Digital Transformation in Audit: Opportunities and Challenges of Artificial Intelligence in Audit

Osman Nuri ŞAHİN[1]

Nimet EVDİLEK[2]

Abstract

Over the last decade, artificial intelligence (AI) has made a significant impact in the accounting and financial auditing fields. In particular, the role of AI in fraud detection, automation processes in financial reporting, and data analysis is addressed. These innovations are factors that have deeply affected both professional practices and academic research and are shaping the future of the sector. This study has examined in detail the effects of artificial intelligence (AI) technologies in the accounting and financial auditing fields. The research shows that AI plays an important role in improving auditing processes as well as data processing and analysis capabilities. AI offers advantages such as fast data processing, improved fraud detection, and increased accuracy of financial reporting. However, these technological advances also bring with them challenges such as data security, ethical concerns, and the need for a qualified workforce. The research emphasizes the need for continuous development and adaptation to AI technologies to be used effectively in the accounting and financial auditing fields. This process plays a critical role in shaping the future of the sector and is vital for accounting professionals and businesses to compete and succeed in the ever-changing business world.

Keywords: *Artificial Intelligence, Accounting, Auditing, Digital Transformation, Technology*

Muhasebe Denetiminde Dijital Dönüşüm: Denetimde Yapay Zekanın Fırsat ve Zorlukları

Özet

Son on yıl içinde, yapay zekâ (YZ), muhasebe ve finansal denetim alanlarında dikkate değer bir etki yaratmıştır. Özellikle, yapay zekanın hile tespiti, finansal raporlamadaki otomasyon süreçleri ve veri analizindeki rolü ele alınmaktadır. Bu yenilikler hem profesyonel uygulamaları hem de akademik araştırmaları derinden etkileyen ve sektörün geleceğini şekillendiren faktörlerdir. Bu çalışma, yapay zekâ (AI) teknolojilerinin muhasebe ve finansal denetim alanlarındaki etkilerini detaylı bir şekilde incelemiştir. Araştırma, AI'nın veri işleme ve analiz yeteneklerinin yanı sıra denetim süreçlerini iyileştirme konusunda önemli rol oynadığını göstermektedir. AI, hızlı veri işleme, dolandırıcılık tespitinde iyileştirme ve finansal raporlamanın doğruluğunu artırma gibi avantajlar sunmaktadır. Ancak, bu teknolojik ilerlemeler, veri güvenliği, etik kaygılar ve nitelikli işgücü ihtiyacı gibi zorlukları da beraberinde getirmektedir. Araştırma, AI teknolojilerinin muhasebe ve finansal denetim alanlarında etkin bir şekilde kullanılabilmesi için sürekli gelişim ve adaptasyonun gerekliliğini vurgulamaktadır. Bu süreç, sektörün geleceğini şekillendirmede kritik bir rol oynamakta ve muhasebe profesyonelleri ile işletmeler için rekabet edebilmek ve sürekli değişen iş dünyasında başarılı olmak açısından hayati önem taşımaktadır.

Anahtar Kelimeler: *Yapay Zekâ, Muhasebe, Denetim, Dijital Dönüşüm, Teknoloji*

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[1] Sorumlu Yazar, Doç. Dr., Alanya Alaaddin Keykubat Üniversitesi, İİSBF, İşletme Bölümü, Antalya/Türkiye, osmannurisahin@yahoo.com, http://orcid.org/0000-0002-6586-7073
[2] Yüksek Lisans Öğrencisi, Alanya Alaaddin Keykubat Üniversitesi, LSE, İşletme A.B.D., Antalya/Türkiye, nimet.evdilek@adu.edu.tr, http://orcid.org/0009-0008-3945-9376

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1. INTRODUCTION

Artificial intelligence-based accounting applications accelerate the processing and analysis of financial data, thus strengthening decision-making mechanisms. The application of artificial intelligence in financial auditing, on the other hand, enables more comprehensive and effective auditing processes by increasing data-based auditing approaches. These technological advances bring with them several challenges such as ethics, data security and changes in the workforce structure. This article aims to evaluate the future potential and current limitations of this technology by discussing the effects of artificial intelligence in the accounting and financial auditing fields with existing examples and analyses.

