



RESEARCH ARTICLE

Strategy for the Regionalization of Municipal General Education Organizations

Yuliya Fedorchuk*

Doctor of Economics, Associate Professor, Chief Researcher, Federal Institute of Digital Transformation in Education, Moscow, Russia

ARTICLE INFO	ABSTRACT
Received: Jun 23, 2025	In order to achieve the national goals set out in Presidential Decree No. 309 of May 7, 2024, and the strategic objectives defined by the federal regulator in the field of education, regional authorities responsible for education must develop and implement new regional educational strategies that take into account both national priorities and the specifics of regional socio-economic development. One of the strategic directions for the development of regional educational systems is the regionalization of municipal general education organizations. This process addresses contradictions in existing socio-economic arrangements: although the authority to guarantee the right to general education is vested in the state authorities of the constituent entities of the Russian Federation, the actual provision of educational services is carried out predominantly at the municipal level, which creates a range of systemic problems. These include substantial disparities in the quality of education between municipalities, driven by differences in management capacity, social context, economic development, and budgetary resources. Such disparities undermine the state principle of a unified educational space. This study examines the challenges of regionalization processes, analyzes statistical data on regional educational systems, and formulates recommendations to resolve these contradictions using the methods of multi-criteria optimization and analytic hierarchy process.
Accepted: Aug 19, 2025	
Keywords Regionalization, Transfer of Municipal Organizations, General Education Organizations, Risks, Criteria, Model, Educational Network, Region, Constituent Entity of the Russian Federation, Institutional, Transformations.	
*Corresponding Author: lj741@ya.ru	

INTRODUCTION

The modern general education system of the Russian Federation faces a number of significant challenges related to the implementation of new state educational policy objectives, intensifying competition for human capital, and changes of a socio-economic, demographic, and migratory nature (On the National Development Goals of the Russian Federation for the period up to 2030 and for the future up to 2036: Decree of the President of the Russian Federation, 2024).

These challenges necessitate a revision of approaches to managing the national education system. The management of general education in the Russian Federation operates at three levels of government — federal, regional, and municipal. The federal level is responsible for developing the regulatory and legal framework, establishing education standards, and setting the overall development strategy. The regional level implements state education policy, ensures financing, and supervises the schools' activities. The municipal level is responsible for the direct management of schools, including the maintenance of buildings, facilities, and grounds, personnel policy, and the organization of the educational process. This is the largest tier: as of today, out of 39.4 thousand general education organizations, about 90% are municipal (The official website of the Ministry of Education of Russia, 2023). However, it is precisely at the municipal management level where key contradictions lie.

The guarantee of citizens' right to receive general education in state and municipal general education organizations is vested in the state authorities of the constituent entities of the Russian Federation (Article 8 of the Federal Law "On Education in the Russian Federation", 2012). However, in accordance with Article 9 of Federal Law No. 273-FZ, the organization of accessible and free general education is carried out primarily at the municipal level, which gives rise to a number of systemic challenges related to ensuring equal access to quality education.

Among the key problems is the significant differentiation in education quality across the regions, caused by differences in municipal budgetary capacity, the degree of their reliance on subsidies, and the heterogeneity of municipal management structures. The additional management tier — the municipal level — increases transaction costs in the system of governance and resource provision for general education organizations. These inter-municipal disparities, even within a single region, exacerbate social inequality and hinder the creation of a unified educational space that ensures equal conditions for all students, regardless of their place of residence.

The optimization of the education management system should be aimed at ensuring a balance of interests among all participants in educational relations, as well as at creating institutional mechanisms to smooth out disparities in the provision of educational services. One such mechanism is the redistribution of powers between regional and municipal levels of governance in general education — the so-called "regionalization."

In the course of regionalization, municipal general education organizations are transferred to the regional level. It should be noted that similar transformation processes in various sectors of the national economy are of a permanent nature, driven by the need to adapt the system of state and municipal governance to dynamically changing socio-economic conditions. Examples include the regionalization of the healthcare sector, the cultural sector, and social services. At the same time, the exercise of managerial powers takes into account the totality of organizational, personnel, and financial-economic resources available at the respective level of authority.

In scientific literature, the term "regionalization" is interpreted in various ways. One approach views "regionalization" as a process of decentralization associated with the transfer of powers from the national to the regional level (Bodenova O.V., 2022). Another approach defines "regionalization" as interstate cooperation between territories with similar socio-economic or cultural and national characteristics (Zhukov I.K., 2010; Leonova O.G., 2013). In Russian legal practice, the term "regionalization" is used in the context of redistributing powers between municipal and regional levels of governance (Grebnev V. S., 2021; Ranjina V., 2014; Chertkov A. N., 2019).

The redistribution of powers, aimed at identifying the balance of authority between different levels of state governance, is relevant both in international and Russian practice. Within these processes, the principle of subsidiarity should be applied, according to which socio-economic tasks must be resolved at the lowest level of governance where their implementation is both possible and most effective. Higher levels of authority assume only those functions that cannot be effectively carried out at the local or municipal level (Kalinichenko A.O., 2016). Approaches to managing the general education system vary from country to country, depending on historical, cultural, and political characteristics. International experience demonstrates that there are centralized, decentralized, and hybrid models of managing such systems (Volodin I.A., 2018).

