INFORMATION TECHNOLOGIES, SYSTEMS ANALYSIS AND ADMINISTRATION

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ACCOUNTING AND ANALYTICAL ASPECTS OF FUNCTIONING OF ENTERPRISES IN THE CONTEXT OF THE INTRODUCTION OF AN ARTIFICIAL INTELLIGENCE SYSTEM

Purpose. To investigate the reasons for slowing down the introduction of artificial intelligence (AI) in the field of accounting Ukrainian enterprises, the priority areas of its implementation. To propose an integrated indicator of the enterprise's readiness for introduction of the newest technologies and a method for its calculation.

Methodology. To conduct the research, general and special cognition methods were used: analysis and synthesis — to substantiate the topic and purpose of the study; content-analysis — for analytical review of the literature; critical analysis — to find unsolved aspects of the problem; system analysis — to study the reasons for the slowdown in the pace of AI implementation; systematic approach — for the integrated use of AI for all forms of accounting; induction and deduction — to compare the world and Ukrainian implementation practices of implementing AI; ascent from the abstract to the concrete — for stratification of the composition and characteristics of accounting functions; mathematical formalization — to propose an integrated indicator of readiness for introducing AI and its method of calculation.

Findings. It is established that the use of AI is observed only for certain accounting tasks. It is proved that the integrated use of AI as a holistic system of integrated accounting of the enterprise for all its types is the most effective. It is pointed out that the main reason for the use of AI is the rapid growth of information in accounting above the critical level, which causes a sharp increase in accounting errors and the difficulty of detecting them by outdated methods.

Originality. The composition and characteristics of accounting functions are stratified, which are primarily subject to automation when using AI. The integrated indicator of readiness for AI implementation is proposed, its components are established and the method of calculation of the specified indicator is developed.

Practical value. The reasons for slowing down the implementation of AI in Ukraine are identified, and methods for their elimination are proposed.

Keywords: *artificial intelligence, analytical aspects, accounting functions, automation, integrated information system*

Introduction. Under modern conditions, abrupt increase in data in enterprise information systems, use of outdated accounting methods and technologies at a certain stage of growth of information flows will lead to generation of complex and unstructured information. This, in turn, will result in errors in data analysis and, as a result, submission of irrelevant accounting and auditing reports over significant periods. Ongoing checks on the level of relevance of such reports by outdated methods are difficult, and the detection of such errors often requires significant efforts of accounting services and large expenditure of staff time.

Accounting technology for the introduction of an artificial intelligence system, which allows one to improve the efficiency of accounting, increase the accuracy of financial reporting, ensure the quality of information provided to managers, can help. Ukrainian enterprises are only at the beginning of the stage of implementation of artificial intelligence technologies in the practice of enterprises, lagging far behind the world's leading economies in this process. There are many reasons for this: significant cost of modern software that provides the use of artificial intelligence technologies; volumes of information in the accounting of Ukrainian enterprises which, in a significant number of cases, still reach a critical level; the habit of using outdated technology; lack of enterprise management's understanding of the need to invest in new technologies and of possible benefits of this, and others.

Therefore, the topic of the research aimed at studying the accounting and analytical aspects of the operation of enterprises using artificial intelligence is relevant.

Literature review. Scientific and analytical reviews [1] and [2] consider the current direction of scientific work on the use of artificial intelligence in accounting and auditing and its impact on business, analyzed the reasons for the slowdown in the introduction of artificial intelligence in the world. The article [3] discusses the analytical applications of Accounting Intelli-

gence which implement artificial intelligence technologies, the benefits of these applications and the threats, in particular, for use in the practice of widespread ERP – systems, specifically: SAP FI/CO, JD Edwards, Epicor, CODA and Oracle E-Business Suite.

