Accounting, Analytical and Information Support for Law Enforcement Activity in Conditions of Ensuring Economic Security in The Presence of Strong Turbulence in The External Environment

Viktor Lopatovskyi[1], Oleg Bondaruk[2], Nadiia Datsii[3], Roman Primush[4] and Ivan Dragan[5]

Abstract

The purpose of the article is to present an effective model of accounting, analytical and information support for law enforcement activity in conditions of ensuring economic security in the presence of strong turbulence in the external environment. The object of the study is economic safety. The scientific task is to build an effective model of accounting, analytical and information support for law enforcement activity in conditions of ensuring economic security in the presence of strong turbulence in the external environment. The research methodology involves using the IDEF0 model to build this model. As a result of the study, a decomposition of the IDEF0 model was presented, which characterizes ways to improve accounting, analytical and information support for law enforcement activity in conditions of ensuring economic security in the presence of strong turbulence in the external environment.

Keywords: *Economic Security, State, Turbulence, Accounting And Analytical Support, Information Support, Sustainable Development, Accounting and Auditing, Finance.*

INTRODUCTION

The relevance of accounting, analytical, and information support for law enforcement activities is crucial, particularly when ensuring economic security amidst strong turbulence in the external environment. Firstly, these tools enhance decision-making capabilities. In the face of external disturbances like geopolitical shifts, economic sanctions, or market fluctuations, law enforcement needs to adapt quickly. Robust accounting and analytical frameworks process vast amounts of data into actionable intelligence, helping authorities make informed decisions, allocate resources efficiently, and strategize against economic crimes such as fraud and corruption.

Secondly, the use of advanced analytical tools and information systems increases operational efficiency. These systems streamline data management, allowing for quicker access and analysis of financial records and other pertinent information. This not only speeds up investigations but also enhances the accuracy of tracking financial transactions and identifying irregularities.

Furthermore, in an era where cyber threats and financial crimes are increasingly sophisticated, the role of precise and comprehensive information systems becomes even more pivotal. These systems are essential for monitoring economic activities and preempting illegal actions that could jeopardize national and global economic stability.

Moreover, maintaining economic security in turbulent times requires a proactive approach. Law enforcement agencies equipped with strong accounting and information frameworks are better positioned to predict and mitigate the impacts of economic disturbances. This proactive stance helps in safeguarding national interests and maintaining economic order.

---

[1] Department of Accounting, Auditing and Taxation, Khmelnytskyi National University, Khmelnytskyi, Ukraine

[2] Department of Financial and Economic Security, National Academy of the Security Service of Ukraine, Kyiv, 01000, Ukraine

[3] Department of Economic Theory, Intellectual Property and Public Administration, Polissia National University, Zhytomyr, Ukraine

[4] National University of Civil Defence of Ukraine, Kharkiv, Ukraine

[5] Department of Law and Law Enforcement, Zhytomyr Polytechnic State University, Zhytomyr 10001, Ukraine keb_dio@ztu.edu.ua

Lastly, the global nature of modern economies means that economic crimes often have cross-border implications, necessitating international cooperation. Effective accounting and analytical support not only aid in domestic law enforcement but also enhance collaboration and information sharing between countries, helping to tackle complex international crimes more effectively. This global perspective is essential for maintaining economic security in an interconnected world.

LITERATURE REVIEW

In the context of ensuring economic security in the face of strong external turbulence, the literature has progressively focused on the need for sophisticated accounting, analytical, and information support systems in law enforcement activities. This chapter synthesizes the contributions of various scholars and practitioners who have explored different aspects of economic security, particularly under conditions of rapid environmental changes and global challenges.

Alazzam et al. (2023) introduced an innovative model for the development of e-commerce to bolster business economic security. Their research emphasizes the integration of advanced technological solutions to enhance economic resilience against external shocks, which is crucial for maintaining robust law enforcement operations (Alazzam et al., 2023). This perspective is critical as it ties directly into the necessity of up-to-date, technology-driven information systems for economic security in law enforcement.

Further, Viknianska et al. (2021) contributed to the discourse by outlining a methodological approach to the economic analysis and control of enterprises during times of significant transformations in economic systems. Their findings underline the importance of methodical economic scrutiny as a fundamental component of economic security, which law enforcement agencies can adapt to improve their operational strategies (Viknianska et al., 2021).