France (as well as South Korea and China) is a classic example of a centralized system, in which schools are managed at the level of the central government through the Ministry of National Education (Dementiev A.N., 2020). This body is responsible for developing national standards, curricula, teacher certification, and quality control of education, ensuring uniformity of the education system throughout the country. In contrast to centralized systems, the United States represents a classic example of a decentralized education management system (as do Canada, Germany, and Switzerland). Schools are managed at the state and local school district levels (each of the 50 states has its own department of education, which sets its own standards and requirements). The federal government provides general recommendations and funding through targeted programs (Busygina I.M., 2007; Fedorchuk Yu.M., Neustroev S.S., 2019). States develop their own educational standards and examination requirements, while school districts manage organizational budgets, hire staff, and determine curricula. The main problem with the decentralized model is the uneven financing of schools and the varying quality of education. Since state budgets are largely funded by

local taxes, wealthier districts can provide students with higher-quality education, resulting in significant disparities in education quality between regions (Fedorchuk Yu. M., 2024). Hybrid systems (e.g., Finland, Australia) employ a mixed approach — the central government sets general standards, while regions and schools have significant autonomy and may adapt programs to their specific needs.

The national system of general education management in Russia can be classified both as a hybrid system — given the presence of regional education authorities and the predominance of municipal schools — and as a centralized system, with a national coordinating federal authority implementing a unified state policy.

In current conditions, the need to transform the management of regional educational systems — taking into account strategic goal-setting, optimization of the regional schools' network, the delineation of powers between regional and municipal levels, and the transfer of municipal general education organizations to the jurisdiction of the executive authorities of the constituent entities of the Russian Federation — is driven by the necessity to create a unified educational space and to implement uniform quality standards within the territory of each constituent entity. However, the successful implementation of this process requires a scientifically grounded approach, including an analysis of regional experience, the design of optimal organizational and managerial models for transferring schools, regulatory and informational support for the processes, as well as the identification of conceptual regional target priorities.

MATERIALS AND METHODS

In the course of studying the issue of regionalizing municipal schools, and in selecting strategies and models for their transfer to the regional level, a range of mutually complementary methods was applied. To develop the theoretical and methodological framework, causal analysis, historical and retrospective analysis, as well as systemic and structural analysis were employed. The results of earlier studies and publications were summarized, focusing on the territorial organization of the educational network, and the division of powers and responsibilities between the different levels of education management. The empirical part of the study included monitoring the current structure of the network of general education organizations in the constituent entities of the Russian Federation. This was done by collecting data from regional executive authorities in the field of education, including indicators such as the number of regional and municipal general education organizations, the ratio of these types of schools within the region, the regional authorities' plans for transferring schools in the near term, and the goals and objectives of such transfers. The data obtained made it possible to identify the main trends in the regionalization of the education system in the Russian Federation, as well as to determine the factors and risks affecting the effectiveness of this process.

Based on the theoretical analysis conducted and the results of monitoring, a model was also developed for selecting a regionalization strategy to optimize the structure of the regional educational network. The multi-criteria optimization model, applying the analytic hierarchy process, takes into account the following parameters: the current structure of the educational network, key socio-economic parameters of the region, regionalization risks, prior experience with regionalization, regionalization models, and the strategic priorities of the region.

LITERATURE REVIEW

An analysis of the degree of problem development shows that the issues of regionalizing the general education system are examined in both Russian and foreign scientific literature from various perspectives. In Russian publications, interest in the topic has been cyclical since the early 2000s. At the same time, comprehensive studies assessing the advantages and disadvantages of completed regionalization processes, as well as their socio-economic effects, are not publicly available. Authors generally limit themselves to presenting arguments “for” and “against.” It is possible to single out recent publications (Chertkov A.N., 2019; Grebnev V.S., 2021; Maron A.E., Monakhova L.Yu., Lukyanovich A.V., 2023; Tyunnikov Yu.S., Fatchikhin P.K., Kelesh N.D., 2024), which focus mainly on fundamental questions concerning the necessity of regionalization, the regulatory and legal aspects of transferring authority for managing schools between the regional and municipal levels, and the effectiveness of managing schools at different governance levels.

But discussions about this issue in the professional and public field are constantly going on, for example, Borovik V.G. (2019), Dashkovskaya O. (2018), Abankina I.V. (2018) emphasize the need for further study of the issue and individual decisions on the transfer of schools to the regional level. B.L. Wolfson (2012), A.I. Adamsky (2022) note that the transfer of some schools to the regional level allows consolidating resources and improving the quality of education, but may lead to a decrease in the availability of educational services in remote areas. Maron A.E. (2023) and Tyunnikov Yu.S. (2024) indicate the need to develop comprehensive models for assessing the effectiveness of regionalization, taking into account economic, personnel and management risks.

In foreign literature, the issues of optimal organization of educational networks are considered mainly from the standpoint of economic efficiency, accessibility and quality of education. Thus, Hanushek E.A. and Woessmann L. (2017) emphasize the importance of a balanced distribution of powers between levels of education management to improve the quality and equality of educational opportunities. Similarly, the OECD Educational Policy Review (2024) study shows that the decentralization of education management must be accompanied by a clear allocation of responsibilities and resources between levels of government in order to achieve an effective outcome.

The redistribution of powers from the municipal to the regional level in various industries, but no dissertation research has been found in the field of education. For example, the works of Prigoda L.V. (2009), Telenkevich V.V. (2012), Kamolova S.G. (2020) present approaches to assessing the effectiveness of the redistribution of powers between regional and municipal levels using economic and mathematical models.

RESULTS

In order to obtain up-to-date data on the processes of regionalization of municipal schools in 2024, monitoring was carried out through an online survey of regional executive authorities in the field of education based on a general sample (89 subjects of the Russian Federation). For this purpose, an online form was developed containing indicators on the current (at the end of 2024) number of regional and municipal schools in the Russian Federation, the plans of the regional authorities to transfer schools to the municipal level in 2025-2027, the transfer objectives (economic, managerial or personnel) and the identified risks.

The current regional structure of the educational network of general education organizations is shown in Figure 1.

