SILESIAN UNIVERSITY OF TECHNOLOGY PUBLISHING HOUSE

SCIENTIFIC PAPERS OF SILESIAN UNIVERSITY OF TECHNOLOGY 2025
ORGANIZATION AND MANAGEMENT SERIES NO. 240

THE USE OF AI IN ACCOUNTING – CASE STUDIES AND PROSPECTS FOR IMPLEMENTATION

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Purpose: The purpose of the study was to assess the level of interest in adopting artificial intelligence (AI) solutions in accounting offices and corporate finance departments, as well as to identify the main barriers and challenges affecting their implementation. The research also aimed to evaluate the current use of AI tools in key accounting processes and to outline future prospects for digital transformation in the accounting profession.
Design/methodology/approach: The research method consisted of conducting a survey among owners and managers of accounting offices and financial departments of companies employing more than 50 employees in the financial department.
Findings: The results of the survey indicate that among small accounting firms, only a small number of owners are considering implementing AI, although they admit that they are already using some tools based on this technology. In larger companies, the percentage of those interested in implementing AI is higher. The most frequently cited key barriers are high implementation costs and lack of sufficient knowledge about the technology.
Research limitations/implications: The study is limited to the Polish market and is based on declarative survey data, which may include subjective bias. The predominance of SMEs in the sample restricts the generalization of results to larger enterprises. Future research should include cross-country comparisons and longitudinal analyses to assess the long-term impact of AI adoption in accounting.
Practical implications: The study results indicate the need to increase awareness and education about artificial intelligence in accounting, which may contribute to greater acceptance of these solutions and their more effective implementation in practice.
Social implications: AI implementation in accounting transforms traditional job roles, emphasizing analytical and advisory skills over routine tasks. Unequal access to advanced technologies may deepen the digital divide between firms. Therefore, developing digital competencies and clear ethical and regulatory frameworks is essential for responsible and inclusive AI integration.
Originality/value: The study's originality and contribution to science is manifested in its empirical analysis of the perception and feasibility of implementing AI in different types of accounting organizations, which enables a better understanding of the dynamics of technological change in the industry.
Keywords: Artificial intelligence (AI), accounting, digitization of finance, process automation.
Category of the paper: Research paper.
JEL Code: M41, C88.

1. Introduction

The rapid development of artificial intelligence (AI) technology in recent years is significantly changing the way various sectors of the economy operate, including accounting and finance. Traditional accounting and financial analysis methods are becoming increasingly automated, which affects the efficiency of decision-making processes, reduces errors and increases the transparency of financial reporting. Increasing digitization and the growing volume of financial data generated by companies require the use of modern analytical tools to enable effective information management. AI is becoming not only a support for accountants, but also a key element in predicting financial trends, detecting anomalies and analyzing risks.

Artificial intelligence in accounting encompasses a wide range of technologies, such as machine learning (ML), natural language processing (NLP) and business process robotics (RPA). In the literature, AI is defined as the ability of computer systems to perform tasks that require human intelligence, such as data analysis, decision-making and forecasting. In the context of accounting, AI is used in accounting process automation, financial fraud detection, predictive financial analysis and auditing.

One of the key issues surrounding the implementation of AI in accounting is its impact on the quality of financial reporting and regulatory compliance. Analytical algorithms can support compliance processes with international accounting standards (IFRS) and tax regulations, but their implementation also raises challenges regarding the interpretability of results, ethics and accountability for decisions based on the recommendations generated.

Modern accounting systems are increasingly using AI solutions to automatically classify transactions, forecast liquidity or assess credit risk. At the same time, there are challenges to implementing these technologies, such as the need to ensure high data quality, legal regulations and ethical issues related to algorithmic decision-making.

The purpose of this article is to analyze selected use cases of AI in accounting and assess the prospects for implementing these technologies in the context of future regulatory and technological changes. The article will analyze specific examples of AI applications in accounting, taking into account their effectiveness and limitations.

The article consists of several sections. The first section will present the existing research on the issue taken up. Next, the methodology of the study and the results from the research will be presented. It will conclude with conclusions on the prospects for further implementation of AI in accounting and recommendations for practitioners and researchers in the field. Taking into account both the benefits and challenges of implementation.

2. Research overview

There has been a noticeable increase in interest in the use of AI in accounting and finance in the academic literature. Empirical studies indicate that the implementation of artificial intelligence technology can lead to a reduction in operating costs and increase the accuracy of financial reporting. An example is the research of B. Prusak and T. Korol who showed that ML algorithms effectively predict the risk of corporate insolvency, which is applied to the credit decisions of financial institutions (Korol, Prusak, 2018). Also, other works that indicate the use of NLP to analyze the content of financial reports most often produce results that demonstrate the high utility of the resulting diagnoses.

Comparative studies of AI implementation in accounting also highlight that companies vary in their level of readiness to implement new technologies. Lack of access to relevant data, high implementation costs and the need to train employees can be limiting factors. The application of artificial intelligence (AI) and robotic process automation (RPA) in accounting and finance is gaining importance in both academic research and business practice. These technologies not only affect the operational efficiency of accounting offices, but also redefine the professional roles of accountants and the organizational structure of accounting processes.

Januszewski, Kujawski and Buchalska-Sugajska (2021) analyzed the potential for and barriers to the application of process robotization in accounting service firms. Among other things, the authors highlighted the possibility of eliminating errors, reducing costs and increasing efficiency, but they also noted implementation difficulties, such as a lack of adequate competence or employee concerns. Łada and Martinek-Jaguszewska (2023) presented the phenomenon of accounting autonomization, pointing to changes in the nature of accountants' work and the shift from operational activities to analytical and advisory functions. This process is part of a broader transformation associated with digital transformation. Similar research was also conducted by Schulze (2023). Tiron-Tudor and Deliu (2021), on the other hand, emphasize the role of human-algorithm relationships in auditing, stressing the importance of being able to collaborate with AI systems and use them in risk assessment or anomaly analysis. In turn, Stafie et al. (2021) conducted a bibliometric analysis that demonstrates the growth of interest in AI topics in accounting in recent years, especially in the context of data analysis and auditing.

Fülöp and Măgdaș (2022) and Kokina et al. (2021) point to the need to redefine the competencies of accountants in the age of automation. The accounting profession now requires knowledge of IT, data analytics and systems thinking. Kokina calls for the development of an "accountant-innovator" attitude that actively co-creates digital solutions. Zhang et al. (2022) conducted a case study analysis of RPA implementations in various areas of accounting, such as financial reporting and tax accounting, showing both benefits (e.g., speed, data integrity) and challenges (e.g., oversight, data security).

