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The Impact of Artificial Intelligence on Accounting Professions

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Abstract:

Purpose: *The objective of this article is to analyze how modern accounting practices have been shaped in response to the technological revolution including process of automation and Artificial Intelligence. Emphasis is placed on how these new phenomena were incorporated into the daily functions and responsibilities of accountants. In addition, identified will be emerging opportunities and challenges that may either encourage a positive attitude toward automation and AI or, conversely, act as deterrents. As well, to identify strategies for accounting professionals to adapt to and collaborate with AI technologies, ensuring a balanced and effective integration.*
Design/Methodology/Approach: *This article formulates the following research problem: How and to what extend does an Artificial Intelligence impact contemporary accounting practices? Will AI overtake the accounting sector completely, leaving accountants jobless? Corresponding to this research problem the research hypothesis was formulated: implementation of AI in accounting result in the efficiency gains for accounting practices and its professionals. AI will reform traditional business models in the accounting world. However, implementing AI in accounting carries as well certain risks. Further analyses and research aim to confirm this hypothesis. The study employs a detailed analysis of existing scientific literature, norms, and standards related to accounting field. The analyzed sources include books and scientific articles aimed at understanding the theoretical foundations of automation and AI in finance and accounting , as well as identifying best practices and challenges in this field.*
Findings: *Findings: An integration of Artificial Intelligence (AI) in world of finance is expected to significantly enhance efficiency and effectiveness in the field of accounting, although it is improbable that AI will fully replace human accountants. It's difficult to replace accounting experts by new technologies at least current stage of it's development. In accounting is needed human judgement, strategic interpretation, and the ability to draw from personal experience, in decision making, particularly in difficult complex accounting tasks.*
Practical Implications: *The study's findings can provide management of the companies with crucial information regarding the effectiveness, positive aspects of AI in accounting, but as well make them sensitive on some issues connected with threats incorporated in implementation of new technologies. However, for impact of AI on finance and accounting to be extend further analyses and studies are necessary. Particular attention should be paid to the data protection problems.*

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Originality/Value: *The article presents a comprehensive approach to relatively new phenomenon of Artificial Intelligence in Finance and accounting with particular emphasis on changing role of accountants in contemporary organizations. It discusses key problems, tools and best practices that can support organizations in effective implementation of new technologies in area of accounting.*

Keywords: *Accounting, auditing, Artificial Intelligence, automation.*

JEL codes: *M41, M42, G39.*

Paper type: *Research Article.*

1. Introduction

In this research paper, is discussed how accounting has changed over the course of time and it will constantly keep evolving. In order to understand the problem, first we need to answer the question where accounting is headed and if we do understand where we are right now? Through research papers by various authors and research done independently author tried to figure out where we really are in the current times, in which people competes with self-learning machines. We need to analyze if they will be replacing the jobs of humans in the future or not.

The main goal of this paper is to investigate the gradually increasing need and dependence on Artificial Intelligence or AI in the sector of accounting. To understand well were we are now should be research the problem progression and advancement in accounting since its very beginning.

As a beginning we may consider the late 14th century, when the Father of Accounting, Luca Pacioli published his book on the double entry bookkeeping method, most of which was fundament of accounting as we know it today, to today when development AI and other IT projects with machine learning are slowly overtaking the sector (Smith, n.d.). It should come as no surprise that AI is the next logical step forward and could have a major impact on the job market.

At the beginning of the process, we have engineers responsible for developing AI, while accountants and economists are investigating how these tools can be implemented in their daily work.

There is a potential risk that this will not only lead to a reduction in the number of accounting staff needed, but also a reduction in the oversight required to keep these systems secure. The idea that AI could take over many sectors in the coming years, including accounting, auditing, and financial transactions, has many worried about losing their jobs and livelihoods.

2. Literature Review

The topic about ‘thinking’ computer systems is not something new. The beginnings of AI are connected with the first electromechanical computers, and so with the period of World War II. Then the British mathematician Alan Turing and his team used such a computer to break the Lorenz code. This code was used by the command of the German army to send encrypted messages to each other (O’Regan, 2018).

