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ARTIFICIAL INTELLIGENCE POTENTIAL IN THE ACCOUNTING AND AUDIT SYSTEM OF THE ENTERPRISE

The article explores the integration of artificial intelligence (AI) technologies into enterprise management systems as strategic productive resources that facilitate long-term development, enable rapid analysis of extensive online datasets, and support innovative managerial models. Opportunities for the effective application of AI-driven tools are examined in light of dynamic market modernization. Criteria for evaluating the utility of AI technologies, along with the operational efficacy of structured accounting and analytical data in audit processes, are thoroughly investigated. The purpose of the study is to analyze contemporary approaches to integrating accounting solutions with intelligent algorithms, identify the key advantages and operational risks of this implementation, and substantiate the development prospects of smart accounting and auditing technologies within the context of digital transformation. The practical advantages of AI in accounting and auditing are summarized, notably enhanced analytical accuracy, increased reporting speed, and the automated detection of fraudulent schemes or discrepancies that human auditors might overlook. Furthermore, the study substantiates that an essential priority of modern management is investing in human capital development, specifically through continuous professional education for accountants and auditors to operate AI-powered platforms proficiently. Finally, ensuring the systematic administrative and technological modernization of AI solutions tailored to current enterprise needs is highlighted as an indispensable requirement for sustainable corporate governance and competitiveness.

Keywords: artificial intelligence; AI technologies; AI products; technological modernization; accounting; audit.it.

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ПОТЕНЦІАЛ ШТУЧНОГО ІНТЕЛЕКТУ В СИСТЕМІ ОБЛІКУ ТА АУДИТУ ПІДПРИЄМСТВА

Стаття досліджує інтеграцію технологій штучного інтелекту (далі ШІ-технологій) в систему менеджменту як виду виробничих ресурсів підприємства, які сприяють формуванню та імплементації довгострокових стратегій його розвитку, дозволяють швидко аналізувати великі обсяги інформації з онлайн-джерел, підтримують упровадження нових моделей управління. Розкрито альтернативи успішного використання ШІ-продуктів користувачами з урахуванням активної модернізації зовнішнього ринку. Досліджено критерії та оцінку корисності використання ШІ-технологій, області оптимальної ефективності отриманих інформаційних блоків, а саме обліково-аналітичних даних, їх використання в процесах аудиторських досліджень. Мета дослідження – аналіз сучасних підходів інтеграції інформаційних бухгалтерських рішень з інтелектуальними алгоритмами, ключові переваги та ризики такого впровадження, обґрунтування перспектив розвитку інтелектуалізованих технологій обліку і аудиту у контексті цифрової трансформації. Узагальнено переваги ШІ за оцінкою впливу на бухгалтерський облік та аудит, серед яких підвищення точності, виявлення моделей шахрайства та низки порушення, які люди можуть пропустити, тощо. Обґрунтовано, що сьогодні невід'ємним вектором сучасного менеджменту є інвестування у розвиток людського капіталу, тобто підготовка фахівців (зокрема бухгалтерів, аудиторів) до роботи з ШІ-системами, їх безперервне

професійне навчання. Не менш важливим питанням залишається системність адміністративної і технологічної модернізації ШІ-технологій за потребами підприємництва.

Ключові слова: штучний інтелект (ШІ), ШІ-технології, ШІ-продукти, технологічна модернізація, бухгалтерський облік, аудит.

Problem statement. Artificial Intelligence (AI) is a branch of computer science. This branch deals with the intelligent machines capable of performing tasks that, implement human abilities, and more often could surpass them. AI is based on the automation of meaningful human behavior, which demonstrates the usefulness of systematized thematic information at the user's request, as well as user-specified concepts disclosure and their functionality, modeling behavior in order to solve set tasks or a specific goal, etc.

Integrating AI into professional activities according to the Generative Artificial Intelligence in Professional Services Report 2025 is presented in Fig. 1. Despite difficult times our country is going through, Ukraine ranks second among Central and Eastern European countries today in terms of the number of companies working in the artificial intelligence field – 243 companies and about 5,200 specialists [1]. The AI adoption in accounting and auditing is projected to grow by 30% annually through 2030. For example, we are seeing real recognition in practice of the AI transformative potential in optimizing both accounting and auditing procedures, enabling improved management decision-making [2].

