

COST CALCULATION IN RUSSIAN RAILWAY COMPANIES: PECULIARITIES, TRENDS AND AREAS OF IMPROVEMENT

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The present article analyzes the current state, trends and structure of costs in Russian railway transport companies, generalizing on the main calculation features of the passenger and freight transportation costs. Based on the results of the analysis, directions of improvement for the calculation methods in the studied companies are offered. The results of the study can be used as a basis for the development of management accounting methodology in Russia and abroad.

Keywords: costs, calculation, management accounting, railway companies, freight and passenger transportation

Introduction

Railway transport is an important strategic state tool, it has high economic, geopolitical and social value; it could also be the indicator of efficient or inefficient functioning of all branches of economy. Railway roads are a way of the transport communications in the vast territory of Russia, an instrument of carrying out military, post, agricultural and passenger traffic; furthermore, many are "donors" of a number of Russian regions. In Russia the share of transport expenses in the full costs of the product is very high. There is a significant correlation between the status of Russian economy and the quality of services and rhythmicity of performance in railway companies.

Today there are a few burring issues to be considered. How can the costs in railway companies be reduced? Where can the optimization reserves of their financial and economic activity be found? In our opinion, the answers to these questions are rooted, first of all, in the composition and structure of the cost in the railway companies, secondly, in the method of cost calculation applied by companies. The article addresses these actual problems and presents their solutions.

Literature Review

Many Russian researchers studied managerial accounting: A. Abramov, A. Bakaev, M. Vahrushina, N. Vrublevskiy, A. Guravel, T. Karpova, V. Kerimov, N. Kondrakov, B. Lapidus, E. Mizikovskiy, I. Mizikovskiy, S. Nikolaeva, Ya. Sokolov, A. Sheremet, A. Shulga and others. Among foreign scientists one can distinguish the papers of Ch. Horengern, J.Foster, D. Midlton.

Unfortunately, these studies consider just general issues of management accounting in organizations; they describe the overall accounting methods of cost calculation and the cost

planning procedure. They don't take into account the peculiarities of railway companies; they neither disclose the order of drawing up internal reporting in these companies, nor study the usage of direct-costing in the cost calculation process in railways companies.

Methodology

Common scientific principles and research methods are the methodological basis of this work. The study was aimed at investigating economic relations in their development and linkages; systematic and comprehensive approaches to the study of management accounting in railway transport were used as well as the analysis and synthesis of cost accounting and calculation of the cost of transportation were applied. Induction and deduction, collection and synthesis of theoretical bases of management accounting, their comparison with the practice of application as well as graphic-analytical and empirical methods were also made use of.

Composition and structure of the cost in railway companies

Today the classification of costs in all departments/divisions of railway companies is carried out in accordance with the Federal Law¹. The key criterion for the separation of costs in the railways is the type of activity, in which the costs are divided into performance and utility-support (Fig. 1).