Artificial intelligence is defined as a type of information processing system that imitates the human brain while seeking answers to the questions asked. The technological developments experienced change stereotypes in various sectors, reduce the workforce and enable to keep up with the digitalizing world. Because the rapid adaptation of businesses to technological developments means not falling behind the sector and the benefits and effects of artificial intelligence emerge. While artificial intelligence changes the rules for many sectors, it is a rapidly developing technology that brings disruptive innovations to these rules (Efe 2022).

In recent years, there has been significant progress in technology that aims to create devices, software and algorithms that are considered ‘‘artificially intelligent’’. Although the developments that will occur at the beginning were expressed as very exaggerated and information pollution occurred, significant and serious progress has been made in recent years thanks to developing technologies. For this reason, developments in artificial intelligence require significant investments in both sectors and auditing areas (Issa. Sun and Vasarhelyi, 2016: 1). With the digitalization of business, technology and automation information, significant progress has been made in these areas, and it can be said that it benefits not only financial shareholders but also almost all individual users and corporate data (Smith, 2018: 245). This process has initiated production work, unmanned work areas such as factories, the inclusion of robotic use in daily life and the era of artificial intelligence. Therefore, a move away from traditional accounting and a return to new accounting models has begun. As financial accounting has almost completely been automated, it has become an inevitable fact that many concepts of cost accounting, such as the determination of distribution keys, the distribution of general production costs, and decision-making models, have to be renewed. Another area that has been and will be seriously affected by this change is “Auditing” (Erdoğan 2019). With all this information, we aim to evaluate the effectiveness of artificial intelligence in accounting auditing.

2. ARTIFICIAL INTELLIGENCE

Artificial intelligence is defined as an information processing system that exhibits features like human intelligence. Thus, it is defined as a technology model that shows rapid development and change in various industry sectors. In this context, machine learning covers a series of interconnected technologies such as image recognition, data mining, information forecasting, speech recognition, smart home technologies and sentiment analysis. For example; accounting data entries can be automatically coded in machine learning, and it is even used in many different technological sectors such as driverless cars, investment portfolio management and home energy systems (Boillet, 2018).

Transactions in the field of finance are no longer done with pen and paper today. Especially with the development of computer technology, computer systems have begun to be widely used in the finance sector (Moudud Ul Huq, 2014: 7). In studies conducted using artificial intelligence, highly developed hardware and software have been used over the years, especially in information technology, and the reasoning activities performed by humans have been implemented with the help of algorithms, systems and machines operating through computers (Sevim and Bülbül, 2017: 7). The abilities called artificial intelligence are Chess and Go systems and driverless cars (Issa et al., 2016: 1). The Oxford English Dictionary defines artificial intelligence as "the capacity of computers or other machines to exhibit or simulate intelligent behavior" (Munoko, Brown Liburd and Vasarhelyi, 2020: 211). Artificial intelligence is cognitive package programs or individual programs that can copy human behavior with

different methods (Smith, 2018: 242). To put it more clearly, it is a technology that is programmed to evaluate human cognitive skills and judgments in the face of events, and even designed to analyze clues from environmental stimuli (Munoko et al., 2020: 210). To obtain accurate results and for the artificial intelligence to learn what to do in a healthy way, it is very important to use quality, impartial and carefully collected data (Gotthardt et al., 2020: 91). Artificial intelligence is also a technology whose learning ability develops after data entries are made without the need for human intervention, with clearly defined boundaries through algorithms created by experts working in the computer science sector. Artificial intelligence algorithms, especially in machine learning, increase their performance over time due to their ability to automate and improve themselves. There are different types of artificial intelligence algorithms; unsupervised learning, supervised learning and reinforcement learning (Dike et al., 2018). These algorithms differ from each other according to their training and working principles. Supervised learning is based on a form of learning that can make predictions based on evidence within the framework of uncertainty. The algorithm includes a known input data store and known responses to the data, and after these processes, the model is trained to create consistent predictions to respond to new data. In this method, the data set must be accurate and consistent for meaningful results. If this is not done, the model predictions may be incorrect, which negatively affects the results. Unsupervised learning is a form of learning that is performed by learning from the entered data set without telling the algorithm what to look for. The system is allowed to work on its own for the right result. Unsupervised learning algorithms are preferred in more complex processes and tasks than supervised learning. Within the scope of unsupervised learning, it algorithmically finds any unknown system in the data set. In the reinforcement learning algorithm, the system perceives its environment and makes decisions on its own, showing how to learn to make the right decisions in reaching the determined goal. Within the scope of this algorithm, the data is analyzed and the system develops itself by feeding itself based on its experiences (Lison, 2015). Artificial intelligence algorithms have now entered industrial sectors, and due to their high accuracy rates, they can perform tasks that depend on many more factors at more accurate and useful rates than humans.

