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Digital transformation of obtaining data for an express assessment of regional sustainable development

KEYWORDS

- region;
- sustainable development;
- express assessment;
- managerial decisions;
- regional legislative and executive authorities;
- digital transformation of data acquisition;
- interdepartmental electronic exchange

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ABSTRACT

Sustainable development of the Russian Federation is impossible without the sustainable development of its regions. To make managerial decisions aimed at sustainable development of the regions, it is necessary to carry out appropriate monitoring. It is proposed to use the methodology and tools of an express assessment, which are based on the dynamics of wages at the enterprises of the region, as operational control over the processes taking place in the economy of the regions. This is due to the fact that in a market economy there is a clear direct relationship between the timeliness and size of wages paid to employees and the state of corporate businesses.

The aim of this study is to select the optimal data acquisition scheme for an express assessment of the sustainable development of the regions. For this purpose, a comparative analysis of three schemes for obtaining paper-based data was applied, using personal accounts on the Internet and the information system of the Federal State Statistics Service using the system of interdepartmental electronic exchange in terms of the following indicators: completeness, delay and discreteness of the wages reflection and the number of enterprises in the region in the digital spatio-temporal model and complexity of organizational measures.

It has been established that in the near future, it will be the most effective to use the scheme for obtaining data from the Internet, which provides high completeness of reflection of the source data and minimizes the delay time of an express assessment relative to the real state of the regional economy. This creates objective conditions for the rapid identification of trends in the regional economy and contributes to the timely formation of legislative initiatives and the adoption of managerial decisions by the regional legislative and executive authorities to improve the legal framework conducive to business development in the region.

The data collected by state statistics bodies as per the form No. P-4 “Information on the wages and number of employees” can also serve as a source for an express assessment. However, the federal law currently prohibits state statistics from providing access to this information to regional executive bodies.

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INTRODUCTION

Responsible government officials and the public against the background of the rapidly developing global economy and environmental degradation formulated the concept of “sustainable development” [1] and continue to improve the international regulatory framework [2; 3]. The President, the Government, and the leading national economists pay much attention to the sustainable development of the Russian Federation [4; 5]. In a market economy, an important factor affecting sustainable development is strategic planning [6; 7] and control over its implementation. Since the national economy is a combination of regional economies, there is a need to assess their sustainable development.

Currently, domestic scientists are offering various methodologies for assessing the sustainable development of regions [8-10] and tools for that [11]. Foreign scientists pay attention to the problem of improving the methodology for assessing the sustainable development of regions [12; 13]. In addition, there is a tendency to develop a methodology for assessing the sustainable development of large cities [14-16] and metropolitan areas [17], as well as the corresponding tools [18]. However, it should be noted that all the proposed methods and tools have two main disadvantages.

First, in these methodologies, the economy of the regions is considered as a holistic object, although in reality, it is a comprehensive hierarchical system consisting of municipal entities in which enterprises of various sizes and forms of ownership are operating. This approach does not allow one to identify which enterprises make a positive contribution to the sustainable development of the region and which ones make somewhat negative. It also does not allow assessing the effectiveness of managerial decisions of the regional legislative and executive authorities and, accordingly, building a focused, reasoned dialogue between the state and the business.

Second, these methodologies are based on a large number of indicators, the initial data for which are the statistics characterizing the regional economy as a whole over long periods. Collecting a large number of indicators takes a long time. This causes the fact that by the time an assessment of sustainable development is completed, the economic system of the region will necessarily move to a different state and it is highly likely that the managerial decisions made on the basis of this assessment will be ineffective.

In order to overcome the above disadvantages in assessing regional sustainable development, it is proposed to use an express assessment methodology [19] and appropriate tools [20]. This methodology is based on the understanding that in a market economy there is a clear direct relationship between the timeliness and size of wages paid to employees of enterprises and the state of the business at these enterprises. Since, if enterprises pay wages in a timely manner and their growth compensates for inflation processes or is even higher, this indicates that the business of these enterprises is developing successfully. Meantime, the financial situation of enterprises here allows the timely purchase of necessary stock and components, maintenance

of equipment, timely payment for the electricity and other energy resources consumed, timely and full payment of taxes and fees, as well as dividends in an amount that satisfies the founders and shareholders. Also, this suggests that managerial decisions made by enterprise management, regional executive authorities, and local governments are generally effective and positively affect business development. Moreover, it is natural that such enterprises make a positive contribution to the sustainable development of not only the municipality but also the entire region. Otherwise, if wages at enterprises are not paid on time and at the same time either decrease or remain at the same level and do not compensate for the inflationary processes, then a detailed analysis is required in connection with the reasons for the lack of business development, both on the part of the management and owners of enterprises and the regional executive authorities and local self-government in which territory these enterprises carry out their production operations.