In the Polish literature, this topic is taken up, among others, by Łada and Barszczak (2024), who introduce the concept of hybrid accounting - cooperation between a human and an accounting bot - and by Martinek-Jaguszewska and Łada (2024), who attempt to record the work of bots within the framework of so-called "virtual robot accounting." An interesting proposal is the RPA feasibility assessment framework proposed by Wellmann et al. (2020), which allows an analysis of the viability of robotic deployments in specific business areas, including in accounting offices. In the context of public policy and taxation, Fornalik and Ziętek (2019) analyze the impact of tax process automation on the functioning of tax advice, while Lada and Mierzejewska (2021) showcase the development of digital interfaces in taxpayer-tax authority relations. These topics are also elaborated on in a report by KPMG (2023), which shows that the digitization of tax reporting not only improves efficiency, but also increases transparency and the detection of irregularities.

Consulting reports such as Deloitte Insights (2020) provide practical guidance for companies implementing AI - from auditing organizational readiness to building data strategies and integrating with current ERP systems. A report by EY (2023) highlights the role of AI in forecasting and predictive analytics that can support financial management. Mookerjee and Rao (2021) identify RPA as a so-called disruptive technology - a disruptive technology that changes the logic of how the entire industry operates. While Zhang et al. (2021) present specific scenarios for implementing bots to support auditing and controlling processes. From an educational perspective, Üçoğlu (2020) and Alghafiqi (2022) analyzes the impact of AI on accounting curricula, advocating the inclusion of subjects related to analytics and expert systems, and Chukwuani (2024) examines the attitudes of future accountants toward automation - enthusiasm on the one hand, and fear of losing their jobs on the other.

Polish literature is increasingly considering the risks and ethical dilemmas associated with AI in accounting. Skuza and Lizak (2023) address the problem of oversight of decisions made by algorithms in the public sector. Prędkiewicz and Biegun (2024) note that AI can both promote sustainability and generate new risks - especially in the absence of regulation and model control. In turn, Ziółkowska (2024) and Tomaszek (2022) point to the need to integrate AI with other financial technologies (e.g., blockchain, big data) to build a new information ecosystem in finance and accounting.

Despite the studies cited above, it can be concluded that to date there is not much research in the literature on the implementation of AI in finance. Especially when it comes to the context of the application of AI in the work of accountants, auditing, or finance departments. Especially if we contrast the number of such studies with studies in other areas. For example, we can mention here numerous studies in the medical field, the customer service sector, or the industrial sector. On the other hand, it is worth noting that the last few years have seen a steady increase in interest in the aforementioned area and the possibilities of using AI in this aspect. This applies to almost all regions of the world.

3. Survey methodology and description of the survey sample

In order to obtain empirical data on the current status of the use of artificial intelligence (AI) technologies in the field of accounting and finance, a survey was conducted. The survey was quantitative in nature and was conducted among representatives of two groups of organizations: accounting offices and finance departments of large companies operating in Poland.

The survey questionnaire was developed in electronic form and made available to respondents via an online form. Questions in the survey included the scope and forms of application of AI tools, the level of familiarity with them in organizations, implementation plans, identified implementation barriers, as well as perceived benefits and anticipated impact of AI on the future of the accounting profession.

A total of 1090 complete responses were collected and statistically analyzed. Among the respondents, representatives of accounting offices dominated (77.1%), the rest were employees of the financial departments of large companies (22.9%) - Figure 1. The respondents represented entities of different sizes - from micro-enterprises to large corporations - which allowed a diverse and representative analysis of the issue.

The purpose of the study was not only to recognize the degree of advancement in the implementation of AI in accounting practice, but also to identify attitudes and expectations towards these technologies. The results served to verify the research hypotheses set and provided the basis for practical conclusions and proposals for further research directions.

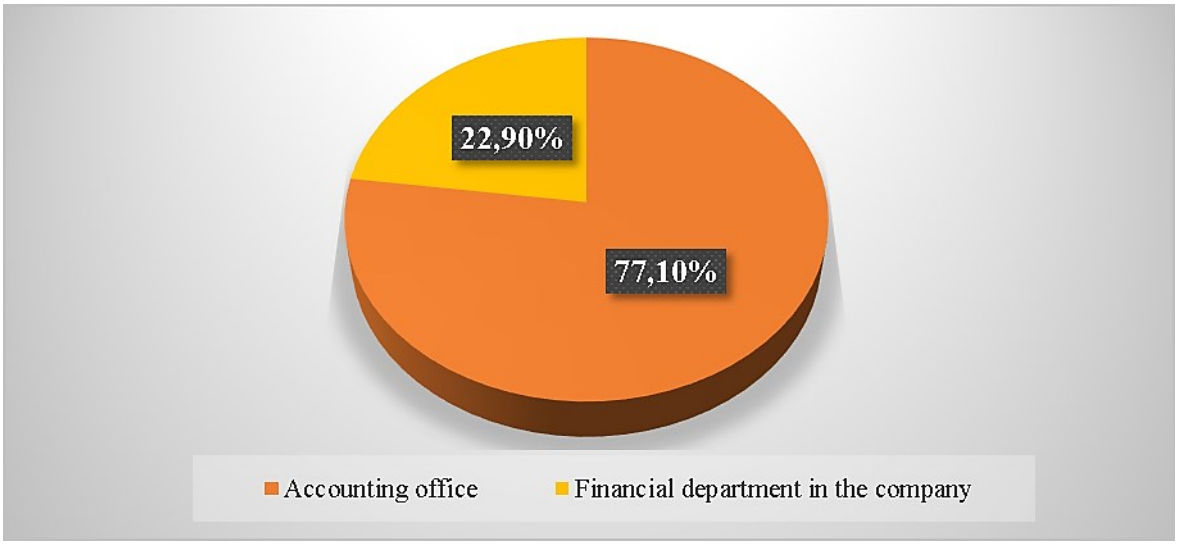

Figure 1. What type of organization do you work for?

Source: own study.

The vast majority of survey participants (77.1%) work in accounting offices, while 22.9% work in the finance departments of large companies. This indicates the survey's strong focus on the typical accounting services environment, but with the perspective of internal finance departments also taken into account. Figure 2 shows the survey sample by organization size.

