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Artificial Intelligence in Accounting: Assessment of the Current State*

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Abstract

The purpose of the article is the assessment of the current state of AI implementation in accounting. New technologies are very important part of modern life. Their implementation has undoubtedly advantages, but on the other hand it raises many doubts. Artificial Intelligence (AI) is considered to be one of the most controversial. Artificial intelligence is increasingly being adopted within the accounting profession. However, numerous issues still require regulatory oversight, encompassing not only technical aspects but also ethical and legal considerations.

Keywords: Artificial Intelligence, new technologies, regulations for AI, AI in accounting

Introduction

New technologies are increasingly important in the modern world. The solutions such as: blockchain, big data, robotic process automation or Artificial Intelligence (AI) are used in many areas. Their application has many advantages, but on the other hand there are also many doubts connected to it. The most controversial one seems to be Artificial Intelligence. Among the problems connected with implementation of AI systems are the liability for its activities and ethics issues. These matters are especially important in the area of finance and accounting.

Artificial Intelligence is changing human lives and the way of doing business. New technologies have contributed to better efficiency and productivity, robots and computers have taken over some human activities. On the one hand it should be noticed that new technologies have brought many improvements in everyday life. On the other hand, many people question if new technologies would replace them in their workplace. But problems connected with the application of Artificial Intelligence are not limited to technical issues. Among many questions that have not been answered yet are e.g.: who would be responsible for AI decisions, how to ensure that these decisions are not bias, what about the human rights?

The issue of Artificial Intelligence

There is not one common definition of the term AI in the literature. It is assumed that AI refers to group of technologies and scientific field that are focused on automation, acceleration and scalability of human perception, decision-making and reasoning (Lauterbach, pp. 239-240). J. P. Simon (2019, p. 209) stated that AI is a kind of 'an umbrella term for the science of making machines smart', and it is connected with information systems which are inspired by biological processes. According to this author the research in the area of AI is focused on four key components of human intelligence: learning, reasoning, problem-solving and perception. AI refers to many technologies such as: deep learning, machine learning, machine reasoning, computer vision and natural language processing (NLP). G. O'Regan (2012, p. 204) also has pointed out that AI is a multidisciplinary field and includes

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the following disciplines: logic and philosophy, neuroscience and neural networks, expert systems, epistemology and knowledge representation, psychology, linguistics, computing, machine vision, machine translation and robotics.

According to High-Level Expert Group On Artificial Intelligence: "Artificial intelligence (AI) systems are software (and possibly also hardware) systems designed by humans that, given a complex goal, act in the physical or digital dimension by perceiving their environment through data acquisition, interpreting the collected structured or unstructured data, reasoning on the knowledge, or processing the information, derived from this data and deciding the best action(s) to take to achieve the given goal. AI systems can either use symbolic rules or learn a numeric model, and they can also adapt their behavior by analyzing how the environment is affected by their previous actions. As a scientific discipline, AI includes several approaches and techniques, such as machine learning (of which deep learning and reinforcement learning are specific examples), machine reasoning (which includes planning, scheduling, knowledge representation and reasoning, search, and optimization), and robotics (which includes control, perception, sensors and actuators, as well as the integration of all other techniques into cyber-physical systems)."

In the literature AI is often divided on two types: strong AI and weak AI. The AI is called weak, when the machine reproduce only a specific behavior, but it does not repeat its operation. It means that the machine does not understand what it is doing. The strong AI is not only a kind of 'reproducing machine", but it also has features such as awareness and emotions, so it can be stated that it understand what it is doing (Lexcellent, 2019, p. 6).

Researchers often refer to so called "Turing test' in this context. "Turing test' was developed by Alan Turing in 1950 to test the intelligence of machine behavior. The essence is to judge who is involved in a natural languages conversation with two other parties – one is a human and the other is a machine. When the judge is not able to stated which part is machine and which is human, this means that the machine have passed the "Turing test". To pass "Turing test" the machine must be intelligent and indistinguishable from a human. It should be noticed that the conversation during the test is limited only to text channel (O'Regan, 2012, p. 225).

Nowadays AI is used e.g. in online shopping and advertising, manufacturing, web search, projecting of digital personal assistants or self-driving vehicles, machine translations, smart homes, cities and infrastructure, fighting disinformation or in health sector (European Parliament, 2020).

The implementation of AI has many advantages such as: greater calculation precision and reduction the amount of errors, replacing humans in performing tasks that they are not able to do or in case of ones that are considered to be too dangerous (e.g. space missions and military operations), doing very complex tasks such as fraud detection, events prediction, and forecasting. On the other hand AI causes many challenges such as: problem of the devaluation of humans work (the risk of replacement them in workplace) or the lack of hardware that make extensive computation possible (Batarseh, 2018).