In addition to rising 14 positions in the overall ranking, Ukraine became one of the world leaders in certain indicators also:

- 99.63% – a record figure for state services digitalization;
- 92.25% – compliance of legislation with international standards.

Today, the Ukraine Digital Transformation Ministry notes the special influence on the technology's development of the defense cluster – an association of defense companies, startups, scientific institutions as well as state bodies for development, testing, and implementation of the latest military technologies [3].

Integration of information technologies into business processes as production entity resources business contributes to the effectiveness of the long-term strategies formation for its development. Artificial intelligence (hereafter referred to as AI) allows the analysis of large amounts of information from online sources quickly, reforming business management models actively. In combination with big data technologies, AI allows you to conduct predictive analytics, technological automation of business, the detailed information formation about the sources of both income and expenses, and in addition. It solves the problem of optimizing financial results of taxation. It is expected that the widespread implementation of artificial intelligence will bring an additional \$ 13 trillion to the global economy by 2030.

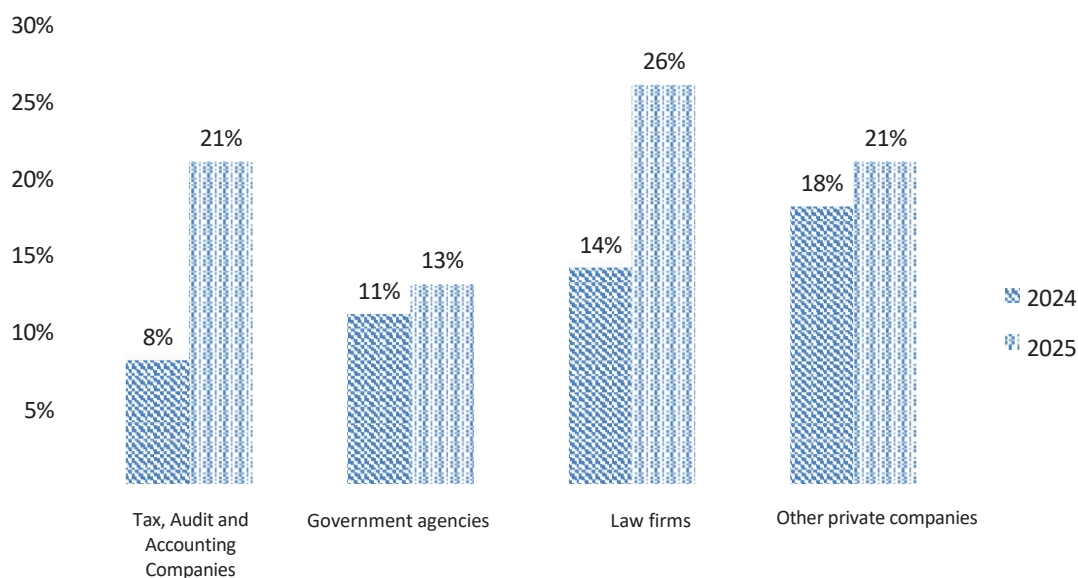


Fig. 1. Integrating AI into professional activities according to the Generative Artificial Intelligence in Professional Services Report 2025

Source: [1; 2].

Among all digital technologies artificial intelligence has the greatest impact on accounting today. It can detect patterns in large volumes of accounting data, that can help business entities in decision-making stages, and use

them in order to conduct financial and management analysis, including factor analysis. Forecasting in accounting is an application area where algorithms based on artificial intelligence are already used widely and successfully. The market size of artificial intelligence in accounting is estimated at 6.68 billion US dollars in 2025, and is expected to reach 37.60 billion US dollars by 2030 (with a growth rate of 41.27% per year during the forecast period 2025 – 2030) [4;5].

Analysis of recent studies and publications. Applied characteristics of the AI potential in accounting and auditing, of living and technological intelligence compromises for effective coexistence are actively researched by both domestic and foreign scientists and practitioners.

