
The Essence of Expert Analytics as a Basis for Managerial Decision-Making in Operational Management

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Abstract. Today's business environment is characterized by fierce competition and uncertainty, which causes significant challenges for business leaders in making informed management decisions, including in operational management. In view of this, the success of management activities is largely determined by the implementation of a thorough and comprehensive analysis of business processes. At the same time, effective enterprise management requires a deep understanding of the internal and external factors that affect its operations. Modern enterprises face the need to make prompt decisions based on accurate and timely data. In such conditions, the role of expert analytics is growing significantly, as it provides systematization and interpretation of information necessary for informed management decision-making. The growing complexity of business processes, increasing requirements for management quality, and the development of information technology make it necessary to constantly improve analytical support methods. Expert analytics, which combines theoretical knowledge and practical experience, is becoming an indispensable tool for managers, allowing them to respond quickly to changes, identify potential risks and find new opportunities for development. The article is devoted to the study of the essence of expert analytics as a tool for making managerial decisions in operational management. The purpose of the study is to determine the role and place of expert analytics in ensuring effective enterprise management, as well as to develop approaches to its implementation. The study was carried out using the monographic method, which allowed for a deep analysis of the theoretical aspects of expert analytics and its role in decision-making in operational management. To achieve the stated research goal, the methods of system-functional analysis, including theories of cognition and decision-making, were applied. Abstract, logical and heuristic methods helped to structure and interpret the data obtained, forming reasonable conclusions. In particular, the systematic approach allowed for the identification of relationships between various aspects of analytical support and management processes, providing a holistic understanding of the issues under study. The results obtained indicate that expert analytics is an integral part of modern operational management. It provides

a comprehensive assessment of internal and external factors affecting the company's operations and contributes to the formation of sound management decisions. An important aspect of expert analytics is its ability to identify both positive and negative trends, which allows an enterprise to respond to changes in a timely manner and adapt to new conditions. The practical value of the study lies in the proposed approaches to improving the system of analytical support for enterprise management. Implementation of the developed recommendations will allow enterprises to improve the quality of management decision-making, optimize management processes, reduce risks and ensure sustainable development in the long term. The article may also be useful for practitioners engaged in enterprise management, for scientists researching analytics and management issues, for teachers training management specialists, and for PhD students conducting research in the field of operational management.

Keywords: *expert analytics, operational management, management decisions, analytical support, management efficiency.*

JEL Classification: *D22, D78, D81, M11*

1 Introduction

Effective business management is a complex and multifaceted process that requires a high level of both intellectual and creative approach. In today's highly complex business environment, business managers face a significant flow of information and the need to make quick decisions based on timely, accurate, relevant data and deep analytical understanding. Thus, the use of expert analytics is becoming not only a useful but also a very necessary tool for the successful management of business operations.

Expert analytics helps to identify the causes of changes in the parameters of the object of management, synthesize deviations and take into account their nature and characteristics. This helps to create the preconditions for making informed and balanced decisions that contribute to the achievement of strategic and operational goals of enterprises.

The growing interest of both theoretical and practical scientists in the use of expert analytics demonstrates its relevance and importance in modern management. An assessment of the theoretical developments of the Ukrainian analytical school demonstrates that one of the determining factors of effective management is the availability of reliable and well-processed information. This confirms the value of expert analytics as a tool for making informed management decisions. It is the analytical understanding of information that allows managers to anticipate possible risks, identify new opportunities, and respond promptly to changes in operations.

Enterprise management involves continuous assessment of the state and dynamics of both the external and internal environment. This includes analyzing new situations and emerging problems and requires strategic and operational decisions modeled with consideration of potential

opportunities and constraints. At the same time, expert analytics is a determining factor in the effectiveness of such decisions.

The purpose of the article is to study the essence of expert analytics and its impact on managerial decision-making in operational management.

The study is aimed at developing the theoretical foundations and practical recommendations for the use of expert analytics, which is a prerequisite for effective enterprise management.

The research methodology includes the use of the monographic method for in-depth analysis of the theoretical aspects of expert analytics. The article uses the methods of system-functional analysis, in particular, the theory of cognition, decision-making theory, and abstract logical and heuristic approaches.

The logic of presentation of the studied material begins with a theoretical substantiation of the essence of expert analytics. Next, the role and place of expert analytics in management is studied, in particular, the introduction of expert analytics into the operational activities of enterprises, evaluation of its effectiveness and recommendations for improving management processes.