In a similar vein, Alazzam et al. (2024) discussed strategic business management within shifting commercial activities. They proposed methodological approaches that can aid law enforcement agencies in choosing strategic directions that align with ensuring economic stability and addressing the uncertainties brought about by external disturbances (Alazzam et al., 2024).

Cherep et al. (2023) focused on the role of innovation potential within enterprises, particularly in enhancing the economic security of Ukrainian businesses post-war. The study illustrates how fostering innovation can contribute to economic resilience, a factor law enforcement must consider in safeguarding against and responding to economic crimes that could destabilize recovery and growth (Cherep et al., 2023).

Lastly, Tytykalo et al. (2023) explored the adaptive management of economic security within the globalization context. They highlighted the need for enterprises to adapt to global challenges through sustainable practices, suggesting that law enforcement agencies must also evolve to protect economic interests effectively in a globally interconnected market (Tytykalo et al., 2023).

These studies collectively emphasize the importance of dynamic and responsive accounting, analytical, and information frameworks in law enforcement. Such systems are not only essential for immediate operational needs but also for the strategic long-term goal of maintaining economic security in an unpredictable global environment.

METHODOLOGY

The methodology employed in this study is designed to address the complexities of establishing an effective model of accounting, analytical, and information support for law enforcement activities, specifically tailored to ensuring economic security amidst external turbulence. The primary focus of the research is on the development and decomposition of an Integrated DEFinition model 0 (IDEF0), a function modeling methodology used to describe the manufacturing functions, which offers a structured representation of the processes, functions, and data systems involved.

The study is structured around a qualitative research design aimed at building and analyzing a comprehensive model that supports law enforcement activities. The IDEF0 model serves as the foundation for this

exploration. It is employed to detail the various activities and processes that constitute effective economic security measures within law enforcement agencies.

Data collection for the study involves an extensive review of existing models and systems within law enforcement agencies that pertain to accounting, analytics, and information dissemination. This review helps in identifying key functions and operations that need support to enhance economic security. Data is sourced from public records, previous studies, and through consultations with experts in law enforcement and economic security fields.

Using the IDEF0 methodology, the study constructs a model that categorizes and organizes the different components of law enforcement's accounting, analytical, and information systems. The IDEF0 framework is used to create a hierarchical series of diagrams that detail the functions, sub-functions, and their relationships within the systems. This structured approach aids in understanding and improving the integration and efficiency of these components.

The analysis phase involves examining the constructed IDEF0 diagrams to identify inefficiencies, redundancies, and gaps in the current models of economic security in law enforcement. Each function and sub-function is evaluated to determine its effectiveness in dealing with the challenges posed by external environmental turbulence. Recommendations for improvements and updates are based on this analysis.

The final phase of the methodology is the presentation of the decomposed IDEF0 model. This decomposition showcases a detailed blueprint of proposed enhancements in accounting, analytical, and information support systems for law enforcement. The model illustrates pathways for integrating new technologies, methodologies, and practices to bolster economic security under challenging external conditions.

Through this comprehensive methodological approach, the study aims to provide a systematic and effective model for improving law enforcement capabilities in safeguarding economic security against the backdrop of global and local instabilities.

RESULTS

A0. Advanced Data Analytics Integration

A1. Assessment of Current Capabilities. Evaluate the existing data analytics capabilities within the law enforcement agencies to understand the baseline from which improvements can be made. This involves assessing the current software, hardware, and skill levels of personnel in handling complex data analysis.

A2. Implementation of Advanced Analytical Tools. Integrate advanced data analytics tools that utilize artificial intelligence (AI) and machine learning (ML) technologies. These tools can enhance the capability of law enforcement agencies to predict potential economic crimes and react swiftly to financial irregularities and fraud.

A3. Training and Development. Implement comprehensive training programs for law enforcement personnel to effectively use these advanced tools. This training should cover technical aspects of the new tools as well as analytical techniques to interpret the data these tools will generate.