Domestic scientists Pravdyuk N. and Pravdyuk M. [6] considered historical aspects of the AI technologies development, revealed the possibilities of an accounting system using AI, and assessed risks for accounting, based on its implementation consequences.

Zdyrko N.G., Mulyk T.O., Mulyk Ya.I. [7] among challenges associated with the AI use, note the need for high-quality accounting and analytical information as an object of study by the auditor. The AI used by the Big Four companies was analyzed. Scientists emphasize: AI allows to increase the efficiency of audit procedures significantly, reduce the number of human errors, and identify both new patterns and trends in the database. An important issue remains the technological algorithms transparency, the adaptability of models to auditor requests, as well as ethical issues related to the AI use.

Anna Makhmudova revealed the practical achievements of large corporations, which, thanks to the modern digital technologies use, are able to respond to changes in the market environment, predict consumer behavior quickly, improve logistics based on reliable results of accounting and analytical procedures, and increase the overall level of competitiveness. Based on the analysis of “value streams” results, the integration of AI and BigData into key areas of international business is substantiated systematically: from strategic market selection and model of entering it to human resources management. This affects the task’s scalability for AI, emphasizes the importance of internal regulation of information flows generated by AI, undoubtedly [8].

The important issue of the active spread in the professional field (including for accounting and auditing) is legislative regulation by areas of application: securing the rights of AI technologies users, ranges of information disclosure, criteria for assessing the economic benefit from AI products used as production resources of a business entity, etc.

The purpose and objectives of the study are: to substantiate alternatives for the effective artificial intelligence-generated information (AI information) integration into the operational and strategic management system of economic activity, taking into account the active modernization of the market; to substantiate the assessing methodology for the AI products usefulness as a production resource by using both financial and non-financial indicators for accounting and auditing. This involves generalizing the existing practice of their successful application for business as whole and in the individual areas contexted of the AI information effectiveness as an integral tool of modern management.

Presentation of the main material of the study. To regulate the processes of applying AI in accounting and auditing, coordinated and integrated concepts are needed, as well as reliable methodology and relevant standards (both for accounting and auditing procedures), that based on the technical capabilities of AI technologies, methods of AI analysis and assessment of relevant risks at decision-making operational and strategic stages by managers.

In order to achieve the practical application effectiveness of AI information in accounting and auditing, it is important to identify several key areas of AI technologies implementation, in particular:

- a clear understanding of the fulfilling requests effectiveness from users of AI information;
- technological AI technologies capabilities in accounting and analytical areas, including their strengths, limitations and practical consequences;
- assessment of the AI technologies practice applying by using the studied application areas example, their improvement and alternative tools for achieving them;
- ensuring the usefulness (economic benefit) of AI products, its internal regulation by the subject and compliance (in accordance with the current norms of auditing standards and accounting regulations);
- compliance with ethical principles and norms by AI products users.

Thanks to these developments, AI will be able in order to perform more and more tasks that previously required human intelligence and participation. The profession of accountant/auditor is already subject to continuous development in modern information technologies. Companies that provide accounting and auditing services are making large investments in creating their own artificial intelligence. For example, PricewaterhouseCoopers and KPMG (English: KlynveldPeatMarwickGoerdeler, KPMG) – an international network of member firms of KPMG International – confirm that they need artificial intelligence not only to automate their services. The main goal of expanding the use of AI technologies practice is to both advise clients and train staff to work with AI technologies

in everyday business. These companies are involving employees in improving their qualifications, creating new jobs in order to achieve their goal actively.

It is relevant in order to review the methodology adaptability for forming the accounting and analytical base (on the information basis for processing is produced) to AI user requests for effective decision-making by management personnel. Accounting and audit methods, according to practitioners, are not adequate at the stages of processing huge information blocks, that are difficult to interpret, unfortunately. Rapid technological progress necessitates the processes unification with appropriate regulatory support.

