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Potential of artificial intelligence in accountancy

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Abstract

This paper explores the transformative role of artificial intelligence (AI) in the accounting profession, focusing on its capacity to automate routine tasks and enhance financial analysis. The primary goal is to examine AI applications—such as document processing, tax interpretation, and risk monitoring—while identifying the associated benefits, limitations, and potential threats. Utilizing a literature review and survey data from Fillup and the Association of Accountants in Poland, the study evaluates perceptions of AI among professionals and entrepreneurs. Results indicate that while AI significantly improves efficiency and reduces errors, human experts remain irreplaceable in areas requiring interpersonal relationships, creativity, and strategic decision-making. Ultimately, AI serves as a powerful supportive tool rather than a total substitute for human judgment.

Keywords: Artificial intelligence; accounting; automation; generative AI; intelligent accounting systems

Introduction

The development of information technology in recent years has significantly influenced the way companies operate and how many professions are performed, including the work of accountants. Artificial intelligence has gained particular importance, as it is increasingly used in processes related to data processing, financial analysis, and the automation of routine tasks. Systems based on artificial intelligence are capable of performing tasks that previously required human knowledge and experience, which makes them an important support tool in accounting. Modern accounting relies on working with large amounts of information that require accuracy, speed, and compliance with applicable regulations. In such conditions, the use of artificial intelligence tools makes it possible to improve many processes, such as generating reports, analyzing financial data, or automatically recording accounting documents. At the same time, the development of this technology raises questions about its impact on the future of the accounting profession and the potential risks resulting from excessive reliance on algorithms. The purpose of this article is to present the potential of artificial intelligence in accounting, discuss its most important applications, and indicate the benefits as well as limitations and threats related to its use in the work of accountants.

1. Artificial intelligence

1.1. Origin and destiny of artificial intelligence

Artificial intelligence is a commonly used term, however, its precise definition is not easy to formulate. This results mainly from the difficulty in defining the concept of intelligence itself, which has many different interpretations. The term “artificial intelligence” was first proposed in 1955 by John McCarthy and since then has referred to a field of computer science focused on creating systems capable of performing tasks that normally require human intelligence. In the literature, different approaches to artificial intelligence can be distinguished, including the concept of so-called strong and weak artificial intelligence. Strong artificial intelligence assumes the possibility of creating systems that are able to think and make decisions independently in a way similar to humans, whereas weak artificial intelligence refers to programs designed to perform specific tasks using predefined algorithms. The development of computer technology and electronics has made AI-based solutions increasingly common in many areas of life, such as medicine, economics, management, and information technology. The most important areas of artificial intelligence include expert systems, artificial neural networks, genetic algorithms, heuristics, and fuzzy logic. Their purpose is to create so-called intelligent machines that are able to analyze data, learn from experience, and support humans in decision-making processes. Despite the rapid development of this technology, it is still emphasised that artificial intelligence should be treated as a tool supporting humans rather than completely replacing them, and its development is associated with both significant opportunities and potential risks.

1.2. Applications of artificial intelligence

Artificial intelligence is currently used in many areas of life and the economy, and its importance continues to grow along with the development of digital technologies. AI-based systems are capable of analyzing large amounts of data, learning from previous experience, and making decisions, which allows them to support humans in performing complex tasks. For this reason, artificial intelligence is used both in everyday life and in industry, public administration, medicine, and commerce. One of the most common applications of artificial intelligence is in online shopping and advertising, where algorithms analyze user behavior in order to provide personalized recommendations of products and services. AI is also widely used in search engines, which learn from vast amounts of data to deliver the most accurate search results. In everyday life, the use of virtual assistants, automatic translation systems, and speech and image recognition technologies has also become common. Artificial intelligence

plays an important role in the development of smart cities and modern infrastructure. It can be used to control traffic, reduce energy consumption in buildings, and improve transport safety. In the automotive industry, AI is applied in driver-assistance systems as well as in autonomous vehicles. It is also very important in cybersecurity, where it helps detect threats by analyzing patterns and monitoring data. Artificial intelligence is increasingly used in medicine, where it enables the analysis of large medical datasets, supports diagnostics, and helps predict the development of diseases. In industry, AI allows for increased production efficiency, prediction of machine failures, and optimization of technological processes. In agriculture, it can be used to monitor crops and livestock, reduce the use of fertilizers, and improve food production efficiency. In addition, in public administration artificial intelligence can support data analysis and help respond to crisis situations, such as natural disasters. The rapid development of artificial intelligence means that its applications cover more and more areas of life, and this technology is considered one of the key elements of the modern digital transformation of society and the economy.

