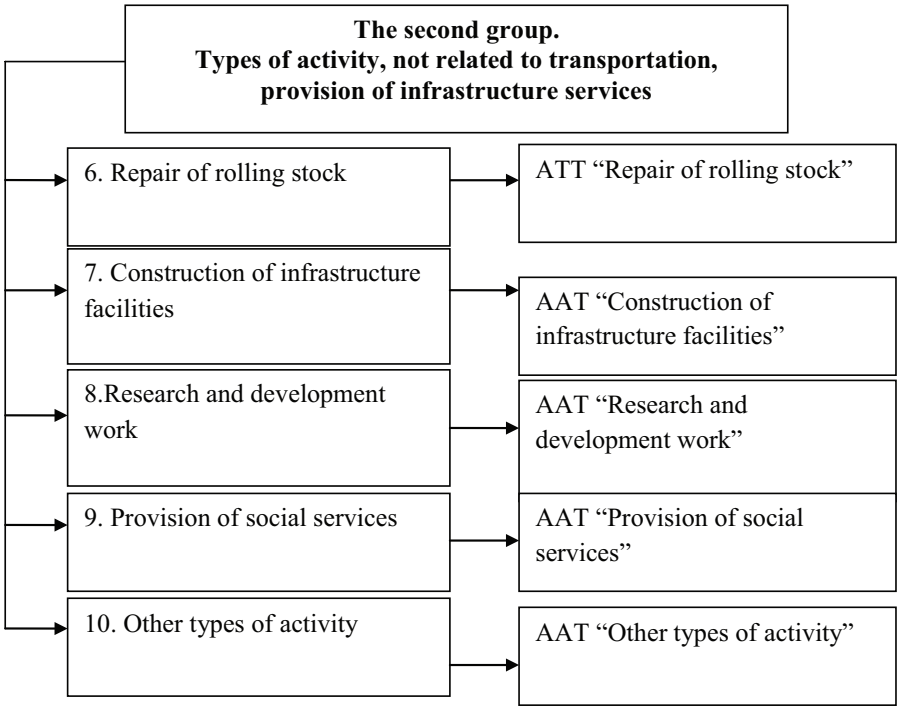
Calculation of structure of sectoral units expenses for types of activity «Freight transportation» and «Provision of infrastructure services for freight transportation» is carried out for three groups of expenses (Tables 3 and 4).

In the current financial statements expenses for each unit are divided according to the type of transportation, sectoral units and aggregate activity types. General production and general business expenses are proportional to the wage fund for operational activity and are recorded as a separate line for each unit and type of transportation. In this case, the total amount of expenses for type of activity can be calculated only by summing lines for items which significantly increases the amount of calculation work. Therefore the authors consider it appropriate, if the accounting forms are revised, to provide an additional form, which will enlist general amount of expenses for each type of activity and AAT for groups of expenses (specific, general production and general business).

The greatest share belongs to specific (direct production) costs – 62,6% (freight transportation) and 59,6% (provision of infrastructure services), while the share of these costs varies considerably for individual units – from 50–54% in the unit of electrification and power supply to 75–76% in the locomotive unit.

Depending on the economic substance costs associated with production are grouped according to cost elements: labor expense; social security fees; material costs (materials, fuel, electric energy, etc.); amortization; other expenses.

Grouping according to cost elements is carried out for each item of the expenses classifier, sectoral units and main groups of expenses. This is done during planning and accounting of actual costs.



Pic. 3. Scheme of formation of expenses of normal business activities for AAT (types of activity 6–10).

