



Information and Analytical Support of Diagnostics and Monitoring of Social Infrastructure: Global and National Challenges

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Abstract

In this article proposes the development of information and analytical support of diagnostics and monitoring of social infrastructure in the context of global and national challenges. Economic and statistical analysis of indicators of innovative activity of enterprises in Ukraine was conducted, low innovative activity of enterprises was revealed in the current market situation. In order to increase innovation development in Ukraine, scientific and methodological approaches were developed for the development of organizational principles for diagnostics and monitoring of the status of social infrastructure objects. The stages of information and analytical support of diagnostics and monitoring of social infrastructure, evaluation criteria are proposed. The basic requirements for information and analytical support and functional requirements are summarized and systematized. The mathematical approach for processing indicators of the activities of social infrastructure organizations has been developed in order to determine their rating positions according to modern criteria of activity evaluation. This scientific approach will enhance the ability to overcome the state monopoly in the provision of social services and distribution of orders in Ukraine, will provide the opportunity for wide involvement of public, charitable, religious organizations and local initiatives in the provision of social services.

Keywords: diagnostics; information and analytical support; monitoring, social infrastructure.

1. Introduction

In the context of transformational changes and rapid globalization processes, complex integration models arise that are characterized by close interconnection of the economies of a number of states and form the environment of global competition in the modern information space. The social infrastructure undergoing transformation and reacting tangibly to changes in the economic situation is one of the priority factors for the comprehensive development of the country's population. This is due to the urgency of the formation of information and analytical support for diagnostics and monitoring of the state of social infrastructure in the context of global and national challenges.

2.1 Prerequisites for the formation of information and analytical support

The competitiveness of the country and the provision of an appropriate socio-economic level in a globalized environment depends on the effectiveness of introducing innovative forms, tools and management mechanisms.

In the conditions of the formation of the information society there is an insufficient level of use of modern information technology at the state and regional levels. It has a qualitative effect on the effectiveness of the functioning of social infrastructure, its innovation, the timely response to internal and external risks and threats, reducing the standard of living of the population.

In the absence of qualitative and effective management decisions in state and regional social policy human and social development in the country is restrained, interregional differentiations are increased in its individual areas, and existing social problems are exacerbated which is a significant condition for the formation of informational and analytical support for the diagnostics and monitoring of social infrastructure. The current situation in Ukrainian society actualizes the problem of diagnostics and monitoring of the social sphere, which is the conceptual basis of the socio-economic development of the state [1].

Now, fundamentally important is the innovative development of social infrastructure at the national and regional levels, serving as one of the most important system factors and criteria for assessing social and economic growth and sources of its provision. At the same time, the analysis of individual indicators of innovation activity in Ukraine for the period from 2000 to 2016 indicates their low level, which does not provide sustainable innovation development. At the same time, statistical observations on innovation development are carried out mainly in the industry, and objects of social infrastructure are not investigated according to such criteria. However, world experience shows that the most innovative activity of enterprises is observed in the healthcare, education, culture, etc., and creative technologies are concentrated there.

According to the data of the State Statistics Service of Ukraine, in 2017, the total expenditures for research and development on their own by the organizations amounted to 13379.3 million UAH (in 2016 - UAH 11530.7 million), of which 53.5% - labor costs (in 2016 - 49.9%); the share of financing the expenses for the



implementation of research and development at the expense of the state budget amounted to 35.4% (in 2016 - 32.1%) [2].