Taking into account that an express assessment of regional sustainable development is based on the data contained in the digital spatio-temporal model (DSTM) [21], the reliability of this assessment directly depends on the quality of reflection of the real state of the payroll and the number of regional enterprises by this model.

The objective of this paper is to select the most optimal data acquisition scheme for an express assessment of regional sustainable development and to identify the set of organizational and technical measures necessary for its implementation. For this, a comparative analysis of three possible data acquisition schemes has been performed.

MATERIALS AND METHODS

In the medium term, the acquisition of data by a regional executive body for an express assessment of regional sustainable development can be organized using the following schemes.

I. Obtaining paper-based data from city-forming enterprises.

In the author's opinion, a representative sample for conducting an express assessment of regional sustainable development is the data on the payroll and the size of the aggregate of city-forming enterprises. In a number of the federal laws [22], enterprises are recognized as city-forming, if the total number of their employees is at least 25% of the working population in the municipality. After getting the documents from the city-forming enterprises, a specialist of the regional executive body will be required to enter the data on the payroll and the number of employees using the Program for Express Assessment of Sustainable Development of Regions (Figure 1).

I. Obtaining data from regional enterprises on the Internet.

This scheme for obtaining data for an express assessment assumes that authorized specialists of all enterprises in the region independently enter data on the payroll and employee number in the DSTM via personal accounts on the Internet. Personal accounts of enterprises can be organized using the Program for Express Assessment of Sustainable Development of Regions (Figure 2).

Figure 1 Scheme for obtaining paper-based data from city-forming enterprises

Figure 2 Scheme for obtaining data from enterprises using the Internet

III. Obtaining data from the Federal State Statistics Service information system using the system of interdepartmental electronic exchange (SIEE).

In the context of the development of a digital economy, the big data collected by the state statistics bodies, in the author's opinion, should become a source of data for the regional executive bodies to conduct an express assessment of the sustainable development of the regional economy and make managerial decisions aimed at creating favorable conditions for business development in the region. It is proposed, when implementing the Federal Project "Digital State Administration" [23], to digitally transform the acquisition of data for an express assessment by organizing the interaction of regional executive authorities with the state statistics bodies using the SIEE (Figure 3).

Figure 3 Scheme for receiving data from the Federal State Statistics Service information system using SIEE

A comparative analysis of the possible schemes for obtaining data for an express assessment of regional sustainable development will be performed in terms of indicators of completeness, delay, discreteness, and complexity of organization [24].

Comparison in terms of "completeness"

This indicator characterizes the share of enterprises for which the data on the wages and

the number of employees have been entered in the DSTM of the total number of enterprises operating in the region.

The first scheme can ensure the completeness of the data no higher than the value of 0.25, since the data will be provided only by city-forming enterprises. The second scheme can ensure the completeness of the data equal to 1.0, since it is assumed that the information will be provided by all enterprises in the region. The third scheme can provide the completeness of the data in the range from 0.7 to 0.8, depending on the structure of the region's business, i.e. shares of small businesses with less than 15 employees.

Thus, for this indicator, the second scheme is preferred.

Comparison in terms of “delay”

This indicator characterizes the lag of a delay in the reflection in the DSTM of the wages and the number of enterprises in the region. Meantime, it should be noted that an increase in a delay in the reflection in the DSTM of the wages and the number of enterprises in the region increases the likelihood that, at the time of an express assessment, the economic system of the region will switch to a different state than that in which it was in the assessment period. On the contrary, the smaller the lag of a delay, the higher the likelihood that the region's economic system at the time of making managerial decisions based on the results of an express assessment is in a state close to that in which it was at the time of assessment. In this case, an analysis of the state of the region's economic system based on an express assessment will be more objective, and managerial decisions made on this basis will be more effective.

