

Resource allocation model for sustainable development of the social sphere

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Abstract. The relevance of the research is due to the need to overcome the resource constraints of the social sphere in order to achieve the goals of sustainable development. The purpose of the article is to develop and test methodological tools for the allocation of social resources in order to increase output. The resource allocation model includes an analysis of alternatives to the output volumes of producers of the social sphere belonging to the categories of state organizations, commercial organizations and non-profit organizations. The results obtained make it possible to achieve the Sustainable Development Goals by increasing the output of healthcare, education, social services and culture organizations. The results obtained show an increase in total output due to the determination of optimal organizational forms of work of producers of the social sphere, the effective use of limited resources. The substantiated model of resource allocation takes into account the predominance of social function in social sectors by replacing the criterion of investment efficiency with an indicator of allocative efficiency.

1 Introduction

In the modern Russian economy, a model has been formed for the distribution of budgetary resources between producers of the social sphere, based on a wide range of quasi-market mechanisms: state orders, grants and budget subsidies distributed on a competitive basis. The role of the state in using these mechanisms is reduced to the formation of social funds and control over their distribution [1]. The formation of multi-subject models of the social sphere supply allows consumers to receive health care, education, social services and culture from state organizations, commercial and non-profit organizations belonging to the non-state sector of the economy [2]. Each organization from the above groups of producers of the social sphere has features of the internal economic model of output, since its organizational and legal status determines such features as the cost of obtaining resources, tax regime, etc. [3]. The purpose of the article is to develop and test methodological tools for resource allocation for sustainable development of the social sphere.

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2 Materials and Methods

The proposed methodological approach to the development of a resource allocation model for the sustainable development of the social sphere is based on the methodological provision on the possibility of selective selection of producers of a specific location based on indicators of allocative efficiency [4,5].

The development of a resource allocation model for the sustainable development of the social sphere belongs to the class of optimization tasks. In its most general form, this model should maximize output, Formula 1:

$$V(R_{1...72}) \rightarrow \max; R \in W \quad (1)$$

where $R = (R_1, R_2, \dots, R_{72})$;

W – range of admissible values for variables R_1, R_2, \dots, R_{72} ;

$V(R)$ – objective function.

Solving the optimization task means finding $R \in W$ such that $V(R_0) \geq V(R)$ for any $R \in W$. The limitations of solving this task are the calculation of the coefficients of direct costs, labor costs, the coefficient of consumption of fixed capital, the coefficient of profit and the possibility of covering the costs of resources from certain sources:

- payment for services by the corporate sector (Y_1);
- payment for services by households (Y_2);
- payment for services from the state budget and state extra-budgetary funds (Y_3);
- payment for services by non-profit organizations (Y_4).

The general task record is as follows:

$$V(A_{\sum R_{1...72}}) = \sum A_{\sum R_{1...72}} \times R_{1...72} \rightarrow \max;$$

$$\sum A_{\sum R_{1...72}} \leq Y_i;$$

where $A_{\sum R_{1...72}}$ – total resource cost ratio;

$R_{1...72}$ – resource consumption (1...72). (2)

This approach involves the formation of a resource allocation model for sustainable development of the social sphere with a parallel analysis of the results obtained and a revision of the composition of subjects and the order of their functioning, depending on the key parameters of allocative efficiency.

The factorial characteristics of the model are formalized within the following groups:

- standards and procedures for the provision of social services, which determine the composition and quantity of services;
- parameters of resource provision.

The procedure for assessing the allocative efficiency of social sector producers is presented in Figure 1.