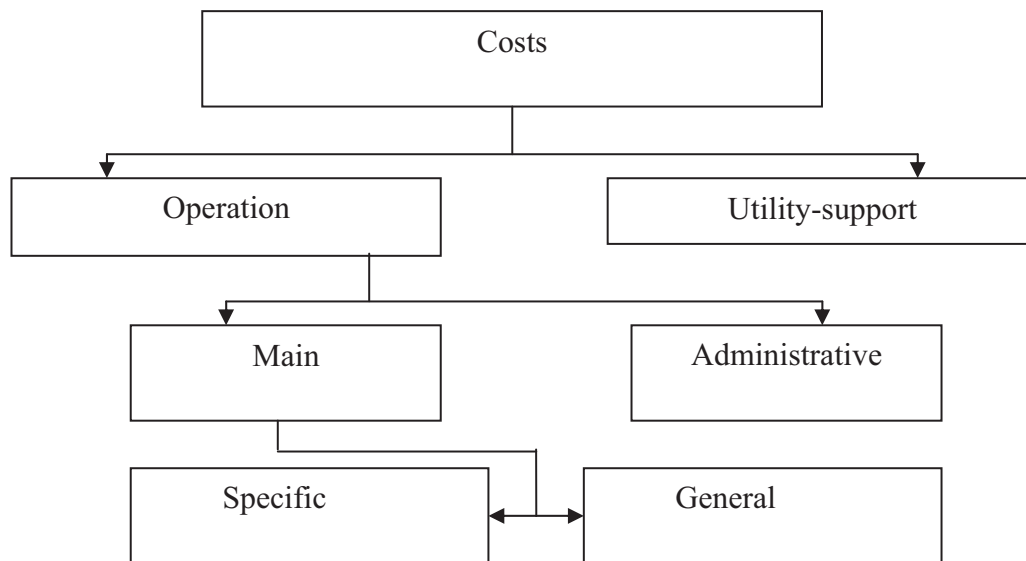


Figure 1. Classification of costs in Russian railway companies. (by the type of activity)

Operating expenses are the basic element in the cost in railways companies; they are divided into main and administrative expenses and include the cost of transportation of goods,

¹ The range of the costs in the main business activities of railways, approved by Order of the Ministry of Railways of the Russian Federation № 68, 29.09.03

passengers, baggage, mail, etc. In our opinion, such a classification is fully consistent with the traditional approaches which are used in other sectors of economy.

Main operating costs, in turn, are divided into two groups – specific (which are localized in specific different departments/divisions of railways) and general (which occur in all departments/divisions railways). Specific main costs are grouped by the types of departments and activities, of process operations. For example, specific main costs in the carriage divisions include the cost of washing the carriage, preparing the tanks for filling, servicing carriages at the stations, the cost of rebuilding carriages, tanks and refrigerators, etc. General operating expenses consist of the cost of employee compensation, depreciation and repair of property, general business purposes, travel expenses, costs of the content and operation of buildings and equipment, occupational health, safety, ecology, etc.

Administrative operation costs are necessary costs that are associated with the management, administrative and general functions in railway organizations. This type of costs can take the form of such basic needs as the rent of the building, the salaries of employees that are not involved in the core activity of the company.

In Fig. 2 you can see the structure of operating costs in the railways in 2012.

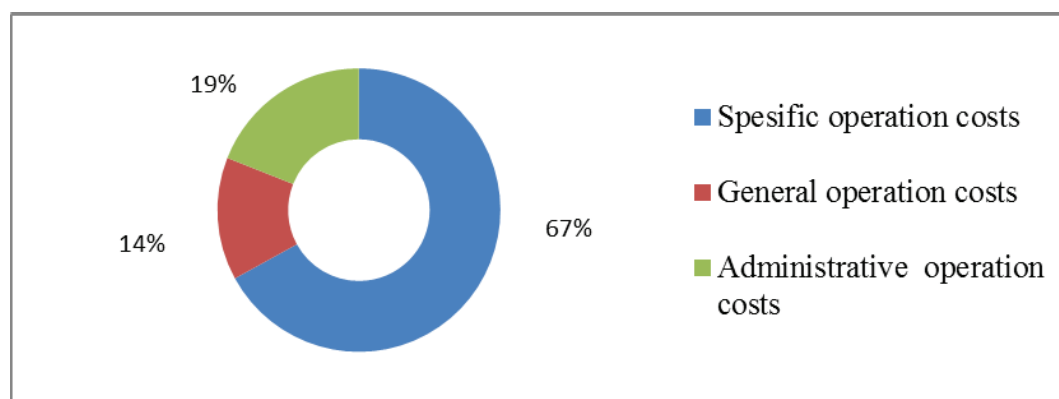


Figure 2. Structure of operating costs in Russian railway companies in 2012

Operating expenses are divided into separate articles, which are used to group costs, first of all, by departments (passenger, commercial work, transportation, locomotive, carriage, track, etc.), secondly, by activities (passenger and freight).

Distribution of operating costs in the railways by the main economic activities is shown in Figure 3. Note, that the dynamics of structure of these costs from year to year is insignificant, not more than 1% per year.