2. Artificial intelligence assistance in accounting

2.1. Automation in accounting – invoices and reports

The first and most visible area where AI is used in accounting is document processing. Tools based on artificial intelligence can recognize data from invoices, automatically record them in the accounting system, and even correct errors in descriptions or numbers. This makes it possible to save time for other aspects of work and ensure higher quality of the data entered into the financial and accounting system. Moreover, automatic report generation allows the company's financial situation to be monitored on an ongoing basis. From the accountant's perspective, this means the ability to focus on analyzing results. This is where the value of accounting automation training is most visible, as it teaches how to use new technologies in practice and maximize their efficiency.

2.2. AI in tax analysis and interpretation of regulations

The second area is the use of AI in taxation, especially in the analysis of legal regulations and case law. Tools based on algorithms can search vast databases of laws and interpretations in real time, indicating the most relevant information for a given case. For tax advisors, this means saving hours previously spent on time-consuming research. AI can also identify inconsistencies in interpretations and suggest possible approaches that minimize the risk of errors and resulting penalties.

2.3. Artificial intelligence in risk monitoring

Another practical application of AI in taxation is ongoing risk monitoring. Systems based on artificial intelligence can analyze thousands of transactions in a short time, detecting those that deviate from the norm. This makes it possible to identify potential tax or accounting problems more quickly, before they lead to serious consequences. Thanks to such solutions, the accountant no longer works only reactively, but can actively prevent irregularities and provide advice on minimizing tax risk.

2.4. AI in customer service and tax advisory

Artificial intelligence also supports direct work with clients. Chatbots and AI assistants can answer basic questions, help with simple calculations, and remind users about important deadlines. This allows advisors and accountants to focus on more complex and time-consuming matters that require expert knowledge. Such solutions increase customer satisfaction while improving the efficiency of the office. AI in accounting is becoming not only a technical tool, but also support in building better business relationships.

Table 1 Intelligent automation technologies

Technology	Main application
OCR – optical character recognition	reading data from scanned documents
RPA – robotic process automation	transferring and transforming data, mapping rule-based manual processes, coordinating work between AI algorithms
ML – machine learning models	detecting patterns in large data sets, identifying anomalies, predicting events, mapping logical processes
NLP – natural language processing	detecting text patterns understandable to humans, for classification and content extraction as well as emotion analysis
GenAI (LLM) – generative artificial intelligence (including language models)	generating new content based on previously available data sets (e.g., text data) and learned procedures

Source: Own study based on the literature of the subject.

2.5. Risks related to the use of artificial intelligence in accounting

The use of artificial intelligence in accounting, despite its many advantages, is also associated with certain risks. One of the main problems is the limited ability of AI systems to fully understand the economic context and the specific nature of a company's operations. Algorithms operate based on data and predefined rules, therefore their results do not always consider the individual situation of an entity.

Another significant risk is the possibility of errors resulting from the automation of processes. Incorrectly recognized data, improper classification of documents, or poorly configured algorithms may lead to incorrect accounting entries, which can affect the reliability of financial statements. The quality of data is also very important, because artificial intelligence systems learn from previously collected information, and inaccurate or incomplete data may cause incorrect results.

A further risk is excessive reliance on technology and the reduction of the human role in decision-making processes. Automation reduces the involvement of accountants in routine tasks, but expert supervision is still necessary, especially in the interpretation of regulations and in making important decisions. Therefore, artificial intelligence in accounting should serve as a supporting tool rather than a complete replacement for human work.