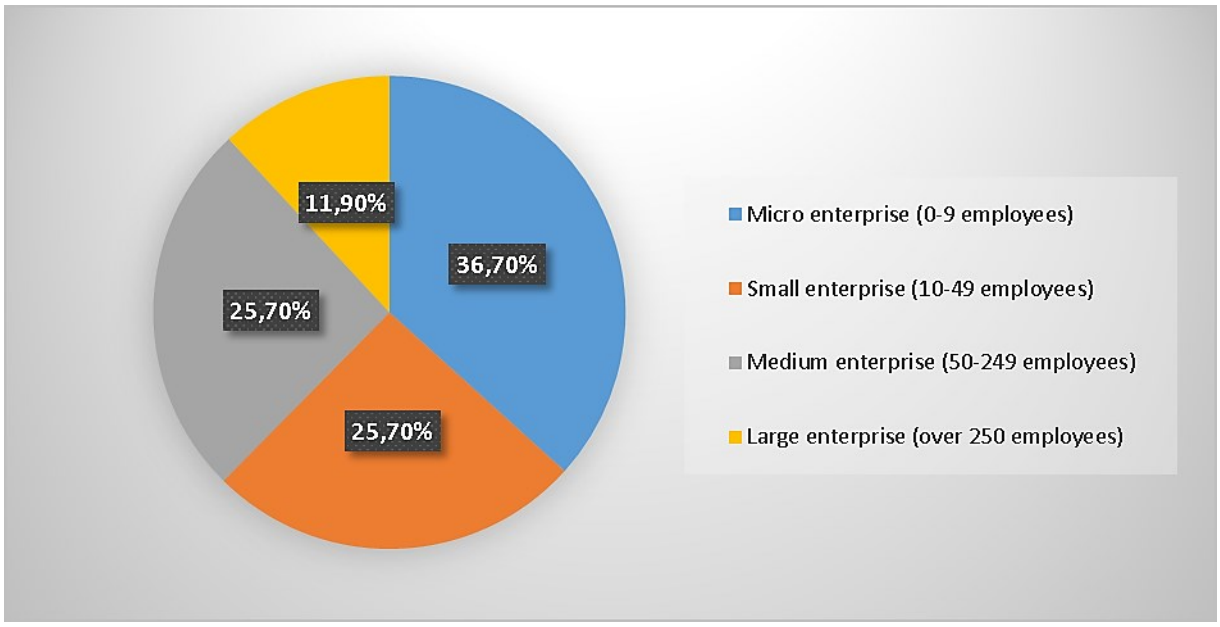

Figure 2. Size of the organization.

Source: own study.

Respondents were mainly from micro (36.7%), small (25.7%) and medium-sized enterprises (25.7%), and only 11.9% from large organizations. This shows that the accounting and financial services market is still strongly represented by smaller units.

Based on the survey questionnaire, three research hypotheses were formulated.

1. The most common barriers to implementing AI in accounting are financial constraints and lack of qualified personnel.
2. Most respondents see the future potential of AI in accounting, even if they do not use it.
3. Openness to implementing AI increases with prior experience in using digital technologies (e.g., RPA, ERP).

The adopted research design and formulated hypotheses provided a structured basis for assessing the current state of AI adoption in accounting and for identifying key factors influencing its future development.

4. Survey results

This section presents the most important results from the study. When asked whether the surveyed organization currently uses AI tools in accounting or finance, nearly half of them answered affirmatively. Almost half of the organizations (46.8%) already use AI tools, and another 45.9% plan to implement them. Only 7.3% do not intend to use AI, which proves the high openness of the sector to new technologies (Figure 3).

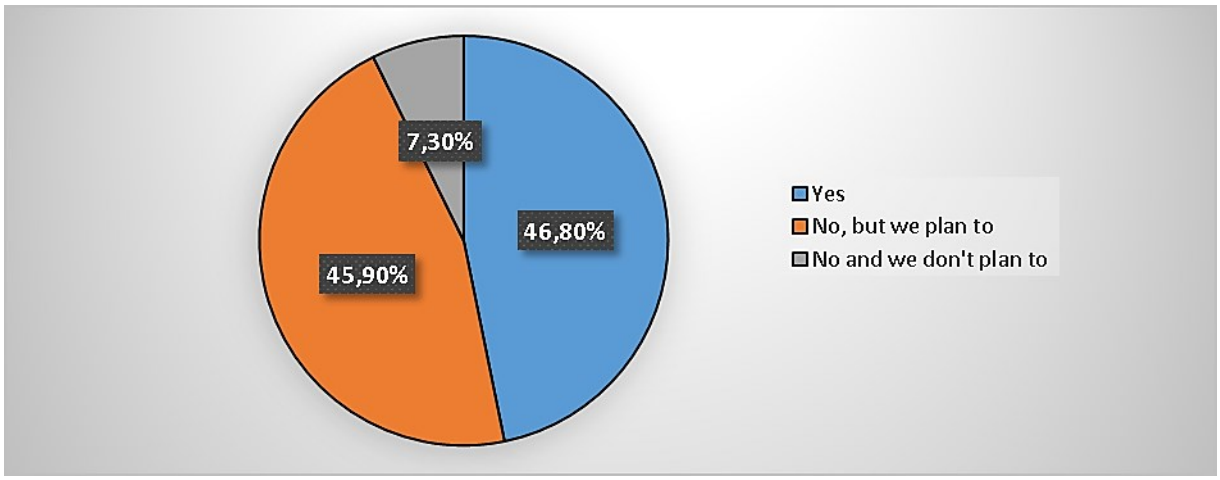

Figure 3. Does your organization currently use artificial intelligence tools in accounting or finance?
Source: own study.

When asked what are the main benefits of implementing AI, the most frequently mentioned benefits were:

- Time savings (67.3%).
- Reduction of operating costs (52.3%).
- Reduction of accounting errors (21.5%).

This indicates high expectations related to automation and improved work efficiency (figure 4).

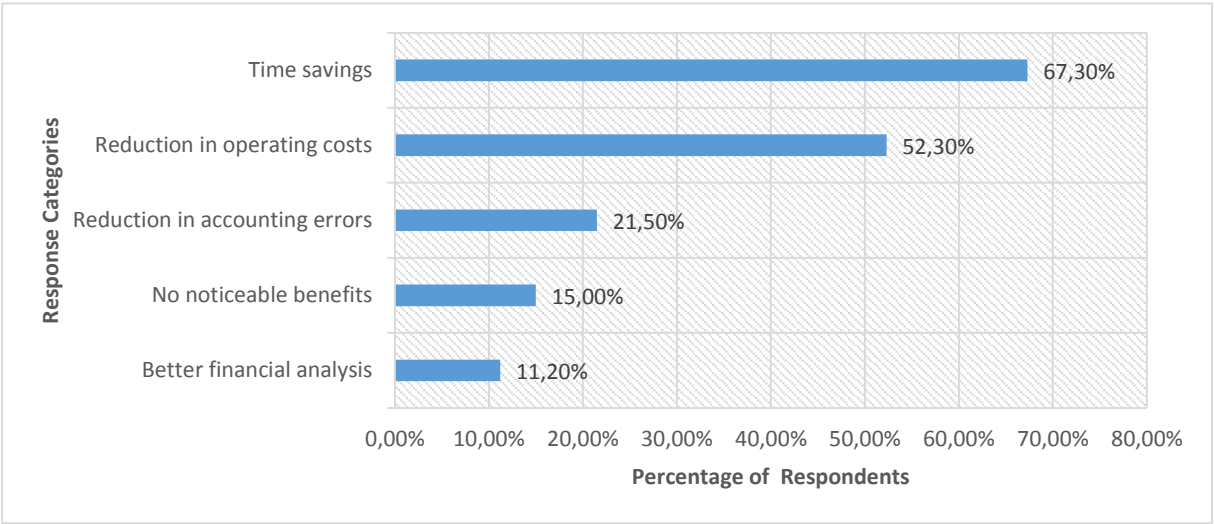

Figure 4. What are the main benefits of implementing AI – could you choose multiple answers?
Source: own study.