Thus, the study provides a comprehensive understanding of the role and importance of expert analytics in operational management, which allows improving the quality of management decisions and ensuring the effective development of enterprises in the long term.

2 The essence of expert analytics

The term «analytics» comes from the ancient Greek word «ἀναλυτικά», which means "the art of analysis, dissection of concepts and elementary principles, with the help of which reasoning becomes evidential". The founder of analytics is Aristotle, who laid the foundations of analytical thinking in his fundamental work *Analytics*.

He defined the concept of analysis (Greek: analysis – decomposition, dismemberment, analysis) as a research method that involves dividing a subject into its component parts (features, properties, relations) for their separate study in the context of the whole (Aristotle, 1981).

The purpose of analysis is to separate the essential from the non-essential and to simplify the complex. The importance of analysis in science was substantiated by René Descartes (Rene Dekart, 2000). The prominent English philosopher Bertrand Russell considered analysis to be the main source of scientific progress, since this method of scientific knowledge allows identifying and studying the basic components of an object (Bertran Rassel, 2023).

According to Immanuel Kant, transcendental analysis is a dissection of the very faculty of reason, identifying «elements of pure rational cognition, without which no cognition of an object is possible at all» (Immanuil Kant, 2000). There is also a technical meaning of the term, which refers to the study of the properties of geometric objects, such as points, lines, surfaces, and bodies, using algebra and the method of coordinates.

Over time, the term «analytics» began to be used in logic to describe a method of solving issues that go from consequences to initial principles, from actions or phenomena to their causes. An analyst, accordingly, is a specialist who is able to solve analytics-related tasks. Today, in the context of digitalization of all spheres of human activity, the profession of analyst is becoming more and more in demand and the term «analytics» has now become international and is actively used in many languages, including Ukrainian. However, its interpretation in dictionaries remains rather limited.

For example, in the Great Explanatory Dictionary of the Ukrainian Language, the term «analytics» has only two meanings: «1. The doctrine of syllogisms and proofs. 2. The same as analytical geometry» (Busel V.T., 2003). In the «New Dictionary of Foreign Words» this concept is expanded to four meanings: «1. Intellectual, logical and mental activity aimed at systematizing the content and identifying cause-and-effect dependencies or spatial and temporal relationships of the objects under study. 2. Part of logic, the science of the basic elements of thinking. 3. A theory of analysis. 4. In Aristotle's logic, the doctrine of syllogisms and proofs» (Slipushko O.M, 2008).

The inclusion of a reference to Aristotle in the definition of the term is explained by the fact that his works «First Analytics» and «Second Analytics» became the basis for the development of analytical activity and remain relevant to this day.

Aristotle not only distinguished between analytics and research, but also foresaw the separation of analytics as an independent field of activity.

Today, analytics is one of the main concepts of the methodology of science, applied expert activity and professional activity in general. Analytics includes analysis, synthesis, generalization, and forecasting, which makes it a crucial element linking data collection and effective decision-making. It acts as a link that helps to process raw data, turning it into useful information for decision-making.

Some scholars consider analytics to be an independent interdisciplinary scientific discipline that covers a wide range of methods and approaches. However, today the term «analytics» is often used too loosely. The term is used to refer to any intellectual and mental processes and their results, regardless of quality, depth, or scientific validity.

Modern media and bloggers often call themselves analysts, passing off their superficial comments as in-depth analysis. This creates the problem of mixing real analytics with superficial observations and popular journalism.

According to Gartner research (Analytics), the term «analytics» is increasingly used to describe statistical and mathematical data processing methods that include clustering, segmentation, evaluation, and forecasting of the most likely scenarios. However, it is a mistake to equate analytics with analysis. Analysis is the process of breaking down a complex phenomenon into its constituent parts for the purpose of studying them separately, regardless of their relationship to the whole.

Analytics includes analysis but is not limited to it. Analytics without analysis loses its essence, but it is not limited to analysis. As David Park notes (Park D.), the difference between analysis and analytics is often blurred and misunderstood. Engineers may consider analytics to be the domain of marketers, while they are engaged in analysis. In fact, analytics can be useful for engineers in the context of production and reliability.

Analysis is aimed at understanding the past, at identifying what happened. Analytics, on the other hand, focuses on explaining why things happened and predicting future events. Using advanced analytics in real time based on data collected from across the global supply chain allows for predicting and answering the question: «What will happen next?» This predictive knowledge provides the ability to make continuous changes that prevent mistakes from happening again, which helps to increase efficiency.