In [4] it is indicated that artificial intelligence changes the way of accounting and analytical activities and the impact of this process on the functioning of enterprises in South-Eastern Nigeria. The author [5] investigates the influence of artificial intelligence technologies on the creation of a new forecast statistical model of tax audit. In [6], the "double potential of influence" of artificial intelligence is considered as the basis not only for "creating opportunities", but also for "threats".

The article [7] considers various aspects of the introduction of artificial intelligence in accounting and auditing and the impact of this process on the activities of enterprises. In [8], the application of artificial intelligence in the field of accounting is analyzed and proposals are developed to avoid problems in this area. The article [9] investigates the influence of artificial intelligence on the peculiarities of the activities of accounting and auditing specialists for the introduction of modern information technologies. The authors [10] identified the impact of artificial intelligence technologies on the coordination and management of enterprises' accounting and auditing. The article [11] examines changes in the practice of accounting and the functioning of enterprises with the introduction of modern information technology. The authors [12] considered strategies for implementing accounting and auditing methods with the support of artificial intelligence and proposed the CPA method. In [13], the peculiarities of the use of modern information technologies for the collection and processing of primary accounting documentation are indicated. The authors [14] point out that, when processing big-data, the use of outdated accounting methods and technologies can lead to the generation of complex and unstructured information.

In [15], a possibility is considered of using artificial intelligence in the field of accounting to form a center of management information system. The article [16] analyzes the benefits of combining artificial intelligence and auditing, analyzes the problems faced by the CPA audit for the use of artificial intelligence. In [17], the influence of accounting and analytical aspects on the functioning of modern companies is considered. The authors [18] substantiate that the use of artificial intelligence will change the priorities in the accounting of enterprises. The study [19, 20] concludes that the challenges of accounting and auditing can be addressed by using an automated system based on artificial intelligence [21].

Unsolved aspects of the problem. In the presence of a significant body of work on the introduction of artificial intelligence technologies in the practice of enterprises, part of which is presented in the literature review, the reasons for the relatively low rate of introduction of new technologies in developing economies have remained unnoticed. Ways to correct this lagging have not been studied sufficiently. Stratification has not been investigated of the composition and characteristics of accounting functions, which are primarily subject to automation using artificial intelligence, components of the integrated indicator of readiness of the enterprise for introduction of the newest technologies as an objective indicator of the feasibility of new technologies and methods of calculating this indicator.

The purpose of the article is to investigate the reasons for slowing down the introduction of artificial intelligence in the field of accounting of Ukrainian enterprises, the priority areas of its implementation. To offer an integrated indicator of readiness of the enterprise for introduction of the newest technologies and a method of its calculation.

Methods. Execution of the research, the results of which

are presented in this article, used both general and special methods of cognition: the method of analysis and synthesis – to justify the topic and purpose of the study; method of content analysis – for analytical review of literature sources; method of critical analysis – to find unsolved aspects of the problem.

The method of system analysis is used to study the reasons for the slowdown in the pace of implementation of artificial intelligence technologies to use an integrated systems approach for all forms of enterprise accounting.

The method of induction and deduction is used for comparative analysis of the world and Ukrainian practices of introduction of artificial intelligence technologies.

The method of convergence from the abstract to the concrete is used to stratify the composition and characteristics of accounting functions, which are primarily subject to automation using artificial intelligence.

The method of idealization and mathematical formalization is used to establish the components of the integrated indicator of enterprise efficiency as an objective indicator of the feasibility of implementing new technologies and the method for calculating this indicator.

Results. There is a tendency to increase the amount of data that must be processed by accounting services, increase the amount of reporting information by increasing the requirements for its accuracy.

Even today, accounting and analytical and auditing activities at enterprises cannot be presented without the use of modern information systems.

But this tendency to increase the amount of information, in turn, leads to the need for a revolutionary technological leap – the use of artificial intelligence (AI) in the field of accounting and auditing of enterprises.

The introduction of artificial intelligence technologies will lead, first of all, to the release of accounting services from routine work and will provide an opportunity to pay more attention and time to solve analytical problems of enterprises.