2 Data in the present article are submitted according internal reports of Russian railways companies

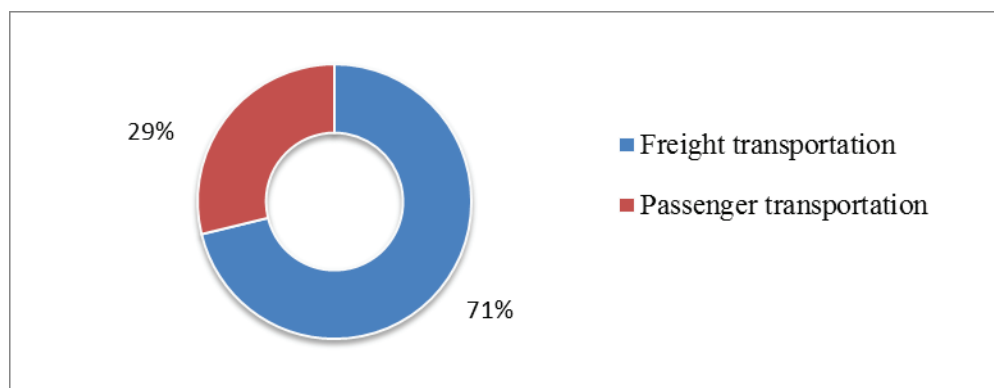


Figure 3. Structure of operating costs in Russian railway companies in 2012 (by the types of activities: passenger and freight transportation)

Distribution of operating costs in railways by departments (divisions) is shown in Figure 4.

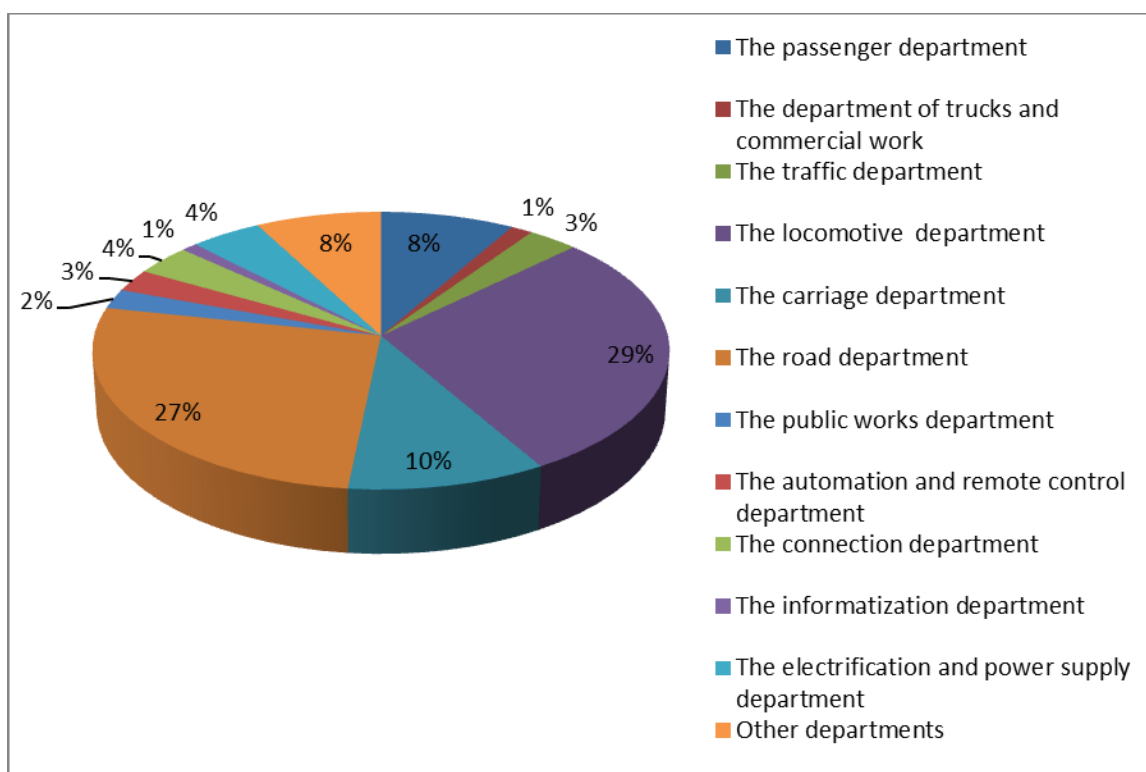


Figure 4. Structure of operating costs in Russian railway companies in 2012 (by the departments)

The largest share of the cost falls to the locomotive and road divisions. The reasons for this are constant changes in the volume of transportation, changing of performance of rolling stock and other factors.