3. AUDIT

The origins of the concept of auditing date back to very old times in history. It has become an important and indispensable concept in human life due to the beginning of life as communities. Especially because of the economic life that started with the Industrial Revolution in the 18th century, the auditing of public decisions and actions has gained special importance and therefore the concept of auditing has been included in the constitutions of countries (Bozkurt 2013). In Türkiye, the concept of auditing entered our lives with the Constitution published in 1961. Articles 126-127 of the 1961 Constitution include how the Court of Accounts will audit public economic enterprises.

The concept of auditing is a systematic process applied to check and verify that the financial records kept by any business, its transactions and operations are carried out in accordance with the relevant legislation (Kayahan, 2015). This process is carried out by independent, trained experts to identify errors, fraud and other irregularities that may negatively affect the reliability or reputation of the business's current financial transactions. Auditing is carried out in two different types depending on the reason, scope and result of the review as internal or external auditing. Within the scope of internal auditing, the effectiveness and efficiency of the current activities of the relevant business are evaluated. In external auditing, the financial statements and activities of the business are objectively evaluated by independent auditors who are experts in their fields (Sağlar, 2009). The intended result of auditing activities is to increase the efficiency and effectiveness of the commercial activities of the relevant company, to positively affect its reputation in the free market and to fulfill the requirements of the legislation. In general, auditing plays a critical role in maintaining transparency, accountability and reliability in organizations (İmamoğlu 2023). Auditing requires planning and standardization of what will be done to achieve the targeted result. If the results achieved do not meet the planned standards, the necessary measures must be taken to detect and correct the standard deviations that cause divergence (Sanal 2002: 4). For all these reasons, we can also say that the concept of auditing is part of the management process. It expresses a management gap without auditing.

Therefore, it cannot be determined whether the work done has been completed or not. This shows us how important a concept auditing is.

4. ARTIFICIAL INTELLIGENCE AND AUDITING

Artificial intelligence is defined as a model that displays human-specific cognitive abilities such as thinking, reasoning and learning and enables them to be performed by machines designed with the algorithms it has. Artificial intelligence has attracted attention with the size of its data storage area in the last few years and has caused financial changes in various sectors due to its integration into the auditing profession (Ng and Alarcon, 2020). It has become necessary for artificial intelligence to review the compliance process and potential dangers in auditing with great care, and this process is important for auditors in terms of keeping data in a healthy way, archiving it, storing forward-looking data and creating retrospective reports (Karabınar and Yılmaz, 2012). Although manual processing is not preferred by businesses during the audit of businesses, artificial intelligence algorithms are used because of automating and simplifying these data input processes. Artificial intelligence can use the right data while examining or auditing a data and to summarize and interpret the inferences from this data.

With the digitalization, the use of artificial intelligence in the audit sector allows auditors to examine fluctuations, effects and anomalies, and to identify potential risk areas (Lokanan et al., 2019). Digitalization of auditing, technology has an important role in increasing the efficiency and effectiveness of the auditing sector. This process of artificial intelligence in the auditing sector benefits financial companies in many aspects such as the accuracy of financial analyses and fast reporting cost savings.

Artificial intelligence has entered the auditing fields in different ways (Fedyk et al., 2022):

- Automatic entries: Financial statements are automated thanks to the automation of the definition and reporting of balance sheet items and artificial intelligence algorithms.
- Data analysis: Artificial intelligence allows for more comprehensive reporting of large amounts of data.
- Workflow automation: Artificial intelligence automates workflows in the auditing process, making them more useful and reducing the possibility of error.
- Risk assessment: Artificial intelligence helps auditors who analyze the financial statements and data of clients in the audit field and go through the solution process to focus on the areas where they are needed.
- Predictive modeling: Artificial intelligence develops models based on inferences that will help auditors identify possible risks and opportunities.
- Facilitating processes: Artificial intelligence simplifies and automates audit methods and processes within a certain order.
- Increased value: Artificial intelligence has the potential to improve the algorithmic value that auditors add in this field by providing insights that would not be easily noticed in the traditional audit approach.