From these positions it should be noted that even in the real sector of the economy in 2017 only 16.2% of industrial enterprises with an average number of employees of 50 persons and more were engaged in innovation activity. That, incidentally, indicates a low innovation activity of the corporate sector of the economy. At the same time, in 2017, the structure of expenditures had the following features: innovations - UAH 9.1 billion, incl. for the purchase of machines, equipment and software - 5.9 billion UAH (64.7% of the total amount of innovation costs); internal and external research and development - 2.2 billion UAH (23.8%); acquisition of other external knowledge (acquisition of new technologies) - UAH 21.8 million (0.2%). The main source of funding for innovation costs for a long time remains the own funds of enterprises (7704.1 million USD); the volume of attracted funds (domestic and foreign investors' funds) amounted to UAH 380.9 million, loans - UAH 594.5 million, state and local budgets - UAH 322.9 million. In 2017, innovations were implemented by 88.5% of enterprises engaged in innovation activities, of which innovative types of products - 53.3%, new technological processes - 67.9% [2]. An analysis of knowledge intensity indexes of GDP and volumes of scientific and technical activity financing in Ukraine one of the most subzero values in Europe [3].

The effectiveness of innovation activity testifies to the insufficient level of formation of the innovation system of Ukraine, low level of adaptation of enterprises to market realities, which requires the increase of commercialization of the results of scientific research and scientific and technical developments [4]. Worldwide practice shows that the effectiveness of social processes management in European countries is achieved through a combination of organizational and methodological foundations, innovations, modern information technology, and analytical support, which helps to carry out systematic monitoring of the situation in the countries [5].

In foreign countries, the availability of information on social infrastructure is characterized by the quality and level of coverage of information on the various aspects of life provided by the state authorities. The statistical system of social indicators of Ukraine also has a broad information base, but there is a lack of a system of state classifiers of social information used for statistical observations, there is also a fragmentary observation of some statistical indicators, which reduces the effectiveness of the analysis of the situation for social management and bringing social statistical reporting in line to international standards.

Providing timely diagnostics and monitoring of the state of social infrastructure on the basis of information and analytical support enables to identify ways to prevent the development of destructive trends in the formation of social potential. The effectiveness of managing social processes depends on the resource provision of social infrastructure and the tools that provide this process, as well as on the level of its innovative transformations. The existence of a developed social infrastructure provides a complete and comprehensive human development through the creation of a complex of vital goods necessary for the expanded reproduction of the workforce.

Traditionally, two blocks of social infrastructure are allocated: social and household (housing services, trade and catering, passenger transport and communication services, etc.); socio-cultural (health, recreation, physical culture and sports, social security, education, culture, art, etc.). However, each branch of social infrastructure has its own features and functional purpose in the social and economic development of the state and human life [6]. The sphere of social services in Ukraine covers all state and non-governmental organizations that provide services to citizens. Separately, it is necessary to allocate both consumers and objects of social infrastructure defined in the Law of Ukraine «On Social Services» [7]. The list of types of social services contains more than 100 items, which are provided to about 30 categories of recipients, and their provision is carried out through the

implementation of many laws, regulations and programs. To evaluate the security of social development and to determine potential risks, basing on indicators and parameters system it is necessary to identify possible threats to the satisfaction of social needs, proper level of the population, conditions of formation and distribution of material wealth and services [8].

Initial scientific and methodological positions of social infrastructure status monitoring organizational principles development are as follows:

the branches of social infrastructure are aimed at the reproduction and development of population life social conditions, and their manifestation in the socio-economic development is directly related to a specific territory (region, administrative district, city, etc.), reflects the functional completeness and quality of activity, the forms of their spatial concentration. The management of social development is the result of the management measures adequacy (subject of management) with regard to the development of such branches (objects of management) that collectively provide a measure of requests, needs, values, incentives, and interests of the population satisfaction (managed objects);

the totality of institutions of the social and residential complex is aimed at creating conditions for the reproduction of a person through the domestic environment, meeting its needs through proper living conditions;

the set of institutions of the social and cultural complex (their level of development, the ability to provide expected services, to create an adequate system of influences to human needs) ensures the "entry" of man into society and the model of one's socialization and formation of potential, role in shaping the social capital;

the task of managing social processes requires the organization of appropriate observations, even if the change in social determinants and the nature of their influence may not always be predictable;