Utility-support expenses are the next type of expenses in Russian railway companies. They include costs, which are related to housing and community services, recreational facilities, social

and cultural facilities, etc. The dynamics of this class of costs in recent years is presented in Figure 5.

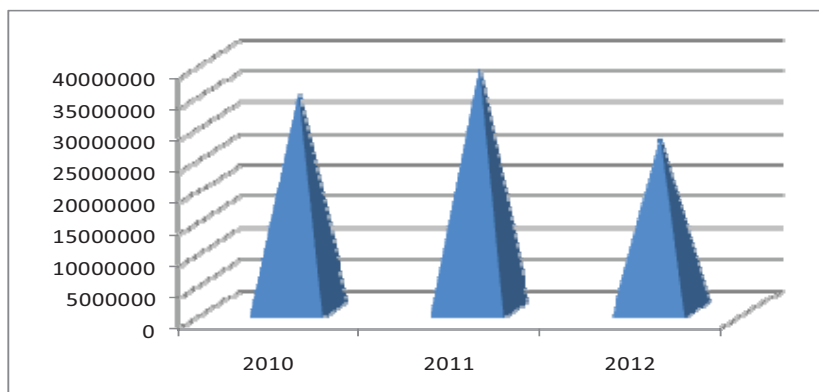


Figure 5. The dynamics of utility-support costs (thousand rubles).

Table 1 presents the analysis of operation and utility-subsidary costs relation in 2010- 2012.

Table 1. The structure of costs in railway companies in 2010 – 2012.

Costs	The share in 2010 (%)	The share in 2011 (%)	The share in 2012 (%)
Operation	48,00	48,44	49,57
Utility-support	52,00	51,56	50,43
Total	100	100	100

We can see that the value of costs, that are not related to the core activity of railway companies, i.e. utility-subsidary, is comparable with the operating costs. Such a situation is unacceptable in transport companies, which are effect for many economic, social and geopolitical spheres of life. This fact requires a management decision to reduce this group of costs.

Operating costs in railway companies are classified by a number of elements: material, labor, fringe benefits, depreciation and amortization, other costs. This classification is fully consistent with the generally accepted approach in management accounting.

Note that compared with 2010, in 2012 the structure of operation and utility- subsidiary costs by their elements has significantly changed. There is a tendency towards reduction of labor costs and an increase in material and other costs (Table 2). The reasons for these changes are the following:

- increasing the volume of freight and passenger traffic,
- rising prices for purchased materials,
- increasing productivity of key personnel and etc.

Table 2. Operation and utility- subsidiary costs by their elements (2010—2012)

Expenses	The share in 2010 (%)	The share in 2011 (%)	The share in 2012 (%)
Operation costs			
Material	38,36	39,44	39,02
Depreciation and amortization	20,33	19,10	19,88
Labor	28,00	26,90	26,50
Fringe benefits	8,68	8,34	8,21
Other	4,63	6,22	6,40
Total	100	100	100
Material	39,56	39,31	38,89
Depreciation and amortization	18,78	19,51	19,76
Labor	26,96	26,68	26,01
Fringe benefits	8,38	8,01	7,89
Other	6,32	6,49	7,45
Total	100	100	100

The next criterion of the classification of operating costs is the dependence on the dynamics of traffic. According to these criterion, costs may be either variables or semi-fixed on the amount of the traffic volume.

Considering the specificity of railway transport we conclude that the growth of costs and volumes of transportation processes is the same, thus the behavior of the information model of the costs can be attributed to a proportional system.

