

Political and Administrative Resources of Public Management of Agglomeration Development in the Context of the Evolution of the Agglomeration Processes

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Abstract—The object of the research is agglomeration as a management structure formed on the basis of voluntary integration of neighboring administrative units to increase the efficiency of joint socio-economic development. The identification of specific subjects and resources as well as their actual benefits for each stage of the development of an agglomeration, can become a prerequisite for constructing an explanatory management model and overcoming the existing contradiction between theoretical constructions and the practice of managing agglomeration processes. The proposed approach makes it possible to assess the availability and degree of involvement of management resources in solving development problems. This contributes to the analysis of the agglomeration process both in quantitative and qualitative terms and creates the basis for designing a public administration system for an urban agglomeration.

Keywords—*agglomeration, political and administrative resources, agglomeration development stages*

I. INTRODUCTION

Today the concept of urban agglomerations, the mechanism of their formation and development as well as identification criteria are in the focus of scientific, social and political discourse. Most researchers agree that it is the large urban agglomerations that are the current and promising growth points in the economic and social development of countries and regions and the most competitive «regional organizations» [1]. Some politicians and specialists in the field of spatial planning believe that modern spatial development is based primarily on agglomeration trends [2]. The clearly expressed polarization of the socio-economic space, on the one hand, confirms this thesis, and on the other hand, it actualizes the problems of managing agglomeration development in order to create and maintain a stable balance of costs and benefits of agglomeration.

The theoretical framework of agglomeration processes is formed within the confines of three main directions: neoclassical, new economic geography and spatial economics. They explain the dynamics of these processes by both centrifugal and centripetal forces. Generation of centripetal impulses occurs in many respects spontaneously. Nevertheless, the nature of further dynamics can be different and is largely determined by the availability of appropriate resources, their quality, as well as the adequacy of their use at different stages of managing the development of the agglomeration. If successful, there is a significant increase in economic and social efficiency (transport, infrastructure and logistics networks are optimized; environmental policy, land use and territorial planning systems are better coordinated, innovative potential is increased, etc.). Although the uncontrollability of the process of spontaneous concentration can lead to significant negative consequences (environmental, social and economic tension) and, as a consequence, to centrifugal processes.

The object of the research is agglomeration as a management structure formed on the basis of voluntary integration of neighboring administrative units to increase the efficiency of joint socio-economic development.

The subjects influencing agglomeration processes are diverse and determined by the uniqueness of each individual agglomeration. Moreover, each of the subjects has certain resources and goals. Their combination and consolidation along with the relevance of the use of available resources in relation to various stages of agglomeration development, ultimately determines the efficiency of agglomeration processes in the short and long term.

The identification of specific subjects and resources as well as their actual use for each stage of the development of an agglomeration, can become a prerequisite for constructing an

explanatory management model. This will also help to overcome the existing contradictions between the theory and practice of managing agglomeration processes.

II. MATERIALS AND METHODS

The methodological basis of this study was an interdisciplinary approach, including a comparative analysis of scientific discourse on assessing the degree of development of urban agglomerations, as well as an analysis of reports and studies on various aspects of the development of the agglomerations, case analysis, and statistical data analysis. System analysis was based on qualitative research methods. The object of research is the Krasnodar urban agglomeration.

III. RESULTS AND DISCUSSION

A. Dynamics of agglomeration processes: approaches to identifying stages

Various researches at different times carried out numerous theoretical and empirical studies. These studies demonstrate significant heterogeneity of the dynamics of agglomeration processes and suggest the variety of approaches to assessing the development of urban agglomerations.

TABLE I. APPROACHES TO ASSESSING THE DEGREE OF DEVELOPMENT OF URBAN AGGLOMERATIONS (COMPILED BY THE AUTHORS)

| Author, year | Approach (development criteria) |
|---|---|
| United States Census Bureau [3], 1910 | Population number and density |
| Gottmann, 1957 | Five criteria covering various aspects of population, trade, transport and internationalization |
| the Japan Department of Administrative Management [4], 1960 | Determined by characteristics of population, administration and traffic flows |
| United States Census Bureau, 1990 | Determined by population number, its density, structure, growth rates and commuting ratio |
| 1995 Zhou and Shi [5] | Population structure, globalization, spatial structure and commuting ratio |
| 2001 Yao et al. [6] | Determined by ten criteria covering population structure, spatial structure and interactions, transport networks, interconnectivity and industrialization |
| 2005 Miao and Wang [7] | Determined by six criteria covering demographic data, spatial extent and public recognition of the territory as agglomeration by government authorities, scientific and expert community and population |
| 2009-2011 Fang et al [8] | Determined by ten criteria covering population, city size, economic development, industrialization, transport networks and travel times. |
| 2015 Ning [9] | Determined by six criteria covering population, transport, city size, strong historical bonds and hence a sense of integrity and a common regional identity |