The DSTM readiness lag of delay in an express assessment in the first scheme is determined by the time of entering a large amount of wages data at the number of city-forming enterprises. Moreover, if the data entry into the DSTM from paper documents provided by enterprises for the previous month is not completed, and new documents have been sent to the regional executive body that evidence the wages and the number of employees for the next month, then to eliminate the “snowball” effect, it is required to either increase the number of specialists who carry out the process of inputting the data from paper documents into the DSTM, or increase the time interval between filing documents. The most rational, in the author's opinion, is a compromise solution with a simultaneous increase in the number of specialists who carry out data transfer and in the time interval for the filing of documents. Apparently, with such a scheme for obtaining data, the lag delay in the range of 30-45 days seems optimal. This is necessary so that the executive authority can make an express assessment, analyze the results, and make appropriate managerial decisions. Moreover, it is advisable to choose the last months of the quarter, i.e. March, June, September, and December, as reporting months.

Using the second scheme will allow entering into the DSTM the data on the wages and the number of enterprises on the day after the payroll calculation, which is made at the beginning of each month following the reporting one. Moreover, the delay lag is 1-2 days, i.e. data entry into the DSTM can be done in near real time.

When using the third scheme, the delay lag will be determined by the amount of the time for transferring the statistical form No. P-4 to the state statistics bodies from the end of the

reporting period (today it is 15 days) and the time the data were entered by state statistics specialists into the Federal State Statistics Service information system. Currently, the lag of delayed publication of the information on the wages and the number of employees in the bulletins of the Federal State Statistics Service is 60 to 63 days.

Thus, for this indicator, the second scheme is preferred.

Comparison in terms of “discreteness”

This indicator determines the discreteness of reflection in the DSTM of the wages and the number of enterprises in the region, which determines the frequency of express assessments of regional sustainable development. For example, if the DSTM contains a reflection of the wages and the number of employees with a discreteness of one year, then an express assessment can be done only once a year. If the DSTM contains an above reflection with a discreteness of a quarter, then an express assessment can be carried out quarterly. The reflection in the DSTM of the wages and the number of enterprises with a one-month discreteness is of the greatest interest. This allows specialists of the region’s executive authorities to conduct an express assessment on a monthly basis, which creates an opportunity to accurately correlate managerial decisions of the legislative and executive authorities of the region with their positive or negative impact on the sustainable development of the economy of enterprises, municipalities and the region as a whole.

The use of the first scheme may allow an express assessment to be performed with the discreteness once a quarter. The second and third schemes will allow for an express assessment on a monthly basis.

Comparison in terms of “complexity of organizational measures”

To implement the first scheme, it is enough to adopt a regional act so that city-forming enterprises of all municipalities send information on the wages and the number of employees on paper to the regional executive body that carries out strategic planning for the sustainable development of the region and monitors its implementation. Obtaining data according to this scheme can be organized within 1-2 months, after the adoption of the relevant regional act.

The second scheme can be implemented after the adoption of a regional act that all enterprises of the region of all forms of ownership monthly enter into the DSTM of the region the data on the wages and the number of employees via personal accounts created on the Internet using the Program for Express Assessment of Sustainable Development of Regions. For this, it is also necessary to authorize the specialists of enterprises who will enter the data on the wages and the number of enterprises into the DSTM. This can be done within 1-2 months.

When using the third scheme, the source of data for an express assessment of regional sustainable development may be the form of statistical observation No. P-4 “Information on the wages and number of employees”, which is monthly filled up by legal entities of all types of economic activities and forms of ownership, the average staff of which, based on the operational performance for the previous year, exceeds 15 persons. However, in accordance with the provisions of Article 9 of the Federal Act “On Official Statistical Accounting and the System of State Statistics in the Russian Federation” dated November 29, 2007, No. 282-FZ

[25], the primary statistical data contained in the forms of federal statistical monitoring are classified as limited access information and the subjects of official statistical accounting are not entitled to provide them to the state authorities of the constituent entities of the Russian Federation. In addition, in accordance with paragraph 3 of Article 9 of this Federal Act, state authorities of the constituent entities of the Russian Federation are not entitled to require the provision of primary statistics, as being limited access information, from the subjects of official statistical accounting.