In 1955, John McCarthy, then an assistant professor of mathematics at Dartmouth College, decided to organize a group and a conference to clarify and develop the ideas about thinking machines. He chose the name "Artificial Intelligence" for this new field. AI was passing a so-called “*Golden Age*” and a lot of work has been made during that period. However, the tools which were available in the past were significantly weaker compared to the tools which are available now (Wooldridge, 2021).

According to Andrew McAfee, MIT economist, currently we are undergoing the phase of a rapidly changing world where the vast majority of occupations of today’s economy will be taken over by machines. In his opinion this switch of the roles is awaiting us in the closest future.

Many contemporary firms realized that they no longer require that many full-time employees and started to rely on AI software and outsourcing of work, increasing the overall financial performance (West, 2018).

This process also applies, and perhaps especially, to the area of finance and accounting or the broadly understood effective management of processes in corporations.

3. Transformation of Accounting Professions and Changing Role of Accountants

The emergence of new technologies and management systems like ERP (Enterprise Resources Planning) including accounting systems, and the ongoing automation of processes have begun to force a change in the specifics of accounting professions. In addition to the traditional features required of accountants, such as reliability, honesty, accuracy, and the ability to continuous learning, high expectations have emerged in terms of IT competences.

Accounting professionals have started to use technologies as a necessity for their jobs or just as their preference in daily life. But the use of this technology for an extended period comes with a certain amount of confidence in the workings of the technology, and this might add up to the efficiency required in specific jobs (Güney, 2014).

Accounting systems are becoming more advanced, with the rapid progress of process automation. Many new solutions have emerged in this area, including automatic posting of recurring accounting transactions.

According to some researchers, the new accounting-based systems are coming up with solutions for the advancement of computer-based accounting systems. These solutions include special journals and subsidiaries ledgers to make them easily maintained.

In such systems, all the accountants must do is input data and the computer does the rest for them. From that point, journal creations, postings, ledger creations, and subsidiaries' ledger accounts are all being overseen by computers and do not require human input from that point (Asuquo *et al.*, 2020).

The above statement allows us to conclude that with such a large automation, much less time is needed to perform accounting activities. As a result, the demand for accounting professionals may decrease. However, this is only part of the new reality. In the author's opinion, such a high degree of automation of accounting processes is still not very common and applies rather to large corporations, not small and medium-sized enterprises.

It should be remembered that most business entities on the market are small and medium-sized entities. The accounting of such companies is carried out in a more traditional way, although using IT systems, but with a lower degree of process automation. Therefore, we should not generalize that accounting processes no longer require human intervention, nor fall into extreme pessimism and think that all accountants will lose their jobs.

However in the coming years, the rapid development of AI-based systems and increasing their availability, including cost of it's purchase and maintenance, can bring about major changes, also for small and medium businesses.

4. Role of Automation and AI Tools in Accounting

In this part of the paper, the author will attempt to answer the question: in which areas of accounting the use of AI tools can bring benefits to both the organization and accounting specialists?

Without doubts AI in accounting is making a change in various areas of finance and accounting, which can be divided mainly into three categories: data processing and analysis, financial processes, audit. But what the Artificial Intelligence really is?

There are different types of Artificial Intelligence, and as a result their characteristics and applications are different: Machine Learning, Natural Language Processing and Optical Character Recognition.

Machine learning (ML) is a branch of and computer science that focuses on the using data and algorithms to enable AI to imitate the way that humans learn, gradually improving its accuracy.

Second type of AI is Natural Language Processing. It is a subfield of computer science and artificial intelligence (AI) that uses machine learning to enable computers to understand and communicate with human language.

Third type of AI applicable in finance and accounting is OCR – Optical Character Recognition:

Optical character recognition (OCR) is a technology that uses automated data extraction to quickly convert images of text into a machine-readable format. (IBM; 2024).