monitoring involves identifying transformation process nature of both social infrastructure objects and relevant management institutions, and objective assessment of current management system effectiveness, since social determinants cover all spheres of life and create the preconditions for economic development of the country;

monitoring results of territorial aspect social determinants impact is the link that connects economic and social policies means of evaluating their performance and truly social orientation, the effectiveness of existing rules in the labor market, the proportions of the of social responsibility distribution between government, business, man;

the system of indicators for monitoring the development of social infrastructure should include both quantitative and qualitative indicators that characterize the outcomes of the social and cultural complex development and the effectiveness of its functioning;

management solution in the social sphere has a dual character and can have both positive and destructive result. Under such conditions, the importance of enriching the existing management system with new tools for predicting changes, their forecasting and scenario modeling of the development of events increases.

The development of social infrastructure provides opportunities for empowering civil society, improving the quality of social services. The needs of people are constantly changing, and they expect the services and social infrastructure to be more adaptable to new challenges, new transformations and cooperation between the education sector, healthcare and social security will emerge.

The financing of social infrastructure is carried out by the public and private sectors, but the transition to a three-sectoral model of social infrastructure provision («power - business-community») and the development of a cross-sectoral social partnership will enable the social responsibilities to be divided at different levels of the state hierarchy with a view to targeted regulation of social processes. In today's realities, the role of solving painful social

problems belongs to civil society through transparency in the adoption of managerial decisions in the social sphere, the overcoming of hard-core corruption schemes, and increased accountability at the local level.

The peculiarity of the social infrastructure development today is that its objects become more and more interesting for public. There are tangible changes among the management subjects, ready to submit their request to health care institutions, education, social protection authorities, etc., and in the content of such a request. In institutions of social infrastructure there is a need for regulation of relations with new subjects of society. At the same time, administrative methods of regulation are ineffective in view of the independence of the entities themselves. Only affiliate relationships that are capable of forming an informed civic position among representatives of various social groups interested in the results of the activities of social infrastructure objects are becoming applicable. There is a need for the development of social infrastructure establishments as effective institutions of civil society.

The modernization of social infrastructure, the introduction of new technologies, types of institutions, and the constantly changing demands of the labor market require significant changes in the structure of the social sphere public administration system, forms and methods of management activity at various levels. Today promising new trends and remnants of old management interconnected in the system of social sphere public administration, which greatly reduces the effectiveness of reforms and management steps. The lack of effective mechanisms for assessing the quality of the social institutions functioning created a situation where the effectiveness, efficiency and quality of these institutions were evaluated solely by the representatives of the same system.

One of the most important conditions for the evolution of social infrastructure institutions in modern conditions is to ensure the openness of their activities for all social groups, organizations and structures interested in the positive development of the social sphere. Therefore, there is an urgent need to create a system of analysis and evaluation of processes and phenomena that take place in the «internal» environment of social institutions, all groups of social service users and their performance.

2.2 An integrated approach for the formation of information and analytical support

The diagnostics and monitoring of the social institution activities, the definition of their rating is possible through a comprehensive solution to the following issues: implementation of criteria for assessing the quality of activities of social infrastructure objects, which are a special standardized measuring instrument; legal regulation of this problem; modernization of the existing system of statistical reporting in the social sphere; development, implementation and continuous support of automated systems for determining the rating of social infrastructure institutions; creation of special electronic sites, providing wide public access to them to various groups of educational service users; computerization of management activity at all levels; approval of social management body new standard regulations (creation of a special infrastructure for monitoring services); state support for scientific research in the field of social infrastructure objects functioning quality management; training of specialists, coordinators for monitoring studies; studying and using international experience.

The main areas of such changes in the system for ensuring the management of social processes should be:

creation of a proper vertical of institutional support, coordination of its functioning (at the national, regional, local and other levels); the coordination of the activities of these institutions, along with a clear distribution of content, functions and responsibilities on issues of social development, social protection through the use of mechanisms for social coordination.