Internal reporting of railway organizations indicates a corporate classification of operating costs, in which costs are divided into direct and overhead. Analysis of the theoretical and methodological accounting basis shows that this fact goes contrary to the accepted and proven concepts. As a result, we encourage bringing corporate costs classification from conventional approaches and considering a part of the operating cost, which is called by railway network overhead, indirect. This proposal will increase the transparency of the costs calculation as well as unify the information base for the study of the dynamics and structure of the operating expenses.

As the next proposal we consider it necessary to allocate a separate class of expenses - commercial expenses: advertising costs, costs associated with participation in trade shows, producing brochures, newspapers, etc. Statistics shows that the average share of these costs is 6% of Gorky railway road, 8.2% of the Sverdlovsk road, 4.8% on the Kaliningrad road. Today commercial expenses, according to the Federal Law³, refer to administrative costs; it is contrary to established traditions and regulatory requirements for the preparation of financial statements. Our recommendation would be to:

- unify railways costs classification with the requirements of the legislation in the Russian Federation and common approaches to management accounting;
- make management decisions to reduce a wasteful use of resources.

Furthermore, it makes sense to introduce a new class of expenses – transport costs, for example, depreciation of passenger and baggage carriage, current capital repair of buildings, facilities and equipment (including carriage), carriage services during operation. The proposal

³ The range of the costs in the main business activities of railways, approved by Order of the Ministry of Railways of the Russian Federation № 68, 29.09.03

will help to use the «absorption – costing» calculation system. The new classification of costs in railway companies is presented in Fig. 6.

Methods of cost calculation in Russian railways companies: areas of improvement

There are different types of cost calculation methods. Some companies in Russia define production cost as the sum of the direct costs, the indirect costs, which arise in a production department, and the indirect costs, which arise in the company generally, i.e. administrative costs. Other companies measure the full cost as a sum of the production cost and commercial expenses. Note, this type of costs calculation applies only to our country. Another way of cost calculation is marginal costing, which has another name in Russia - reduced costing. Marginal costing is widely adopted in the USA and Western European countries, it has 2 variants:

- Direct-costing, wherein the cost is defined as a sum of direct material costs, direct labor costs and fringe benefits;
- Absorption – costing, wherein the cost is measured as a sum of direct material costs, direct labor costs and fringe benefits, indirect costs, which arise in the production department. In Russia this type of calculation methods has another name - manufactory cost calculation.