Auditors' ability to use digital products and new technologies in practice needs to be improved and training needs to be provided for this. In fact, companies in the audit sector should encourage auditors to use this software more effectively, more efficiently and comprehensively regarding software and hardware applications. (Efe 2022). Artificial intelligence technologies pose unique risks in various sectors. In fact, while these technologies can be turned into an opportunity to detect, evaluate and manage serious risks identified, institutional capacity is increased, and therefore new risks come with them. Another point where artificial intelligence decisions are evaluated is that the harmony of human-machine interaction requires a high level of care, which in turn represents dynamic risks. Audit managers need to work with senior executives, regulatory authorities and decision-making bodies to implement ethical standards and governance methods on how artificial intelligence is used (Efe 2022). Artificial intelligence technologies will bring clarity to 'data management, data privacy, compliance, supplier management, accounting regularity, human resources, risk management, cyber security and policies. The cross-functional audit team may require new operating models, provided that the group leaders create appropriate control assurance for the affected areas in the organization (Jiang et al., 2017). Thus, artificial intelligence threatens the survival of the company in cases such as subjective and conceptual risk assessments, in case of high reputation

loss, and artificial intelligence technologies are inadequate (Efe 2022). Therefore, to avoid conceptual confusion with the subsets of artificial intelligence, using the same language and creating a common understanding shows that some definitions can be effective (Struthers-Kennedy and Nesgood, 2020). Based on this, it shows that there is a relationship between the relationship with the subsets of artificial intelligence and the current and popular technological solution (RSO) robotic process automation that can imitate everything done with the human brain (Struthers-Kennedy and Nesgood, 2020).

5. CURRENT AUDIT SOFTWARE

In recent years, companies' demand for audit software has been increasing. Generally, auditors should look for ways to speed up their routine tasks in terms of efficiency, effectiveness and finance, and to focus on the priority in terms of importance when evaluated from a business perspective (Efe 2022). For this reason, most audit units see that artificial intelligence audit technology software can help teams create a strong audit plan, improve risk assessments, and create audit plans with high reliability and with what kind of findings (Efe 2022). In fact, in recent years, increasingly developed audit software, modern audit techniques, and monotonous and constantly repetitive tasks are replaced with fast, continuous and real-time reports that are highly efficient and less resource consuming, thanks to artificial intelligence software, and audits are carried out automating them (İmamoğlu, Erat and İnce 2023).

Today, AI-based audit software is increasingly used in audit processes. For example, Deloitte's "Argus" (Deloitte, 2024) software uses AI algorithms to detect anomalies in large data sets, while PwC's "Halo for Journals" (PWC, 2024) tool analyzes anomalous entries in financial data, allowing you to focus on risky areas. In addition, KPMG's "Clara" (KPMG, 2024) platform accelerates audit processes with AI-supported analyses and supports auditors' decision-making processes. Such software allows both a comprehensive review of data and a more effective and accurate audit process. These innovations offered by AI help develop a more predictive and strategic approach in the field of auditing.

With the increasing interest in artificial intelligence software; below, we evaluate six key trends that are thought to move the auditing industry forward as it adopts and supports auditing software (Hashimoto, 2022).

5.1. Increasing Demands to Automate Routine Tasks

Artificial intelligence is implementing innovative ways of automation of humans and machines to serve, which poses a threat to human employment, yet can perform intuitive and logical tasks at the same time. (Huang and Rust, 2018). As a result of the research, it has been shown that artificial intelligence has a positive effect on the efficiency and control phase within the sector, and that beneficial and effective results will emerge as a result of the society's adoption of artificial intelligence technologies (Solaimani et al., 2020). With the entry of artificial intelligence into every area of our lives, the demand for robotic automation is increasing. Auditors will also be affected by this process. Therefore, auditors have a serious gap in the sector due to corruption, inappropriateness and managing the process outside of what is necessary, and although radical changes are being made in this area, they can get results faster by taking advantage of the algorithmic automation of artificial intelligence as a result of the rapid, consistent and realistic advancement in technology. In this case, it positively affects all sectors with a control mechanism.