Fuzzy scheme of authority and function distribution of profile ministries, local state administrations, self-government bodies and social service providers reduces the effectiveness of their activities. Consequently, realization of measures in this field will allow coordinating the activities of these institutes and increasing the efficiency of making managerial decisions;

adaptation of social policy and legal regulation of the social process management to the requirements of the EU, taking into account the current state of socio-economic development and economic opportunities of the country, where such instruments as state social standards, state social guarantees, living wage, social norms and norms of financing are crucial. The definition of the content and depth of transformations in social policy, the application of new mechanisms and tools for their implementation within the framework of the three-sectoral model should be the result of business and individual social responsibility levels simultaneous redistribution, which requires a wide public debate, the introduction of social governance and innovation. This will determine the quality of the regulatory and legal framework in general;

modernization of the social infrastructure and optimization of its financing taking into account the effectiveness of using the intended purpose and quality of the services rendered in accordance with the changing needs of the population;

introduction of tools for scenario modeling and impact prediction of social determinants in their relationship with the level of the national economic security, strategic planning of measures not only for social development and protection (as the first indicators of existing institution functioning effectiveness), but for human development (which is much wider);

realization of the developed information and analytical support at all levels of social process management, including for the purpose of coordination councils activity informational support, creation of effective management influences on the improvement of national economic security level as a whole and regional components of its formation taking into account the social determinant in fluence dynamics.

It is clear that the diversity of social infrastructure objects, the specificity of their evaluation, the scale of processes, the multidimensional features and the large number of social entities complicate the task of creating a unified system for monitoring social infrastructure. In order to solve the problem, we consider it necessary to propose a sequence of stages of data formation and analytical support in order to assess the social infrastructure by giving to social service users and the public the possibility to obtain information on the development state of such objects and the content of their services. It will ensure the provision of state guarantees of equal access to services and development of human potential as the most important component of the country's development.

The sequence of the data formation stages and analytical support for the analysis and monitoring of social infrastructure and the effectiveness of its activities is presented in Fig. 1

Stage I implies compliance with generally accepted and general civilizational approaches (in particular, European ones), norms and existing world practices in evaluating of social institutions [9]. The implementation of Stage II involves assessing of social infrastructure object competitiveness level by the criterion of demand for services, analysis of social service demand and supply. Of particular importance is the assessment of the competitiveness and innovative potential of business entities, which should be the basis for making decisions on the granting of authority (or support) to those entities that are most capable of realizing this potential.

Stage III requires the coordination of the Ukraine-2020 Sustainable Development Strategy priorities and regional and local strategies. In this case, the principle of priority becomes especially important. A limited number of priorities should take into account competitive advantages, a realistic assessment of the economic entity innovative potential (as growth potential), a

critical mass of activity and entrepreneurial resources, and transparency for investment. In addition, it is advisable to prioritize the development of regional, local objects of socio-cultural infrastructure.

Stage IV reveals the characteristics of the social sphere as a set of institutions and organizations providing specific services to meet the needs of society and personality, aimed at solving social problems [10]. It is important to characterize the functional content of the social sphere institution activities (as a social institution) and its functional purpose of ensuring social development (realization through a specific spectrum of social life, creation of a social effect, continuity with the process of reproduction and development of a person, its potential).

Stage V involves taking into account organizational, economic, financial, staffing, innovative, technological, and digital criteria.

Organizational criteria (managerial): the ability of the organization to develop in the medium and long-term period, as well as the improvement of the formal (organizational structure of management, processes of management, distribution and coordination of rights, responsibilities, organization of managerial work, etc.) and informal parts (the ability to provide organizational development through the use of effective methods of motivation and the formation of organizational culture) of organizational activity are assessed.