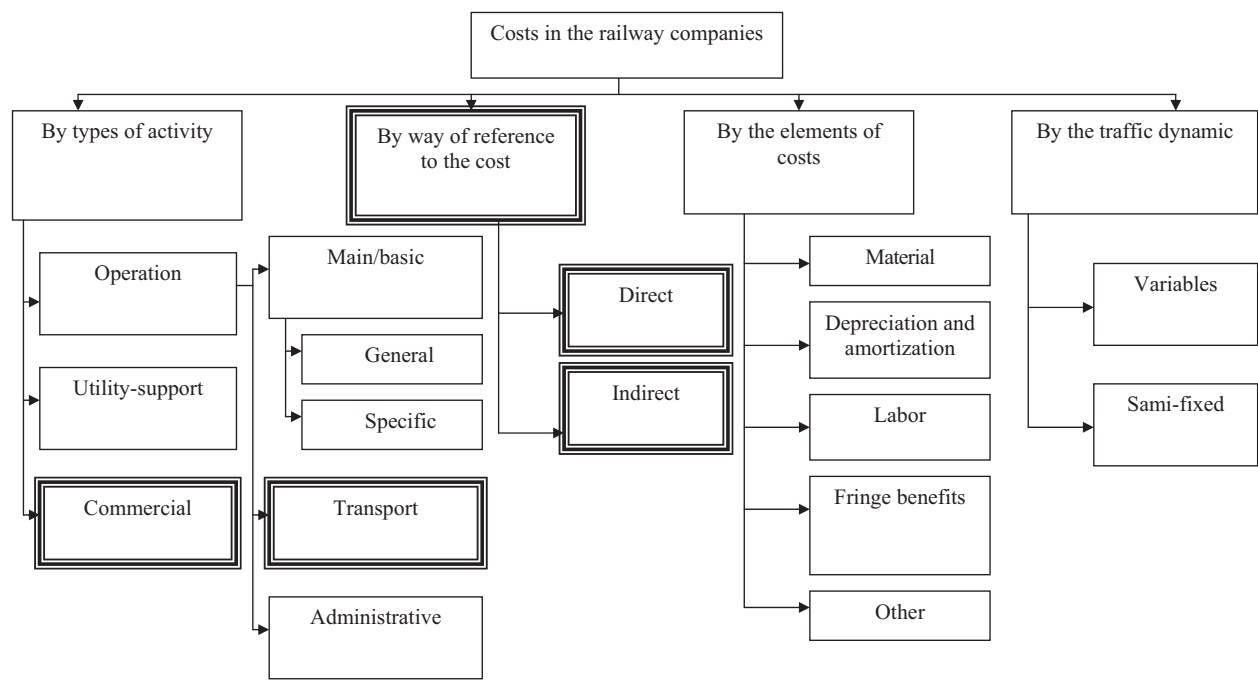


Figure 6. Updated costs classification in railway companies.

All types of cost calculation methods are shown in Fig.7.

Calculation of the full cost (Russian version)	Calculation of the production costs	Absorption – costing	Direct-costing	Direct material costs
				Direct labor costs and Fringe benefits
				Indirect costs, which arise in a production department
				Indirect costs, which arise in the company generally

Figure 7. Methods of costs calculation.

The advantages of the direct-costing are the simplicity of the accounting system, low labor intensity in its application, there is no need for allocation of indirect costs. The direct-costing is the best assistant at the time of making operational decisions, for example, when rating the financial results, the effectiveness of outlays.

However, direct - costing has limitations. It is not a universal tool for cost calculating in Russia because national regulations, which establish the rights of preparing financial reports for external users, define another approach to cost calculating. Absorption - costing is more productive for Russian companies because it allows to:

- unify data of the management and financial accounting;
- determine the contribution of each individual production department in the profits (loss) of the company.

Allocation of the indirect costs, which arise in the production departments, is the exclusive difficulty of this method of calculation. Allocation of indirect costs is a routine, long-term procedure; it is linked with a high probability of arithmetic errors.

Recall that absorption - costing and direct - costing are the types of margin costing, which is widely popular in the management systems of Western enterprises. In the United States it is known as «variable costing», in France - «la comptabilite marginale», in Germany – «teilkostenrechnung».

The essences of marginal costing are, firstly, accounting of direct costs by the types of the products and responsibility centers; secondly, consideration of the indirect costs on the responsibility centers; thirdly, writing-off of the indirect costs. Writing-off of the indirect costs can be done by reducing the profits of a company; it corresponds with the direct-costing. The next way of writing-off is the distribution of the indirect expenses between the costs of the products; it corresponds to the absorption – costing.

In Russia the marginal cost is called «reduced», «truncated», «incomplete». In our opinion, the cost of the products can't have these characteristics. The cost characterizes the financial position of the company, its performance. The meaning of the costs is contrary to the terms «reduced», «truncated» or «incomplete». As a solution to this problem we propose to use another name for the cost, which is calculated in the marginal costing. This name is the variable cost (Fig. 8).