Therefore, the most important condition for the implementation of the third scheme is the need to amend the Federal Act No. 282-FZ “On Official Statistical Accounting and the System of State Statistics in the Russian Federation” in terms of providing the regional executive authorities with access to primary statistics. In addition, the roadmap for the implementation of the Federal Project “Digital State Administration” must include the creation of the data type “Number and wages of corporate employees” as part of the information system of the Federal State Statistics Service and its input in the productive zone of the interdepartmental electronic exchange system. This type of information should have two main operations. One operation should, at the request of the executive branch of the region, provide an up-to-date list of enterprises filling in the statistical observation form No. P-4 “Information on the wages and number of employees”. Another operation should provide the data on the wages and the number of enterprises at the requested date. These legislative and technical processes, even with an optimistic forecast of developments, will take at least 2-3 years.

RESULTS

The values of the indicators characterizing each of the possible schemes for obtaining data for an express assessment of regional sustainable development are presented in Table 1.

Table 1

The results of a comparative analysis of data acquisition schemes for an express assessment of regional sustainable development

	Indicator	Values of indicators and organizational measures		
		Scheme 1	Scheme 2	Scheme 3
1.	Completeness	0.25	1.0	0.7-0.8
2.	Delay	30-45 days	1-2 days	60-63 days
3.	Discreteness	quarterly	monthly	monthly
4.	Implementation time	1-2 months	1-2 months	2-3 years

During this study, it has been found that in the near future, the digital transformation of data acquisition for an express assessment of regional sustainable development can be carried out using the second scheme, the implementation of which has a short time, and can be carried out

in accordance with the decisions made at the regional level. Moreover, this scheme provides the highest completeness, minimum delay lag, and the discreteness equal to one month.

Digital transformation of data acquisition using the third scheme is possible only in the medium term, as it requires amendments to the federal legislation, which is usually a fairly lengthy process.

DISCUSSION

At present, it is becoming apparent that for the successful solution of strategic tasks for the sustainable development of the economy of the Russian Federation, it is necessary for leaders at all levels, federal, regional and municipal, to form an understanding that their main task is not to allocate budget funds, but to create favorable working conditions at enterprises of all forms of ownership, the combination of which represents the economic potential of the country, and the results of their activities are the taxable base to budgets of all levels. The process of creating favorable conditions for business in the region requires a constant understanding by regional executive bodies of the impact of their managerial decisions. This understanding can be achieved through a monthly express assessment of regional sustainable development, for which it is necessary to organize the receipt of data on the wages and the number of enterprises in the region.

In the course of the study, it has turned out that at present there is a situation in the Russian Federation in which big data of primary statistical observation are collected exclusively for processing by state statistics authorities and their interpretation in departmental bulletins in a generalized form. At the same time, regional executive bodies are legally deprived of the opportunity to use these data for an express assessment of the sustainable development of regions and making informed managerial decisions.

The author believes that during the implementation of the Federal Project “Digital State Administration”, it is necessary to eliminate the legislative restrictions on the use of primary statistical monitoring data by regional executive bodies in connection with the form No. P-4 and to digitally transform the data received for an express assessment of regional sustainable development from the information system of the Federal State Statistics Service. In this case, there will be no need to enter data into the DSTM of the region by specialists of enterprises via personal accounts on the Internet.

CONCLUSION

A digital transformation of obtaining data for an express assessment of regional sustainable development until the federal legislation is amended to allow regional executive bodies to use the data of primary statistical monitoring can be carried out using personal accounts of

enterprises on the Internet. An analysis of the results obtained in the process of an express assessment will ensure the rapid identification of trends in the development of the regional economy and the adoption of effective managerial decisions, as they will be based on knowledge of the real situation in the economy of the region's enterprises. At the same time, the monopoly of the state statistics bodies in connection with the right to collect, process and interpret primary data on the wages and the number of employees at the enterprises in the region will be destroyed.

If there is a legislative initiative on the part of the regions of the Russian Federation to amend the federal legislation to remove the restriction on the use by regional executive authorities of primary statistical monitoring data in general, or at least, as an exception, those from the No. P-4 form and after the adoption of these changes by the State Duma and the Council of Federation it will be possible to carry out a digital transformation of obtaining data for an express assessment of regional sustainable development from the Federal State Statistics Service information system using the system of interdepartmental electronic exchange.

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