When asked how you assess the future of AI in accounting and finance, more than half of respondents (52.3%) believe that AI will support accountants, but will not replace them. At the same time, as many as 24.8% believe that AI will completely automate the work of accountants in the future (figure 5).

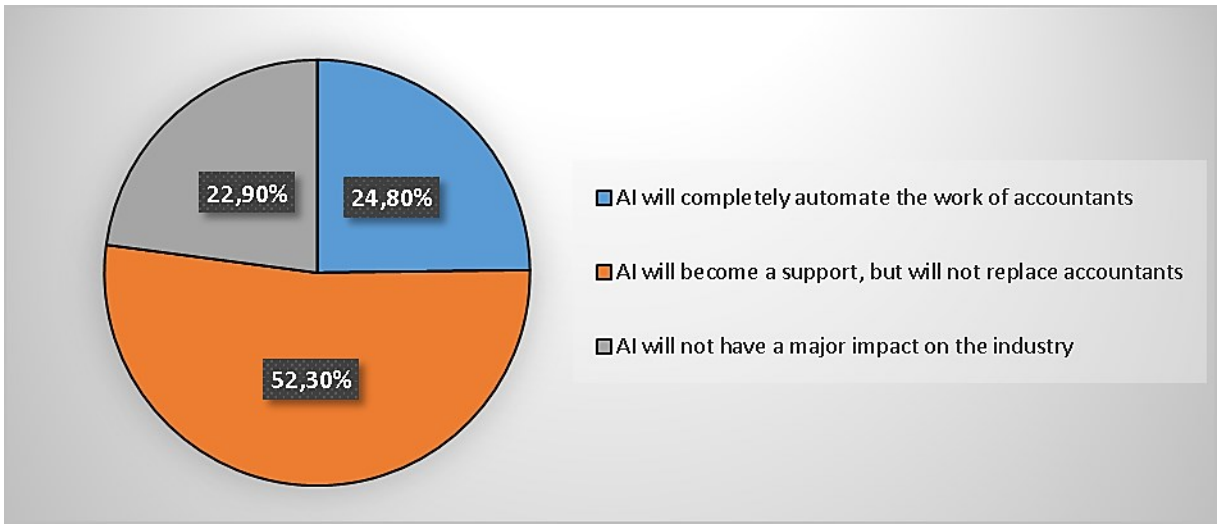

Figure 5. How do you assess the future of AI in accounting and finance?

Source: own study.

In turn, when asked whether your organization plans to implement AI in the next 3 years, the surveyed companies are strongly divided. 38.9% plan to implement AI within 3 years, 39.8% do not plan, and 21.3% have not made a decision yet. This indicates the need for further education and development of solutions tailored to different needs (figure 6).

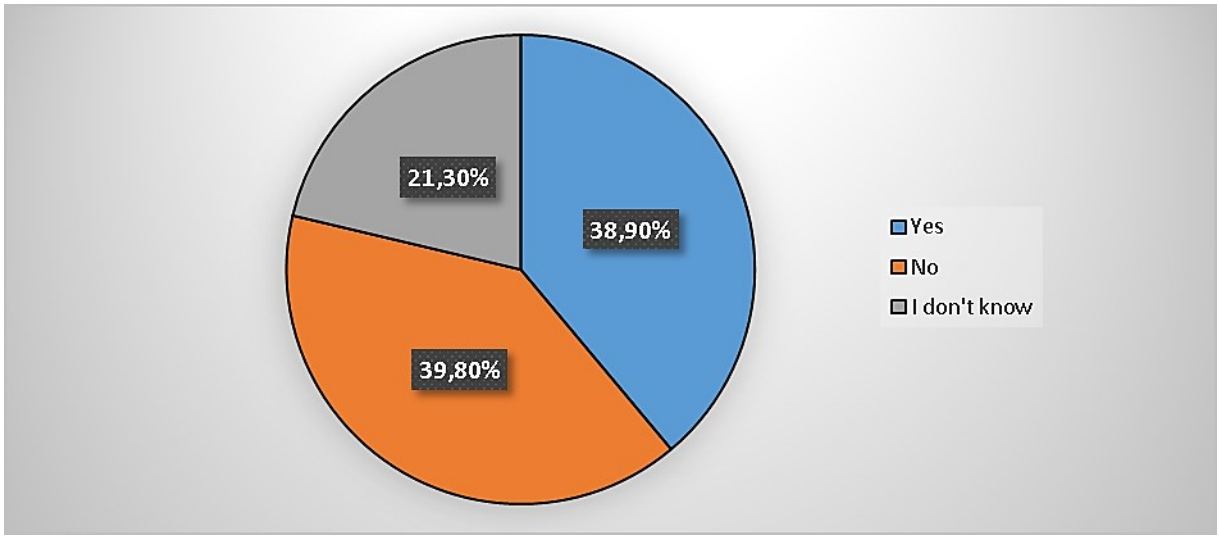

Figure 6. Is your organization planning to implement AI in the next 3 years?

Source: own study.

In turn, when asked to what extent AI could help the most in the work of an accountant/financier, it was indicated that AI has the greatest potential in:

- Optimization of operating costs (35.8%).
- Automation of repetitive processes (33.0%).
- Risk analysis and detection of irregularities (12.8%).

Customer service using AI is considered a lower priority (figure 7).