In this regard, some researchers note their stepped diffusion capacity. They also make attempts to identify and differentiate development stages that characterize the leading

factors that caused the replacement of one stage by another, and functioning features of the agglomeration in a given period. Gottmann [10], for instance, relies on research of the agglomerations of the USA, Japan, China and Europe, and highlights the stages of urban space agglomeration depending on population density, trade and freight traffic. Wang et al. [11] assessed the degree of integrated development of urban agglomeration through the characteristics of social, spatial and economic development. Zhang et al. [12, 13] assessed various stages in the development of an agglomeration depending on traffic and degree of sustainable urbanization.

The spatial-cycle model introduced by Klaassen [14] is a well-known research construct. It, like some others, is based on population indicators, within which there are four main stages:

- population of a settlement grows at the cost of a surrounding countryside;
- population of a surrounding countryside grows and outstrips the growth of the urban core;
- population loss in the urban core exceeds the population gain in a surrounding countryside;
- urban core re-starts its growth or its decline in population is less than the one in a surrounding countryside.

We shall not dwell upon certain conceptual weaknesses of this model. We only note that it is somewhat schematic and is based on a rather narrow (demographic) criterion.

Later, research approaches were developed that took into account the variety of indicators of agglomeration dynamics. Many of them rely on the empirical base from case-studies.

So, A.A. Neshchadin [15], proposes to distinguish 4 stages and 3 phases of the development of an agglomeration. The first stage ("industrial agglomeration") begins with the formation of a conglomerate of closely located urban areas, united mainly by industrial ties. At the same time, single markets for labor, real estate and land have not yet been formed. The second stage is characterized by the strengthening of centripetal tendencies, the flows of commuting to the urban core, and the formation of a single labor market. At the third stage, a single functionally connected space is formed. A number of functions of the agglomeration's core is transferred to the neighboring suburbs; now then, they receive additional incentives for development. Single resource markets are being formed. The fourth, post-industrial stage, is the stage of "embedding" the agglomeration into global economic processes, the development of concepts for new public spaces and a new "resource portfolio". Neshchadin emphasizes that agglomerations go through three main phases in their development. The first phase is the agglomeration of labor markets, the second is the agglomeration of retail, residential and industrial real estate markets, and the third is the maturity phase.

Fang [16] identifies four stages of agglomeration development, which he calls "expansion stages" and provides their detailed description. In his study, he uses a multi-criteria

approach including such characteristics as the number of settlements, spatial and regional structure, transport networks, type of expansion, population and functions.

Generally, one can note that the differences in research approaches are mainly associated with the degree of detail and a set of indicators characterizing the individual stages of the development of agglomeration processes. In our study, we will use the modified classification of V.Ya. Lyubovnyy, who, analyzing the dynamics of the growth of the Moscow agglomeration, suggests the following:

- the pre-agglomeration stage: main material prerequisites for agglomeration development exist already, but it is necessary to include certain mechanisms to "launch" it;
- the first stage: the development is predominantly extensive and centripetal; legal registration of the agglomeration and its management system take place;
- the second stage: one observes a predominantly intensive and qualitative change in the agglomeration structure, namely the growth of "secondary" cores, development of inter-municipal cooperation, improvement of management structures and practices, etc.;
- the third stage: further growth both territorial and qualitative, improvement of the settlement structure, the system of connections between urban cores, etc. [17]

We propose to supplement this classification with a fourth stage. This is due to the need for a "restart" and a new qualitative expansion of the urban agglomeration.

This sequence takes into account the impact of various factors on this process (including the creation and transformation of management structures).

B. Identification of resources of public administration of an urban agglomeration in relation to various stages of its development

Agglomeration as a structure of public administration is a complex and multi-layered system of management interactions, stimulated by various factors. These factors determine the involvement of various subjects in the management process and contribute to the search and integration of resources, as well as the development of the most optimal management decisions to achieve the goals and objectives of agglomeration development.