5.2. Increased Adoption of Cloud-Based Solutions

Data centers that contain large databases, software and various auxiliary hardware form the necessary infrastructure for cloud-based applications. Today, cloud-based software has become increasingly popular in the auditing, accounting and finance sectors (Puhan et al., 2020). In companies, workload has been reduced with cloud-based solutions, remote work has been enabled, no installation is required, and it is a fast, practical and reliable data storage system that provides cost savings.

5.3. Fighting Big Data in Financial Audits

In financial audits, errors and inconsistencies also bring corruption, and therefore it plays an important role in the fight against corruption. However, financial data, which are static and non-linear, and have low data, signal-alert ratio characteristics, do not have a training set used to reveal different financial data anomalies (Wang, 2021). Finance experts who rely on outdated manual tools and techniques are not very successful in finding and managing financial data that increases intentional changes, negligence and errors to the level of fraud. As a result of real-time examination of financial records, using artificial intelligence technologies and providing appropriate data to managers within the company in a reliable manner and making inferences and making predictions about the company using appropriate data analytics (Efe, 2022).

5.4. The Need for Prevention of Fraud with Risk Assessment

If we do not manage artificial intelligence risks correctly, irregularities, fraud and scams in audits are inevitable. With the development of artificial intelligence, the necessity of technologies that increase the usability of big data has increased and new opportunities have been provided with artificial intelligence models as a result of the detection of institutional anomalies (Boa et al., 2021). Risk assessment is a part of the audit for auditors (Efe 2022). Financial pressures, conceptual confusion, concerns in front of businesses and employees, risk assessments include difficulties in controls.

5.5. Opportunity to Grow Consulting Services

Artificial intelligence technologies are rapidly entering the consulting field (Nithiyuwith and Treenuntharath, 2020). The adoption of artificial intelligence by auditing firms increases audit quality. It also plays an active role in decision-making and helps improve their skills by providing mixed-value and artificial intelligence consulting services that are more useful than traditional auditing (Seethamraju and Hecimovic, 2020). Financial statement audits are traditionally conducted by sampling past activities and statistically (Efe, 2022). However, as we know, since auditing practices are changing very rapidly, with access to more automated solutions, today's real-time transaction analysis of auditing will include data verification and risk assessment (Hashimoto, 2022).

5.6. Planning Artificial Intelligence and Audit Interaction

When several factors are considered within the framework of artificial intelligence auditing, it may or may not include all the necessary factors. As a result of the evaluation of artificial intelligence by audit managers who are experts in their field, the risks across the organization should be re-examined in detail (Efe 2022).

6. COMPARISON OF AUDITING IN ARTIFICIAL INTELLIGENCE AND TRADITIONAL AUDITING

Traditional auditing sees algorithmic systems and software as a threat and performs all transactions manually. It provides detailed examination of the appropriateness and accuracy of transactions that require financial records such as bank statements, contracts and invoices. Traditional auditing provides a limited perspective since it can analyze a small portion of the obtained data. Today, investors need faster and more reliable information about the financial status of businesses. While in traditional audits, the financial status reports of the business are issued at the end of the period, in artificial intelligence auditing, we can access information quickly and see the financial status of the business whenever we want. In the past, businesses employed more people and had great difficulties in auditing. In recent years, the workforce has decreased, fast access to data is provided and data storage areas are very large and easier to control. With the automation of artificial intelligence algorithms, data processing and audit reports can be reached in a shorter time. In addition to all the benefits of artificial intelligence technologies, some businesses still maintain the validity of traditional auditing in the business environment (Majumdar et al., 2019). The advantage of traditional auditing is that with the involvement of people in companies, it evaluates business activities in detail (İmamoğlu et al., 2023). Auditors can conduct a detailed audit by examining the activities of companies on site, verifying documents, papers and records, and meeting with company managers in person (Brynes et al., 2018). In recent years, the use of artificial intelligence technologies in auditing processes and in