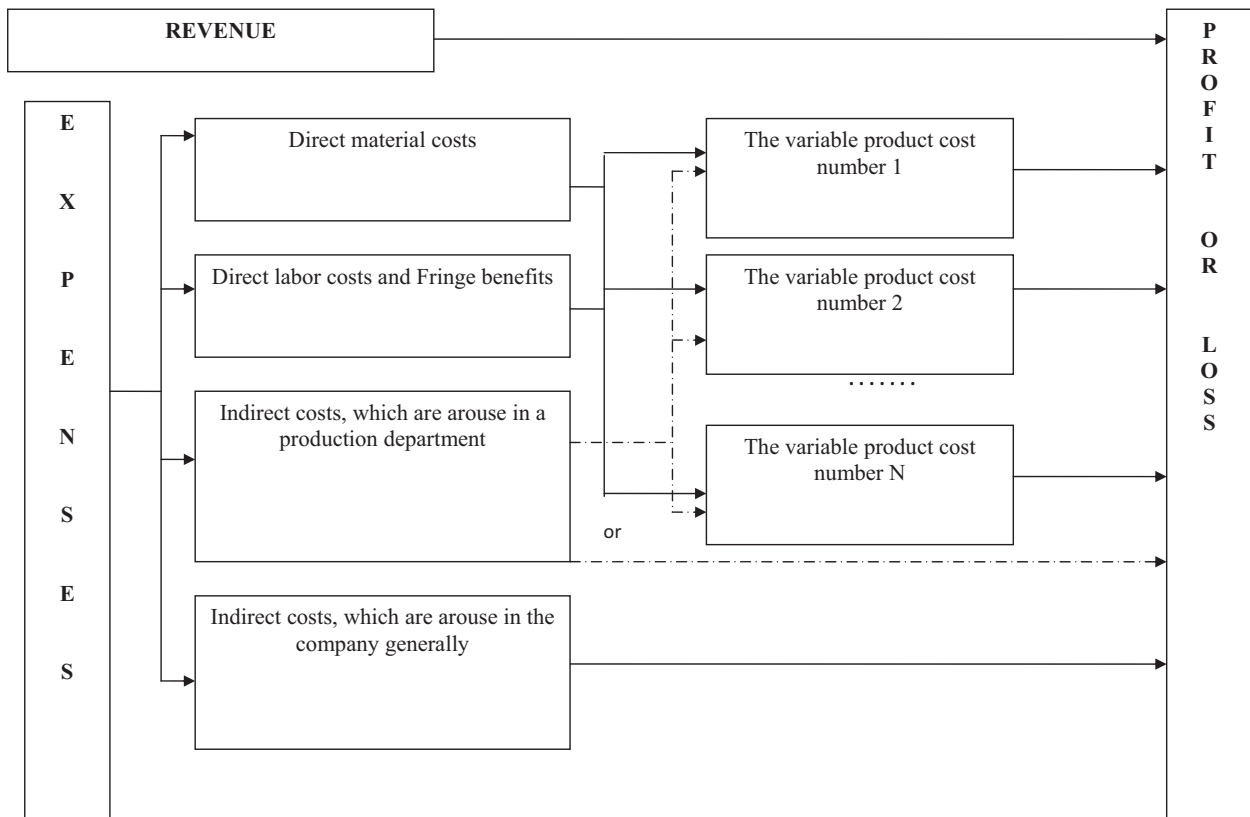


Figure 8. Marginal costing.

In Russian railways companies the cost of the passenger and freight transportations is calculated by absorption – costing, which has a lot disadvantages. Management of the companies does not have time to react promptly to changes in the cost, to find solutions of to its reduction. In our opinion, direct-costing is a more appropriate method of calculation. The reasons are connected with the specificity of the activity in railways companies:

- it's interregional, i.e. coverage of large areas in different geographical zones,
- it has complexity of computational and algorithmic system,
- it focuses on the definition of the labor costs because they have a large share in the cost structure.

So, we propose to account expenses and calculate the cost in direct- costing. Departments of railways companies must act as responsibility centers. It is efficient to prepare information separately for the passenger and freight transportations. Thus, the structure of the cost objects will be formed in a hierarchical manner (Fig. 9).

Department											
Unit number 1						Unit number N					
Passenger transportation			Freight transportation			Passenger transportation			Freight transportation		
Operation 1	⋮	Operation N	Operation 1	⋮	Operation N	Operation 1	⋮	Operation N	Operation 1	⋮	Operation N

Figure 9. The structure of cost objects in railway organizations in direct – costing.

Root segment of operating costs is the department of the company, for example, passenger, commercial work, transportation, locomotive, carriage, track, etc. The structural units (number 1, 2...N), which are the responsibility centers in these departments, are the second level in the hierarchy. The third level of the hierarchy is the types of transport work: passenger and freight transportations. The last level is operations, a list of which depends on the type of the department. Of course, our proposals will increase the complexity of the management accounting in railways companies. On the other hand, such an approach will greatly improve the accuracy and reliability of the data for the management decisions.