A4. Continuous Improvement and Feedback Loop. Establish a continuous improvement process that includes feedback loops from analytics outputs to refine and optimize the tools and techniques in use. Regular updates and adaptations to the evolving external environment and emerging economic threats will ensure the tools remain effective and relevant (Fig.1).
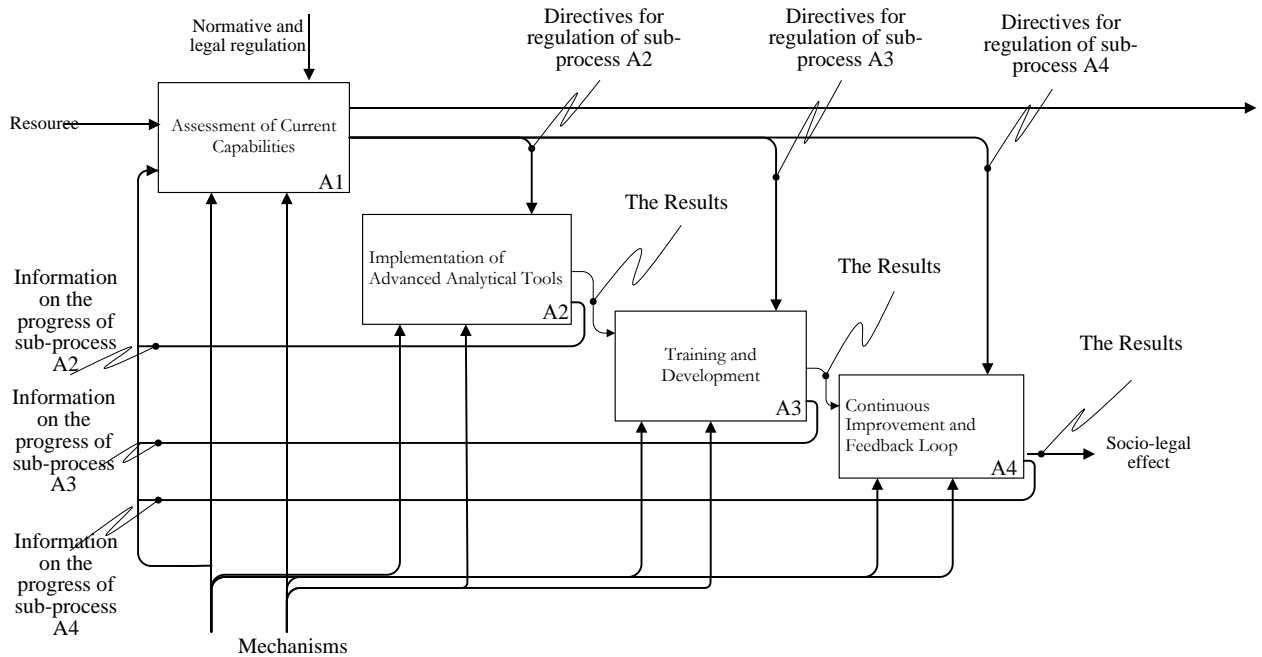
Figure 1. Model IDEF0

A0. Collaborative Information Sharing Framework

A1. Development of A Collaborative Framework. Develop a collaborative framework that allows for seamless information sharing between different law enforcement agencies and other relevant bodies, such as financial institutions and international law enforcement agencies. This framework should ensure data privacy and security while promoting transparency.

A2. Integration of Real-Time Data Sharing Systems. Implement systems that support real-time data sharing and communication. These systems should be equipped with end-to-end encryption to secure sensitive information but allow for the immediate exchange of information necessary for quick responses to economic threats.

A3. Joint Analytics Units. Establish joint analytics units that combine experts from various agencies and sectors. These units will use the collaborative framework to pool resources, skills, and information, enhancing the analytical depth and breadth available to tackle complex economic security issues.

