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ARCHITECTONICS AND STRATEGIC ARCHITECTURE OF
REGIONAL PUBLIC ADMINISTRATION SYSTEMS:
ASSESSMENT OF COMPLIANCE

O. V. Glushakova (a)*, Ya. A. Vaysberg (b), N. V. Fadeykina (c), V. V. Mikhailov (d), V. A. Trifonov (e)

*Corresponding author

(a) Siberian Academy of Finance and Banking, Polzunova Str., 7, Novosibirsk, Russia, trinity@oaotk.ru,

(b) Siberian Academy of Finance and Banking, Polzunova Str., 7, Novosibirsk, Russia,

(c) Siberian Academy of Finance and Banking, Polzunova Str., 7, Novosibirsk, Russia,

(d) Plekhanov Russian University of Economics (Kemerovo branch), Kuznetsky Ave., 39, Kemerovo, Russia,

(e) Yaroslav-the-Wise Novgorod State University, ul. B. St. Peterburgskaya, 41, Veliky Novgorod, Russia,

Abstract

The article presents the results of assessing the level of compliance of the existing architectonics of the regional systems of public administration of socioeconomic development of territories with the strategic architecture which means a qualitatively new state of mentioned systems as a response to environmental changes. The research hypothesis implies that in the conditions of increased change rate the sustainable development of any territory can be maintained due to the transformation of public administration system architectonics into strategic architecture. The success of this transformation is determined by how much the regional systems of public administration are oriented to the maintenance of the proper development of both economic and social processes. The purpose of the research is to develop the methods assessing the compliance of the existing architectonics of regional public administration systems with the strategic architecture. The research is based on the differentiated integral evaluation of the development level of social and economic processes, using the method of gap analysis. 85 subjects of the Russian Federation were evaluated within the framework of the justified system of criteria and indicators of strategic architecture effectiveness. The results of the research are presented by assessing the level of compliance of the existing architectonics of regional public administration systems with the strategic architecture for 2016. The limitations of application of the results obtained are associated with the necessity to alter the current legislature in the field of evaluation of effectiveness of executive bodies at the sub-federal level.

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Keywords: Architectonics, compliance assessment, economic processes, effectiveness criteria, social processes, strategic architecture.



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1. Introduction

Integration of Russia into the world social and economic space predetermined the need to ensure the transparency of activities of state and local authorities, as evidenced by the reforming of their structure and functions, the introduction of strategic management methods into management practice.

Success of implementation of strategies for the socioeconomic territorial development (hereinafter referred to as the SETD) is largely determined by the compliance of the strategic capabilities of the current structure of the public administration system (hereinafter – PAS) with the goals and objectives of socioeconomic development in a strategic perspective. However, the complexity and high inertia of the object of management, which is a combination of social and economic processes of territorial development, added by low dynamic capabilities of the current architectonics (structure) of PAS, poor development of professional competences in the human capital structure of public administration subjects, and, consequently, skills of strategic management do not allow for the rapid response of the management system to changes in the external environment.

2. Problem Statement

High risks of socioeconomic development of Russia and its regions caused by prolonged conservatism of economic structure and high level of dependence on the conjuncture in markets of raw materials, combined with the above-mentioned systemic contradictions, gave the impulse for institutional transformations which formed the basis of PAS architectonics transformation into the strategic architecture in order to increase its flexibility and adaptability to changes, provide the sustainable SETD, and improve the life quality of citizens. However, the given process is not over yet. That is why the assessment of the compliance of the existing architectonics of PAS with the strategic architecture is the important aspect of SETD public administration at macro- and meso-levels.

3. Research Questions

Theoretical and methodological approaches to the transformation of the PAS architectonics into the strategic architecture were discussed in details by the authors in a monographic research (Glushakova & Vaysberg, 2014). Theoretical foundations for the mentioned transformation are the statements of strategic management concept at the level of organization, significant contribution to it having been made by well-known scientists (Ansoff, 1965; Drucker, 1992; Kotler, 1999; Mintzberg, 1973; Porter, 1991; Thompson & Strickland, 1993; Chandler, 1962; Andrews, 1971).