It is difficult to find a clear and relevant definition of analytics in the scientific literature today. There are some works that try to systematize this concept, but they do not always meet all the aspects and requirements for modern scientific analysis.

It is unacceptable to equate analytics with analysis and reduce it to activities only, as A.S. Baronin does (Baronin A.S., 2005), as this unreasonably narrows and distorts the semantics of the concept. More reasonable is the definition that considers analytics as an integral set of principles of methodological, organizational and technological support for individual and collective mental activity, which allows to effectively process information in order to improve the quality of existing and acquire new knowledge, as well as to prepare an information base for making optimal management decisions (Mandziuk O.A., 2019). The advantage of this definition is the integration of methodology, organization and technology.

At the same time, O Mandziuk notes that it is important not only to identify these three elements, but also to understand their sequence. The priority of the methodology is determined by the analyst's choice of the leading concept and system of approaches to the selection, comprehension and interpretation of the accumulated material. The organizational component manages this process. The technological component includes the general technology of activities and algorithmization of analysts' actions, not just the use of certain software. An important aspect is the indication of individual and collective activities. Defining the goals of analytics adds additional weight to this term.

Y.P. Surmin in his works (Surmin Yu.P., 2012; Surmin Yu.P., 2000; Surmin Yu.P., 2003), based on the opinions of other scholars, identifies two main meanings of the term «analytics». The first meaning is based on an activity-based approach, according to which analytics is viewed as a dynamically developing industry based on obtaining information using analytical methods for the needs of practical activities. The second meaning is focused on the institutionalization of the concept, defining analytics as an applied discipline that uses multiple methods of research and argumentation to develop principles and methods for preparing, making and implementing decisions in socially significant problem situations.

At the same time, Y.P. Surmin also emphasizes that analytics cannot be equated with analysis. After all, analytics is a specific social phenomenon, not just a tool of intellectual activity. It is a complex polystructural formation that can be viewed from the perspective of activity, institutional,

organizational, value, epistemological and technological approaches (Surmin Yu.P., 2003).

Y. Surmin defines analytics as an extensive and complex system of knowledge, the components of which are other sciences: logic (the science of regularities of correct thinking), methodology (a system of principles, methods, and techniques of cognitive activity), heuristics (a science that discovers new things in various spheres of life), computer science (the science of information, methods of its receipt, accumulation, processing, and transmission) (Surmin Yu.P., 2003).

To concretize the concept, Y. Surmin proposes a model of analytics in the form of a pyramid, which includes the problem, methodological, value-normative and organizational sides.

V. Savchuk and V. Deriy (Savchuk V. and Deriy V., 2023) characterize analytics as «a divided integrity that synthesizes diverse data and creatively interprets them in order to identify cause and effect relationships and systematic, quantitative and qualitative assessment of changes in phenomena, structures, processes, functions, results, which is the information base for cognition, forecasting and management of their transformation (development)».

After studying the concept of «analytics», which covers the general principles and methods of analysis, it is worth moving on to consider a more specific area of analytical activity – «expert analytics». Thus, V.D. Bakumenko, O.O. Krasnorutskyi and S.A. Popov (Bakumenko V.D. et al., 2021) believe that expert analytics is an extended approach to analytical research based on the involvement of experts to assess a selected object, process or phenomenon. The main purpose of this approach is to formulate conclusions and recommendations for further improvement of the subject under study based on the professional judgment of experts. An important part of expert analysis is the identification of the main components and essential parameters of the object under study, as well as the consideration of its structural and functional features.

The data obtained by experts are systematized by researchers according to certain criteria, usually in the form of tables or questionnaires. This approach allows for a more detailed and accurate assessment of the state and prospects of the object of study, which is important for making informed decisions in various areas of activity, including operational management.

Based on the above interpretations, a definition of expert analytics will be formulated as an integral set of principles of methodological, organizational, and technological support, which focuses on

attracting qualified specialists to evaluate and analyze specific objects, processes, or phenomena.

It allows to process information efficiently in order to improve existing knowledge, acquire new insights, and prepare an information base for making optimal management decisions. Expert analytics is based on the systematization and integration of professional judgments of experts, which ensures a high level of accuracy and validity of conclusions and recommendations and contributes to the adoption of sound management decisions.