According to the ACCA (2019) report "Audit and Technology", technologies are transforming the accounting profession and have the potential for innovative development of both accounting and auditing. The use of advanced AI technologies, machine learning (ML), blockchain and data analytics are the basis for these professions' transformation. Common to both areas of professional employment is the irreversible transformation of accounting and auditing from retrospective activities for proactive professional specialties with the necessary source of promising knowledge, which should be qualitatively improved without interruption. The accountant, like the auditor, acts as the custodian and interpreter of targeted management information, which is the basis of operational and strategic management [10].

Summarizing scientific and applied research on the AI effectiveness in the accounting and analytical field, a number of advantages can be identified: the ability to automatically process a large amount of information; perform long-term financial forecasting; conduct financial monitoring (in particular, suspicious transactions); identify risks quickly that based on financial and non-financial criteria for sustainable business development; personalize financial consultant functions etc.

The obvious advantages of AI technologies integrating into accounting and analytical procedures are the effectiveness of AI products in business management in the operational period, such as: the ability to reduce operating costs by delegating repetitive operations for automated systems; support of strategic management processes; optimization of business models to improve the quality of management as a whole.

The scalability of IT products becomes a significant tool for ensuring the reliability of accounting and analytical data, by acquiring the role of an integral element for management effectiveness. Such modernization of automated information processing significantly reduces labor costs, although it increases the budget for continuous professional training of personnel significantly.

Among the AI technologies most commonly used by accountants and auditors are:

Expert systems: a basic class of AI systems that use a knowledge base and logical rules in order to solve complex, highly specialized tasks. They simulate the thinking process of a human expert, relying on accurate data and logical conclusions at the stages of planning, estimating, controlling and reporting on production resources.

Data analytics: The use of AI and machine learning to examine large amounts of data to gain actionable insights (deep ideas or unobvious patterns); combines classical statistics with algorithms that can learn on their own, discover hidden patterns, and make decisions accordingly.

Neural networks: A key mathematical machine learning method, generated by the human brain. They serve as the "engine" for many systems, allowing machines to process vast amounts of information, find patterns independently, and perform complex tasks (for example, detect potential fraud based on the large number analysis of transactions).

It is worth considering the significant challenges of AI using, including:

- administrative: excessive reliance on automated judgments for decisions, which can weaken managerial control over transaction costs (additional financial and non-financial costs that arise when concluding agreements, conducting barter transactions, transferring ownership rights, searching for information in order to determine the fair value of an asset, etc.);

- the absence of regulatory internal documents at the enterprise on the personalization issues of solutions user's assessment of economic benefits from the use of AI products, methods for assessing the risks of such solutions in the management system (by complex performance parameters – costs, productivity, efficiency, quality alternatively);

- methodology for implementing policies for using AI technology of in organization of integrated accounting system for enterprise;

- maintaining confidentiality (information blocks are quickly and dynamically scaled), compliance with ethical norms, etc.

To manage socio-economic and environmental business sustainability programs, it is important to use the technological AI products potential in the context of analytical research of big data (BigDataAnalytics). Functioning as an integral management component, BDA makes it possible to study huge volumes of heterogeneous data (both structured and unstructured) in order to identify hidden patterns, market trends and their impact on the financial stability of the enterprise.

Using the BDA potential, let's summarize the advantages of making information decisions by managers, accountants, auditors taking into account AI technologies.

1. Ensuring efficiency. AI automates data entry, verification, analysis and other labor-intensive manual tasks, reducing the need for specialists in order to review numerous paper documents and files. This saves time, allowing specialists to focus on more complex tasks that require professional knowledge and judgment.

2. Increasing accuracy. The ability of AI to process large data volumes in real time reduces the likelihood of losing important information, as well as increases the likelihood of detecting errors and falsifications in reports. Accurate calculations are crucial for accountants, auditors and managers in general, as they affect the quality of management directly.

3. The ability to prevent and assess fraud. AI helps accountants and auditors identify fraud (due to underestimation, identification of money laundering, etc.) based on the results of analyzing large data sets, deep checks, that make it possible to identify fraud patterns and violations which may not be taken into account due to subjective factors.

4. Qualitative improvement of reporting. AI tools help entities optimize report creation: specialists quickly create graphs, spreadsheets, and visual materials by using AI technologies (which is actively used in practice in the preparing an explanatory note process for the annual report and the Corporate Governance Report), simplifying the reporting process and ensuring its faster publication [11].