Let us first focus on the possible applications of each category of AI in the first and second areas, i.e., financial accounting and bookkeeping.

Accountants may use Machine Learning to, forecast financial performance, review potential fraudulent scenarios, perform risk analysis. Whereas Natural Language Processing may be used in accounting in order to: generate documentation based on notes, double check calculations, generate filled-out templates based on input. (Shortt, 2024)

Optical Character Recognition (OCR) in accounting may be use for generating reports and e-mails, completing data entry, creating amortization schedules, matching purchase orders with invoice and payment.

AI can be widely used in external and internal audit. Automation allows to increase both data samples and the number of processes covered by the audit. It helps to detect irregularities and distortions of data. Undoubtedly, AI can contribute to increasing the effectiveness of audit processes.

This is an extremely important factor, for both current and future shareholders of audited companies. It must be remembered, that the auditor's opinion is treated as a kind of “insurance policy” for current shareholders or future shareholders, and they often rely on it making investment decisions. This “insurance policy” is the more effective if the more efficient and reliable the audit is.

Let’s analyze what applications can different types of AI find in auditing. Machine Learning may be used for review potential fraudulent scenarios, detecting frauds and errors or perform risk analysis. Auditors may use NLP for summarize findings and write first drafts of reports. Whereas Optical Characteristic Recognition can help in sample selection for testing, performing audit confirmations, performing routine audit tests and reconciliations.

The tasks of auditing and accounting is to provide information enabling assessment of the ability of companies to generate future financial surpluses and revenue for investors (Bojanczyk, 2017)

AI and automation of processes may help to deliver more reliable information to investors on time.

One of the tasks in auditing which can be simplified from the implementation of AI is Internal Control evaluation since it consists of complex and advanced information systems. Also, with the help of artificial intelligence, the decision-making, and control evaluation process can be embedded in the data systems, creating an advanced auditing and accounting database system (Zemankova, 2019).

According to Zemankova, there are benefits from the usage and application of Artificial Intelligence in risk assessment, corporations include Bankruptcy Prediction, by identifying early warning signs of financial distress, Going Concern decisions, and a review of Analytical Procedures for audit evidence (Zemankova, 2019).

These are some examples of tasks which can be done manually, usually taking up a lot of time for gathering evidence and going over the final results to come to a conclusion satisfying enough to be considered. There is also a factor of human error that is taken into consideration for predictions and forecasting. The use of AI can significantly contribute to reducing the risk of errors.

We also cannot forget about the financial aspect of using process automation and AI. Automation allows businesses to cut costs and increase market competitiveness since it enables businesses to perform tasks more quickly and more efficiently overall.

It is important to note that automation provides a reduction in the costs associated with the labor force, and the skills of employed accounting specialists can be used more effectively.

Moreover, companies will be forced to find talents specialized in Information Technology to help them build tools and solutions of AI models, at the current labor market it can easily be understood how valuable and demanding the computer and data scientists are.

5. Limitations and Risks of Using AI in Accounting

However, the issue of AI in accounting and finance should be viewed from different perspectives. What seems to be beneficial for corporations (cost reduction, increased economic efficiency of processes) does not necessarily have to be beneficial for their employees, especially if they become former employees. It does not have to be