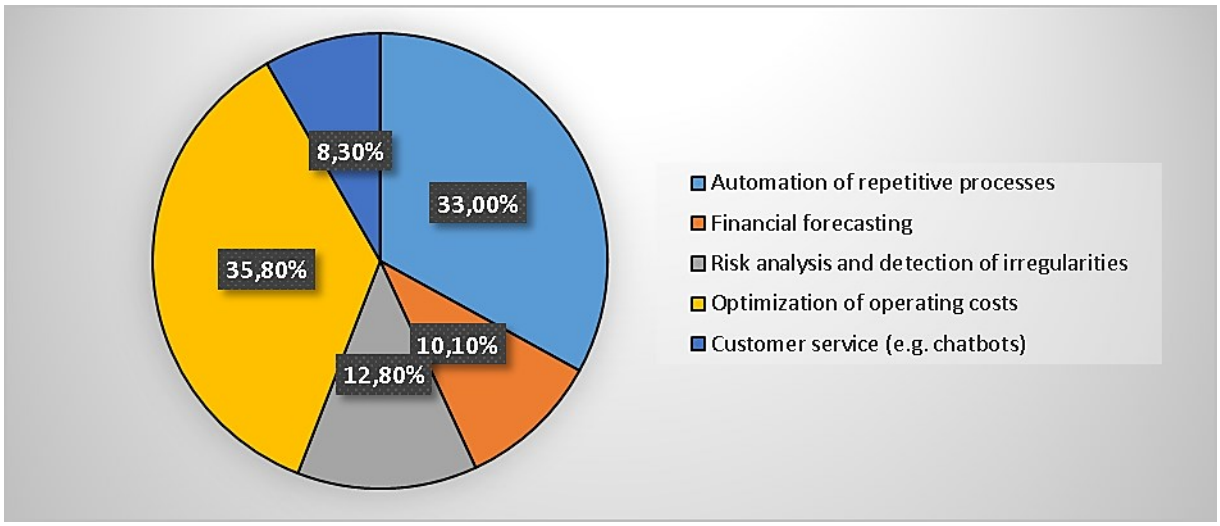

Figure 7. To what extent could AI most help in the work of an accountant/financier?

Source: own study.

When asked how quickly do you think AI will become widely used in accounting? More than half of the respondents (50.5%) believe that AI will become widely used in accounting within 2-5 years. Optimistic forecasts indicate a rapidly progressing transformation of the sector (figure 8).

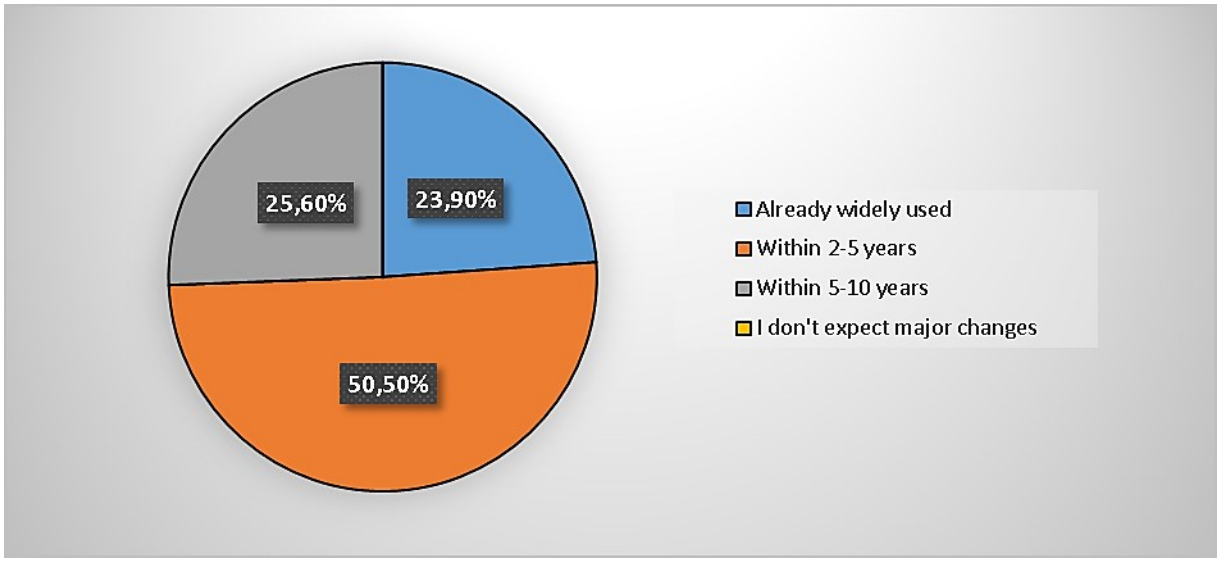

Figure 8. How quickly do you think AI will become widely used in accounting?

Source: own study.

The biggest barriers to AI implementation in the surveyed entities are:

- High implementation costs (72.5%).
- Concerns about data security (37.6%).
- Lack of knowledge about the technology (31.2%).

This indicates the need for education and adjustment of implementation costs for smaller entities (figure 9).

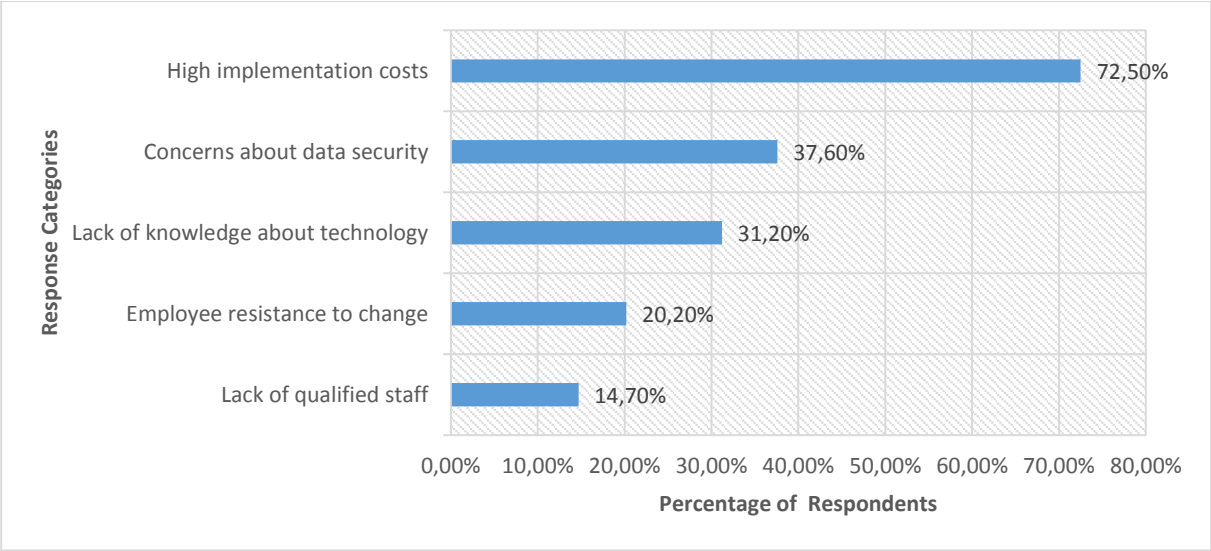

Figure 9. What are the biggest barriers to implementing AI in your organization (you can choose multiple answers).

Source: own study.

The question was also asked whether the surveyed company is already using AI tools in accounting or finance? Most organizations (54.1%) use free AI tools available online, and only 3.7% have dedicated AI solutions. This shows the low level of advanced AI integration in the accounting environment (figure 10).