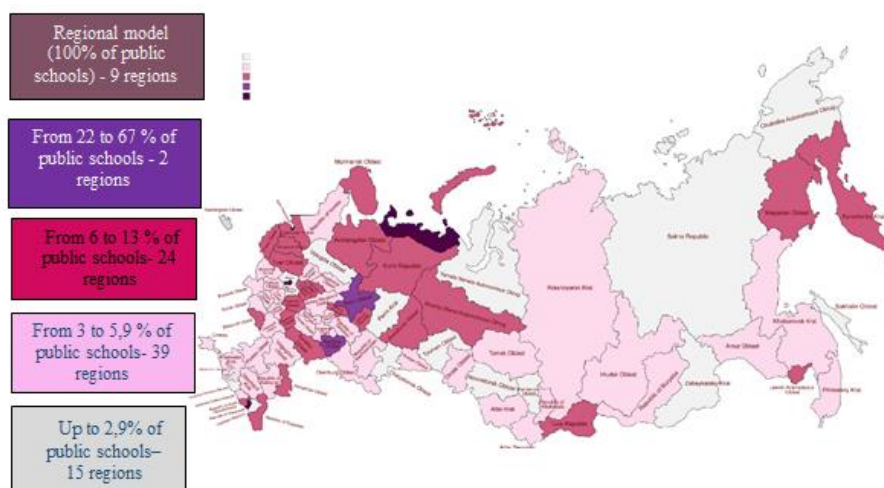


Figure 1. The Structure Of the Educational Network of General Education Organizations in the Subjects of the Russian Federation according to the Ratio of Regional and Municipal Schools

The monitoring results show that in most subjects of the Russian Federation the municipal structure prevails and the share of regional schools varies from 0.9 to 6% in the regional educational network

(60.6% of subjects of the Russian Federation in Figure 2), in 24 subjects the share of regional schools ranges from 6 to 13%, in two subjects (Samara and Kirov regions, conducting a systematic regionalization of the educational network since the early 2000s) - from 22 to 67%. In nine regions of the Russian Federation (cities of federal significance, new regions of the Russian Federation, the Nenets Autonomous Okrug and the Republic of Ingushetia), the entire network of educational institutions has been fully transferred to the regional level (100%). Thus, in more than 87% of the subjects of the Russian Federation, the share of regional schools does not exceed 13%, which confirms the dominance of the municipal level of government in the general education system (Figure 2).

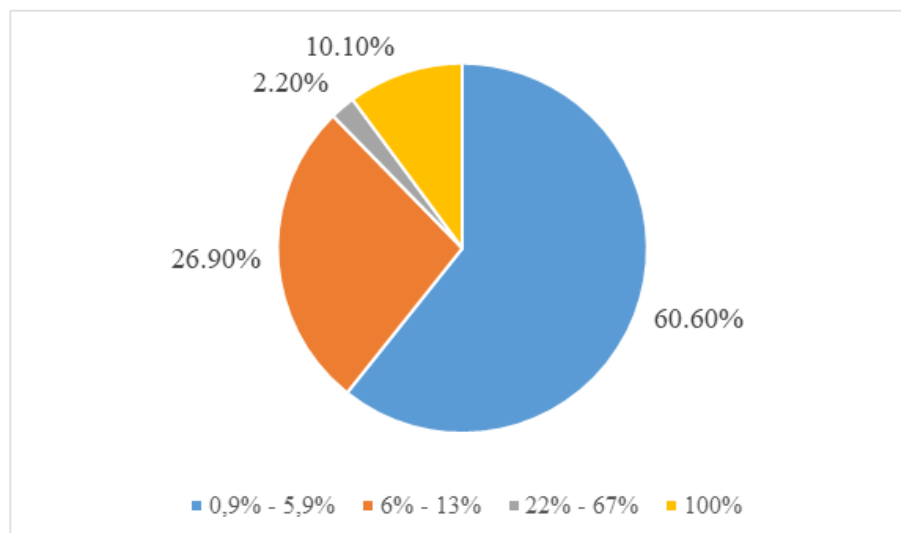


Figure 2. The Structure of the Subjects of the Russian Federation by the Number of Regional Schools

In the period from 2017 to 2024, the processes of regionalization of municipal schools were noted in 23 subjects of the Russian Federation, while the intensity and objectives of these processes vary significantly. By 2027, the transfer of municipal schools to the regional level is planned in 28 regions of the Russian Federation: in seven of them, large-scale systemic transformations are expected to achieve a significant share of regional organizations, in the remaining 21 planned local solutions for the transfer of specific schools prevail. Since the monitoring was carried out during 2023-2024, the regional strategies and plans of the subjects changed – only ten regions had plans for the transfer of schools remained unchanged; eight regions radically changed their plans, abandoning the transfer planned for 2023 in 2024; two regions postponed the implementation dates for subsequent years; one subject increased the number of schools scheduled for transfer, two entities have reduced this number. More than 40% of regions (37 subjects of the Russian Federation) have no experience of transferring municipal educational institutions to the regional level and do not plan to carry out such processes in the foreseeable future.