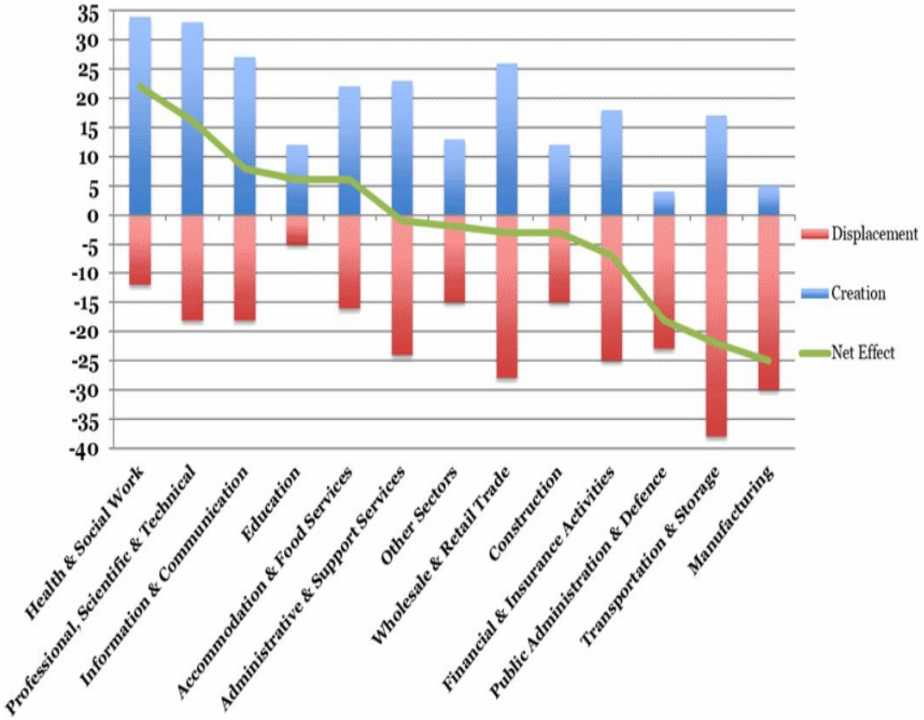
positive from the perspective of the labor market or the economy as such, by affecting the increase in unemployment.

Just because there will be a market demand for AI specialists doesn't mean that many more jobs won't be cut. Accountants performing repetitive tasks have already been partially laid off, and the process is ongoing.

Analysis by the Polish Economic Institute indicates that highly skilled professions are most at risk of being affected by AI, including financiers, lawyers, programmers, mathematicians and some government officials. In Poland, about 3.68 million people work in the 20 professions most at risk of being affected by AI. The financial and insurance sector is characterized by the highest exposure to AI, which means intensive use of technology in process automation and data analysis (Polski Instytut Ekonomiczny, 2024)

According to Economic Research Council in the financial and insurance sectors the distribution reveals that there will be approximately 18% of new jobs created by 2037. On the other hand, 25% of positions will be replaced by AI technologies. Therefore, it is posing an unemployment rate in the finance industry caused by AI at around 7%.

Figure 1. *Impact of AI on UK Jobs by Sector*



Source: *Estimated Impact of AI on UK Jobs by Sector by 2037 (COUNCIL, 2018).*

According to report of KPMG, 40 per cent of UK jobs could see some impact from Generative AI with 2.5 per cent of all tasks affected. Around half of the displacement will be offset by the creation of new tasks linked to managing the new technology within the affected jobs.

The drafting of technical reports by AI also plays a significant role in the 7% of tasks that face automation among auditors. An important benefit that the adoption of Generative AI technology may bring is the potential improvement in productivity.

The occupations corresponding to the approximately 2.5% of tasks that could be affected are equivalent to the working time of 670,000 employees. This figure represents the working time that could be saved by using AI, which could allow for redeployment of workers to other tasks and activities, including towards new tasks necessitated by the deployment of Generative AI (KPMG, 2023).

Machine learning is expected to have a significant impact on the finance sector, with the Big Four leading the way in adopting white-collar automation. Strategies like focusing on operational or explanatory areas for AI implementation can optimize resource allocation and budgeting.

However, there are concerns about the potential impact of AI on the workforce, particularly in people-centric industries like consulting. While the Big Four are optimistic about the augmentation potential of AI, there are ongoing discussions about its implications for knowledge workers and the need for adaptation and adoption (Faggella, 2020)

One of the main risks imposed by AI and machine learning models is it's complexity. The fact the more sophisticated the tool is, the harder it gets to understand the reasons behind its actions. and results. The assumption that every AI model is infallible is inherently flawed. If we feed it incorrect or incomplete data, the results it produces will be false. Reliance on inaccurate data may pose a big risk. Moreover, there is a risk of unattended bias created by the model or intended corruption of data inputs by humans.