3. Fillup survey

3.1. What is Fillup?

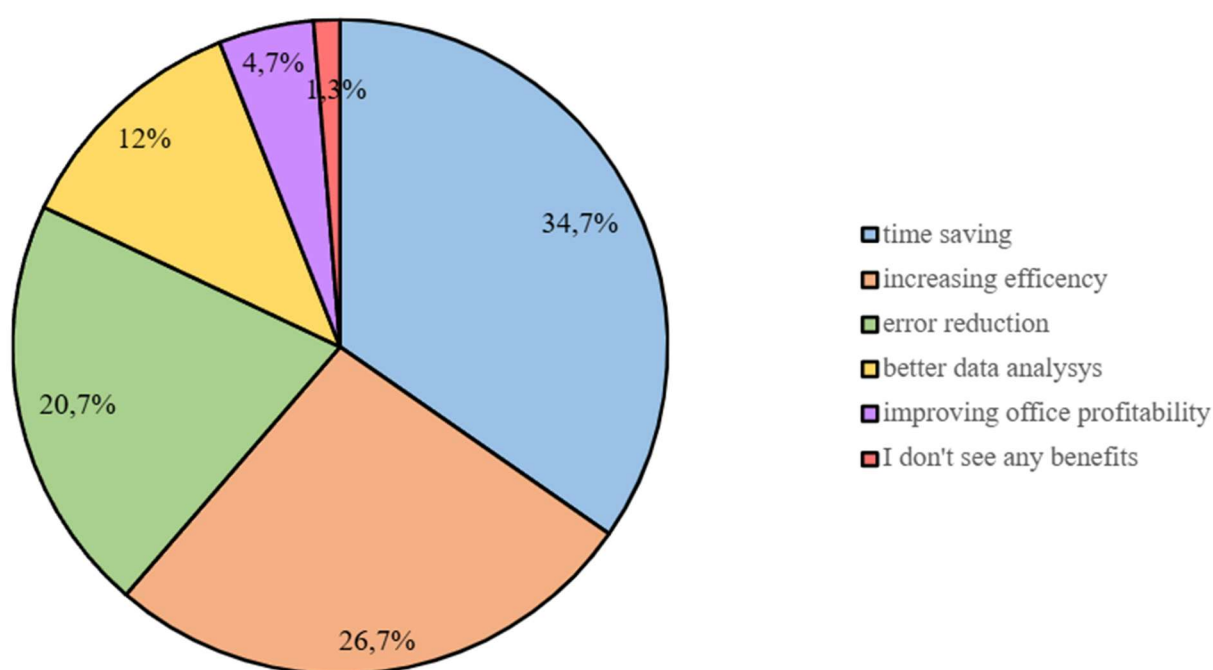
Fillup is a Polish software solution developed by e-file, designed to simplify the preparation and submission of official documents and tax declarations. It offers a wide range of up-to-date forms (such as VAT, CIT, and JPK) that can be completed and sent electronically, supporting accountants, entrepreneurs, and accounting offices in their daily work. By automating processes and ensuring compliance with current regulations, Fillup helps reduce errors, save time, and increase efficiency.

The company is also involved in industry research and professional cooperation. In particular, Fillup collaborates with SW Research on studies related to the accounting profession, such as reports analyzing the role and perception of accountants in Poland. Additionally, it cooperates with Stowarzyszenie Księgowych w Polsce (Association of Accountants in Poland), contributing to reports and initiatives aimed at developing professional standards and knowledge within the accounting community.

3.2. Survey results

In whole report made by Fillup were included not only questions, but speeches made by experts as well, for example president of Association of Accountants in Poland (Stowarzyszenie Księgowych w Polsce) - Stanisław Hońko and president of the National Chamber of Accounting Offices (Krajowa Izba Biur Rachunkowych) - Beata Boruszkowska. They spoke about evolution of accounting profession, modern accounting technologies, future accounting competencies and the greatest benefits of using modern technologies, like artificial intelligence, in accounting. One of the main reasons for creating the survey was to find out what opinions both accountants and entrepreneurs have about the latest technologies, especially about artificial intelligence used in the whole accounting system. Below are the 3 main questions asked by interviewers.

Chart 1 In your opinion, what are the greatest benefits of using modern technologies in accounting?