The study found that global trends in the formation of accounting and analytical aspects of the functioning of enterprises in the implementation of artificial intelligence system can be integrated as:

- increasing the level of relevance of accounting data and reporting information;

- significant acceleration of large data processing;

- finding implicit results and correspondences in large amounts of external and internal information;

- providing access to more data for management decision support systems;

- analysis of data and detection of implicit trends and facts regarding the functioning of the enterprise;

- generating new ideas and forming development scenarios based on analytical data;
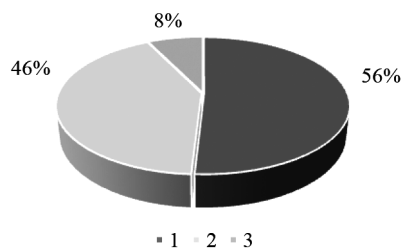

Fig. 1. The degree of implementation of artificial intelligence in the accounting and auditing of companies in leading countries:

1 – part of CIO's not having an Artificial Intelligence implementation plan; 2 – part of CIO's having an Artificial Intelligence implementation plan in future; 3 – part of CIO's having acted upon their plan

- solving problems of providing relevant forecasts and effective planning of enterprise activities.

At the same time, the analysis found that the full-scale use of artificial intelligence in the accounting of enterprises in leading countries has not yet been widely used (Fig. 1).

Thus, according to [1], 47 respondents — heads of enterprises and accounting services — claim that they use only 13 digital tools, the full list of which is given in the questionnaire.

According to the model developed by the Gartner research group, the introduction of new technologies takes place in stages: rise, fall, and then slow growth. That is, the Hype Cycle is assumed from the trigger point, when the introduction of a new one occurs abruptly, reaches the peak of inflated expectations, then a decline in the pace of implementation and, then, a slow rise to the plateau of productivity and reach widespread.

Today in advanced economies, various artificial intelligence tools are at different stages of the latest iteration of Hype Cycle Gartner. In particular, machine learning is at the peak of inflated expectations, while neural network technology and virtual assistants will be widely used in the next two to five years.

This means that instead of full-scale integrated application of AI technologies as a holistic system, the approach of "artificial intelligence toolkits" is used. That is, much more widely AI technology is used to ensure full automation of accounting activities only for the implementation of certain accounting tasks, in particular, in cash audit, data analysis, risk assessment and processing of paper documents.

Thus, the processing of primary accounting documentation in the days before the stage of implementation of AI technologies took significant resources of time of accounting staff. Now this process is much simplified and accelerated. This applies, first of all, not so much to text documents, but to their images, which was not previously subject to automation.

There is also widespread use of AI technologies to automate the process of processing invoices and subsequent monitoring of their approval and control of user activities. This significantly reduces the level of risk of this activity. The use of artificial intelligence-based accounting software to manage accounts payable is also being introduced.

Artificial intelligence has made it possible to use methods to automate accounting that were not previously used due to their complexity in application to information systems. For example, these include the CPA method, which provides multi-criteria results (MCDM) and uses fuzzy coarse set theory (FRST) [16].

The main purpose of accounting, as we know, is to provide information in the most appropriate and adapted form to the relevant users for internal or external economic decisions. The use of machine learning methods, the improvement of AI technologies can be used to avoid the risk of fraud, the "human factor" in information flows and increase the accuracy of accounting functions. For enterprises, this will reduce production costs, create new opportunities to quickly enter new markets, establish reliable and transparent relationships with new partners and customers, forecast and plan their activities better and more accurately, ensure high accuracy of operations.

In our opinion, artificial intelligence should lead to increased efficiency of accounting services, cheaper processing of units of information, and the use of additional capabilities based on the processing of integrated accounting information. Integrated accounting information should combine all the functions of enterprise accounting: accounting, warehousing, management, and others. It is the combination of all accounting functions in a single system that will provide previously unseen opportunities in the field of formation of relevant analytical and forecast information to prevent criminal acts through the use of analytical AI technologies.