The study of the agglomeration process implies an assessment of the availability and degree of involvement of management resources. Therefore, we can assess the course of the agglomeration process both in quantitative and qualitative terms.

We share the point of view of A. Puzanov and R. Popov that the same management mechanisms, all else being equal, will work with different efficiency in agglomerations at different stages of development [18]. In this regard, we consider it's important to assess the need for and the

effectiveness of the use of certain political and administrative resources of public administration of the agglomeration.

We argue that it is rational to differentiate public administration resources in relation to the stages of the agglomeration process. This approach makes it possible to identify the starting conditions for each stage and analyze the qualitative characteristics of the emerging socio-economic relations, as well as the processes required for the consolidation of the main elements of the system.

We carried out diagnostics and verified its results using an expert survey. Next, we have identified a set of resources. So now the public administration system is able to solve the specific tasks of each stage of agglomeration development. (Table 2).

At the first (pre-agglomeration) stage of development, a new project is launched. There is a transition from the spontaneous development of agglomeration processes to an orderly and planned one. One requires various political and administrative resources for this, primarily intellectual, communicative and managerial. Intellectual resources are the ability for social design, formulating the meanings of agglomeration development, its main directions, delimitation of borders, awareness of possible contradictions, etc. Communicative resources are methods and technologies, the so-called "agglomeration marketing". Managerial resources are platforms and technologies for coordinating interests at the level of government and public structures.

The second stage involves the creation of an agglomeration management system. In modern studies, the advantages and disadvantages of various models of its organization are widely discussed. Regardless of which approach is used as a basic one, it is necessary to institutionalize the created management structures and formal foundations of management. This involves the inclusion and development of institutional resources. Then it is necessary to master new norms and rules so that they become practically effective. From the point of view of the management system, this means the implementation of the process of justification and decision-making. It's of utmost importance in the context of consultations, commissions, etc. (such modes are widespread within some models of metropolitan management, including those that correspond to the current legislation of the Russian Federation). The choice and coordination of strategic development goals should be carried out through negotiations of various stakeholders: federal, local, regional authorities, business structures, local communities and the general population. It also appears to be quite necessary to use the resources for involving citizens and civil society structures in new institutional practices. We argue that, first of all, these include network resources that allow one to develop a consolidated opinion on key issues (groups in social networks, particular online resources for discussing development projects, etc.).

The change in the internal structure of the agglomeration is characteristic of the third stage. Here it may be necessary to reformat the management structure, transfer the authority to the new "core" of an agglomeration. Such transformations require public-political justification and legitimation right up

TABLE II. RESOURCES FOR PUBLIC ADMINISTRATION OF URBAN AGGLOMERATION DEVELOPMENT (COMPILED BY THE AUTHORS)

| Stage | Tasks | Resources | Subjects (existing or specially established) |
|-------------------------------|---|---|---|
| The first (pre-agglomeration) | transition from spontaneous development to an orderly and planned one, selection of an optimal spatial agglomeration model; defining development directions of the social settlement framework | Lobbying, expert, communicative, administrative, intellectual, information-discursive, symbolic-image resources | State legislative and executive authorities, departmental structures of the executive authorities of the Russian Federation and the constituent entities of the Russian Federation, local governments, business structures and their associations, structures of academic and applied science, funds (regional development agencies), media, online communities, public organizations, political parties |
| The second | delimitation of borders and creation of an agglomeration management system, institutionalization of the created administrative structures and formal foundations of agglomeration management, search and determination of the most effective instruments for inter-municipal cooperation and construction of partnership, contractual relations between various centers of power and stakeholders, formation of the natural-ecological framework of the agglomeration. Coordination of strategic documents for urban development and territorial planning documents, programs for infrastructure, regional and municipal development. | Network, communicative, administrative, expert, investment, budgetary, legal resources | State legislative and executive authorities, departmental structures of the executive authorities of the Russian Federation and the constituent entities of the Russian Federation, local governments, individual and associated subjects of business structures, local communities, online communities, public associations, structures of academic and applied science, authorized working groups, coordinating bodies for urban development, commission on investments, on nature management, on transport, on spatial development |
| The third | increasing the role of coordination instruments and conciliation procedures as elements of planning and management of the agglomeration, changing the internal structure of the agglomeration and the management system in accordance with current needs, public-political justification and legitimization of the necessary transformations in the field of governance, elimination of parallelism and duplication of the same type of functions performed by different local government bodies, delegation of authority for territorial planning and infrastructure development to superior / regional government bodies | network resources, administrative, legal, political response resources, investment resource, budgetary resource | funds (regional development agencies), expert communities, online groups to discuss development projects, departmental structures of the executive authorities of the Russian Federation and constituent entities of the Russian Federation, local government bodies, coordinating bodies for urban development, commission on investments, on nature management, on transport, on spatial development |
| The fourth (new expansion) | improvement of the settlement structure, the system of connections between urban cores, transport, logistics, communal, shopping and entertainment, social infrastructure, land use system, system of promising multifunctional and specialized centers of agglomeration significance, formation of an intelligent urban infrastructure, the integration of the agglomeration into global economic processes | Expert resource, Information and discourse resource, public image | Expert groups, businesses, departmental structures of the executive authorities of the Russian Federation and the constituent entities of the Russian Federation, local authorities |