Today, there are prepared models describing namely the activities of government agencies and departments, e.g. Federal Enterprise Architecture (FEA). Methods, principles, and approaches used in it were applied in developing the USA Federal Architecture. In Russia, methodology of the FEA was used, while implementing the model of electronic government.

In our opinion, the notion of “architecture” contains deeper essential sense reflecting the strategic context of PAS functioning in the changing conditions.

As we understand, the strategic PAS architecture means the qualitatively new state of the mentioned system as a response to changes manifesting itself in the action of exclusively formal

institutions, selecting of priority development processes, using of key strategic resources, information-telecommunication systems and standards of sustainable SETD, increasing of professional competencies of public administration subjects as one of the most important components of the human capital.

During the research, the approaches to assessing the level of compliance of existing SETD PAS architectonics with the strategic architecture (Glushakova & Vaysberg, 2014) were improved. First of all, the rating scales were changed, this having been caused by the extended public law bodies studied (hereinafter – PLB). Also, the system of indicators was changed due to the formation of new institutional conditions of SETD public administration.

Today, the performance assessment of executive authorities of the constituent entities of the Russian Federation and local governments is carried out according to Decrees of the President of the Russian Federation No. 548 of November 14, 2017 and No. 607 of April 28, 2008, the special attention is paid to the achievement of both economic and social aims of territorial development which can give all opportunities of developing the human capital. Despite the fact that scientific community determined the human capital as a SETD factor-determinant in the second half of the twentieth century (Shultz, 1971; Becker, 1962, 1964, 1967), the significance of social processes in its extended reproduction was also recognized (Edvinsson & Malone, 1997; Psacharopoulos & Patrinos, 2004; Ozturk, 2008; Fukuyama, 1995; Roik, 2010; Mikhaylov, 2012; Kuklin & Gurban, 2012; Tatarkin & Andreyeva, 2014; Auzan, 2013; Mau & Stupin, 1995), the alteration of Russian public administration paradigm in the given context occurred only following the crisis of 2009.

4. Purpose of the Study

The foregoing implies the need to develop fundamentally new approaches to assessing effectiveness of the functioning of the SETD PAS.

In our opinion, to assess the level of compliance of PAS architectonics with the strategic architecture it is necessary to consider the specific administration object, namely SETD. At the same time, the significance of social processes in the extended reproduction of the human capital and sustainable territorial development implies the necessity to study social and economic processes separately.

The given conceptual approach allows formulating the criteria of effectiveness of SETD PAS strategic architecture in the conditions of high rate of environmental changes, the latter include:

- level of development of social processes and economic ones;
- rate of response of social processes and economic ones to a management action;
- gaps in the rate of response of social and economic processes to a management action.

Thus, the assessment of correspondence of SETD PAS to the criteria of effectiveness allows judging how close is the existing architectonics of PAS to the strategic architecture, and, as a result, how strategically flexible is it in the changing environment. This is the main purpose of our research.

5. Research Methods

To assess the level of compliance of the existing SETD PAS architectonics with the strategic architecture, we developed methods which we represent below.

5.1. Justification of the system of indicators

At the basis of their methodology the authors laid the calculation of component indexes and integral index which allow to estimate the level and rate of the development of social and economic processes, as well as the gaps in the rate of their response to a management action, and, as a result, determine the level of PAS architectonics compliance with the strategic architecture. We believe that for the assessment it is necessary to use the official indicators of government statistic observation, this does not require the significant involvement of human and other types of resources in the current systemic constraints.

Justification of the system of indicators of the development of social and economic processes with the aim of assessing is presented in table 01.