every area of our lives has become widespread. While interest in artificial intelligence technologies is increasing, the auditing process has become faster and more effective (Ukpong et al., 2019). The auditing process in artificial intelligence technologies is to minimize risks and increase efficiency. Thanks to the algorithms of artificial intelligence technologies, objective auditing and the prevention of human errors in traditional auditing have been ensured. In traditional auditing, quarterly and annual reports are prepared, while with artificial intelligence technologies, audits are reported daily, weekly and annually (İmamoğlu et al., 2023). Thanks to this technology, audits are carried out quickly, saving time and money for the business. Some of today's basic strategies are to become more global and develop on-system hardware that learns integration and audit mechanisms within the system faster. As a result, while in traditional auditing, review, evaluation, analysis and reporting are done by human hands, in artificial intelligence-based technologies, real audit algorithms are developed objectively without human intervention and are carried out automatically.

6.1. Benefits of Artificial Intelligence Technologies in Audit

Artificial intelligence technologies are a system consisting of algorithmic automation structures that think like humans, produce solutions to targeted questions, constantly improve themselves, integrate into every area of our lives while developing and respond very quickly. This system, which is based on continuous learning, is roboticized and we see that it has progressed much more with different software such as Siri, smart home technologies, Google Assistant, smart watch-phone, etc. Artificial intelligence technologies have quickly completed their adaptation period with their entry into our daily lives. With the entry of artificial intelligence technologies into our lives in businesses, along with the decrease in the workforce, large storage areas, storage-collection-reporting of data, businesses are provided with effective and efficient use of artificial intelligence technologies. These technological changes have brought many conveniences to our lives. Some of these are (Şentürk 2023)

- Search algorithms: Search engines are automated algorithmic systems that can perform video and voice searches as well as open sources and quick answers to the searched concepts (İmamoğlu et al.,n2023).
- Social Media: As a result of algorithmic detection of some words on social media, the system removes them, spams, blocks the desired person, and determines some restricted messages (Şentürk, 2023).
- Google Maps: We describe where we want to go, it takes us the shortest way, and it is a useful and effective algorithmic robot that even provides us with the image of the place we will go and the surroundings (Şentürk, 2023).
- E-Payment: Many transactions such as bills, banking transactions, etc. are made using artificial intelligence technologies (Şentürk, 2023).
- Apple Siri: This application is our personal assistant that makes our lives easier (Şentürk, 2023).
- Chatbot: It is the rapid provision of the service offered by reducing the interaction between people (Batal, 2016) Microsoft Cortana: Microsoft provides more effective answers by remembering the answer to the previously asked question (Göksel&Mutlu, 2016).

The benefits of artificial intelligence technologies, which are much more common than the auditing field, are listed below:

- Financial Reporting and Accuracy: One of the advantages of artificial intelligence technologies in the auditing field is the analysis of large data stores and the increase in the reliability and accuracy of reporting financial statements (Couceiro et al., 2020). Artificial intelligence technologies detect fraudulent transactions and can analyze large data (İmamoglu et al., 2023). When a problem is noticed in fraudulent activities, artificial intelligence algorithms follow this situation and intervene by detecting the suspicious source and sending news signals to the auditor quickly (Fedyk et al., 2022). In addition, although artificial intelligence applications are fast and useful in the financial reporting process of data, human judgment and auditor supervision still maintain their importance in terms of accuracy, reliability and accountability (Kokina and Davenport, 2017). Therefore, although artificial intelligence technologies are important for auditors, human judgment is still needed today.

- Efficiency and Speed: Artificial intelligence technologies have made the audit process more efficient and faster. Since the manual and paper-based processes used in the traditional audit process are too slow for the sectors, we benefit from today's technologies due to the errors and inconsistencies that may occur in the audit because time cannot be saved. With the transition of auditors to the modern audit process, efficiency and speed in auditing have increased. While traditional audits are reported quarterly and annually, audits conducted with modern technologies are prepared daily, weekly, monthly and annual financial reports (Chan and Vasarhelyi, 2018). When using artificial intelligence-based technologies, audit processes can provide insights while transforming the situation in the financial statements into action (Noordin et al., 2022). Companies using artificial intelligence-based algorithms have developed in many areas such as efficiency from transactions, reaching the problem quickly and providing a solution quickly.
- Cost savings: In the traditional auditing approach, human capital is used throughout the process of identifying the problem, analyzing it, collecting information and reporting, which causes high costs and delays in the process (Brynes et al., 2018). Artificial intelligence-based algorithmic technologies reduce the manual and monotonous labor of traditional auditing, and we see that the real, modern auditing approach, which is more effective and faster, has high time and cost savings, is integrated into our lives by developing digitally and keeping pace with the global world.