With an integrated approach to enterprise accounting, it should also be borne in mind that the application of various AI methods, in particular, software for machine learning is now more focused on solving point problems. At the same time, full-scale application of AI technologies to integrated data allows enterprises to significantly increase the efficiency of enterprise accounting.

The use of up-to-date accounting information in all types of accounting also opens up new opportunities.

This will allow automatic detection of negative microtrends in a particular activity of the enterprise and prevent losses due to the use of management actions in the early stages of threats.

For example, let us consider modern real-time auditing technology. The AI technology makes it possible to keep the entire general ledger and auxiliary ledgers instead of data sampling through a software filter that automatically identifies risky transactions. When accounting has to process many high-risk transactions, it allows you to reduce the level of risk by paying attention to risky transactions, i.e. saves the employee time to increase the efficiency of his/her work. The same goes for billing and bank reconciliation software. However, the use of modern information technologies in Ukraine has certain limitations.

The analysis shows the cost of corporate information systems used at Ukrainian enterprises: large integrated systems (R3, Baan, Oracle Application) — up to $ 500,000; medium integrated systems (JD Edwards, Syte Line, Galaxy, Sail) — $ 200,000−500,000; small integrated systems (Concord XAL, Scala, Platinum SQL, NS-2000) — $ 50,000−300,000; local systems (1C, BEST) — $ 5,000−50,000.

The most common are local systems, less common — small integrated systems, even less common — medium integrated systems. Individuals in the industrial sector use large integrated systems. Systems such as R3, Baan, Oracle Application are more used by powerful financial institutions.

This allows us to conclude that the main factor in choosing a corporate information system in the Ukrainian market is its price. It is possible to involve programs and resources of artificial intelligence only to the account of large integrated systems. This will significantly increase their value.

At the current stage of Ukraine's economic development, especially in times of crisis, few companies will be able to afford to use expensive corporate information systems with artificial intelligence. The level of efficiency of such systems will not allow recouping capital costs in a short time. This significantly reduces the motivation of management and owners to implement artificial intelligence in the accounting and auditing of domestic enterprises and organizations.

The solution to this problem, in our opinion, may be to use the concept of AI PaaS, i.e. "platform as a service". First, as the implementation of this concept, it is proposed to introduce the so-called "Cloud accounting", an approach that emerged in 2010−2011, into the activities of enterprises.

This approach is that the implementation of cloud technologies simplifies and reduces the cost of using artificial intelligence in accounting and auditing. In particular, it facilitates the processes associated with the formation and use of large amounts (big data) of integrated accounting information. For example, the task of processing the primary accounting documentation and forming, on its basis, arrays of primary digitized, verified and ordered data is simplified; the process of settlement operations is simplified, in particular, the payment of taxes and mandatory insurance premiums; the processing of statistical information necessary for management activities, etc. is significantly accelerated.