Table 01. System of indicators to assess the level of regional PAS architectonics compliance with the strategic architecture in the context of managing social and economic processes¹

Indicators	Private index Designation	Justification
Indicators characterizing social processes		
Life expectancy at birth, years	<i>A</i>	Is largely determined by the development of social infrastructure, the effective functioning of health system of specific PLB
Rate of population migration growth per 10 000 population	<i>B</i>	Demonstrates the most favorable, first of all from the social point of view, PLB
Number of recorded crimes per 100 000 population	<i>C</i>	Characterizes the level of SETD PAS architectonics compliance with the strategic architecture in terms of personal security
Housing security, square meters per person	<i>E</i>	Characterizes the level of SETD PAS architectonics compliance with the strategic architecture in terms of life support of citizens
Infant mortality rate –number of infants died before the age of 1 year per 1000 live births	<i>F</i>	Demonstrates the level of SETD PAS architectonics compliance with the strategic architecture in terms of managing processes of development of social infrastructure and providing healthy sanitary and epidemiological situation in the territory
Number of patent applications for intellectual property, one per 1000 people*	<i>G</i>	Shows the level of inventive and innovative activities of regional population in the context of supporting and developing the processes of scientific and innovative sphere
Air pollutant emissions from stationary sources, tons / person per year*	<i>H</i>	Characterize the level of SETD PAS architectonics compliance with the strategic architecture in the context of managing anthropogenic environmental load
Volume of discharge of polluted	<i>I</i>	

¹ Official site of the Federal State Statistics Service. Regions of Russia. Socioeconomic indicators. URL: <http://www.gks.ru>

wastewater into surface water bodies, m3 / person per year*		
Number of students of higher vocational education (students of baccalaureate, specialty, magistracy programs) (per 10,000 population)	<i>J</i>	Inclusion of the given indicator in the assessment system is conditioned by the fact that today one of the problems of territorial development is migration of young people to big cities in order to get more qualitative education and, as a result, higher career growth and salary
Inclusion of children in the system of pre-school education, %	<i>K</i>	Inclusion of the given indicator in the assessment system is, to our mind, principal, as it shows starting conditions for forming the human capital of proper quality and including in the process Life Long Learning
Indicators characterizing economic processes		
Investments in fixed capital per capita, thousand rubles per person	<i>M</i>	Demonstrate the compliance level in the context of development of institutional forms, including forms of legislative and legal character that provide investment attractiveness of the region
Proportion of unprofitable organizations of their total number, %	<i>N</i>	Allows to estimate the compliance level in the context of effective regulation of business entities performance, making conditions for increased total budget and increased volume of strategic financial resources
Gross regional product per capita, rub. Per person	<i>O</i>	Characterizes the compliance level from the point of view of managing the process of gross value added formation, and reflects the labor productivity. It is necessary to note that today the growth of the given indicator is provided by extensive way mainly.
Tax and non-tax revenues of consolidated budget per capita, thousand rub.*	<i>P</i>	Reflects the compliance level from the point of view of effective management of the tax potential of the territory, as well as state property in state (municipal) ownership, and, consequently, the financial capacities of PLB
Proportion of population with incomes above the subsistence minimum, % *	<i>Q</i>	Reflects the compliance level in the context of increased economic wellbeing of the community living in the territory of PLB
Ratio of average prices in the secondary housing market to average income per capita, coeff. *	<i>R</i>	Demonstrates the provision of housing affordability for persons by PAS, taking into account disposable average incomes per capita
Share of innovative products in total volume of shipped goods of own production, %	<i>S</i>	Characterizes the compliance level from the point of view of overcoming conservative economic structure and increasing SETD stability
Number of used advanced productive technologies per capita, unit*	<i>T</i>	Demonstrates the results of innovation space formation by PAS in the PLB territory, the development of institutes focused on increasing innovation activity of economic subjects
Gini coefficient	<i>U</i>	Demonstrates how justly the PAS implement the distributive processes in the PLB
Internal expenses for scientific research and developments, thousand rubles per person*	<i>V</i>	Reflects the compliance level in order to form the conditions to overcome the conservative structure of PLB economics and provide sustainable territorial development