Along with the greater use of Artificial Intelligence (AI), in particular machine learning (ML), the awareness of the ethical issues related to its implementation has increased. Discussion concerns areas such as privacy, fairness, accountability, accessibility, environmental sustainability or transparency.

Artificial Intelligence Implementation in Accounting - Opportunities

Accounting rules and principles have been in place for many years, but issues such as globalization, changes in regulations and technological innovations influence the accounting system (Gulin, Hladika and Valenta, 2019, p. 502). Digitalization and information technology undoubtedly affect accounting. Many accountants are afraid that new technologies will deprive them of their jobs, but Gulin, Hladika and Valenta (2019, p. 509) point out that new technologies will help accountants in routine tasks, rather than replace their work. Humans will still be needed in activities which require critical thinking and creativity.

Nowadays, the use of artificial intelligence (AI) in the work of accountant is often discussed. AI can help accountants in processing large data sets or documents containing purchase orders. According to J. Kommunuri (2022, pp. 586-588) AI can't displace human work, but rather complements it. Based on the research conducted, Kommunuri points out that AI has been widely adopted in various sectors, but its use in accounting requires further research to understand its impact and to provide accountants with adequate knowledge of machine learning principles. AI's automation capabilities allow accountants to process large datasets, streamline data collection and eliminate routine manual tasks, which enables accountants to adopt more strategic and value-added roles. However it should be noted that the integration of AI in accounting remains at an early stage, with limited research

into its practical applications, skill requirements, and implications for the profession. AI is already enhancing efficiency of businesses, particularly through cloud-based accounting platforms, which incorporate AI-supported features to reduce repetitive work. The emerging technologies are reshaping both the accounting curriculum and professional practice, while forensic accountants are encouraged to adopt big data analytics for fraud detection and predictive services. It can be observed that the shift from traditional bookkeeping to advanced AI-driven accounting systems capable of detecting misstatements, predicting fraud, and improving financial estimates through machine learning and statistical programming languages has occurred. AI also supports emerging fields such as regulatory technology (RegTech), blockchain-based financial services, and predictive analytics. AI transforms conventional information systems into intelligent systems capable of learning, reasoning, and adapting. However, some findings indicate that the benefits of AI and RPA have been overstated, with only moderate improvements in cost, speed, and accuracy (Kommunuri, 2022, pp. 586-587).

Artificial Intelligence Implementation in Accounting – Limitations

The use of AI in accounting offers new opportunities, but researchers also point to problems and limitations.

Kumar Das (2021, p. 21) states that successful implementation of AI in accounting depends on data quality. He also points that not every problem is acceptable for AI. Ethical issues may influence decisions or problems may require in-depth root cause analysis. Different levels of estimation accuracy are also appropriate in different circumstances. A long-standing issue with data in many companies is that while artificial intelligence techniques have been around for a long time, their scalability in business accounting is still in its infancy. Moreover AI has made only limited progress within accounting software to date. In many cases, accountants interact with AI technologies without being fully aware of their presence. The adoption of AI solutions often entails substantial financial investment. In the context of legal or regulatory accounting systems, even cloud-based platforms may require considerable hardware capacity and computational resources. The development of intelligent accounting applications incorporating AI therefore depends on the existence of sufficient market potential to justify the necessary investment by software developers.

According to Almufadda and Almezeini (2022, pp. 34-36) the implementation of artificial intelligence (AI) in the accounting sector continues to face significant constraints stemming from both technical and institutional factors. There are four major obstacles to AI development in the accounting industry: the inherent complexity of AI technology combined with a lack of specialized knowledge, the significant upfront investment required, coupled with firms' emphasis on short-term profitability, the shortage of qualified accounting professionals with technological competence and the inability of universities to reform accounting education in line with digital innovations. Researchers also point out that the implementation of AI poses new risks that require robust management. Furthermore, low-quality or incomplete datasets undermine the reliability of algorithmic outputs, and programming errors can lead to inaccurate or misleading results. Given that AI systems often process sensitive financial data, exposure to cyberattacks poses additional reputational and operational risks.

Conclusions and Future Research

Artificial intelligence is increasingly being applied across a wide range of business activities, including accounting. Its use within the accounting profession is expanding rapidly. In this context, concerns are often raised regarding the potential replacement of accountants by AI. However, a critical issue in accounting relates to the responsibility for decision-making. While AI may be capable of performing routine accounting tasks, the exercise of judgment and accountability for decisions remains a challenge that necessitates appropriate legal and regulatory frameworks. There is still a need to develop solutions that would enable the full utilization of AI's potential within accounting. Given the significance of these issues, addressing them will require a comprehensive set of measures and coordinated efforts across the profession.

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