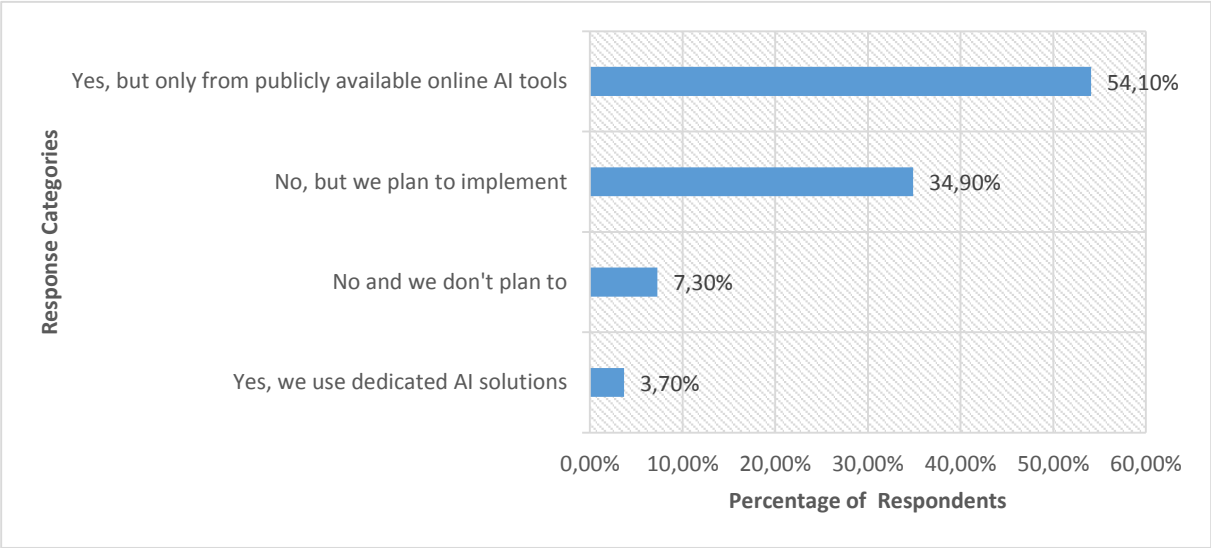

Figure 10. Does your organization currently use artificial intelligence tools in accounting or finance?

Source: own study.

The next question concerned the interest in implementing dedicated AI solutions in the future in the surveyed enterprises. Of the surveyed entities, only slightly over 10% of those surveyed do not see the need to implement AI-based tools in the future. Nearly two thirds of the surveyed declare that they may implement such solutions in their enterprises within 3-5 years (figure 11).

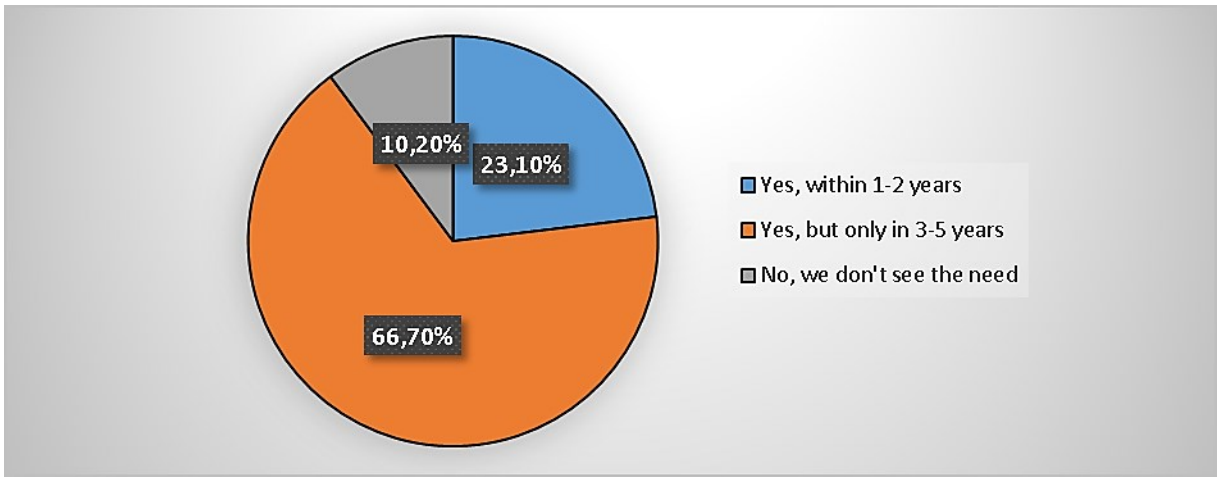

Figure 11. Would your organization be interested in implementing dedicated AI solutions in the future?
Source: own study.

When asked whether you think that using available online AI tools is sufficient or whether it would be better to implement dedicated AI systems in the organization, more than half of the respondents (51.4%) believe that dedicated AI systems would be a better solution than using only online tools (figure 12).

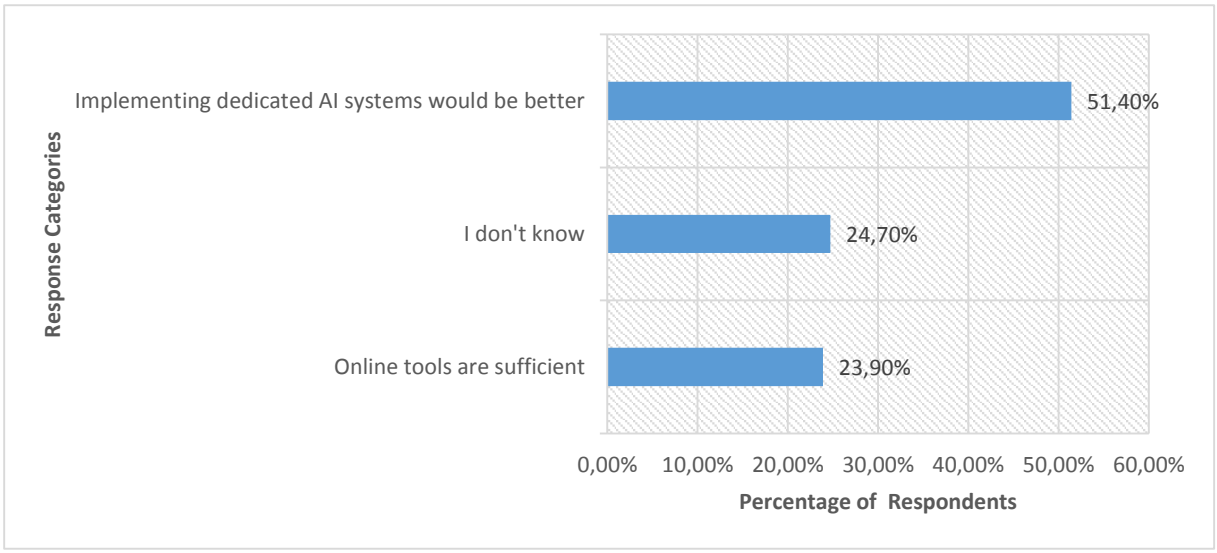

Figure 12. Do you think that using available online AI tools is sufficient or would it be better to implement dedicated AI systems in the organization?
Source: own study.