A qualitative analysis of the experience of transferring municipal schools to the regional level has shown that all regions on this basis can be divided into 6 groups:

- regions that began the institutional processes of network optimization and the transfer of schools to the regional level in 2000-2010 as part of an experiment to implement the Decree of the Government of the Russian Federation dated 06/21/2005 No. 840-r and followed the path of forming educational districts and transferring schools to the regional level (3.3%);
- subjects that have implemented institutional transformations of the management system within the framework of agreements between the executive authorities of the subjects of the Russian Federation that carry out public administration in the field of education and local governments (6.7%);
- subjects participating in the pilot project of 2017-2018 on the development of effective regional models of education management with the transfer of schools to the regional level within the

framework of two models (with the transfer of property and without the transfer of property) (22.4%) (The Ministry of Education of Russia summed up the interim results of the project on the transfer of schools from the municipal to the regional level. 2018). Of the regions participating in the 2017-2018 experiment, only the Republic of Tyva, the Samara Region, the Jewish Autonomous Region, the Tambov Region and the Republic of Mari El continue these processes (5.6%);

entities implementing a fully regional management model for educational institutions (10.1%) or planning to implement a regional model (2.2%);

subjects that have an educational network with a predominance of municipal schools and systematically optimize the network through transfers and associations (31.4%);

Subjects with a municipal management model for general education organizations that do not plan to transfer powers or optimize the network of general education organizations (41.5%).

Correlations between the processes of regionalization and the quantitative characteristics of the region, such as the scale of the educational network of educational institutions, the number of rural and low-class schools, the number of students, and the distance between schools have not been identified. That is, the decision on regionalization is solely within the region's purview, and represents a political decision. The analysis of the target settings of regionalization in the subjects of the Russian Federation, where it was carried out or is planned, was carried out. At the same time, the targets presented in Fig. 3 were identified.

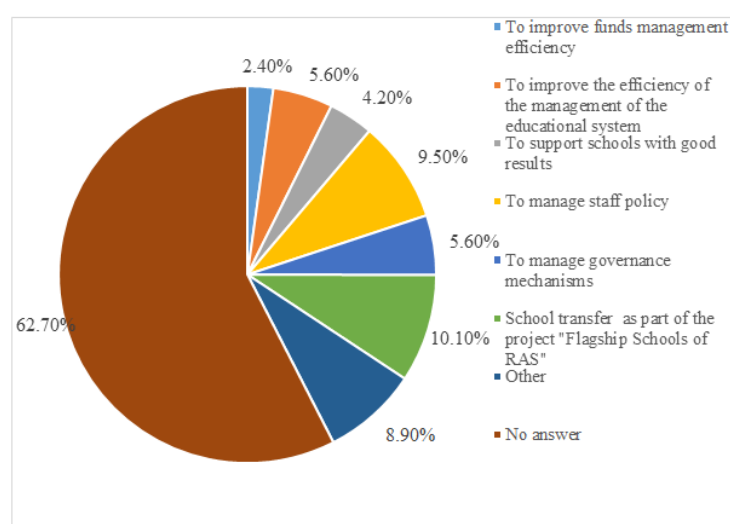


Figure 3. Targets for the Transfer of Schools to the Regional Level

Based on the results of a survey and personal interviews with specialists of the ROIV to identify the targets for the transfer of schools to the regional level, it was determined that only a third of the regions have formed a strategic approach to regionalization, while the rest are implementing local management solutions. Thus, in most subjects of the Russian Federation, there is a tendency to preferentially solve the problems of general education at the local government level, and regional governments are given a role in solving strategic educational tasks.

Each region solves the tasks of providing modern and high-quality education, taking into account its specific characteristics, such as geographical location, climatic conditions, demographic processes and socio-economic trends. Approaches to solving these problems are unique in each region; in addition to fulfilling their constitutional responsibilities to ensure equal access to quality education, the regions are addressing the challenges of socio-economic development of their territories. In the context of the projected decline in the number of students in many regions, large-scale career guidance programs are being implemented, educational and industrial clusters are being created, and cooperation with institutions of secondary vocational and higher education is being established. These measures are aimed at consolidating graduates in the region and providing the economy with qualified labor resources;

A significant number of rural and small-scale schools in a number of regions pose complex management tasks for regional authorities. Some regions solve this problem by transferring such

schools to the regional management level, creating support schools with a network of branches, which allows them to be preserved as socio-cultural centres of settlements. An alternative approach is to increase transport accessibility through the organization of school bus routes;- in a number of regions, effective management practices are being introduced to create educational complexes that unite all levels of education and ensure their interaction. The creation of such educational complexes increases the opportunities for each student to receive all levels of general and vocational education, ensuring the "seamless" educational trajectory;

special attention is paid to the organization of education for children with disabilities and children with disabilities. Some regions leave specialized schools for such categories of students at the regional level or transfer them to the management of regional authorities to create educational clusters with vocational education institutions for the adaptation of such children to the regional economy and employment, which solves the global problem of integrating people with disabilities into society;

systematic educational work is actively developing in all regions, including interaction with children's and youth public associations. Special emphasis is placed on patriotic education, which is especially important in modern conditions, and regional schools are becoming the mainstays for the implementation of these tasks;

reducing municipal differentiation within a federal subject is also one of the key goals in transferring schools to the regional level. This allows the education system to play the role of a "social elevator" and reduce social tension in society in the future;

the presence of schools with consistently low educational outcomes, due to the socio-economic situation of municipalities and the context of the territory, is an important factor for the regionalization of such schools, their transfer to the management of regional authorities allows for more effective mechanisms to support and improve the quality of education.

Thus, the transfer of schools to the regional management level is an integrated process aimed at improving the quality of education, eliminating municipal disparities and solving the problems of socio-economic development of territories, taking into account their unique characteristics.