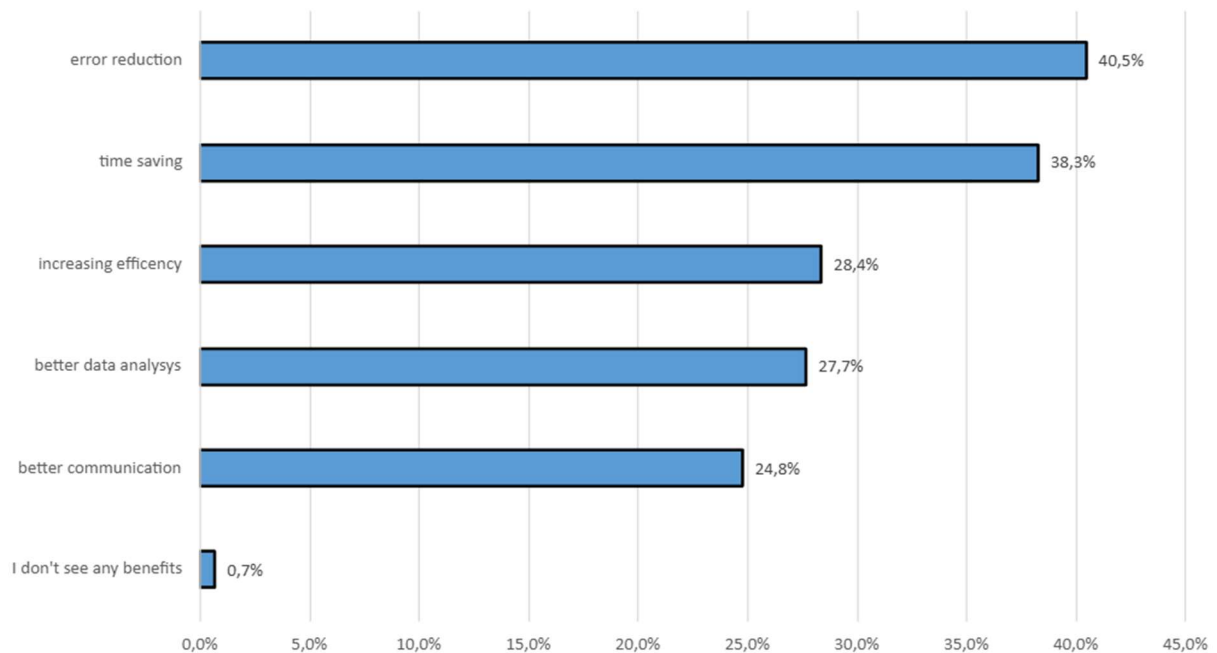


Source: Fillup report

The first chart presents accountants' opinions on the greatest benefits of using modern technologies in accounting. The most frequently indicated advantage is time saving (34.7%), which clearly stands out as the key benefit. This is followed by increasing efficiency (26.7%) and error reduction (20.7%), confirming that automation and digital tools significantly improve both speed and accuracy of accounting processes. Less frequently mentioned benefits include better data analysis (12%) and improving office profitability (4.7%), suggesting that more

advanced analytical advantages are recognized by a smaller group. Only a marginal percentage (1.3%) of respondents do not see any benefits, indicating an overall strong positive perception of modern technologies.