When asked what AI functionalities would be most useful in your work (you can choose multiple answers), respondents indicated primarily:

- Automation of accounting processes (63.3%).
- Detection of errors in documents (28.4%).
- Intelligent financial analysis and forecasting of results (25.7%).

Details regarding the indications are presented in Figure 13.

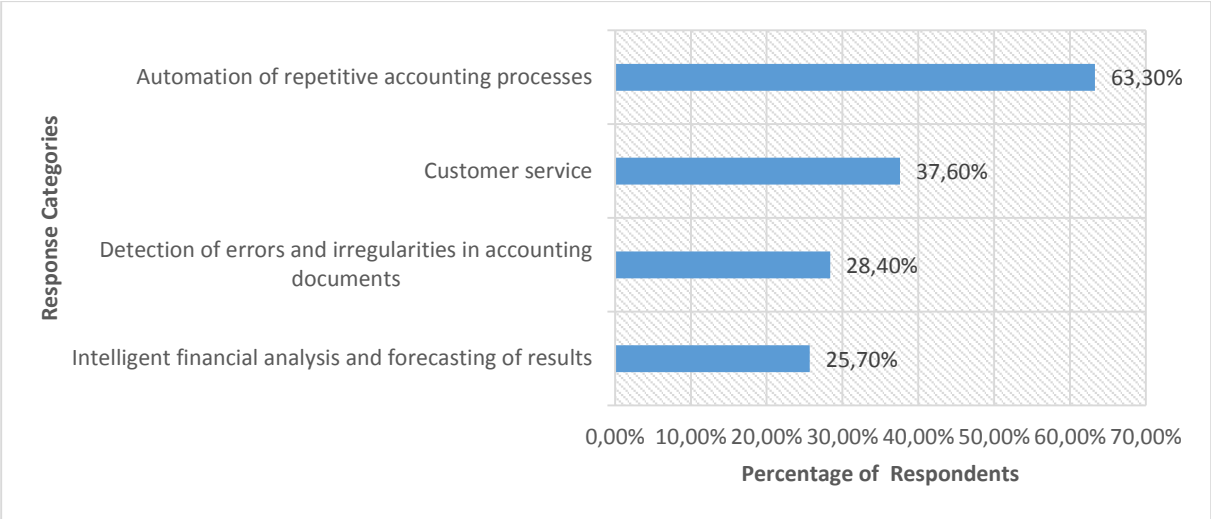

Figure 13. What AI functionalities would be most useful in your work (you can select multiple answers)?

Source: own study.

When it comes to the frequency of using online AI tools in accounting/financial work, most people use AI several times a week (32.1%) and several times a month (33.0%). This indicates the growing importance of AI tools in the daily work of accountants and financiers (figure 14).

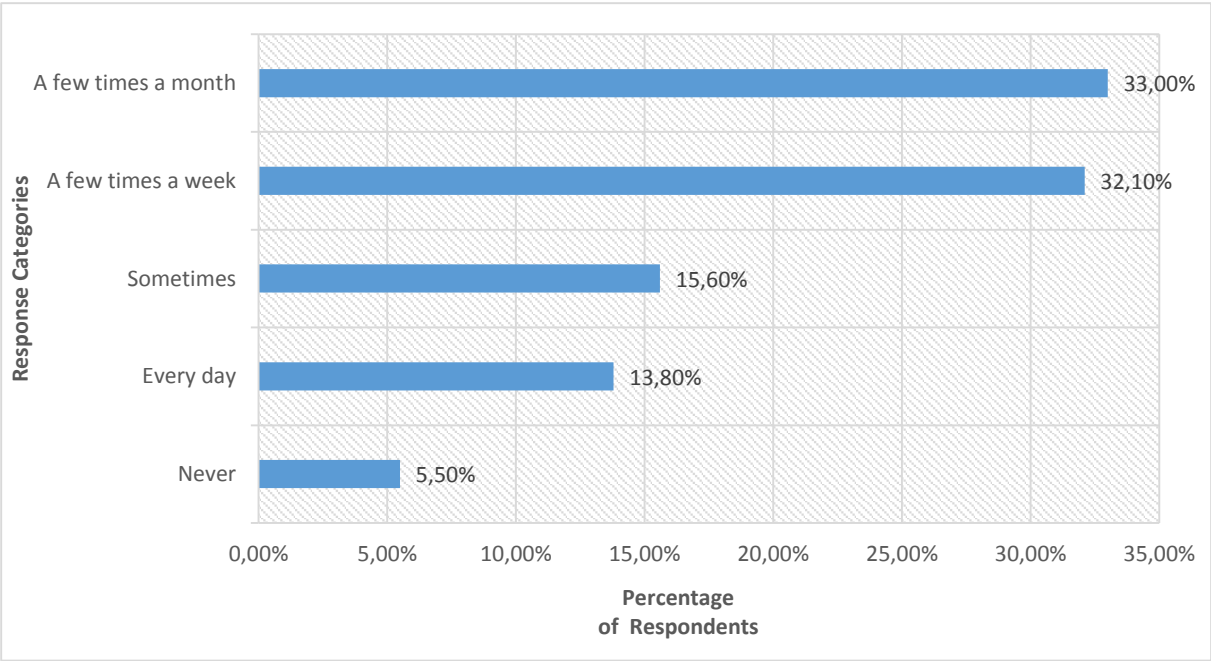

Figure 14. How often do you use online AI tools in your accounting/financial work?

Source: own study.

Among the surveyed companies that use AI, the most commonly used tools are:

- Chatbots for customer service (45.7%).
- Predictive analysis of finance (33.3%).
- Tools for automatic invoice recognition (23.8%).

Details regarding the indications are presented in Figure 15.