6.2. Challenges of Artificial Intelligence Technologies in Auditing

The transformation of artificial intelligence technologies in the field of auditing is undeniably rapid. Therefore, we see that artificial intelligence technologies bring some challenges in the field of auditing. When artificial intelligence algorithms make the decisions that auditors should make, it causes auditors to become passive during the auditing process (CPA, 2020). Artificial intelligence-based technologies have also brought some challenges to our lives.

6.3. Data Privacy, Security Concerns

In artificial intelligence-based algorithmic technology, the size of the data, data diversity, and the financial infrastructure of the business can become the target of malicious people (Bak et al., 2022). With the current laws, there are still security gaps in the protection of information during audit procedures, end-to-end encryption systems are often not available, and there are risks in storage areas formed in cloud-based systems (Chinnasamy et al., 2021). In the use of artificial intelligence-based technologies, it has become necessary for company employees and auditors responsible for digital auditing to receive continuous training under the name of cybersecurity systems.

6.4. Ethical Concerns and Bias

The use of artificial intelligence-based technologies in the audit process can lead to ethical problems. Some precautions should be taken to avoid bias in the design and use of artificial intelligence-based algorithms in the audit process. For example, in order to reduce bias, the human factor should be eliminated from the audit (İmamoglu, Erat&İnce 2023). Some studies argue that such a bias concern is unnecessary (Rahvan et al., 2020). The basis of artificial intelligence algorithms is that it is up to auditors to realize the effects of the ethical values that emerge (munoko et al., 2020).

6.5. Qualified Workforce Shortage

AI-based algorithms have faced a shortage of qualified workforce in the auditing sector (Eck et al., 2017). As technology continues to advance, there is a need for professionals who use AI and its algorithms in the auditing field (Poli and Permana, 2021). With globalizing technologies, it has become imperative to find qualified personnel. Therefore, it is necessary to provide opportunities for the new generation to grow. For example, universities open career day stands under the name of opportunities for young people. By directing young people to these stands and ensuring that they are introduced to AI technologies, and by providing young entrepreneurs

with training opportunities in accordance with the protocol made between businesses and universities, and by providing new opportunities and supporting them, it is aimed to eliminate the shortage of qualified personnel.

6.6. Perception of Change, Institutional Culture

The adoption of AI-based algorithms can lead to changes in the organization of cultures. AI-based algorithms pose a threat to the skills, positions and activities of auditors. Companies are doing most of the work done with human labor and brain with artificial intelligence technologies, which creates pressure on employees. To overcome the restrictions and obstacles of the organizational culture in the audit, training is provided on how new technologies work today with artificial intelligence algorithms, employees' job security concerns are addressed and a corporate culture that supports innovation is created (Tiron-Tudor & Deliu, 2022).

7. CONCLUSION

This study has comprehensively examined the significant impacts of artificial intelligence technologies in the accounting and financial auditing fields. The research results show that artificial intelligence has an important role in improving data processing, analysis capabilities and auditing processes. While artificial intelligence technologies offer advantages such as fast data processing, improved fraud detection and increased financial reporting accuracy, the challenges brought by these advances are also significant. Data security, ethical concerns and the need for a qualified workforce are the main obstacles to the effective use of artificial intelligence in accounting and auditing.

Continuous development and adaptation are required for artificial intelligence technologies to be used effectively in accounting and financial auditing fields. It is of great importance for accounting professionals to develop their technological skills and gain in-depth knowledge of the functioning of artificial intelligence systems. In addition, it is the responsibility of the sector to use these technologies in accordance with ethical and security standards.

As a result, the integration of artificial intelligence technologies in the accounting and financial auditing fields is inevitable and this integration plays a critical role in shaping the future of the sector. Successfully managing this technological transformation is vital for both accounting professionals and businesses to remain competitive and to succeed in the ever-changing business world. Embracing technology and overcoming the challenges encountered in this process will lead to more effective, transparent and reliable financial reporting and auditing standards.