At the same time, enterprises have the opportunity to temporarily rent modern software without directly purchasing a license, with no need for constant paid software updates, which are operated by specialists of the enterprise.
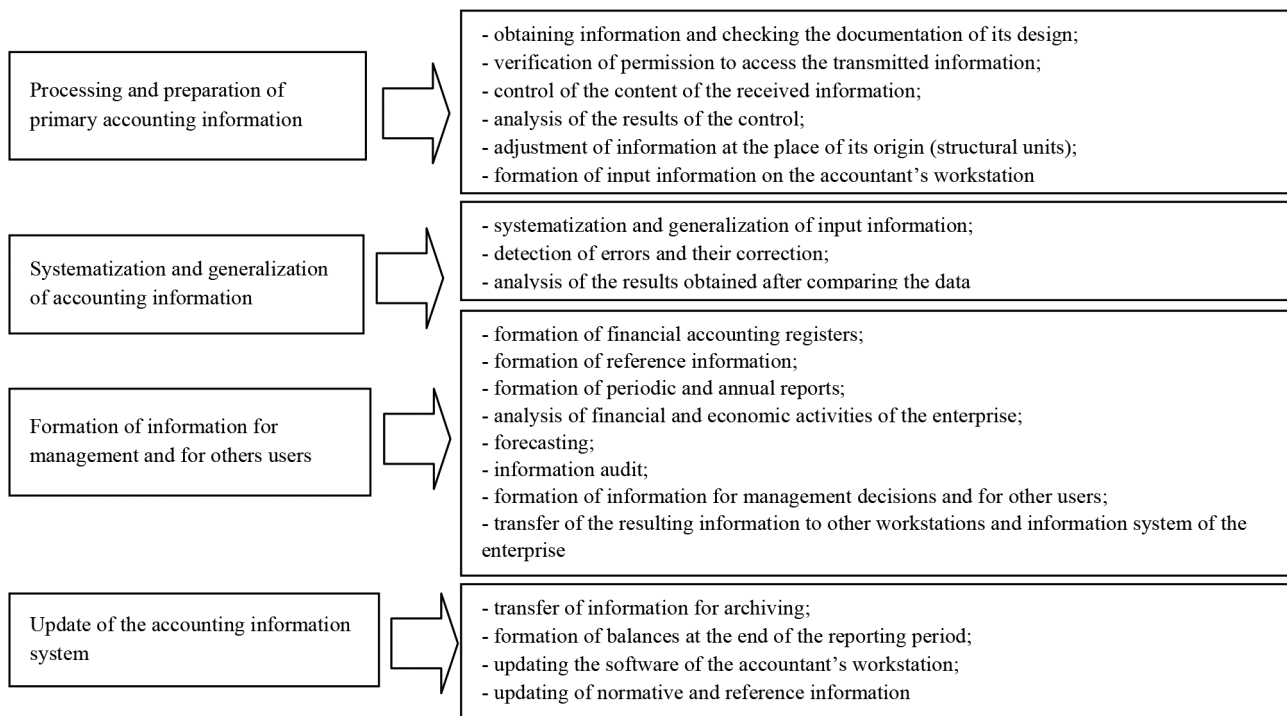
Fig. 2. The composition and characteristics of accounting functions, which are primarily subject to automation using artificial intelligence

Since the computer equipment of employees does not have any significant load, there is no need for capital expenditures on expensive computers and related equipment.

Innovations are emerging in the operation of enterprises, in particular, the mobility of employees is growing − they can not only work remotely, but are also able to move between departments of the enterprise, without stopping the workflow.

In Ukrainian reality, to check data and records in reporting and current internal documentation for compliance with regulations is one of the most important tasks of accounting services, as it takes a lot of time and effort of specialists, because it can lead to significant losses to the company. These activities are significantly complicated by frequent changes in the right field. AI allows one, on the one hand, to conduct a continuous audit of accounting activities of the company in real time, which ensures high accuracy of data, and on the other hand, using machine learning technology to automatically track changes in the legal field and direct compliance with these documents.

With a continuous process of reconciliation and adjustment of accruals, financial statements acquire a significant level of accuracy, and AI algorithms, based on these checks verify the compliance with the current state of the current regulatory framework. This greatly simplifies the activities of accounting services of enterprises and increases the efficiency of their work by reducing labor costs.

The analysis established the composition and characteristics of accounting functions which should primarily be subject to automation in the use of artificial intelligence at enterprises of Ukraine (Fig. 2). Characteristics of accounting functions are presented in Fig. 2 on the left, and the composition of these characteristics is presented in Fig. 2, respectively, on the right.