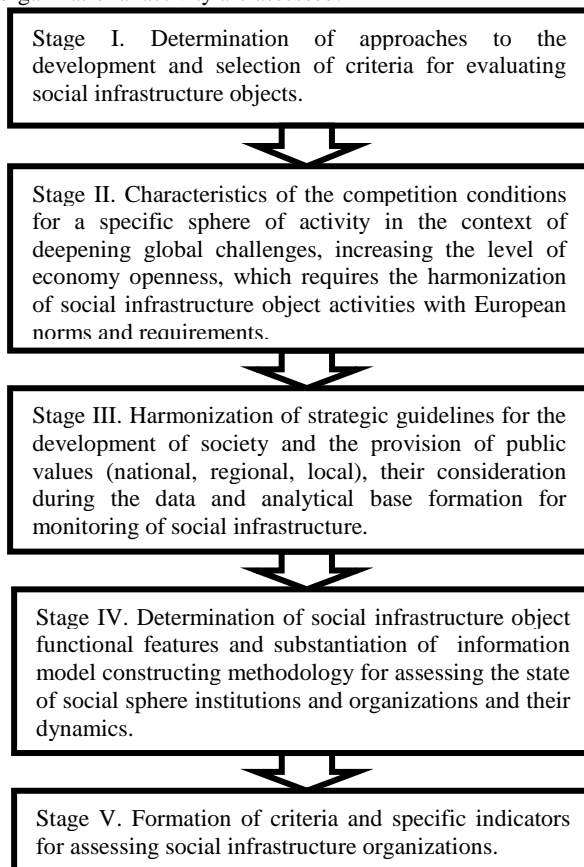


Fig. 1: Stages of data formation and analytical support for the diagnostics and monitoring of social infrastructure and the effectiveness of its activities.

Economic criterion (resource): the material and technical support of the institutional activity (technical condition of social infrastructure objects (normal, satisfactory, unsuitable for operation, emergency); availability, level of providing and use of space for service providing; the cost of equipment, instruments, tools, and other means of rendering services (for example, per one person) are assessed;

Financial criterion: financial support of an institution's activity: costs for the purchase of devices, tools, and other means of rendering services (for example, per one recipient of service in the reporting period); sources of funding and the ratio of own funds

and funds to the state budget or another level budget in the overall financing of the institution; level of necessary premises providing; level of institution activity with modern computer and other equipment; efficiency of budget and social funds use, a list of investment projects (with the definition of funding sources); organizational measures for their implementation, as well as preparation of proposals with the purpose of adjusting the results. Technological criterion: technological / technical level (condition) of equipment; compliance with technological requirements for organization of activities; informational support (licensed application software, funds used for informational support of the institution's activities, etc.).

Personnel criterion: the level of labour supply; compliance of functional activity employee qualifications; the share of retirement age employees; fluidity of employees; the share of workers who have completed advanced training courses; the share of employees who use a personal computer at work.

Innovative criterion: service characteristics according to the innovative criterion (new products, services, models, ideas, systems of relations, etc.); implementation of technological and organizational innovations; improving the management culture of the organization.

Digitalization criterion: the ability to enter an integrated information platform for interaction between organizations of the social sphere, state bodies and registries; the ability of the organization to determine its own unique capabilities, individual requirements and specifics of consumers; evaluation of the provided services effectiveness, the quality of social services, the organization of transparency and targeting of social assistance, cost reduction.

The processes of digitalisation of social services that are inherent in many countries of the world require the introduction of new models and approaches for providing services based on digital technologies and identifying the needs of a particular consumer. It requires definition of the main service consumer characteristics: by age; by professional orientation; by gender and so on.

The main requirements of information and analytical support for the diagnostics and monitoring of social infrastructure are:

- calculation of criteria for evaluating the results of social infrastructure institutions activities, presentation of social institution activity integrated indicators, drawing up rating tables;

- providing definition of the general rating, and also according to separate criteria;

- the convenience of the system interface, work methods - convenient and simple for ordinary users;

- predict the possibility of downloading the database (input data) of each social infrastructure institution in electronic form;

- the presentation of the results must be complete and clear;

- provision of results in tabular and graphical form;

- protection against unauthorized access to the database and program code (in order to make changes to it by users);

- results of processing should be submitted on electronic sites (on the Internet).