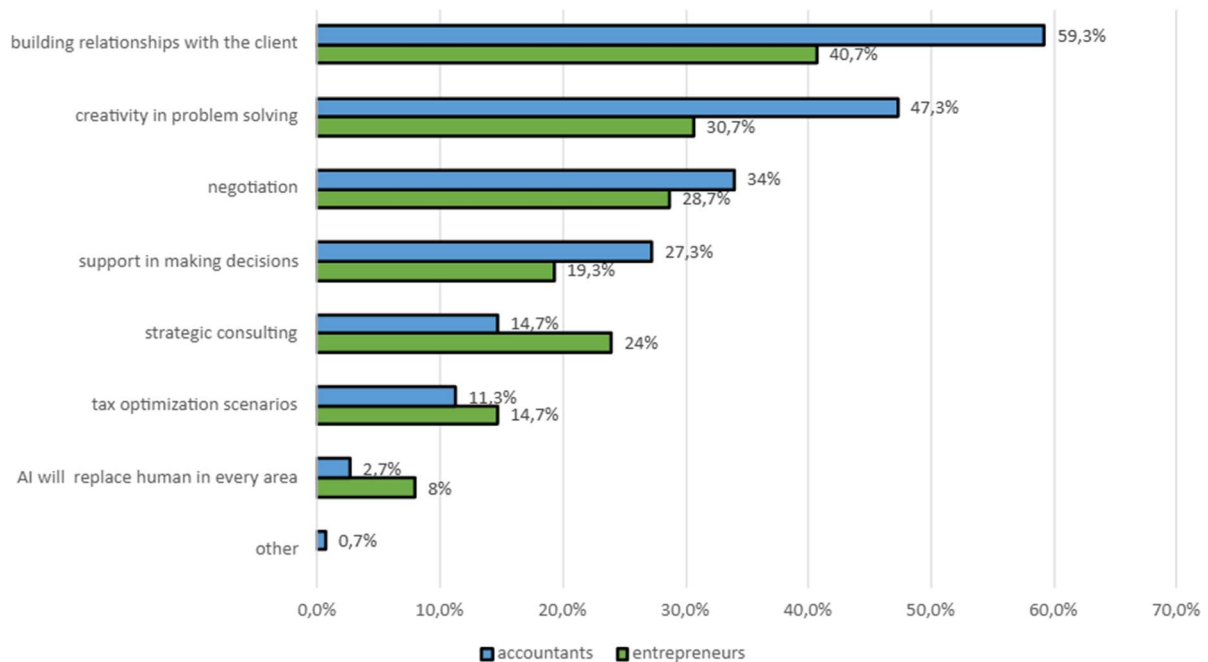
Chart 2 In your opinion, what are the biggest benefits of modern technology usage by an accountant or accounting department from your company's perspective?



Source: Fillup report

The second chart shows the biggest benefits of modern technology usage from the company's perspective. Here, error reduction (40.5%) is the most important factor, slightly ahead of time saving (38.3%), which highlights that companies prioritize reliability and accuracy even more than speed. Other significant benefits include increasing efficiency (28.4%) and better data analysis (27.7%), demonstrating that technology supports both operational performance and decision-making processes. Better communication (24.8%) is also noted as a meaningful advantage. Very few respondents (0.7%) claim that there are no benefits, reinforcing the widespread acknowledgment of the value of technological adoption.

Chart 3 In your opinion, in what areas of accountants' work, artificial intelligence will not be able to replace a human expert?



Source: Fillup report

The third chart focuses on areas where artificial intelligence is perceived as unable to replace human accountants. The most prominent area is building relationships with clients, indicated by both accountants (59.3%) and entrepreneurs (40.7%), emphasizing the importance of interpersonal skills. Creativity in problem solving is another key domain (47.3% of accountants and 30.7% of entrepreneurs), followed by negotiation and decision-making support, which also require human judgment and experience. Interestingly, entrepreneurs more often than accountants point to strategic consulting (24% vs. 14.7%) as an area resistant to automation. Only a small percentage believe that AI could replace humans in every area (2.7% of accountants and 8% of entrepreneurs). Overall, the results suggest that while technology excels in efficiency and automation, human skills remain crucial in relational, creative, and strategic aspects of accounting.

Conclusions

Artificial intelligence has evolved into a practical tool that enhances accounting through the automation of document processing, report generation, and tax analysis. While accountants primarily value the technology for its time-saving capabilities, companies prioritize the significant reduction in errors it provides. Despite these efficiencies, risks such as data quality issues and a lack of economic context necessitate continued human oversight to prevent

incorrect accounting entries. AI remains a supportive resource rather than a replacement, particularly because it cannot replicate the human capacity for client relationship building, creative problem-solving, and strategic consulting. Consequently, the future of the profession lies in a collaborative model where AI manages technical precision while humans focus on high-level advisory and interpersonal value.

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