The emergence of new strategic goals in the development of the general education system in accordance with the Presidential Decree on National goals, with new national projects, and the education development strategy until 2036, set new goals and objectives for regional educational authorities (On the National Development Goals of the Russian Federation for the period up to 2030 and for the future up to 2036: Decree of the President of the Russian Federation, 2024). There are 8 conceptual targets for optimizing the regional educational network with the transfer of municipal schools to the regional level for the implementation of strategic goals:

1. Creation of an effective regional career guidance system to provide the regional economy with qualified personnel;
2. Integration of small-scale and rural schools with supporting schools;
3. Ensuring the alignment of municipalities in the quality of education;
4. Support and development of specialized schools to achieve high results;
5. Support and development of schools with low educational outcomes to ensure stable functioning;
6. Optimization of management and financing of the education system;
7. Creation and management of an effective regional educational system;
8. Creation of an inclusive educational and industrial cluster with the inclusion of graduates in the socio-economic life of the region.

Each subject of the Russian Federation must independently determine a strategy for the development of its educational system in terms of transferring schools from the municipal to the regional level, in accordance with a set of strategic documents at the federal level, an industry strategy, strategic documents at the regional level, an analysis of the situation in municipalities, their economies and development prospects.

When defining a regionalization strategy, three main models of municipal school transfer can be distinguished: regional, combined, and municipal. The regional model assumes the transfer of all municipal schools to the regional level. This model is aimed at centralizing the management of the educational network, which allows for uniform standards of educational quality and an even distribution of resources. The municipal model assumes the retention of most schools at the municipal level, but may include individual transfers in relation to hotel general education organizations (for example, in the framework of the Basic Schools of the Russian Academy of Sciences project, where the transfer of a school to the regional level is a prerequisite for participation in the project). This model is used to solve targeted tasks, such as improving the quality of education in a particular school or providing specialized training. The combined model is a combination of different approaches to the reorganization of the educational network and depends on the choice of strategic directions for the development of each municipality or group of schools. This model is the most promising and its implementation in most cases can be further reorganized in three directions: designing a network model (transferring a group of schools with the creation of a reference school and a network of schools as separate legal entities united by common goals and objectives); educational complex models (transfer of a group of schools with subsequent reorganization of their structure by creating a central school and converting the remaining schools into structural divisions of this school); educational cluster models (transfer of a group of municipal schools into a branch network, where the parent organization is an school, which can be either a general education organization or a professional school).

In the process of constructing a regional educational network of general education organizations, it seems methodologically justified to build an economic and mathematical model. However, it should be noted that it is impossible to rigidly formalize correlations between indicators and algorithmize the procedure for making a managerial decision on choosing the optimal model. This inherent feature is determined by the high degree of social sensitivity of the educational sphere, which is characterized by the multiplicity of subjects of educational legal relations and their interrelated interests.

DISCUSSION

Taking into account the predominantly political and managerial nature of the decision on the regionalization of educational systems, it seems methodologically justified to use the methodology of multi-criteria optimization in combination with the method of analytical hierarchy. The methodological feasibility of this approach is due to the possibility of structuring a complex problem in the form of a hierarchical system, including a target component, a multilevel system of criteria that determine the choice and range of alternative solutions.

A significant advantage of this method is the possibility of representing each element of the hierarchical structure through various aspects of the problem under study, namely: material and non-material factors, quantitative and qualitative parameters, objective indicators and subjective expert assessments.

The target factor is the definition of a transfer strategy for municipal schools when designing a regional educational network, which consists in selecting targets and identifying schools to be transferred. The methodological basis for making a strategic decision on regionalization is based on a comprehensive analysis of the following determinants: strategic directions for the development of the regional educational system, a set of regional socio-economic characteristics, potential risks of regionalization, and alternative models for transferring schools (Figure 4).