The basic functional requirements of informational and analytical support are as follows:

- predict the possibility of changing the text of the criteria content and indicators of calculation (responsible for the organization of work);

- to formulate formula computations in accordance with the methodology for calculating the criteria for assessing the quality of social infrastructure institution activities;

- the best value for each of the criteria for the activities of social infrastructure institutions is taken in accordance with the methodology for calculating the criteria;

- predict the possibility of sorting social infrastructure institutions in the database by type (profile), location (rural, urban);

- prediction of formatting capabilities when printing results of a rating;

providing general analysis possibility and analysis according to the chosen section, criterion of social sphere institutions of different areas simultaneously;

foreseeing the supply of reservations in information windows in the Ukrainian language;

predict the possibility of searching data for a separate institution of social infrastructure by its name.

2.3 The mathematical apparatus of rating evaluation

The use of such a multicriterial information and analytical support for analysing and monitoring the development of sectoral social infrastructure provides the basis for a rating assessment of organization and social institution activities in accordance with selected criteria for their evaluation, as well as the definition of priorities for their development in the short and medium term.

The introduction of criteria and determination of their ranking will contribute to: the establishment of a system for organizing the collection, processing and dissemination of information on the activities of social infrastructure institutions, monitoring their activities; to ensure accessibility of the public, various social groups, public organizations to the information resources of the social sphere at different levels; organization of constant discussion of social institution activity quality results; timely identification of reform problematic issues, clarification of the public requirements; regarding the quality of providing social services; work on making reasoned corrections to the current legislation in the social sphere; development of the legal and regulatory framework for public-public quality management of social infrastructure functioning.

The basis for determining the integrated indicator of social infrastructure object activities is the method that allows determining the integrated rating number for each social infrastructure object from the profile group for all indicators of its activity during the reporting period.

Calculation of the rating value of the indicator:

$$m_{\xi g}^r = \frac{100}{m_{\xi a}} m_{\xi g}, \tag{1}$$

where $m_{\xi g}^r$ – the rating value of the ξ -th indicator of the g -th object of social infrastructure;

$m_{\xi g}$ – the value of the ξ -th indicator of the g -th object of social infrastructure;

$m_{\xi a}$ – the best value of the ξ index among its values in the group of social infrastructure objects is assigned the highest number of points (100 points), for the remaining indicators the rating value of the ξ index of the g social infrastructure object (in points) is calculated.

Calculation of the rating value by section:

$$N_{qg}^r = \frac{\sum_{\xi=1}^n m_{\xi g}^r}{n}, \tag{2}$$

where N_{qg}^r – the rating value under the section q g of the social infrastructure object;

n – number of indices q section.

Calculation of Integrated Rating Number:

$$R_{qg} = \sum_{q=1}^N \frac{1}{b} N_{qg}^r, \tag{3}$$

where R_{qg} – integrated rating number;

N – number of sections;

b is the weighting factor of importance, which is established according to the expert survey.

It must be assumed that not all indicators of the social infrastructure object activities are equally important and equally affect the objectivity of the final result.

$$Q = \frac{R_{qg \max} - R_{qg \min}}{x}, \tag{4}$$

where Q – the length of rating intervals;

x – number of groups of social infrastructure objects with the corresponding rating.

L_x – rating interval (low, medium, high, optimal).

A schematic representation of a user module for selecting a social infrastructure object and displaying its ratings in various types is presented in Fig. 2. This access option provides an opportunity to calculate the ratings and display them in different types (tables, charts), as well as output print information. In the module, the user can select social infrastructure objects from different regions and districts that interest him. For a more specific choice of a social infrastructure object and a more detailed study of ratings, different types of information representation are provided: general ratings, ratings in different years; and the choice of criteria and type of social infrastructure object are provided.