It brings following questions: In case of errors caused by the use of AI, who will take responsibility for them? Who should take the responsibility for AI failure? Is it the developer of the program, seller of the program? Or maybe the company who chose this software? And if the responsibility should be shared at what ratio? As a result, we may have some legal uncertainty on this point (FSB, 2017)

We may predict that there are probable risks related to the implementation of AI and machine learning tools in the activities of a company, which requires the companies to allocate some resources to cover losses in a bad scenario or even prepare for large compensation payments.

Next field of uncertainty is personal data protection which may be under the threat. Personal data protection is subject to very restrictive regulations in the EU, including Poland.

The European Union enacted a General Data Protection Regulation (GDPR), which regulates some issues connected with data Protection: Article 11, which provides a right to "an explanation of the decision reached after (algorithmic) assessment". As well Article 9, which prohibits processing of "special (sensitive) categories of personal data and Article 22, which provides for a data subject's qualified right not to be subject to a decision with legal or significant consequences based solely on automated processing. (FSB Report 2017)

Violation of this protection is associated with serious consequences, including financial ones. Who should be responsible in such a case, the company that has the data of e.g. customers or suppliers, or maybe the authors of AI algorithms?

Another issue is the complexity and frequency of changes in accounting regulations/standards, but most importantly, the complexity of tax regulations. Human skills remain essential, especially in specialized fields such as accounting, where a nuanced understanding of business data and placing it in a legal context is essential. AI can not replace human interaction required in sensitive situations like: negotiations, recovery of debts, keeping up good relations with customers.

6. Conclusions

As AI it becomes more integrated into various industries, it may reshape business models, potentially replacing certain human tasks and presenting challenges for individuals to adapt and enhance their skills. Learning various AI systems becomes imperative for individuals seeking to navigate this evolving world including world of finance and accounting.

In order to detecting financial fraud AI experts developed algorithms to analyse transaction and financial data patterns to identify the possibility of fraud or irregularities. This approach helps mitigate financial risks. Prompt recognition and reporting of activities linked to fraud provide accountants with the ability to respond swiftly to any financial irregularities.

AI has revolutionized various accounting practices such as automated data entry and processing. AI systems can extract data from financial documents like invoices or contacts, significantly reducing the potential for manual errors of human accountants and saving their time. However, accounting standards are complex and require human expertise. That means that human expertise is essential to proper implementation and usage of AI specially in so sensitive field as accounting and taxes.

Most of the manual or repetitive work, like transactions record, will be transferred to AI tools, but there is still big space in accounting and auditing for expertise roles.

Moreover, despite the common belief that AI tools have a great potential to increase the unemployment rate in the financial industry, research shows that this is not entirely true. First, there is no way to claim that automation tools are the ultimate solution to replacing humans, and AI systems are still imperfect. This, in turn, requires specialist human assistance. Second, technological progress not only takes over existing roles, but also creates new ones.

AI is not just replacing existing jobs, but also creates new jobs. For instance, AI which enables evaluation of clients' credibility and reliability for a loan might require specialized employees who will analyze the performance of the tool and maintain the AI systems.

Future labor market can be characterized by AI and human cooperation. It is difficult to say to what extent AI will reduce employment in accounting and finance as a result of the use of AI, and to what extent new jobs will be created. This area requires further research.

While AI can offer valuable guidance to businesses, its current limitations in depth of insight and contextual understanding highlight the necessity for a collaborative approach that combines human expertise with AI capabilities for effective implementation.

In conclusion, while AI presents both challenges and opportunities for the accounting profession, its successful integration hinges on a collaborative approach that leverages the strengths of both technology and human intelligence. By applying this approach, in accounting can harness the full potential of AI to drive innovation, effectiveness in accounting practices in the future.

7. Conflicts of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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