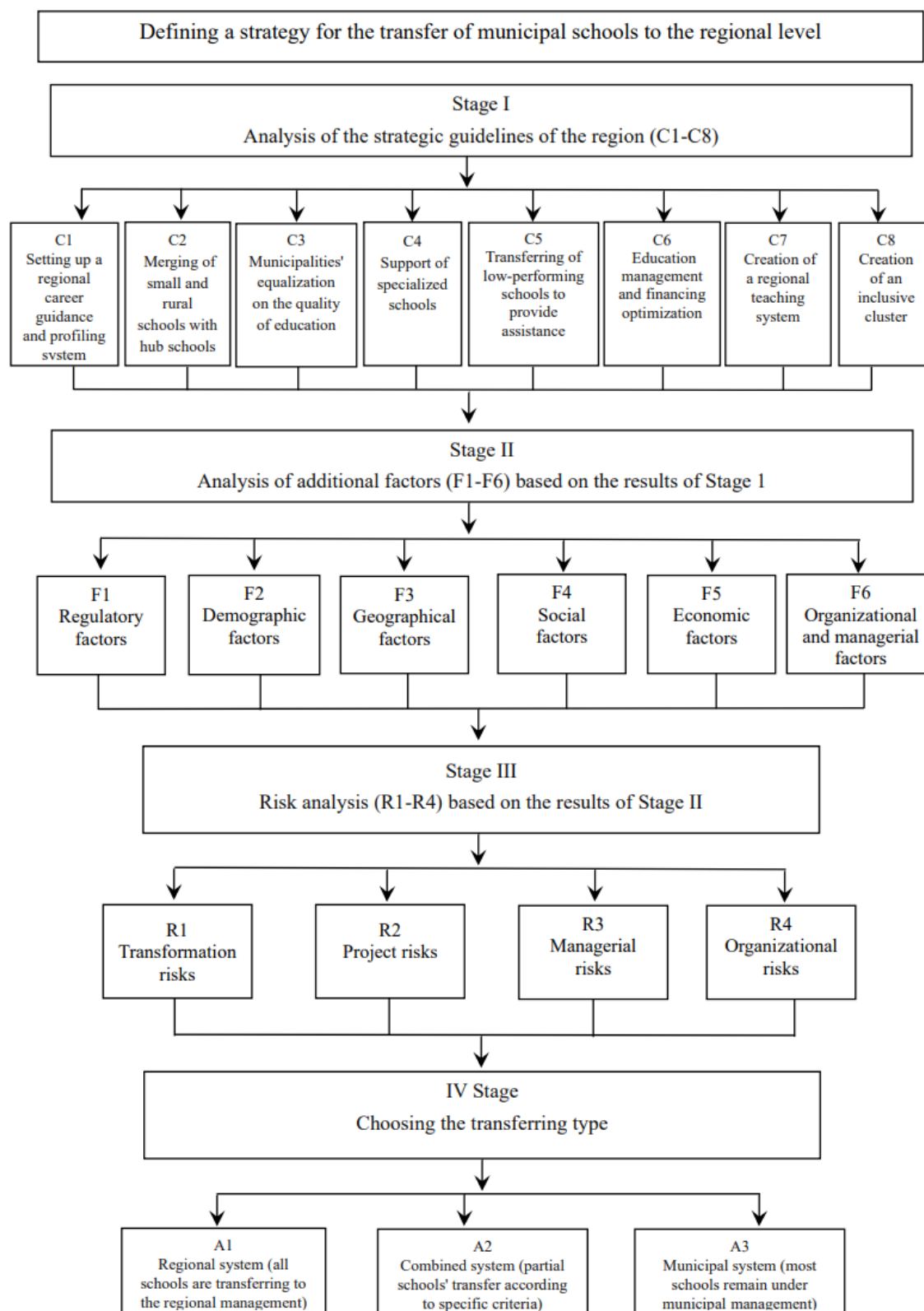


Figure 4 - Hierarchical Model of Choosing a Strategy for Transferring Municipal Schools to the Regional Level

The second group of criteria is represented by socio-economic indicators of the subject of the Russian Federation, structured by categories: regulatory, demographic, geographical, socio-economic, organizational and managerial factors (Fig. 5).

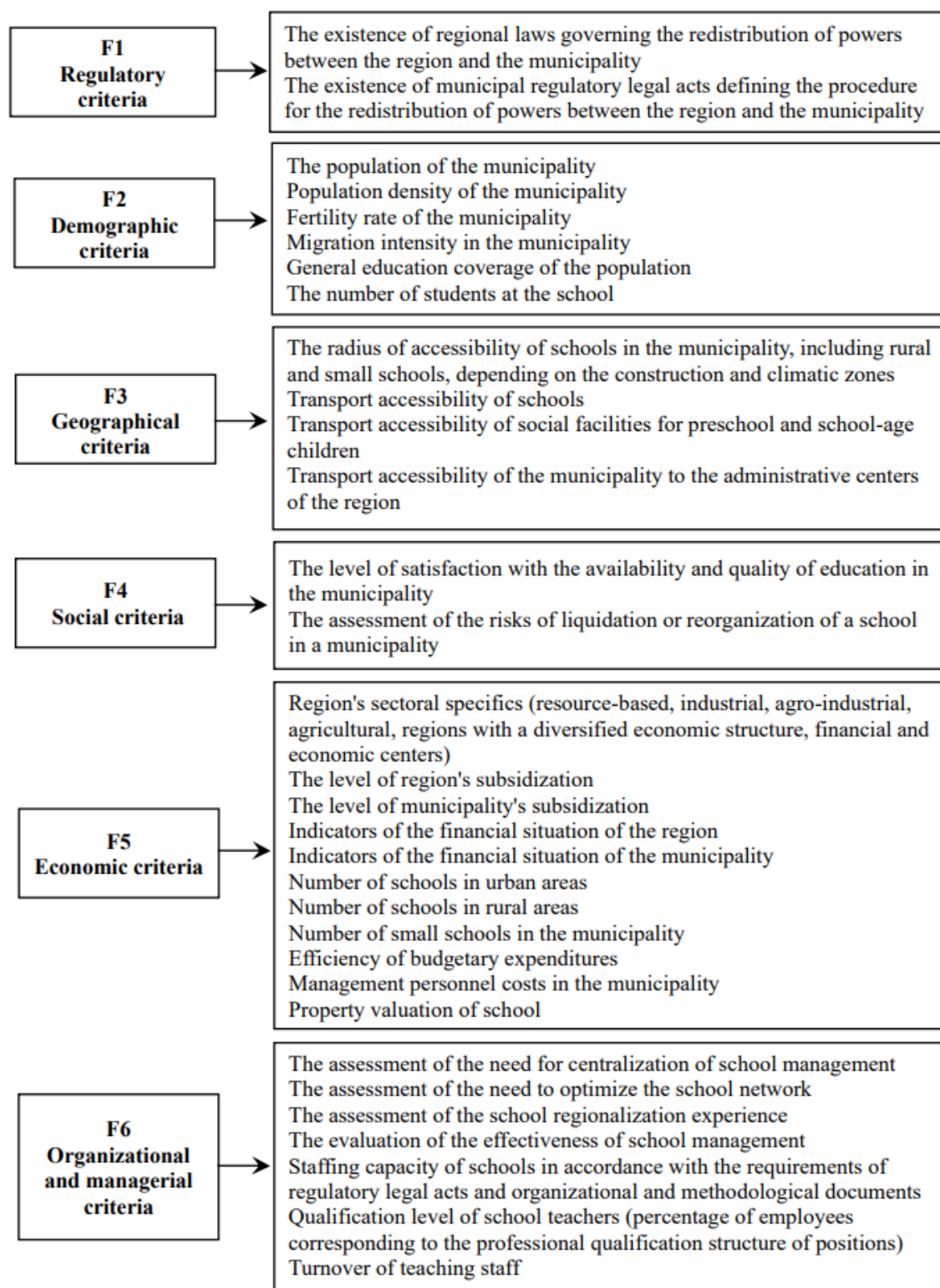


Figure 5 - Socio-Economic Indicators of the Region, Relevant when Deciding on the Transfer of Municipal Schools