Table 1

Structure of operating costs for freight transportation in the context of AAT, %

Aggregate activity types	Types of activity	
	Freight transportation	Provision of infrastructure services for freight transportation
Provision of services for freight transportation	3,7	-
Maintenance and operation of the railway infrastructure	63,4	93,4
Repair of rolling stock	3,6	3,3
Locomotive traction	29,3	3,3
Total	100	100

Table 2

The structure of expenses for freight transportation for type of activity in the context of sectoral units, %

Sectoral unit	Types of activity	
	Freight transportation	Provision of infrastructure services for freight transportation
Commercial work in freight transportation sector	2,7	–
Transportation	10,5	15,8
Locomotive	32,2	6,6
Cars	6,3	–
Track	31,5	26,7
Civil engineering structures, water supply and sanitation	2,1	4,0
Automation and remote control	7,5	9,0
Electrification and energy supply	5,5	36,2
Other units	1,7	1,7
Total	100,0	100,0

Table 3

Structure of operating costs for type of activity «Freight transportation» for groups of expenses in the context of sectoral units, %

Sectoral unit	Groups of expenses			
	Specific	General production	General business	Total
Commercial work in freight transportation sector	49,78	16,39	33,83	100,00
Transportation	55,42	8,80	35,78	100,00
Locomotive	75,03	10,10	14,87	100,00
Cars	56,77	17,32	25,91	100,00
Track	53,52	20,59	25,89	100,00
Civil engineering structures, water supply and sanitation	67,84	14,14	18,02	100,00
Automation and remote control	62,21	12,86	24,93	100,00
Electrification and energy supply	50,22	18,63	31,15	100,00
Other units	71,47	8,17	20,36	100,00
Total	62,61	14,10	23,29	100,00

Table 4

Structure of operating costs for type of activity «Provision of infrastructure services for freight transportation» for groups of expenses in the context of sectoral units, %

Sectoral unit	Groups of expenses			
	Specific	General production	General business	Total
Transportation	64,53	4,74	30,73	100,00
Locomotive	76,28	11,03	12,70	100,00
Cars	63,20	11,89	24,91	100,00
Civil engineering structures, water supply and sanitation	72,51	13,79	13,70	100,00
Track	52,00	20,04	27,96	100,00
Automation and remote control	63,17	12,07	24,77	100,00
Electrification and energy supply	54,29	17,31	28,39	100,00
Other units	48,04	18,36	33,60	100,00
Total	59,59	14,19	26,22	100,00

Table 5

Structure of operating costs for freight transportation for cost components, %

Cost elements	Type of activity «Freight transportation» 100%	Including with allocation of the share of costs	
		AAT «Maintenance and operation of infrastructure» 63,4%	Track unit 31,5%
Labour expense	40,4	45,6	39,7
Social security contributions	8,5	9,7	8,7
Materials	6,4	7,9	10,7
Fuel	6,3	1,4	1,2
Electric energy	10,4	3,0	1,3
Other material expenses	6,3	7,0	7,7
Amortization	16,3	19,7	25,7
Other expenses	5,4	5,7	5,0
Total	100,0	100,0	100,0

Examples of calculations of the structure of operating costs for cost elements are made for freight transportation according to data of a simulated railway (Table 5). Considering the cost structure we can clearly see the difference between a high share of material costs (over 29%) for the type of activity «Freight transportation» and a lower share of the same material costs (19,3%) for AAT «Maintenance and operation of infrastructure.

The largest share of costs for freight transportation have elements «labor expenses» – more than 40% and amortization – 16,3%. In the structure of aggregate activity types related to infrastructure, the share of labor expenses is over 45%, and the share of amortization is almost 20%, due to the presence of a large number of employees and passive fixed assets of rail transport in infrastructure units. The example of track unit shows that the share of labor expenses (about 40%) and amortization (almost 26%) are high, and there is a low share of costs of fuel and electric energy.

The structure of the costs for groups of main specific expenses, general production and general business expenses for AAT and sectoral units as well as for cost components varies considerably for each type of activity. And it should be carefully assessed and taken into account when planning, budgeting, and performing an economic analysis of the operating costs of railways.

Conclusion.