To assess the efficiency, it is proposed to use the following components of the integrated indicator of enterprise efficiency: management efficiency indicator, efficiency indicator in accounting and financial accounting and technical efficiency indicator in accounting and financial accounting (Fig. 3). These indicators are asked to calculate according to the generalization of the formula

$$\vec{E}_j = \sum \vec{z}_{if} / \sum \vec{z}_{ipl}, \qquad (1)$$

where $\vec{E}_j$ is the efficiency indicator in accounting ($j = 1$), financial accounting ($j = 2$) and technical efficiency indicator ($j = 3$); $\vec{z}_{if}$ is the vector of the ith actual exponent; $\vec{z}_{ipl}$ is the vector of the ith planned indicator.

It is proposed to calculate the integrated efficiency indicator of the enterprise $\vec{E}$ as a vector sum of individual efficiency indicators $\vec{E}_j$

$$\vec{E} = \vec{E}_1 + \vec{E}_2 + \vec{E}_3. \qquad (2)$$

Tendencies to change indicators can be considered in accordance with the zoning of the level of efficiency to high, low level and the level of full cost recovery for a preliminary assessment of the trend of changes in the integrated efficiency indicator of the enterprise or its individual components (Fig. 3).

The level of full cost recovery in the space of factors, in this case, is the area that separates the zone of efficient management from the zone of inefficient management.
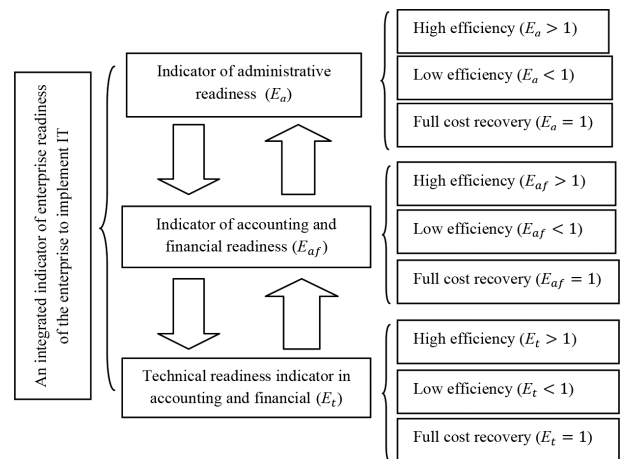

Fig. 3. Components of the integrated indicator of enterprise efficiency

Conclusions. It is stated that with the use of AI technologies in accounting, as in many other related areas, the main thing in the work of specialists in accounting and analytical activities will be the ability to understand and evaluate how to apply these technologies rationally and effectively.

It is pointed out that the main reason for the need to use artificial intelligence technologies is the rapid growth of information in the accounting of enterprises above its critical level. This critical level has been found to cause a sharp increase in the number of errors in data analysis that cannot be detected by outdated methods without excessive time and effort and, as a result, the submission of irrelevant accounting and auditing reports over significant periods. The global directions on the formation of accounting and analytical aspects of the functioning of enterprises under the conditions of introduction of the system of artificial intelligence are indicated.

The nature of the pace of implementation of artificial intelligence in the accounting and analytical activities of enterprises, the degree of this implementation in the accounting and auditing of companies in leading countries are considered.

The reasons for the slowdown in the introduction of artificial intelligence in the accounting of Ukrainian enterprises and the reasons for the lag in this area from the global trend have been studied.

It is established that there is an approach to the use of "sets of artificial intelligence tools" only for certain accounting tasks. At the same time, the most effective would be the full-scale integrated application of AI technologies as a holistic system of integrated accounting of the enterprise for all its types.

The composition and characteristics of accounting functions are stratified which are primarily subject to automation using artificial intelligence.

An integrated indicator of enterprise efficiency as an objective indicator of substantiation of expediency of introduction of new technologies is offered, its components are established and the method of calculation of the specified indicator is developed.