*Note: calculated by the authors, using: [Official site of Federal State Statistics Service. Regions of Russia. Socioeconomic indicators. URL: <http://www.gks.ru>]

5.2. Model

The indicators justified in table 01 allow calculating:

– *SP (Social Processes)* component index characterizing the level of social process development

(1):

$$SP = 0.18A + 0.03B + 0.12C + 0.1E + 0.11F + 0.05G + 0.14H + 0.12I + 0.07J + 0.08K \quad (1)$$

– *EP (Economic Processes)* component index characterizing the level of economic process development (2):

$$EP = 0.15M + 0.1N + 0.17O + 0.13P + 0.13Q + 0.05R + 0.1S + 0.07T + 0.04U + 0.06V \quad (2)$$

Weights of the indicators included into the evaluation system were obtained with the data of a questionnaire in which 10 experts of higher qualification took part. The high level of conformity of expert opinions was confirmed by the Kendall concordance coefficient values of 0,648 and 0,613 for economic and social processes correspondingly.

At the basis of SP and EP component and private index calculation lies a linear scaling method that allows to transform the indicators having different measurement units into a comparable form (3). Scaled indicators take values from 0 to 1 inclusively.

Reference points are *i*-variant indicator maximum and minimum values being fixed for the whole research period. If the measured indicator is negatively related to socioeconomic development, for example, crime rate and the like, then the inverse linear scaling is used (4):

$$X_i^m = \frac{X_i - X_{\min}}{X_{\max} - X_{\min}} \quad (3)$$

$$X_i^{1-m} = 1 - \frac{X_i - X_{\min}}{X_{\max} - X_{\min}} \quad (4)$$

Based on SP and EP component indexes, it is possible to calculate the integral index of *SEP (Social and Economic Processes)* (5):

$$SEP = (SP + EP) / 2 \quad (5)$$

The assessment of the public administration system architectonics compliance with the strategic architecture is made as follows.

1) *The assessment of the development level of social/economic processes.* The value of the integral indicator of SEP allows to evaluate the development level of socioeconomic processes on the whole, but, in order to reveal the contribution of social and economic processes to the formation of the given indicator, they need to be studied separately. It is evident that the public administration system architectonics corresponds to the strategic architecture, if the development level of both social and economic processes is high. We suggest differentiating the development levels of social and economic processes into low, below the average, average, above the average, and high, wherein their development level is to be assessed on a five-point scale.

2) *The assessment of the rate of social and economic process response to a management action.* The rate of social and economic process response to a PAS management action is shown by the rate of

growth of component indexes (6) and (7):

$$\frac{SP_Index_n}{SP_Index_{n-1}} \quad (6) \quad \text{and} \quad \frac{EP_Index_n}{EP_Index_{n-1}} \quad (7)$$

Their matching allows observing how fast (slow) the social and economic processes react to the management action within the research period. The obtained value of the growth rate of SP index and EP index receives the definite number of points *on a five-point scale*.

3) *The assessment of gaps in the rate of social (SP) and economic (EP) process response to the management action.* According to the above formulated effectiveness criteria of the PAS strategic architecture, social processes must develop faster than economic ones. It allows obtaining significant economic and social effects of the territorial development in the future. The gaps in SP and EP response rate will be evaluated according to the formula (8):

$$\frac{SP_Index_n}{SP_Index_{n-1}} - \frac{EP_Index_n}{EP_Index_{n-1}} \quad (8)$$

where n – a reporting year; n-1 – the previous year, and the obtained value will receive points on a five-point scale.