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GENİŞLETİLMİŞ ÖZET

Giriş

Yapay zekâ teknolojilerinin finansal denetim ve muhasebe uygulamalarına entegrasyonu, karar alma mekanizmalarını güçlendirerek süreçleri hızlandırmaktadır. Finansal verilerin otomatik analizi ve dolandırıcılık tespitindeki gelişmeler, denetim faaliyetlerini daha kapsamlı hâle getirmiştir. Ancak bu teknolojik ilerlemeler etik ve veri güvenliği gibi bazı zorlukları da beraberinde getirmektedir.

Arka Plan

Yapay zekâ, insan beynini taklit eden bilgi işleme sistemleri olarak tanımlanır ve çeşitli sektörlerde devrim niteliğinde değişiklikler yaratır. Teknolojinin gelişmesiyle birlikte muhasebe ve denetim süreçlerinde otomasyon artmış ve işletmeler, teknolojik değişimlere uyum sağlamak zorunda kalmıştır. Geleneksel denetim modellerinden uzaklaşıp yeni muhasebe modellerine yönelmek bu dönüşümün kaçınılmaz bir sonucu olmuştur.

Araştırma Problemi

Yapay zekânın muhasebe denetim süreçlerine etkisi büyük fırsatlar sunarken veri güvenliği ve iş gücü kalitesi gibi önemli sorunları da beraberinde getirmektedir. Bu çalışmanın temel sorunu, yapay zekânın muhasebe ve denetim süreçlerinde nasıl daha etkin kullanılabileceği ve karşılaşılan zorlukların nasıl aşılabileceği üzerine odaklanmaktadır.

Araştırma Soruları

1. Yapay zekâ, denetim süreçlerinde nasıl avantajlar sunmaktadır?

2. Yapay zekâ tabanlı denetim süreçlerinin karşılaştığı zorluklar nelerdir?

3. Denetim sektörünün yapay zekâ teknolojilerini etkin kullanabilmesi için neler yapılmalıdır?

Amaç

Bu çalışma, yapay zekâ teknolojilerinin muhasebe ve denetim alanlarındaki etkilerini incelemeyi ve bu teknolojilerin etkin kullanılabilmesi için gerekli olan stratejileri değerlendirmeyi amaçlamaktadır. Hem fırsatların hem de zorlukların dengelenmesi için sektörel öneriler geliştirilmiştir.

Yöntem

Araştırmada literatür incelemesi yöntemi kullanılarak, yapay zekâ teknolojilerinin muhasebe ve denetim alanlarındaki uygulama örnekleri ve etkileri analiz edilmiştir. Veri analizi, risk değerlendirmesi ve süreç otomasyonu gibi alanlarda yapay zekânın katkıları değerlendirilmiştir.

Bulgular

Yapay zekâ, veri analizi ve otomasyon süreçlerinde hızı artırarak dolandırıcılık tespitini iyileştirmekte ve finansal raporlamaların doğruluğunu artırmaktadır. Ancak veri güvenliği, etik kaygılar ve nitelikli iş gücüne olan ihtiyaç gibi faktörler, teknolojinin yaygın kullanımını engelleyebilir.

Sonuç

Bu araştırma, yapay zekânın muhasebe ve denetim alanlarında sunduğu avantajların büyük olduğunu ancak bu avantajların sürdürülebilir olması için sürekli gelişim ve adaptasyonun şart olduğunu göstermektedir. Etik standartların benimsenmesi ve nitelikli iş gücünün yetiştirilmesi, bu teknolojinin etkili kullanımında kritik bir rol oynayacaktır. Yapay zekânın muhasebe ve denetimde yaygınlaşması kaçınılmazdır ve bu teknolojilerin sektörde etkin kullanımı rekabet avantajı sağlayacaktır. Muhasebe profesyonellerinin yapay zekâ tabanlı teknolojilere uyum sağlaması, gelecekte başarılı olmanın temel anahtarlarından biri olacaktır. Bu çalışma, yapay zekânın doğru yönetimi ve adaptasyonunun sektör için önemini vurgulayarak, daha güvenilir ve şeffaf denetim standartlarına geçişin önünü açmaktadır.