Cost calculating, in our opinion, will consist of the following steps:

1. Conducting a comprehensive technical and economic analysis of the current content of the accounting records of railways departments;
2. Identifying a list of direct costs in all departments;
3. Forming the cumulative note of direct costs, first of all, by the type of transport work, secondly, by the unit, then, by the department;
4. Checking the contents and presentation of this cumulative note;
5. Calculating of the financial results in the unit, then in the department;
6. Forming the cumulative note of the financial results in the railway company.
7. Let's consider an example. We analyze the following cost objects:
 - the upper level is Passenger department;
 - the second level is passenger transportation;
 - the last level is unit, which is called Station.

The cumulative note of the Station direct cost is shown in Table 3.

Table 3. A list of the direct costs in Russian railway companies in the context of the objects: "Passenger department - Passenger transport - Stations"

Number	Direct cost in the Station	Amount (thousands rub.)
1	Ticket sales for long-distance trains in domestic traffic	195 628

2	Ticket sales in suburban traffic	66 514
3	Ticket sales in international traffic	3 212
4	Reception and delivery of luggage in domestic traffic	21 242
5	Reception and delivery of luggage in international traffic	576
6	Nimble work on passenger stations	7 708
7	Reception and departure of trains at passenger stations	29 794
8	Reception and departure of trains at border stations	22
	Total	324 696

The marginal and operation profits (losses) in the unit «Station» are shown in the Table 4. The marginal profit is calculated as revenue of the stations minus its total direct costs. The operation profit (loss), i.e. profit (loss) from the passenger transportation, is calculated as the marginal profit minus indirect costs, which are include transport and administrative costs (Table 4).

Table 4. Profit (loss) from the passenger transportation in the Russian railway companies sectional «Passenger department - Stations».

Number	Indicator	Amount (thousands rub.)
1.	Revenue of the Station	1 135 322
2.	Direct cost of the Station (table 3)	324 696
3.	Marginal profit (loss) (p.1 – p.2)	810 626
4.	Indirect costs	217 060
4.1.	Transport costs	95 242
4.2.	Administrative costs	121 218
5.	Operation profit (loss) from the passenger transportation in the Station of the Passenger department	594 166

The same accounting technology is used for all units of Passenger departments, then in all units of the other departments of railways companies. As a result, the total amount of profit (loss) from passenger transportation is determined. The scheme of the estimation of the financial results from freight transportation is similar (Table 5).

Table 5. Profit (loss) from passenger and freight transportation in railways companies.

Number	Indicator	Amount (thousands rub.)
1.	Marginal profit	33 503 424
1.1.	Passenger transportation	14 119 300
1.2.	Freight transportation	19 384 124
2.	Indirect costs	15 187 602
2.1.	Passenger transportation	5 786 674
2.2.	Freight transportation	9 400 928
3.	Operation profit	18 315 822
3.1.	Passenger transportation	8 332 626
3.2.	Freight transportation	9 983 196

This scheme of cost calculation, which is based on direct – costing, has a number of advantages:

- improving the accuracy of calculation;
- accounting the costs by the types of activities, locations and possibility centers;
- making it possible to analyze the «cost- traffic - financial results»;
- providing information to calculate the break-even point;
- allowing the data to find ways of increasing profitability and forecasting future performance.

Conclusions

In the present study the current state, trends and structure of costs in the railway transport companies in Russia were analyzed. The trends in the economic development of Russian railways, the needs to increase their competitiveness and output of separate kinds of the main activities of the number of unprofitable departments require the development of effective ways to reduce operational costs, increase their level of controllability. It is obvious that there is a necessity to improve management accounting of the passenger and freight transportation in railway organizations.

We proposed to change the cost classification of the railway companies; our classification of the costs will be fully consistent with the generally accepted approach in management accounting. Also, we propose to use another name for the cost, which is calculated in the marginal costing; this name is the variable cost.

Our next proposal is to account expenses and calculate the cost by the direct-costing; the structure of cost objects will be formed in a hierarchical manner. The new cost calculation scheme will have a number of advantages and will answer the following questions: how the costs in railway companies can be reduced and where the optimization reserves of their financial and economic activity can be found?

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