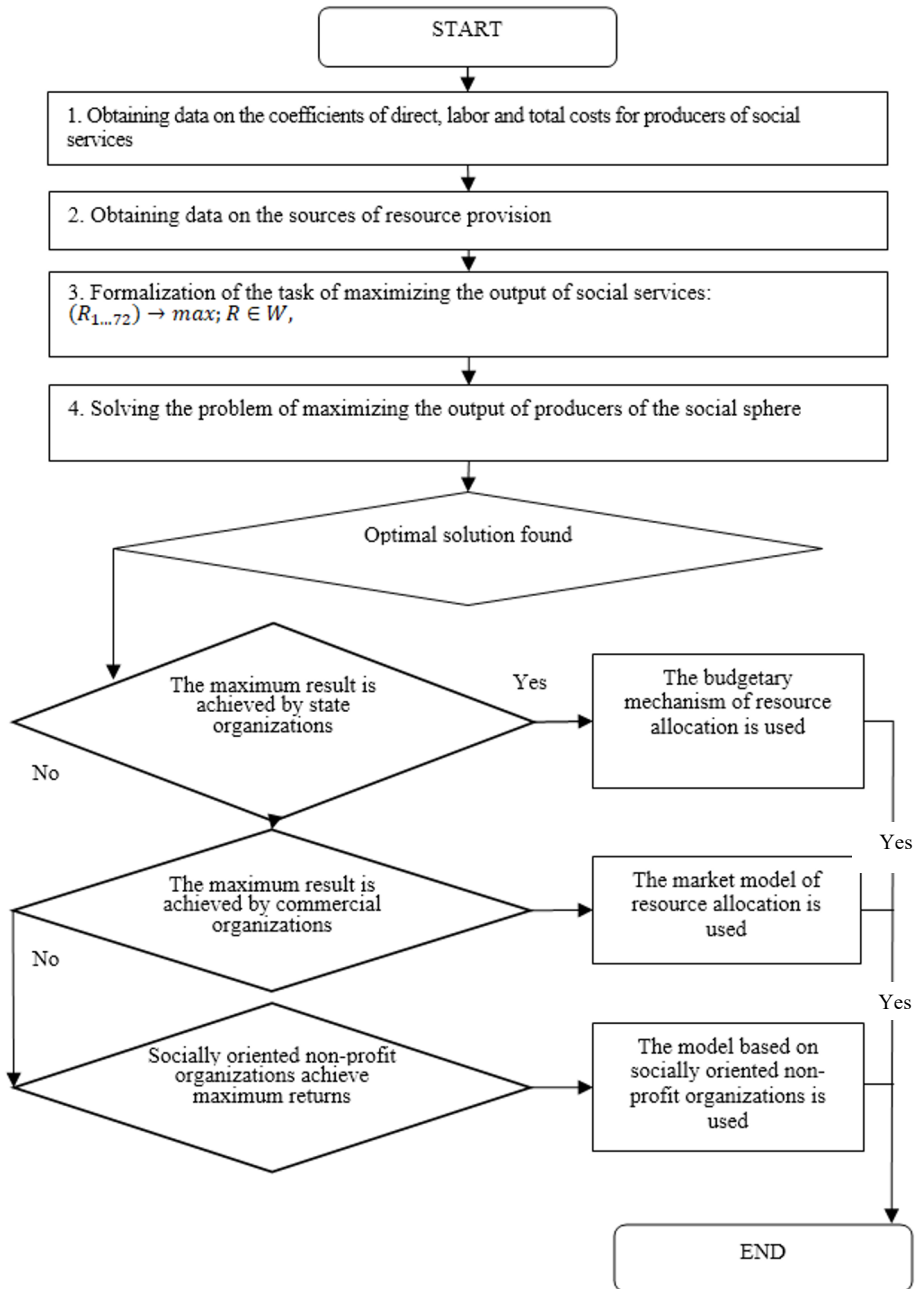


Fig. 1. Algorithm of the methodology for the formation of a resource allocation model for sustainable development of the social sphere

Thus, methodological support for the formation of a resource allocation model allows you to consistently update the stages of analysis and design. The novelty of this approach is the relationship of resource consumption indicators, which differs depending on the organizational status of the producer of the social sphere and the sources of resource provision [6]. This approach, combined with increased monitoring of compliance with

standards and procedures for servicing citizens, allows us to identify significant reserves for achieving sustainable development goals.

3 Results

Based on the results obtained, it is possible to present a comprehensive picture of the output of individual social organizations and sources of resource coverage, table 1.

Table 1. The ratio of output by social sector organizations and sources of coverage, 2018, billion rubles.