References.
1. Berdiyeva, O., Islam, M.U., & Saeedi, M. (2021). Artificial Intelligence in Accounting and Finance: Meta-Analysis. *International Business Review, 3*(1), 56-79. https://doi.org/10.37435/NBR21032502.
2. Hasan, A. R. (2022). Artificial Intelligence (AI) in Accounting & Auditing: A Literature Review. *Open Journal of Business and Management, 10*(01), 440-465. https://doi.org/10.4236/ojbm.2022.101026.
3. Reddy, P. S., Yasaswi, K. R. K., & Kumar, B. K. (2019). Accounting Intelligence — The New Era in Accounting. *Journal of Information and Computational Science*, *9*, 692-697.
4. Odoh, L. C., Echefu, S. C., Ugwuanyi, B. U., & Chukwuani, V. N. (2018). Effect of Artificial Intelligence on the Performance of Accounting Operations among Accounting Firms in South East Nigeria. *Asian Journal of Economics, Business and Accounting*, *7*, 1-11. https://doi.org/10.9734/AJEBA/2018/41641.
5. Huang, Z. (2018). Discussion on the Development of Artificial Intelligence in Taxation. *American Journal of Industrial and Business Management*, *8*, 1817-1824. https://doi.org/10.4236/ajibm.2018.88123.
6. Doshi, K. H. A., Balasingam, S., & Arumugam, D. (2020). Artificial Intelligence as a Paradoxical Digital Disruptor in the Accounting Profession: An Empirical Study amongst Accountants. *International Journal of Psychosocial Rehabilitation*, *24*, 873-885. https://doi.org/10.37200/IJPR/V24I2/PR200396.
7. Leshchenko, M. P., Kolomiiets, A. M., Iatsyshyn, A. V., Kovalenko, V. V., Dakal, A. V., & Radchenko, O. O. (2021). Development of informational and research competence of postgraduate and doctoral students in conditions of digital transformation of science and education. *Journal of Physics: Conference Series, 1840*, 012057. https://doi.org/10.1088/1742-6596/1840/1/012057.
8. Luo, J., Meng, Q., & Cai, Y. (2018). Analysis of the Impact of Artificial Intelligence Application on the Development of Accounting Industry. *Open Journal of Business and Management*, *6*, 850-856. https://doi.org/10.4236/ojbm.2018.64063.
9. Mohammad, S. J., Hamad, A. K., & Borgi, H. (2020). How Artificial Intelligence Changes the Future of Accounting Industry. *International Journal of Economics and Business Administration*, *8*(3), 478-488. https://doi.org/10.35808/ijeba/538.
10. Ucoglu, D. (2020). Current Machine Learning Applications in Accounting and Auditing. *Pressacademia, 12*, 1-7. https://doi.org/10.17261/Pressacademia.2020.1337.
11. Zhang, Y., Xiong, F., Xie, Y., Fan, X., & Gu, H. (2020). The Impact of Artificial Intelligence and Blockchain on the Accounting Profession. *IEEE Access, 8,* 110461-110477. https://doi.org/10.1109/ACCESS.2020.3000505.
12. Kuang-Hua, H., Fu-Hsiang, C., Ming-Fu, H., & Gwo-Hshiung, T. (2021). Identifying key factors for adopting artificial intelligence-enabled auditing techniques by joint utilization of fuzzy-rough set theory and MRDM technique. *Technological & Economic Development of Economy*, *27*(2), 459-492. https://doi.org/10.3846/tede.2020.13181.
13. Lee, C. S., & Tajudeen, F. P. (2020). Usage and Impact of Artificial Intelligence on Accounting: 213 Evidence from Malaysian Organizations. *Asian Journal of Business and Accounting*, *13*(1), 213-239. https://doi.org/10.22452/ajba.vol13no1.8.
14. Mešković, E., Garrison, M., Ghezal, S., & Chen, Y. (2018). Artificial intelligence: Trends in business and implications for the accounting profession. *Internal Auditing.* *75*, 5-11. https://doi.org/10.3846/tede.2020.13181.
15. Ostroverha, R. (2020). Accounting as a financial center for the management information system of the enterprise accounting, *Analysis and audit, 2*(25), 404-411. https://doi.org/10.32782/easterneurope.25-59.
16. Zhou, G. (2021). Research on the Development of CPA Audit from the Perspective of Artificial Intelligence. *International Conference on Tourism, Economy and Environmental Sustainability,* 251. https://doi.org/10.1051/e3sconf/202125101056.
17. Yaremenko, L., Hevchuk, A., Vuzh, T., Vashchilina, E., & Yermolaieva, M. (2021). Information Technologies of Accounting and Analysis in Modern Companies. *International Journal of Computer Science and Network Security, 21*(5), 151-159. https://doi.org/10.22937/IJCSNS.2021.21.5.22.
18. Koval, V., Mikhno, I., Udovychenko, I., Gordiichuk, Y., & Kalina, I. (2021). Sustainable natural resource management to ensure strategic environmental development. *TEM Journal, 10*(3), 1022-1030. https://doi.org/10.18421/TEM103-03.
19. Mohammad, S. J., Hamad, A. K., Borgi, H., Thu, P. A., Sial, M. S., & Alhadidi, A. A. (2020). How Artificial Intelligence Changes the Future of Accounting Industry. *International Journal of Economics and Business Administration, 8*(3), 478-488. https://doi.org/10.35808/ijeba/538.
20. Nitsenko, V., Mardani, A., Streimikis, J., Ishchenko, M., Chaikovsky, M., Stoyanova-Koval, S., & Arutiunian, R. (2019). Automatic Information System of Risk Assessment for Agricultural Enterprises of Ukraine. *Montenegrin Journal of Economics*, *15*(2), 139-152. https://doi.org/10.14254/1800-5845/2019.15-2.11.
21. Ma, B., & Hou, Y. (2021). Artificial Intelligence Empowers the Integrated Development of Legal Education: Challenges and Responses. *Future Human Image*, *16*, 43-54. https://doi.org/10.29202/fhi/16/4.