3 The role and place of expert analytics in operational management

In today's conditions of transformation of management functions, the importance of information and analytical support for managing the activities of an enterprise is growing. This support not only reflects economic phenomena and processes, but also allows to analytically comprehend their essence and assess the impact on the effectiveness of management decisions. Expert analytics, as part of this process, plays a crucial role in making informed decisions at all levels of management.

Expert analytics is a specialized type of analytical research based on the involvement of experts to assess specific objects, processes or phenomena. It involves identifying the main components and essential parameters of the object of study, as well as taking into account its structural and functional features. The data obtained are systematized and used to formulate conclusions and recommendations for improving the object of study.

In operational management, expert analytics plays an extremely important role in improving the efficiency of management decisions. Traditional accounting information, which is often used as a basis for decision-making, has certain drawbacks. It is summarized for a certain period of the company's activity, which allows for diagnosing indicators only for a specific period. Reporting information reflects actual business results for the previous period, which makes it impossible to adjust and influence the performance of business operations in real time. In addition, the data of the reporting analysis are general, without specification by type of economic activity (Putsenteilo P.R., 2015).

These limitations justify the need to differentiate information flows by management levels, structural units, and types of activities, as well as to increase the importance of analytical data processing. Expert analytics allows solving these problems through in-depth and comprehensive analysis of

information, involving specialists with relevant knowledge and experience in this process.

For the effective use of expert analytics in operational management as a balanced system, the following basic principles of its functioning should be observed:

- The system of information and analytical support should take into account the sectoral structure of production, availability and level of resources, and priority areas of development of the region and the country as a whole;

- the system should be built on the basis of a strategic management plan developed with due regard for operational and tactical tasks focused on the current implementation of activity plans;

- the information-analytical system should take into account external and internal factors of influence, as well as the needs of different information users.

It is also important to compare the requirements of external and internal information users. In addition, the same information should not be processed twice depending on its form or display, so a preliminary analysis of information needs is carried out first. Since all levels of management are interdependent, information and analytical support of the management process involves constant monitoring of business operations at the enterprise with periodic review of activity priorities.

Thus, expert analytics is an important tool in operational management that ensures a high level of validity of management decisions and contributes to the efficiency of the enterprise in the modern market environment.

Effective implementation of the enterprise management process largely depends on information and analytical support, which provides users at all levels with access to the information necessary for making management decisions. This support covers organizational, socio-economic and institutional aspects of management.

Information and analytical support of enterprise management can be defined as a set of measures, tools and methods that provides the system with the necessary information by collecting, registering, transmitting, storing, processing and providing information for making the necessary management decisions. To ensure the effective functioning of this system, it is advisable to create a single information management center in the overall organizational structure of the enterprise. This center will be responsible for the formation of an integrated analytical support system and will ensure the effective impact of the information used on the overall performance of the enterprise.

The need to form a system of information and analytical support for management is identified at every stage of decision-making. This process includes a preliminary study of economic phenomena and processes, analysis of the actual state of the enterprise, selection of business process options, assessment of the compliance of the economic aspect in the prepared decision options with other aspects of management, generalization or synthesis of the analysis results to justify management decisions and analysis of the results obtained.

Implementation of the system of information and analytical support of management at the enterprise will allow:

- Increase production efficiency and significantly improve the company's performance based on effective profit and cost management – expert analytics helps to identify and eliminate weaknesses in production processes, which allows to optimize costs and increase profitability;
- rationally allocate and use available resources – thanks to expert analytics, the company's management can make informed decisions on the allocation of resources, which contributes to their optimal use;
- optimize enterprise costs and quickly and accurately determine the cost of production – expert analytics methods allow for accurate calculation of production costs and determination of the real cost of production, which is crucial for pricing policy;
- improve the quality and efficiency of management decision-making – reliable information

and analytical system provides the company's management with timely and accurate information necessary to make informed decisions in real time.

Thus, expert analytics is considered central to operational management, providing a deep and comprehensive assessment of the changes taking place in the enterprise. It helps to identify both positive and negative development trends promptly, which allows developing management solutions to overcome undesirable phenomena and maintain favorable conditions for the sustainable development of the enterprise. Figure 1 shows the main stages of analytical support for decision-making in operational management.

The first stage is to clearly define the strategic and operational and tactical goals of the enterprise, as well as the current tasks required to achieve them. It includes an analysis of internal and external factors affecting the company's operations, as well as setting priorities.

At the second stage, a detailed analysis of current operational tasks is carried out and management decision options are developed based on the collected data and analytical methods. The goal is to substantiate the most effective solutions to achieve the set goals.