4) *Isolation of typological groups and assessment of the level of SETD PAS compliance with the strategic architecture.* Suggested scales of assessment of the level of the current SETD PAS architectonics compliance with the strategic architecture allow concluding that a maximally possible formalized value is 25 points, this makes possible to isolate the SETD PAS typological groups:

- *complete discrepancy* between the current SETD PAS architectonics and the strategic architecture (from 1 to 5 points);
- *compliance level* of the current SETD PAS architectonics with the strategic architecture is *below the average* (from 6 to 10 points);
- *average compliance level* of the current SETD PAS architectonics with the strategic architecture (from 11 to 15 points);
- *compliance level* of the current SETD PAS architectonics with the strategic architecture is *above the average* (from 16 to 20 points);
- *high compliance level* of the current SETD PAS architectonics with the strategic architecture (from 21 to 25 points).

Monitoring of transition of the SETD PAS of an individual PLB from one typological group into the other is made *due to the division of the range* of indicator values: the development level of social (SP)/economic (EP) processes; the rate of the response of social (SP) and economic (EP) processes to the management action; the gaps in the response rate of social (SP) and economic (EP) processes *at five equal intervals*, this allows to identify the correspondence of the current SETD PAS architectonics to the strategic architecture in the context of reasonable effectiveness criteria.

6. Findings

Approbation of the methods developed by the authors was carried out on the example of the regions of the Russian Federation for 2016.

We studied the relation closeness (strength) between the above justified indicators. As a result, only 13.3% of indicator combinations demonstrated the strong relation (the value of the correlation coefficient was more than 0.7), this being estimated as an acceptable proportion of combinations demonstrating the strong relation between the indicators included into the assessment system. The reference points were determined as minimal and maximal values within the justified system of indicators for the period from 2003 to 2016 (table 02) accompanied by two falls of socioeconomic development in 2008-2009 and 2013-2016 caused by the conjuncture change in the markets of energetic resources (oil, coal).

Table 02. Reference points of values of indicators characterizing the development level of processes for 2003-2016²

Indicator	Max	Min	Range
<i>Reference points characterizing the development level of social processes for 2003-2016</i>			
Expected lifetime at birth, years	80.82	54.2	26.62
Coefficient of population migration growth per 10 000 persons	439	-499	938
Number of crimes registered per 100 000 persons	4531	248	4283
Housing supply, m. sq. per pers.	33.7	4.9	28.8
Coefficient of infant mortality – number of infants that died under the age of 1, per 1000 born alive	29.3	2.5	26.8
Number of patent applications for intellectual property, one per 1000 persons	1.24964	0	1.24964
Air pollutant emissions from stationary sources, tons / person per year	6.71429	0.00023	6.71405
Volume of discharge of polluted wastewater into surface water bodies, m3 / person per year	0.54131	0	0.54131
Number of students of higher vocational education per 10,000 population	1254	13	1241
Preschool education coverage of children, %	92.6	4.3	88.3
<i>Reference points characterizing the level of development of economic processes for 2003-2016</i>			
Investments in fixed capital per capita, thousand rub. per person	2625864	1798	2624066
Proportion of unprofitable organizations of their total number, %	65	16.3	48.7
Gross regional product per capita, rub.per person	5821559.8	10332.4	5811227.4
Tax and non-tax revenues of consolidated budget per capita, thousand rub.	448.04641	1.00562	447.04079

² Calculated by the authors, using: Data of Federal State Statistics Service [Electronic resource]. URL: <http://www.gks.ru> (date of application: 15.07.2018).

Share of population with incomes above the subsistence level, %	94.3	18.6	75.7
Ratio of average prices in the market of secondary housing to average income per capita, coeff.	7.68612	0.53134	7.1548
Share of innovative products in the total volume of shipped goods of own production, %	60.1	0	60.1
Number of applied advanced productive technologies per capita, unit	8.2	0.00641	8.1936
Gini coefficient	0.615	0.304	0.311
Internal expenses for scientific researches and developments per capita, million rub.	26.66982	0	26.66982

The results of the assessment for 2016 are presented in figure 01, for the example sixteen regions were taken with the SETD PAS which received the highest (19 points) and lowest (from 13 to 16 points) values of the level of compliance of architectonics with the strategic architecture.