When choosing a regionalization strategy, it is necessary to take into account the risks of regionalization, which can be grouped by the "nature" of their occurrence:

risks of transformation (decrease in the quality of management at the transitional stage; socio-psychological unpreparedness of public opinion; reorganization of the existing municipal education management system; increase in bureaucracy; intensification of the competitive environment between schools);

project risks (implementation errors in the implementation of the model, imbalance in the prioritization system); management risks (destabilization of the functioning of the management system; imbalances in the control system of schools at the municipal level; increase in management costs; efficiency of solving administrative and economic tasks in geographically remote areas; impossibility of widespread use of information and communication technologies in solving management and networking issues due to the lack of stable Internet; uneven distribution of funding between schools);

organizational risks (reduced motivation of management and teaching staff of schools, employees of municipal/regional educational authorities; lack of regulatory regulation in the region for the redistribution of powers in the field of education between the region and the municipality; possible departure of qualified specialists from the industry due to staff reductions in the municipal education system; increased professional workload of teaching staff; migration processes in the teaching community; difficulties in implementing personnel policy in peripheral municipalities) (Gordashnikova O. Y., 2024).

For a comprehensive assessment of the above criteria, a regional team of experts is being formed - representatives of various executive and legislative authorities of the subject, which may include representatives of municipal educational authorities and heads of schools. An expert matrix of paired comparisons of criteria $C1-C8$, $F1-F6$, $R1-R4$ is formed and weights of criteria w (C_i , R_i , F_i) are assigned. For each criterion, matrices of paired comparisons of alternatives $A1-A3$ are formed and local priorities of alternatives for each criterion are calculated. Then, by using a weighted sum of local priorities according to criteria, global priorities of alternatives are calculated.

The approbation of this model in determining the regionalization strategy was carried out using the example of the Tomsk region. The following data served as the initial conditions for modeling: in 2024, there were 299 general education organizations in the region (of which 4.1% were regional schools). From 2017-2023, their total number decreased by 18 units, including 11 educational institutions that were liquidated, 10 educational institutions were reorganized by joining, and 3 educational institutions were opened. The total number of students in the education system of the Tomsk region is 208,452 students (Gordashnikova O. Y., 2024).

A distinctive feature of the educational network is the high proportion of small schools - 37% of which are attended by 4.3% of the total number of students in the region. Since the beginning of 2024, 299 day and evening general education organizations (including private ones) have been operating in the Tomsk Region: 3 elementary schools, 56 basic general education schools, 184 secondary schools, 13 special (correctional) educational institutions for students with disabilities, 1 special educational institution for children and adolescents with deviant behavior, 1 sanatorium-type health-improving educational institution for children in need of long-term treatment, 1 educational institution for children, those in need of psychological, pedagogical, medical and social assistance, 14 gymnasiums, 15 lyceums, 3 cadet boarding schools, 3 evening (shift) schools.

A special feature of the region is its large territory – the distance from one administrative center to another is more than 100 km. The ratio of urban and rural population is 72.5% and 27.5%, respectively. There were no regionalization processes in the region.

An expert assessment of the importance of criteria by hierarchy analysis gave the following weights: $C1 = 0,18$; $C2 = 0,15$; $C3 = 0,18$; $C4 = 0,10$; $C5 = 0,09$; $C6 = 0,10$; $C7 = 0,02$; $C8 = 0,18$.

The region is distinguished by a strong scientific, educational and innovative sector, therefore, the priority of regional policy is the transition to the implementation of cluster policy - the formation of educational and industry clusters - the union of manufacturing companies and schools, this requires the priority of career guidance policy (criterion 1). In individual municipalities (80 out of 135 municipalities), criterion 2 is a priority – the integration of small and rural schools with basic educational institutions. Taking into account the demographic regional forecast, criterion 8 is also relevant – the creation of an inclusive cluster combining resource schools, colleges and employers, aimed at ensuring access to quality education and vocational training for children with disabilities. This approach will make it possible to comprehensively solve the problems of inclusion, ensuring systematic interaction between schools, scientific organizations and employers.

When determining the weights of the second level of criteria, the following characteristics of the Tomsk region were taken into account:

F1: Currently, there has been no mass transfer of municipal schools to the regional level in the Tomsk Region, schools are mainly run by municipalities. At the same time, there is a strategic document in the region - the Strategy for the Socio-Economic Development of the Tomsk Region until 2030 (Ranjina V., 2014) and programs for the development of the regional education system, in which the priority for the development of general education is to improve the quality and accessibility of education, develop career guidance, digitalize the educational process, support talented children and create conditions for inclusive education.

F2: the region is characterized by moderately negative demographic trends: there is a natural population decline (aging, migration decline), partially offset by the influx of migration due to the presence of large university centers. The main migration flows are directed to the regional center (Tomsk) and large municipalities, while rural areas are experiencing a steady outflow of the population, especially young people and the working-age population.

F3: The region has a significant territorial extent (north-south about 600 km), includes 135 municipalities (4 urban districts, 16 municipal districts, 3 urban and 112 rural settlements). Schools are unevenly located, and the network density of educational institutions is low, especially in the northern and eastern regions of the region. The distances between schools in rural areas can exceed 50-80 km, which complicates the creation of a unified educational infrastructure and requires special approaches to logistics and organization of the educational process.