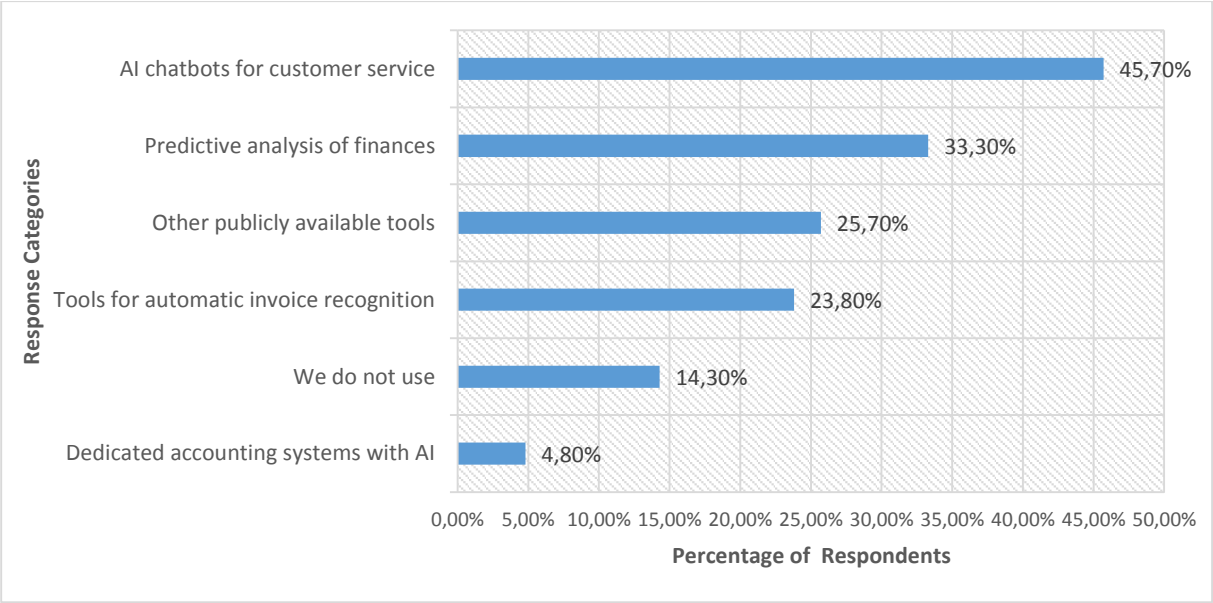

Figure 15. What AI tools do the surveyed companies use?

Source: own study.

The selected survey results presented above allowed for the verification of the research hypotheses. The first hypothesis stating that the most common barrier to implementing AI in accounting are financial constraints and lack of qualified personnel was partially confirmed. Indeed, the main barrier that was most often indicated, which is a significant limitation in implementing AI in accounting and finance work, is limited funds and high costs of advanced technologies. As for the lack of qualified personnel - in the opinion of the surveyed companies, this is not a key factor deciding whether AI will be included in accounting and finance work or not.

Hypothesis two, which states that most respondents see the future potential of AI in accounting, even if they do not use it, was verified positively. Indeed, even companies that do not currently use AI tools in their current work see the potential of such products.

Similarly, hypothesis 3, which stated that openness to AI implementation increases with previous experience in using digital technologies (e.g. RPA, ERP) was verified positively. The research results confirm the relationship between the use of AI tools and openness and willingness to reach for this type of technology. This indicates positive experiences related to the use of AI technology, which facilitates and speeds up the work of accountants and employees of financial departments.

In addition, it is worth pointing out the following key conclusions:

- High openness to AI: Most organizations are either already using AI or are planning to implement it in the near future.
- Critical importance of costs: The biggest barriers remain the costs of implementation and concerns about data security.
- Low level of technological advancement: The vast majority of organizations currently use basic online AI tools, not dedicated solutions.

- Growing expectations: Specific areas are indicated in which AI can bring the greatest benefits: automation, error analysis, intelligent forecasting.
- Need for education and support: Lack of knowledge about the technology and concerns about security indicate the need for training and the provision of simple, secure solutions.

Overall, the findings confirm that the adoption of AI in accounting is no longer a distant prospect but an emerging reality that requires strategic preparation and investment. The growing awareness of AI's potential, combined with the need to overcome cost and knowledge barriers, highlights the importance of proactive digital transformation in accounting and finance functions.

5. Summary and discussion

The conducted study identified key trends and barriers related to the implementation of artificial intelligence (AI) in accounting offices and financial departments of enterprises in Poland. The results clearly indicate that the financial and accounting sector is open to implementing AI-based technologies - almost half of the surveyed organizations are already using such solutions or are planning to implement them in the near future. The main expectations towards AI concern the automation of repetitive processes, reduction of operating costs and increase in efficiency. The phenomenon observed in the study is confirmed in the literature on the subject. For example, the studies by Fulop and Magdaş (2022) and Zhang et al. (2022) indicate that accounting and finance are among the areas most susceptible to automation thanks to AI. These conclusions are also consistent with the observations of Kokina and Gilleran (2021), who emphasized the growing importance of intelligent predictive tools in financial risk assessment.

At the same time, the study revealed existing challenges, the most important of which are the high costs of AI implementation, lack of sufficient technological knowledge and concerns about data security. These are barriers commonly indicated in global studies (e.g. Mookerjee, Rao, 2021), which suggests that the problem is global, not just local. It is also worth emphasizing that a large proportion of organizations still use only basic AI tools available online, which may limit their development potential. This indicates a growing need for the development of more affordable, yet technologically advanced dedicated solutions for the financial and accounting sector.

It is also worth pointing out some limitations of the conducted study. Here they are:

- Although the number of 1090 respondents is sufficient for basic analyses, broader conclusions for the entire population of enterprises in Poland should be formulated with caution.
- The predominance of small and medium-sized organizations may affect the nature of the results - the needs of large enterprises may be different.
- Self-assessment and declarations of respondents may be burdened with a subjective error, which is typical for survey studies.
- The study focuses on Poland and does not take into account the specificity of other markets, which limits the possibility of international comparisons.

Taking the above into account, it would be worth continuing the research. It would be worth conducting detailed comparative studies of AI implementation in various industries (e.g. industry, services, education) within the financial functions. It would also be possible to supplement the survey research with in-depth interviews with people responsible for AI implementation in organizations, which could provide more valuable, more detailed information. In further research, it is also worth focusing on measuring the actual impact of AI implementation on the efficiency, costs and quality of work in accounting and finance. In addition, studying AI implementations in various countries (e.g. Poland vs. Western European countries) would allow for a better understanding of the pace and nature of changes.

In a broader sense, the study highlights that the digital transformation of financial and accounting services is not only a technological but also a strategic and organizational challenge. The ability of companies to adapt AI effectively will likely become a key determinant of their competitiveness in the coming years. Therefore, future research should not only describe current trends but also develop practical models and best practices for successful AI adoption in the financial sector.

Moreover, the implementation of AI in accounting raises important ethical and legal considerations. Compliance with data protection regulations, including GDPR, is essential, requiring transparent handling of client information and proper safeguards for sensitive data. The concept of algorithmic accountability is becoming increasingly important, as organizations must be able to explain AI-driven decisions and provide mechanisms to correct potential errors. Ethical standards in the accounting profession remain crucial, as AI tools should support the integrity, transparency, and professionalism of financial reporting and advisory services. Integrating these aspects into research and practice reinforces the societal significance of AI adoption in accounting, highlighting the importance of responsible and legally compliant use of advanced technologies.

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