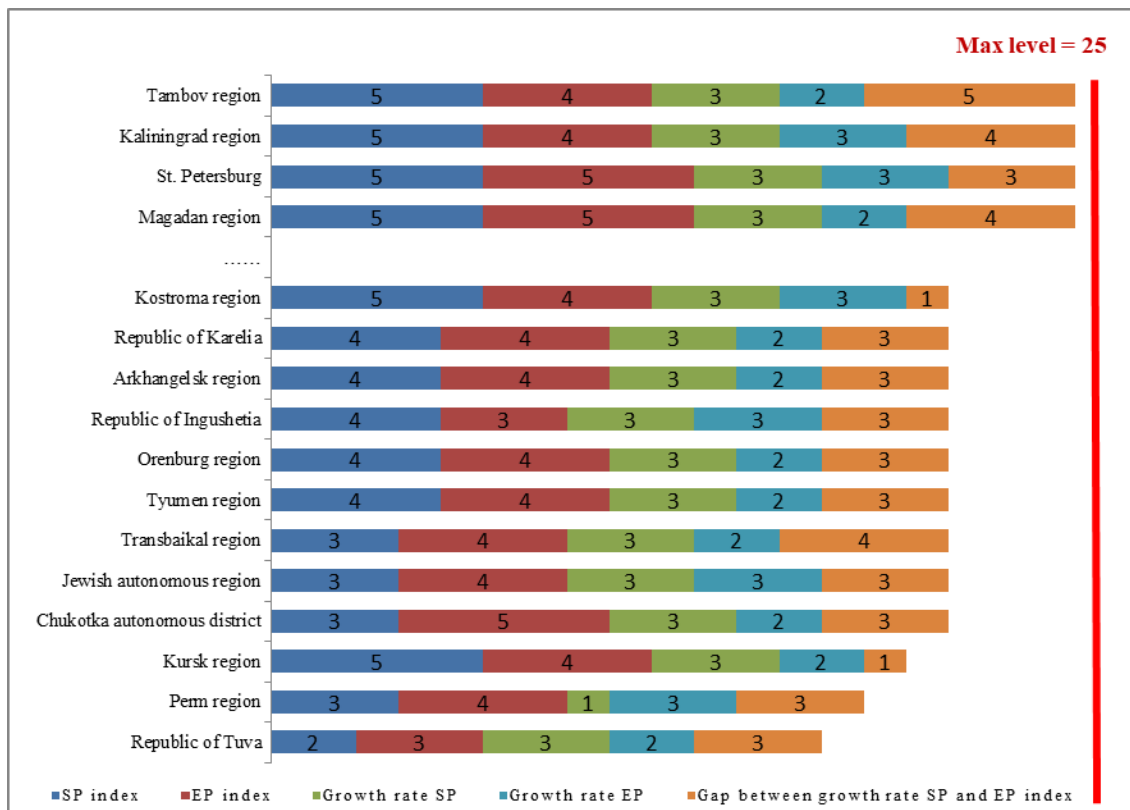


Figure 01. Assessment results of level of compliance of SETD PAS architectonics with strategic architecture

7. Conclusion

The methods developed allow evaluating the level of compliance of the current SETD PAS architectonics with the strategic architecture not only at the sub-federal (municipal) level, but also at the national one. The methods can be used in a similar research in any country of any government type. No doubt, this evaluation will require considering national characteristics of social and economic development, and, as a result, specifying the system of indicators formed by the organs of state statistics observation.

Generally, the research undertaken showed that no subject of the RF had the high level of compliance of the existing SETD PAS architectonics with the strategic architecture. This fact does not allow providing the rapid response of processes of territorial development to environmental changes.

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