Regarding common approaches in implementing AI technologies in both accounting and auditing, we suggest considering the following points:

- accounting and auditing are not identical in terms of purpose, goals and objectives;
- qualitative characteristics of accounting information (main and auxiliary) are aimed at a true economic reality reflection that based on business results [12];
- qualitative characteristics of an audit according to International Standards on Auditing (ISA) determine requirements for audit evidence, professional behavior of the auditor and quality management system, since their main goal is to ensure the reliability, relevance and validity of the audit opinion [13].

The greater integration of accounting and auditing principles is provided in table 1.

Table 1

Accounting and auditing principles

No.	The main principles of accounting [12]	No.	The main principles of auditing [13]	Integration of principles
1	2	3	4	5
1	autonomy			1–9*
2	continuity			2–9
3	charge			3–11
4	essence predominance over the form			4–2
5	consistency			5–1,12
6	prudence			6–1,12
7	single monetary measure			7–11,12
		8	professional ethics and integrity	this auditing principle does not integrate with accounting principles
		9	independence and objectivity	9–2
		10	confidentiality	this auditing principle does not integrate with accounting principles
		11	professional competence and due diligence	1–4,5,6
		12	documentation and evidence	12–3,4,5,6

*the principle 1 (accounting) integrates with the principle 9 (auditing)

Source: compiled by the author.

Such integration enhances the management decisions effectiveness based on the consideration of the accounting and auditing basic principles in particular: objectivity, professional competence, documentation and evidence, thoroughness, etc. Today, it is important to maximize the potential of AI technologies in accounting and auditing (Table 2).

Table 2

Using the methodological potential of AI technologies in both accounting and auditing

No	Advantages of AI integration	Description	Procedures	
			for the accounting audit	for the audit
1	2	3	4	5
1	Automation of standard procedures	AI technologies allow you to automate repetitive tasks (in particular, processing primary documents, data entry, formation of analytical accounting business transactions, etc.), which significantly reduces the complexity of processes	+	+
2	Minimizing of errors	Machine learning algorithms ensure data processing high accuracy and human error risk reduce	+	+
3	Real-time reporting	Thanks to AI process data ability without delays, real-time report generation is possible, independent of traditional periodic reporting cycles.	+	-
4	Fraud and anomaly detection	Detecting fraud and anomalies both by markers of circumstances that adopted by the subjects and chaotically	+	+
5	Forecasting and analytics	Forecasting and analytics based on financial and economic indicators of the enterprise's activity	+	+
6	Cost optimization	Cost optimization by elements, objects, types of activities	+	-

Source: compiled by the author.

Conclusions. AI in accounting and analytical processes increases confidence in the results of their implementation significantly, reducing errors and fraud risks. Nowadays the AI implementation as an integral management tool is accompanied by its own risks for the enterprise, such as: a high technical component of ethical considerations, insufficient information arrays security, lack of transparency and systematization at administrative decision-making stages, etc.

It is obvious that AI cannot replace a number of important tasks completely. We can single out among them: tasks that are related to the relationship between the enterprise and its counterparties; methodology optimization for organizing an integrated accounting system; rational (taking into account external and internal factors) choice of the taxation system by the entity, etc.

As a result, replacing the IT-technology positions of accountant or auditor is unlikely due to the accounting and analytical operations generative nature, the subjective search and confirmation of professional judgment, unconditional observance of principles of audit and accounting (such as skepticism, prudence, etc.). The active introduction of AI into business organizations has motivated specialists in order to master new cutting-edge technologies.

A modern enterprise management integral vector remains investment in the development of human capital, i.e. preparation for working with AI systems, continuous professional training. An equally important issue remains the effectiveness assessment of the AI technologies used by both managers and specialists, as well as the use of the AI technologies potential on the basis of administrative and technological modernization.

In summary: key components of the artificial intelligence technologies effectiveness today are both the high-quality preparation of the initial information by specialists and their ability to interpret the obtained processing results. Further research is needed to develop methodological approaches of assessing the information blocks (tasks) usefulness that prepared for processing by AI technologies.

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