A4. Regular Scenario Testing and Simulation Exercises. Conduct regular scenario testing and simulation exercises to evaluate the effectiveness of the collaborative framework and real-time data sharing systems. These exercises should mimic real-world conditions of economic turbulence to test the robustness of the systems and identify areas for improvement (Fig.2).
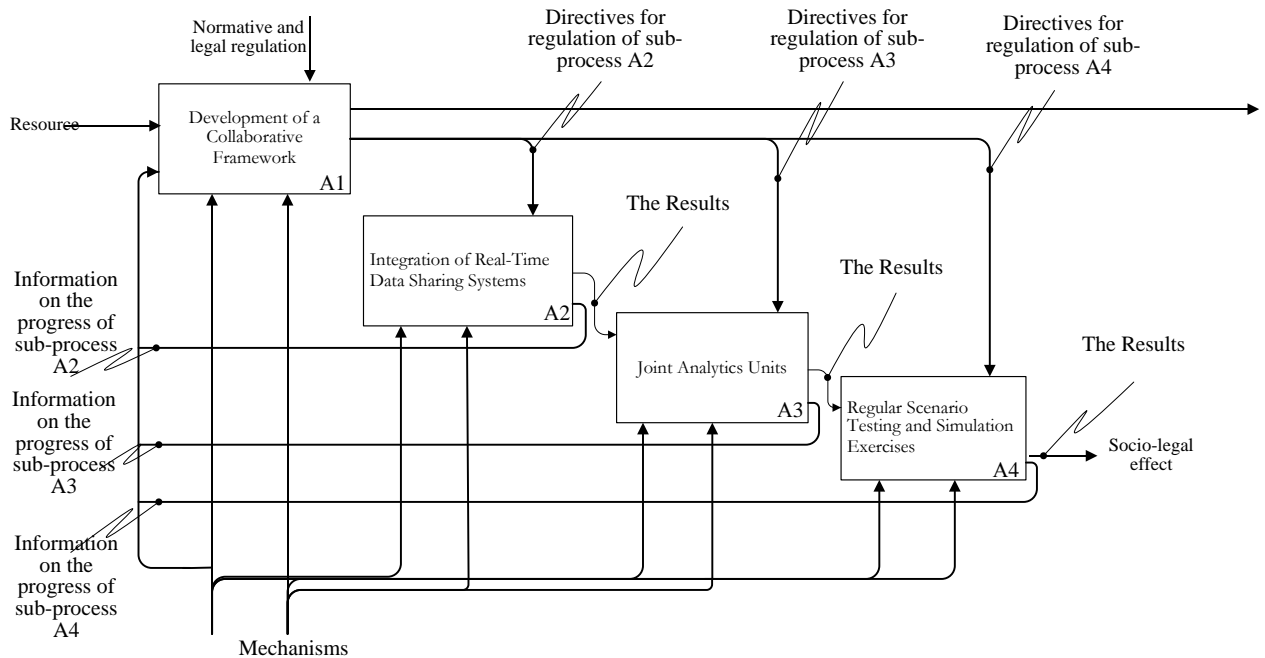
Figure 2. Model IDEF0

Both approaches aim to leverage technology and collaboration to enhance the accounting, analytical, and information support systems within law enforcement. By adopting one or a combination of these strategies, agencies can significantly improve their operational readiness and effectiveness in maintaining economic security amidst external challenges.

DISCUSSIONS

Alazzam et al. (2023) discuss the development of information models for e-commerce platforms that emphasize the importance of aligning with global digitalization and legal compliance. Similar to our findings, their study acknowledges the need for robust information systems that can adapt to legal and economic changes. However, our research extends this by specifically integrating these systems within law enforcement activities to enhance economic security directly, thereby providing a more focused application in maintaining stability amidst external shocks.

The work by Bani-Meqdad et al. (2024) on modern challenges in the cyber-environment, particularly regarding intellectual property law and sustainable development, parallels our emphasis on enhancing analytical capabilities. Both studies highlight the need for law enforcement and other institutions to upgrade their technological and analytical frameworks to address contemporary challenges effectively. Our model of accounting and information support directly contributes to these broader goals by offering specific mechanisms for law enforcement to protect economic interests and intellectual property rights in a digital age.

Samoilenko et al. (2022) address economic security within digital transformation, which closely aligns with our approach to integrating advanced technologies and real-time data processing in law enforcement. Both studies underscore the critical role of digital technologies in securing economic interests. Our study builds on this by detailing specific IDEF0-based models that can be implemented in law enforcement to bolster economic security more dynamically and responsively.

The research by Blikhar et al. (2023) and Kopytko & Sylkin (2023) on the economic and legal aspects of anti-corruption measures reflects the proactive measures we advocate for in law enforcement. These studies

complement our findings by providing broader context on how improved information systems can be part of a comprehensive strategy to counteract corruption, enhancing the effectiveness of state authorities in maintaining economic and legal integrity.