The third stage involves monitoring market conditions and fluctuations, which allows the company to respond quickly to changes in the market environment. This includes analyzing the competitive environment, consumer demand and other external factors.



Figure 1 The main stages of analytical support for decision-making in operational management

Source: author's development

The fourth stage involves a comprehensive analysis of the company's key performance indicators, such as production volumes, productivity, product quality, cost levels, etc. The analysis is conducted in both quantitative and qualitative terms.

The fifth stage involves identifying and assessing risks associated with the company's activities, as well as developing measures to minimize them. This helps ensure the stability and continuity of business processes.

At the sixth stage, the data obtained is analyzed and interpreted to formulate conclusions and recommendations for further actions. This includes systematizing information, identifying trends, and evaluating the effectiveness of decisions.

The seventh stage involves the implementation of management decisions based on the analysis and recommendations. This ensures the implementation of strategies, plans and measures to achieve the set goals.

The final eighth stage of the cycle includes the development of long-term plans for the development of the enterprise, based on the results of previous analytical studies. This forms a strategic vision and prepares for future challenges and opportunities. The cycle then repeats, but at a different level.

Thus, expert analytics enables enterprises to make informed management decisions based on a deep understanding of internal and external factors affecting their operations. Expert analytics, among other things, provides:

- Optimization of management processes – helps to identify weaknesses in production and management processes, which allows optimizing costs and increasing efficiency;
- support for strategic planning – thanks to a detailed analysis of market conditions and internal resources, enterprises can develop strategic plans that contribute to their long-term development;
- risk forecasting – expert analytics allows identifying potential risks and developing measures to minimize them, ensuring the stability of the company's operations;
- improving the quality of management decisions – reliable analytical information allows managers to make timely and informed decisions, which increases the efficiency and effectiveness of management, etc.

Thus, expert analytics is an important tool in operational management that contributes to increasing competitiveness and ensures the company's efficient day-to-day functioning, improving the prospects for further development.

4 Conclusions

The study of the essence of expert analytics as a tool for making managerial decisions in operational management allowed for drawing several important conclusions.

In the current conditions of transformation of management functions, the importance of analytics is becoming increasingly relevant. Expert analytics acts as the main component that provides high-quality information and analytical support for the management of an enterprise.

Analyzing scientific papers, it can be argued that analytics is a determining factor in effective management. It should be based on reliable and relevant data that meet the needs of users and facilitate timely and informed management decisions. Analytical methods allow identifying both positive and negative trends affecting the company's operations, providing a basis for developing sustainable development strategies.

The main stages of analytical support in operational management include the formation of strategic and operational and tactical goals, development of analytical solutions for operational tasks, monitoring of market conditions, assessment of operational indicators, identification and assessment of risks, analysis of performance results, implementation of management decisions and development of long-term plans. Each of these stages is essential for ensuring effective enterprise management.

Expert analytics helps to optimize management processes, support strategic planning, predict risks, and improve the quality of management decisions, which ensures efficient operation and competitiveness of enterprises.

In further research, it is important to focus on improving methodological approaches to ensuring the comparability of indicators, accounting and analysis of virtual assets, justifying management decisions in the face of risks and uncertainty, and making greater use of intelligent analysis and knowledge gained from large data sets. The introduction of the latest technologies and approaches to analytical support will help improve the efficiency of operational management.

Successful implementation of analytical studies of the management system depends not only on the methodology but also on the quality of information and organizational support. The information required for analysis is of a diverse nature and is collected both internally and externally. The organizers of analytical work should take into account the specifics of the problems under study, the peculiarities of the enterprise, the realism of

providing the necessary information and the level of analysts' proficiency in specific methods and techniques.

All of the above indicates that expert analytics is an indispensable tool in operational management, which ensures a high level of validity and prudence

of management decisions, contributing to the efficiency of the enterprise as a whole. It provides companies with the ability to respond quickly to changes make informed decisions and achieve strategic goals, which is the basis for their long-term success.