	Education	Healthcare activities	Activities in the field of sports, recreation and entertainment
State organizations	3 591.5	3 919.6	823.8
Budget	2 923.0	3296.1	694.9
Corporate sector	152.9	130.8	147.2
Population	502.2	933.0	446.5
Commercial organizations	31.0	831.0	637.0
Budget	11.6	37.8	4.4
Corporate sector	12.6	18.4	6.0
Population	33.0	310.0	118.0
N-profit organizations	2.5	2.4	16.2
Budget	3.4	6.1	2.9
Corporate sector	0.0	0.8	0.0
Population	5.8	6.0	8.4

In the presented table we can see the order of distribution of social sector resources between organizations belonging to the state and non-state sectors of the economy. The main output of the social sphere is carried out by state organizations, and the main source of resources for them remains funds from the budget and extra-budgetary funds. The second largest volume of resources allocated to the social sphere is the funds of the population financing the production of health care, educational and cultural organizations, both related to the commercial sector of the economy and the state. According to the data presented, the hybrid financing model, which consists in the provision of paid services by government organizations, is well tracked. This trend indicates the lack of a formed offer by non-governmental organizations in the social sphere, operating within both commercial and non-profit models [4, 5]. The data presented in the table confirms the sufficient solvency of the population of the Russian Federation; accordingly, the low output of non-state producers in the social sphere is most likely due to the low efficiency of resource allocation by these participants. The reason for this situation lies in the peculiarities of the economic model of the functioning of non-state participants in the social sphere. Firstly, these organizations usually do not have buildings and other infrastructure that are present in organizations in the public sector of the economy, and secondly, these organizations are characterized by types of expenses that differ from government organizations, such as marketing costs, improved service, etc., thirdly, the functioning of non-governmental organizations in the social sphere often involves making a profit from their activities.

Next, let's present the change in the output volumes of social sector organizations using the principle of allocative efficiency, Table 2.

Table 2. Changes in output parameters when using the principle of allocative efficiency in the model of distribution of social resources, million rubles

	Resource Coverage Source	Existing output	Output when implementing the principle of allocative efficiency
Education	Allocation of budget fund	2 616 943.0	2 973 799.0
	Allocation of funds of the corporate sector	151 557.0	172 223.9
	Allocation of funds of the population	496 988.0	564 759.1
Health care	Allocation of budget fund	2 379 395.0	2 643 772.0
	Allocation of funds of the corporate sector	137 613.0	152 903.3
	Allocation of funds of the population	982 294.0	1 091 438
Residential care activities	Allocation of budget fund	135 696.3	135 696.3
	Allocation of funds of the corporate sector	1 032.6	1 032.57
	Allocation of funds of the population	49 095.4	49 095.42
Provision of social services without housing	Allocation of budget fund	283 728.7	283 728.7
	Allocation of funds of the corporate sector	2 159.0	2 159.01
	Allocation of funds of the population	102 654.1	102 654.1
Creative activities, arts and entertainment activities	Allocation of budget fund	82 004.2	88 176.56
	Allocation of funds of the corporate sector	8 776.8	9 437.419
	Allocation of funds of the population	52 561.4	56 517.68
Activities of libraries, archives, museums and other cultural objects	Allocation of budget fund	274 535.8	295 199.8
	Allocation of funds of the corporate sector	29 383.2	31 594.84
	Allocation of funds of the population	175 966.6	189 211.4
Activities in the field of sports, recreation and entertainment	Allocation of budget fund	247 787.0	266 437.6
	Allocation of funds of the corporate sector	87 953.0	87 953.0
	Allocation of funds of the population	243 346.0	243 346.0
Total		8 541 470.1	9 441 136.0

As the data presented in the table show, changing the distribution model would significantly expand the output of the social sector, which would greatly contribute to the achievement of sustainable development goals for the population of the Russian Federation. The methodology of allocative efficiency is a priority in achieving sustainable development goals because it allows increasing the output of such sectors of the social sphere as

education, healthcare, the provision of social services, cultural services, physical culture and sports.

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