to the holding of local referendums. It is vital to use the resources of political response to new challenges - monitoring of possible development problems, the creation of expert groups, etc.

A rethinking of the agglomeration itself, its main ideas, is usually required at the fourth stage. Even a kind of "restart" is possible, associated with the expansion of the territory and a change in the structure of settlement. There is a return to the first stage but at a significantly higher level. This is reflected in the development of intelligent urban infrastructure, the emergence of a new concept of public spaces, the practical embodiment of an innovation-oriented development mission. Thus, at each of the identified stages of development one requires to attract a complex of political and administrative resources that are effective in the public space. At the same time, the ratio between the types of resources, the scale and proportions of their use changes.

C. Public Administration Resources of the Krasnodar Agglomeration: Approaches to Policy Analysis

Now in Russia there are no agglomerations that have gone through all the development stages entered its new cycle. Existing agglomerations often experience difficulties in the

very perception of the ideas of metropolitan management, the formation of new political and administrative structures and management tools. Therefore, their project development often lags behind the real one. It results in the predominance of spontaneously formed development trends over the managed ones. It is quite natural that this causes a number of negative consequences. One can say that it has "stuck" at the pre-agglomeration stage from the point of view of development manageability. The problem of the management system of the Krasnodar agglomeration is complicated by its location on the territory of two federal subjects: Krasnodar Krai and the Republic of Adygea. Naturally formed boundaries are being questioned. The choice of a management model, creation of appropriate institutional conditions in general drop out of the socio-political discourse. At the same time the agglomeration is fully functioning, and the COVID 19 pandemic has proved it. For example, municipal authorities of Krasnodar introduced quarantine restrictions in force in the city on the settlements located beyond the Kuban River and included in the Republic of Adygea. Although these territories are excluded from the agglomeration according to the presentation materials of the new master plan for the city's development. Such semantic gaps between reality and development concepts in the future

can lead to social tension and conflict situations in the public sphere of urban politics.

We propose an approach to assessing public administration resources based on a combination of qualitative and quantitative methods of analysis. It includes sociological (expert methods) as well as statistical and mathematical methods. Expert assessments include two projections: the current state of public administration resources ("what is") and the target or reference state ("what should be"), and are ranked according to three intervals of a 100-point scale. The method of canonical and positional analysis checks the reliability of the consistency of expert estimates.

Resource assessment is one of the components of the authors' algorithm for a comprehensive assessment of the public administration system of an urban agglomeration:

Stage 1 – the formulation of the most acute problems of agglomeration development and identification of "bottlenecks" in need of transformational changes, as well as required resources;

Stage 2 – analysis of the main participants and stake holders;

Stage 3 – analysis of the resources of the main participants and stake holders;

Stage 4 – analysis of the resource "gap", the choice of the optimal strategy for their growth and inclusion in the management process;

Stage 5 – the formation of a set of indicators to adequately assess any progress;

Stage 6 – systematic control and monitoring of indicators.

IV. CONCLUSION

The development of analytical tools that make it possible to adequately diagnose the entire variety of political and administrative resources for transforming agglomeration processes, as well as the range of their success in designing agglomeration development, is extremely important for modern science and practice.

The proposed approach to the differentiation and assessment of the political and administrative resources of the public administration of an urban agglomeration makes it possible to assess the presence and degree of involvement of administrative resources in solving development problems. This, in turn, allows one to analyze the agglomeration process in quantitative and qualitative terms, and also creates the basis for designing a public administration system for an urban agglomeration.

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