Kryshtanovych et al. (2024) explore the development of new information systems utilizing artificial intelligence, which resonates with our study's emphasis on adopting advanced analytics in law enforcement. The methodical approach they propose for assessing and selecting optimal AI technologies can inform further enhancements to our IDEF0 model, suggesting pathways for integrating AI to improve data analysis and decision-making processes. Lastly, the study by Saleh et al. (2020) on the legal management of cryptocurrency assets within national security systems offers an interesting parallel to our focus on economic security. While they deal specifically with cryptocurrency, the broader implications for law enforcement in terms of managing emerging economic risks are relevant. Our model could potentially be expanded to include specific strategies for dealing with new forms of digital assets.

CONCLUSION AND RECOMMENDATION

The research undertaken in this study provides a comprehensive evaluation of the accounting, analytical, and information support systems essential for law enforcement activities, particularly under the conditions of ensuring economic security amid external turbulence. By leveraging the IDEF0 model, the study successfully maps out the complex interdependencies and operational dynamics of these support systems, leading to several significant conclusions and recommendations.

Integration of Systems: The IDEF0 model allowed for a thorough visualization and analysis of existing support systems within law enforcement. It revealed that greater integration between accounting, analytical, and information systems significantly enhances responsiveness and agility in the face of external disruptions. Integrated systems facilitate a more cohesive flow of information, improving decision-making processes and operational efficiency.

Need for Enhanced Analytical Capabilities: Our study highlights a critical need for advanced analytical tools that can process large volumes of data swiftly and accurately. Enhancing these capabilities is vital for identifying trends, predicting potential security threats, and making informed decisions to maintain economic stability. Importance of Real-time Data Access: The effectiveness of law enforcement in ensuring economic security is heavily reliant on the timeliness and accuracy of information. Real-time data access has emerged as a pivotal component, allowing law enforcement agencies to act swiftly to evolving economic threats and disturbances. Adaptive and Scalable Models: The external environment impacting economic security is dynamic and often unpredictable. Therefore, the accounting, analytical, and information systems need to be not only robust but also adaptable and scalable to adjust to new threats and changes in the economic landscape.

The study underscores the necessity of a shift from reactive to proactive measures in law enforcement practices. Proactively enhancing economic security frameworks through continual updates and improvements to the support systems can prevent economic crimes and mitigate their impacts effectively.

REFERENCES

Alazzam, F. A. F., Tubishat, B. M. A.-R., Savchenko, O., Pitel, N., & Diuk, O. (2023). Formation of an innovative model for the development of e-commerce as part of ensuring business economic security. Business: Theory and Practice, 24(2), 594–603. https://doi.org/10.3846/btp.2023.19781

Alazzam, F. A. F., Tubishat, B. M. A.-R., Storozhuk, O., Poplavska, O., & Zhyvko, Z. (2024). Methodical approach to the choice of a business management strategy within the framework of a change in commercial activities. Business: Theory and Practice, 25(1), 1–10. https://doi.org/10.3846/btp.2024.19676

Alazzam, F.A.F., Aldrou, K.K.A.R., Berezivskyy, Z., Zaverbnyj, A., Borutska, Y. (2023). State management of the system of rational environmental use in the context of commercial development of the bioeconomy: Ecological aspect. International Journal of Environmental Impacts, Vol. 6, No. 4, pp. 155-163. https://doi.org/10.18280/ijei.060401

Alazzam, F.A.F., Salih, A.J., Amoush, M.A.M., Khasawneh, F.S.A. (2023). The nature of electronic contracts using blockchain technology - Currency bitcoin as an example. Revista De Gestão Social E Ambiental, 17(5): e03330. https://doi.org/10.24857/rgsa.v17n5-014

Alazzam, F.A.F., Shakhatreh, H.J.M., Gharaibeh, Z.I.Y., Didiuk, I., Sylkin, O. (2023). Developing an information model for E-Commerce platforms: A study on modern socio-economic systems in the context of global digitalization and legal compliance. Ingénierie des Systèmes d'Information, Vol. 28, No. 4, pp. 969-974. https://doi.org/10.18280/isi.280417

Bani-Meqdad, M.A.M., Senyk, P., Udod, M., Pylypenko, T., Sylkin, O. (2024). Cyber-environment in the human rights system: Modern challenges to protect intellectual property law and ensure sustainable development of the region. International Journal of Sustainable Development and Planning, Vol. 19, No. 4, pp. 1389-1396. https://doi.org/10.18280/ijsdp.190416

Bazyliuk, V., Shtangret, A., Sylkin, O., & Bezpalko, I. (2019). Comparison of institutional dynamics of regional development publishing and printing activities in Ukraine: Methodological and practical aspects. Business: Theory and Practice, 20, 116–122. https://doi.org/10.3846/btp.2019.11