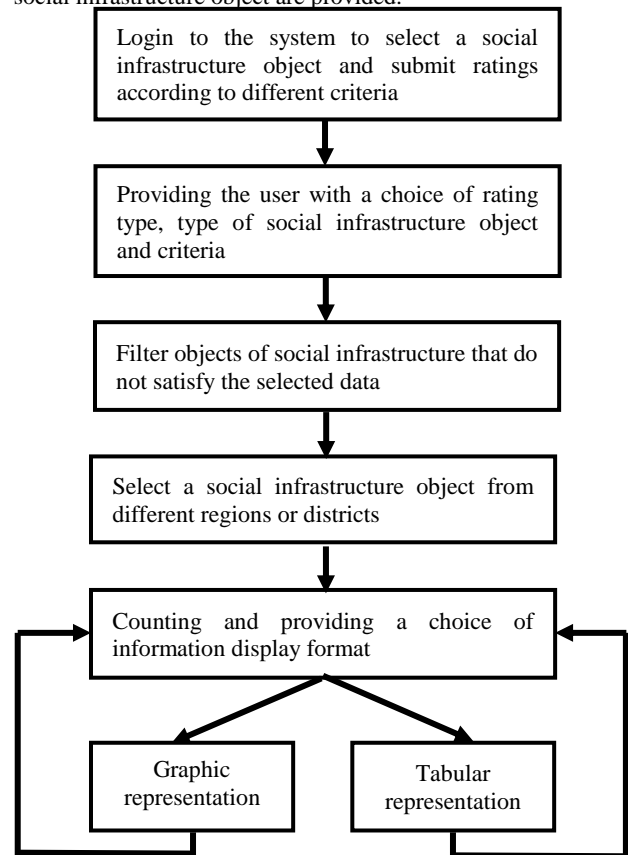


Fig. 2: A schematic representation of the user module for calculating and displaying ratings of social infrastructure objects.

It is also important to administer a rating assessment of social infrastructure institutions (Figure 3). To access this module, you need to enter the correct key, after which the administrator is given the opportunity to: change the criteria that participate in different research years, edit the regions, districts, settlements and institutions of social infrastructure, search for institutions, edit criteria, indicators and their groups.

Such a system of monitoring according to its purpose is a public model; it should provide free access to monitoring results of a wide range of users, establishments, management bodies, etc. The operation of the software system through the Internet provides access of participants, the public to the information resources of the social infrastructure network at all levels, which, on its part, will facilitate the organization of its functioning results permanent discussion and the formation of a public administration system.

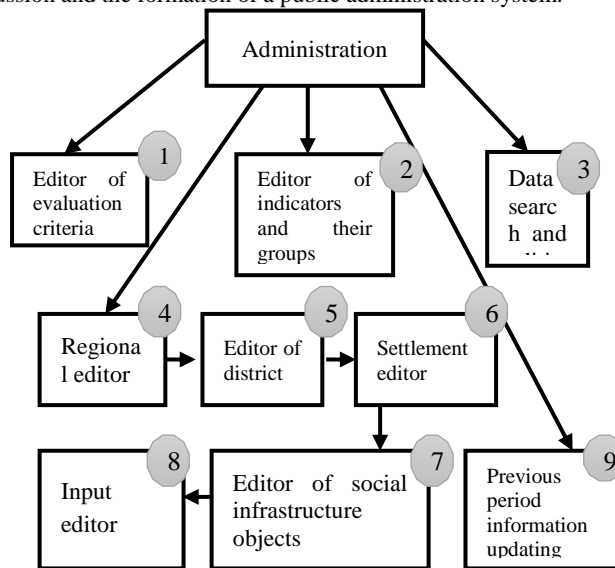


Fig. 3: Schematic representation of the admin module

The results of the monitoring system development should include: a significant reduction in the financial costs of collecting, processing and disseminating information on the institution activity results; providing social infrastructure object management bodies with information on the state and dynamics of their development for making informed managerial decisions; assistance in forming a system of public control and quality management of services; creation of an objective basis for evaluating the activity of institutions during the performance of their certification; ensuring accessibility of the public, various social groups, public organizations to the results of the organization activity evaluation [11, c. 400].