References

- Analytics. Gartner IT Glossary. Available at: <https://www.gartner.com/en/information-technology/glossary/analytics> (accessed June 14, 2024).
- Aristotle (1981) *Analytica Priora et Posteriora*. Ed. Ross and Minio-Paluello. Oxford University Press, 210 p.
- Park D. Analysis vs. Analytics: Past vs. Future. Available at: <https://www.eetimes.com/analysis-vs-analytics-past-vs-future/> (accessed June 14, 2024).
- Bakumenko V. D., Krasnorutskyi O. O., Popov S. A. (2021) Ekspertna analityka mekhanizmiv derzhavnoho upravlinnia v naukovykh rozvidkakh ukrainskykh vchenykh [Expert analysis of state management mechanisms in scientific intelligence of Ukrainian scientists]. *Aktualni problemy derzhavnoho upravlinnia*, no. 1(82), pp. 20–26. Available at: <http://uran.oridu.odessa.ua/article/view/229117/228075> (accessed June 20, 2024).
- Baronin A. S. (2005) *Analiz i prohnoz u politytsi ta biznesi* [Analysis and Forecasting in Politics and Business]. Kurs lektsii. Kyiv : Vyd. Palyvoda A.V., 128 p. (in Ukrainian)
- Bertran Rassel (2023) *Istoriia zakhidnoi filosofii* [History of Western philosophy]. Translation Yurii Lisniaka ta Petra Tarashchuka. Kharkiv : «Folio», 864 p. (in Ukrainian)
- Busel V. T. (Ed.) (2003) *Velykyi tлумachnyi slovnyk suchasnoi ukrainskoi movy* [A large explanatory dictionary of the modern Ukrainian language]. Slovnyk [Dictionary]. Kyiv; Irpin: VTF «Perun», 1440 p. Available at: <https://slovnyk.ua/index.php?swrd=аналітика> (accessed June 18, 2024). (in Ukrainian)
- Immanuel Kant (2000) *Krytyka chystoho rozumu* [Critique of pure reason]. Translation Ihoria Burkovskoho. Kyiv : «Iunivers», 504 p. (in Ukrainian)
- Mandziuk O. A. (2019) Pravovyi potentsial poniattia «analitika» [The legal potential of the concept of «analytics»]. *Aktualni problemy derzhavy i prava*, issue 84, pp. 38–46. Available at: <https://hdl.handle.net/11300/13129> (accessed June 17, 2024).
- Slipushko O. M. (2008) *Novyi slovnyk inshomovnykh sliv* [New dictionary of foreign words]. Slovnyk. Kyiv : Akonit, 848 p. Available at: <https://www.jnsm.com.ua/cgi-bin/u/book/sis.pl?Article=1316&action=show> (accessed June 20, 2024). (in Ukrainian)
- Putsenteilo P. R. (2015) *Analitichne zabezpechennia diialnosti pidpriemstva* [Analytical support of enterprise activity]. *Stalyi rozvytok ekonomiky*, no. 1, pp. 168–174. Available at: http://nbuv.gov.ua/UJRN/sre_2015_1_27 (accessed June 20, 2024).
- Putsenteilo P. R. (2015) *Osoblyvosti funktsionuvannia analitichnoho zabezpechennia pidpriemstv* [Peculiarities of functioning of enterprise analytical support]. *Innovatsiina ekonomika*, no. 1, pp. 194–198.
- Rene Dekart (2000) *Metafizychni rozmysly* [Metaphysical reflections]. Translation Zoi Borysiuk ta Oleha Zhupanskoho. Kyiv : «Iunivers», 304 p. (in Ukrainian)
- Savchuk V., Derii V. (2023) *Relevantna analityka – vyznachalni chynnyk efektyvnoho upravlinnia diialnistiu pidpriemstva* [Relevant analytics – a determining factor in effective management of enterprise activity]. *Visnyk ekonomiky*, issue 4, pp. 104–117. DOI: <https://doi.org/10.35774/visnyk2023.04.104> (accessed June 18, 2024).
- Surmin Yu. P. (2012) *Analitika derzhavnoho upravlinnia: sutnist i tendentsii rozvytku* [Public administration analytics: essence and development trends]. *Informatsiyni menedzhment*, no. 10, pp. 20–27. Available at: <http://www.academy.gov.ua/ej/ej5/txts/06sydpdv.htm> (accessed June 20, 2024).
- Surmin Yu. P. (2000) *Analitichna diialnist u derzhavnomu upravlinni: tekhnolohichni aspekt* [Analytical activity in public administration: technological aspect]. *Aktualni problemy derzhavnoho upravlinnia*, issue 3, pp. 27–48.
- Surmin Yu. P. (2003) *Teoriia system i systemnyi analiz* [Systems theory and systems analysis]. Navchalnyi posibnyk. Kyiv : MAUP, 368 p. (in Ukrainian)