The need for additional traffic volumes to ensure sustainable financial position of rail transport and to reduce the share of transport costs in the price of the final product requires a more in-depth feasibility research of costs for transportation. And this task is equally relevant for all holding companies. Railways are territorial branches of JSC «Russian Railways», but their role changes considerably: from business units they are transformed into regional centers of corporate management (RCCM).

The new organization implies modernization of management system of economic activities on the basis of automated information systems to monitor costs and results in real time.

The accuracy of calculation of costs and the degree of their relationship to the income by type of activity, aggregate activity type and integrated tariff component influences the effectiveness of managerial decision-making in the area of responsibility of the management of «Russian Railways», and at the level of RCCM and individual units.

New approaches to formation, registration and distribution of costs contribute to substantially specify a methodology to assess the factors affecting the specificity of cost management, taking into account:

– Change in the management structure of the railways;

– Division of ownership types and on this basis, the allocation of the costs for type of activity, aggregate activity type and integrated tariff component;

– The development of an information base of costs formation;

– The use of a single methodological approach to the automation of calculations of costs and income through the introduction of a corporate management accounting and the development of the EC ASUFR (Commom corporate automated system of management of finances and resources – ed.note) enables to perform a through accounting and calculation of costs for types of activity and AAT at all levels of management;

– Relationship of operating costs with performance conditions of the transport market: volume of traffic, quality of transport services, pricing, depending on the position and role of operating costs by type of activity and AAT.

Expenses structure can be applied to a scope of problems, e.g. to: calculations of cost norms of budgets during the process of planning of costs; substantiation of the level of motivational budget, programming of increase in profitability of an enterprise. All together it refers to budgeting of the holding, individual transport companies, their branches and subsidiaries. It means that characteristic features of structuring of operating costs should be considered wider than just as an occasion to re-evaluate existing methodologies and forms of accounting. Their diffuse sense implies considerable innovative opportunities.

Keywords: economy, railway, operating costs, freight transportation, type of activity, cost structure, classifier, aggregate activity types, calculation methods, system distribution.

REFERENCES

1. The procedure of separate accounting of income, expenditures and financial results by type of activity, tariff components and aggregated activity types of JSC «Russian Railways». Order № 311 of the 31st of December 2010 (registered by Ministry of Justice of Russia on the 12th of April, 2011, registration number 20470). [*Porjadok vedenija razdel'nogo ucheta dohodov, rashodov i finansovyh rezul'tatov po vidam dejatel'nosti, tarifnym sostavljajushhim i ukrupnennym vidam rabot otkrytogo akcionernogo obshhestva «Rossijskie zheleznye dorogi». Prikaz № 311 ot 31 dekabrja 2010 g. (zaregistrirovan Minjustom Rossii 12 aprelja 2011 g., registracionnyj № 20470)].*

2. Nomenclature of income and expenditure by type of activity of JSC «Russian Railways» [*Nomenklatura dohodov i rashodov po vidam dejatel'nosti OAO «RZhD»*], 2010, 228 p.

3. Smekhova, N.G., Shobanov, A. V. New principles of cost management of JSC «Russian Railways» [*Novye principy upravlenija rashodami OAO «RZhD»*]. *Ekonomika zheleznyh dorog,* 2009, No.3, pp. 62–76; No.4, pp. 31–45.

4. Tereshina, N.P., Galaburda, V.G., Tokarev, V.A. [et al]. Economics of Railway Transport: Textbook for universities of railway transport [*Ekonomika zheleznodorozhnogo transporta: Uchebnik dlja vuzov zh.-d. transporta*]. Ed. by N. P. Tereshina, B. M. Lapidus. Moscow: UMC ZhDT, 2008, 987 p.

5. Tereshina, N.P., Smekhova, N.G., Inozemtseva, S.M., Tokarev V. A. Expenditures of rail transport infrastructure: educational guide [*Rashody infrastruktury zheleznodorozhnogo transporta: uchebnoe posobie*]. Moscow:UMC ZhDT, 2010, 224 p.

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