The presence of such security is important not only for understanding the existing features of social development, measuring the influence of external and internal factors on the nature of the manifestation of social determinants. This should ensure transparency of the relevant institution activities, free access to public information and act as one of e-government development components (for example, the construction of real-time local information networks, providing citizens with access, or for the purpose of expert evaluation of social policy certain instruments infrastructure functioning, appropriate measures by involving legal entities, non-governmental experts in assessments in organizations)

3. Conclusions

The introduction of new and progressive mechanisms for assessing social infrastructure organizations, the creation of a broad information basis for making managerial decisions based on social innovation and forecasting the development of social infrastructure will provide the appropriate level of state social development. Proceeding from the foregoing, the vector of state innovation policy should be aimed at ensuring the proper organizational and legal, socio-economic conditions of innovative development with the purpose of effective use of Ukraine's scientific and technical potential, possibilities of creation, implementation of high-tech and competitive products, progressive information systems. The success of the country,

enterprise, and organization in the globalized economy depends on the ability to take its position in the marketplace, to offer more competitive products than other market players. Thus, the proposed information and analytical support for monitoring the activities of social infrastructure organizations and determining their rating positions according to the current criteria for evaluating such activities extends the possibilities of overcoming the state monopoly in the area of providing social services and distribution of orders, broad involvement of public, charitable, religious organizations and local initiatives in providing social services in the community.

References

- [1] Onishchenko V. Social security of the region: theoretical and applied aspects: monograph /V. Onishchenko, Zavora T., O. Chepurny/ Poltava: PNTU, 2015, 274 p.
- [2] Official Site State Statistics Service of Ukraine. Available from <http://ukrstat.gov.ua/>
- [3] Onishchenko S. Analysis of threats to economic security of Ukraine in conditions of innovative economic development / S. Onishchenko, A. Matkovskiy, A. Puhach // Economic Annals-XXI. – 2014. – № 1 – 2 (2) – pp. 8-11.
- [4] Komelina O.V., Fursova N.A., "Methodical bases for the formation of information and analytical support in the management of innovative development" In *Scientific Journal Poltava National Technical University. Economy and region*, vol. 4(35), 2012, pp. 42-47
- [5] Eurostat. Available from <http://ec.europa.eu/eurostat>
- [6] Pigul N.G. Features of functioning social infrastructure in the region. *International scientific and practical Internet conference*, 2014, pp. 160-163
- [7] Law of Ukraine on Social Services (2003) Available from <http://www.rada.gov.ua>
- [8] Komelina O.V. Evaluation of social security: systemic and synergetic approach / O. Komelina, N. Fursova // *Economic annals-XXI. – 2014. – № 7-8 (1). – pp.12-15*
- [9] Human Development in Ukraine: Minimizing Social Risks (*Collective Scientific and Analytical Monograph*) / Ed. E.M. Libanova, Institute of Demography and Social Studies M.V. Ptukha NAS of Ukraine, 2010, p. 496
- [10] Bandur S.I., Zayats T.A., Kutsenko V.I. Modern development of Ukraine: current transformation and prospects, Cherkasy: Brama – Ukraine, 2006, p. 620
- [11] Bondar A. V., Lyakhov O. L., Virevkin S. V., Zakhov S. O., Fursova N. A. AIS project "Rating": Status and Prospects, Tenth International Scientific and Practical Conference "Mathematical and Simulation Modeling Systems. MODS'2015, pp. 398-403