F4: The population of the region demonstrates an average level of satisfaction with the quality of general education, while there is a significant differentiation by territory: higher grades are given to schools in the regional center and large cities, while rural schools are rated less satisfactorily. The population structure of the region is characterized by a high proportion of the urban population (more than 70%), but the number of schoolchildren in rural areas remains significant (about 20-25% of the total number of students), which requires maintaining a network of small rural schools and their support.

F5: The Tomsk Region belongs to the regions with a moderate level of budget subsidies (the share of federal transfers is about 11%). The region specializes in oil and gas production, timber industry, scientific and educational complex and innovative technologies. Municipalities differ significantly from each other in terms of economic development and budget provision: the city of Tomsk and its agglomeration are economically developed and have low dependence on subsidies, whereas most rural areas are characterized by a high degree of subsidization and limited own incomes.

F6: Given the significant territorial extent and uneven location of educational institutions in the Tomsk region, there is a need to centralize the management of the school network in order to increase the efficiency of resource use and equalize educational conditions. The task of optimizing the network of schools is also relevant, taking into account demographic trends and economic opportunities of municipalities, including the integration of small schools with core schools and the development of distance learning.

$F1=0,10$; $F2=0,20$; $F3=0,20$; $F4=0,15$; $F5=0,20$; $F6=0,15$;

When assessing the third level of criteria, the transfer risks, the weights were obtained based on monitoring data, as it provided for the issue of risk assessment.

$R1=0,30$; $R2=0,20$; $R3=0,25$; $R4=0,25$.

When evaluating alternatives A1, A2, A3 for each criterion of the first level (C1–C8), the second level (F1–F6) and the third level (R1–R4), it is possible to calculate the final integral estimates of alternatives at three levels.

The integrated assessment of alternatives according to the first level of criteria (C) will be:

$A1=0,40$; $A2=0,45$; $A3=0,15$.

According to the second level of criteria (F):

$A1=0,35$; $A2=0,50$; $A3=0,15$.

According to the third level of criteria (R):

$$A_1=0,50; A_2=0,30; A_3=0,20.$$

The final assessment of alternatives is calculated as a weighted sum of the estimates for each level:

$$A_i = w_C \cdot C_i + w_F \cdot F_i - w_R \cdot R_i,$$

at the values of the weights of the criteria determined by the experts $w_C=0,4$, $w_F=0,35$, $w_R=0,25$.

$$A_1 = (0,4 \times 0,40) + (0,35 \times 0,35) - (0,25 \times 0,50) = 0,16 + 0,1225 - 0,125 = 0,1575$$

$$A_2 = (0,4 \times 0,45) + (0,35 \times 0,50) - (0,25 \times 0,30) = 0,18 + 0,175 - 0,075 = 0,28$$

$$A_3 = (0,4 \times 0,15) + (0,35 \times 0,15) - (0,25 \times 0,20) = 0,06 + 0,0525 - 0,05 = 0,0625$$

Final ranking of alternatives:

1st place – A2 ("Combined system") = 0.28

2nd place – A1 ("Regional system") = 0.1575

3rd place – A3 ("Municipal system") = 0.0625

Thus, the calculation of the multicriteria optimization model using the hierarchy analysis method (using open-source PuLP tools in Python) showed the expediency of choosing a combined model of regionalization of municipal schools for the Tomsk region. This model assumes a partial transfer of schools to the regional level in accordance with certain criteria and characteristics of the region (a large number of small schools – 37%, a significant area of more than 100 km between the centers of municipalities and the specifics of demographic and social conditions). This strategy will take into account the specifics of the region and minimize the risks of regionalization. The target setting of the region according to the priorities of the criteria is, first of all, the equalization of the quality of education and the integration of small and rural schools with supporting organizations. The region should use a combined education management model with the transfer of some schools to the regional level in accordance with the identified constraints and priorities. The main objectives of such a transfer are to equalize the quality of education between municipalities, integrate rural and low-income schools, support specialized schools, and improve the effectiveness of education system management. Taking into account the assessment of the integral risk indicator for the implementation of targets, the recommended network structure in the region is 75 schools at the regional level (taking into account 12 existing ones, it is possible to plan the transfer of 63 general education organizations for the period 2026-2028), of which: specialized schools (14), small rural schools in the core network (40 out of 111 available), schools with low results (9 out of 11 available); 224 general education organizations are recommended to operate at the municipal level.

CONCLUSION

When defining specific schools, it is possible to build models with different target functions. – maximizing the integral usefulness of transferring schools to the regional level, taking into account certain factors of the region and municipality, minimizing total costs and risks while achieving the maximum socio-economic effect of the transfer, while controlling the manageability of the educational network after the transfer, the total regional costs of maintaining the educational network, taking into account budget constraints, the index of social satisfaction at the transfer of each school, assessment of the achievement of the strategic goals of the region. Therefore, each region needs, in accordance with its strategy and program for the development of regional education, to determine the directions and extent of institutional transformations in optimizing the educational network of general education organizations.

In 2025, it is planned to approve the Education Development Strategy in Russia until 2036 and for the future until 2040. In accordance with the national strategy, programs for the development of regional and municipal educational systems will be modified, taking into account strategies for the socio-economic development of territories. In relation to the processes of regionalization, a conceptual position will be developed and a program for the transformation of the educational network of general education organizations will be developed. The model developed in this study allows us to provide a scientifically sound approach to choosing a strategy for the regionalization of

municipal schools, taking into account regional specifics and strategic goals, which can help improve the effectiveness of the management of the general education system and achieve sustainable development of the regional educational network in the long term.

ACKNOWLEDGMENTS

This research was carried out with the financial support of the Ministry of Education of the Russian Federation within the framework of the research project No. 1024120500010-0-5.3.1 "Development of strategic directions for education and methodology for designing regional education development programs based on big data analysis"

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