Blikhar, M., Vinichuk, M., Kashchuk, M., Gapchich, V., Babii , S. (2023). Economic and legal aspects of ensuring the effectiveness of counteracting corruption in the system of anti-corruption measures of state authorities. Financial and Credit Activity Problems of Theory and Practice, 4(51): 398-407. https://doi.org/10.55643/fcaptp.4.51.2023.4138

Cherep A., Adamenko M., Adamenko M., Cherep O., Dashko I., Korolenko R., Kornukh O. (2023). The influence of the innovation potential of personnel on strengthening economic security of Ukrainian enterprises in the post-war period. WSEAS Transactions on Business and Economics, 20: 70-79.

Kopytko, M., & Sylkin, O. (2023). Modelling information support for combating corruption in the economic security management system of the state. Social and Legal Studios, 6(3), 60-66. https://doi.org/10.32518/sals3.2023.60

Kryshtanovych, M., Bilyk, V., Hanushchyn, S., Sheremet, I., & Vasylenko, K. (2021). Modelling the ways to increase the creativity of psychology students as a basic factor in professional development. Creativity Studies, 14(1), 34-50. https://doi.org/10.3846/cs.2021.12571

Kryshtanovych, M., Kryshtanovych, S., Stepanenko, L., Brodiuk, Y., & Fast, A. (2021). Methodological approach to determining the main factors for the development of creative thinking in students of creative professions. Creativity Studies, 14(2), 391-404. https://doi.org/10.3846/cs.2021.14806

Kryshtanovych, M., Snihur, L., Buzhyna, I., Tiurina, D., Imeridze, M. (2024). Development of new information systems with the involvement of artificial intelligence for the men and women's work: A methodical approach to assessment and selection of the optimal. Ingénierie des Systèmes d'Information, Vol. 29, No. 2, pp. 723-730. https://doi.org/10.18280/isi.290234

Saleh, A.J., Alazzam, F.A.F., Aldrou, K.K.A.R., Zavalna, Z. (2020). Legal aspects of the management of cryptocurrency assets in the national security system. Journal of Security and Sustainability Issues, 10(1): 235-247. https://doi.org/10.9770/jssi.2020.10.1(17)

Samoilenko, Y., Britchenko, I., Levchenko, I., Lošonczi, P., Bilichenko, O., Bodnar, O. (2022). Economic security of the enterprise within the conditions of digital transformation. Economic Security of the Enterprise Within the Conditions of Digital Transformation/Yuliia Samoilenko, Igor Britchenko, Iaroslava Levchenko, Peter Lošonczi, Oleksandr Bilichenko, Olena Bodnar//Economic Affairs, 67(04): 619-629.

Sylkin, O., Kryshtanovych, M., Zachepa, A., Bilous, S., & Krasko, A. (2019). Modeling the process of applying anti-crisis management in the system of ensuring financial security of the enterprise. Business: Theory and Practice, 20, 446-455. https://doi.org/10.3846/btp.2019.41

Sylkin, O., Shtangret, A., Ogirko, O., Melnikov, A. (2018). Assessing the financial security of the engineering enterprises as preconditions of application of anti-crisis management: Practical aspect. Business and Economic Horizons, 14(4): 926-940. https://doi.org/10.15208/beh.2018.63

Teerasoponpong, S., Sopadang, A. (2022). Decision support system for adaptive sourcing and inventory management in small- and medium-sized enterprises. Robotics and Computer-Integrated Manufacturing, 73: 102226. https://doi.org/10.1016/j.rcim.2021.102226

Tytykalo, V., Kovalenko, N., Pohrebniak, A., Nahorna, I., Kalyniuk, V. (2023). Assessment of adaptive management of economic security of enterprises in the context of globalization challenges and sustainable development. International Journal of Sustainable Development and Planning, Vol. 18, No. 4, pp. 1271-1281. https://doi.org/10.18280/ijsdp.180432

Viknianska, A., Kharynovych-Yavorska, D., Sahaidak, M., Zhavoronok, A., Filippov, V. (2021). Methodological approach to economic analysis and control of enterprises under conditions of economic systems transformation. Scientific Bulletin of National Mining University, (4): 150-157. https://doi.org/10.33271/nvngu/2021-4/150