Обліково-аналітичні аспекти функціонування підприємств за умов упровадження системи штучного інтелекту

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Мета. Дослідити причини уповільнення впровадження штучного інтелекту (ШІ) у сфері обліку українських

підприємств, першочергові напрями його впровадження. Запропонувати інтегральний показник ефективності підприємства за впровадження новітніх технологій і метод його розрахунку.

Методика. Для виконання дослідження використані загальні та спеціальні методи пізнання: аналізу й синтезу — для обґрунтування теми й мети дослідження; контент-аналізу — для аналітичного огляду літератури; критичного аналізу — для знаходження невирішених аспектів проблеми; системного аналізу — для дослідження причин уповільнення темпів упровадження ШІ; системного підходу — для комплексного використання ШІ для всіх форм обліку; індукції й дедукції — для порівняння світової та української практик упровадження ШІ; сходження від абстрактного до конкретного — для стратифікації складу й характеристик функцій обліку; математичної формалізації — для запропонування інтегрального показника готовності до впровадження ШІ та його методу розрахунку.

Результати. Встановлено, що спостерігається використання ШІ лише для окремих задач обліку. Доведено,

що найбільш ефективним є комплексне застосування ШІ як цілісної системи інтегрального обліку підприємства за всіма його видами. Указано, що основною причиною використання ШІ є стрімке зростання обсягів інформації в обліку над критичний рівень, що викликає стрибкоподібне зростання помилок в обліку та складність їх виявлення застарілими методами.

Наукова новизна. Стратифіковано склад і характеристику функцій обліку, які в першу чергу підлягають автоматизації за використання ШІ. Запропоновано інтегральний показник готовності до впровадження ШІ, встановлені його складові й розроблено метод розрахунку вказаного покажчика.

Практична значимість. Установлені причини уповільнення впровадження ШІ в Україні, та запропоновані методи їх усунення.

Ключові слова: *штучний інтелект, аналітичні аспекти, функції обліку, автоматизація, інтегрована інформаційна система*

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