Chapter 9

Integrating Artificial Intelligence and Audit: An Assessment for the Future

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Abstract

Artificial Intelligence (AI), as a byproduct of a profound technological paradigm shift, has necessitated a conceptual reassessment across numerous disciplines. Enhanced data processing capabilities, the proliferation of big data analytics, and the widespread adoption of machine learning techniques facilitate the execution of auditing activities with greater comprehensiveness, velocity, and efficacy. Auditing stands at the forefront of these fields. Beyond serving as a supportive instrument, AI is evolving into a strategic component within decision-making mechanisms. As a consequence of digital transformation in auditing, various approaches targeting the analysis of vast datasets have emerged, elevating the significance of activities such as continuous auditing and instantaneous, real-time reporting. From this perspective, AI-powered auditing tools provide users with substantial advantages in risk assessment and the mitigation of potential risks.

The primary objective of this research is to evaluate the impacts induced by AI in auditing, delineate the resulting transformations, and provide a detailed exposition of its contributions to firms operating within this sector while prognosticating the future of the profession. By examining the impacts of AI on auditing through a multidimensional lens, this study aims to scrutinize the opportunities it presents. Furthermore, the utilization of AI in auditing is investigated from the perspectives of both external (independent) and internal audit

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1. Introduction

The concept of artificial intelligence, which emerged as a result of technological progress in today's world, has entered our lives in every field. Especially in the last 10 years, it has gained a great speed and its usage areas have started to become

widespread day by day. It is not limited to only one country, but also includes and continues to influence all countries, societies and economies on a global scale.

The rapid development of artificial intelligence has drawn considerable attention for various reasons. Businesses are increasingly inclined to leverage the advantages offered by this technology. According to a report published by the World Economic Forum, a significant majority of businesses (over 75%) plan to integrate this technology into their operations in the future (Ağdeniz, 2024: 112). This percentage indicated in the report highlights that artificial intelligence will increasingly influence various fields, particularly the business world, in the future.

The acceptance of technological innovation such as artificial intelligence has started to be used in many sectors, and the integration processes in all areas, especially in enterprises, have significantly increased their speed. One of these areas is the control. The use of artificial intelligence in the audit area aims to carry out transactions faster, effectively, efficiently and reliably. Considering the providing advantages of artificial intelligence technologies, audit companies are expected to take great steps in the use of these technologies.

In this study, it was explained in detail what kind of changes the effects of artificial intelligence in control caused by evaluating, and at the same time, the contributions it will make to the businesses operating in this sector, and what awaits this profession in the future is explained. In addition, traditional audit and artificial intelligence-supported audit approaches were examined comparatively. Beside this the contributions of artificial intelligence technologies to the audit processes were emphasized.

2. Articial Intelligence Concentual Framework

The term artificial intelligence, which was first used by John McCarthy in 1956, is a very common concept that we come across both in the business world and in the literature today (Alansari, Gerwe and Razzaque, 2021: 157). With its most incoming definition, artificial intelligence is 'the ability to accurately interpret the data obtained by any system from the outside, to learn from this data and perform certain tasks through adaptation' (Zemankova, 2019: 148).

In another definition, artificial intelligence is a megatrend technology that performs activities that humans cannot do with digital tools by imitating human intelligence and his cognitive abilities so that any task can be performed (Eltweri, 2021: 1)

This technology, which basically has functions such as problem solving and decision making, tries to understand the mindset of individuals. In addition, it is a system that aims to produce an algorithm in other words, that aims to produce an efficient and logical solution when faced with any problem (Efe and Tunçbilek, 2023: 73). It is based on the use of human cognitive processes such as the execution of logic, generalization of any subject right and learning something from background information through technological tools.

The general characteristics of the intelligence can be listed as follows (Serçemeli, 2018:375):

- *Being able to act like a human being*
- *Being able to think like a human being*
- *Ability to think rationally*
- *Ability to behave rationally*

Artificial intelligence behaviors, which are referred to as cognitive technology or cognitive informatics in various sources (Kokina and Davenport, 2017:117), are a technology that can produce solutions by acting rationally in situations of uncertainty by matching human behavior and can be used in a wide range of categories.

Artificial intelligence is described as a branch of computer science. It basically aims to create smart machines for many activities. A series of activities that can be performed by a computer with artificial intelligence or any hardware; acquisition of information, learning ability, ability to plan, speech definition, problem solving, deep learning, machine learning, ability to manipulate and move objects, programming, reasoning can be listed (Alansari, Gerwe and Razzaque, 2021: 158).

When the origins of artificial intelligence are examined historically, it is seen that it dates back to 1956 and the term was first used at the Dartmouth Conference. In this conference, various factors were mentioned about computers that can use language, automation and language artificial intelligence that can develop itself. (Zemankova, 2019: 148).

According to various researchers, it is claimed that the foundations of the concept of artificial intelligence were laid in the 1950s by the thinking

of the machines mentioned by Alan Turing in his article and focusing on computational machines. Over time, this idea has turned into different shapes with the development of technology and steps have been taken in different fields. One of the important steps taken in this field has evolved into deep learning, which works on the basis of artificial neural networks and is expressed in the form of machine learning. These methods make it possible to use them mainly in decision-making processes, as well as in the daily activities of people. In addition, the foundations of many technological vehicles such as driverless vehicles in the automotive industry, the fast food sector, the construction of various robots in logistics and storage, and drones have been laid with the development of artificial intelligence over time (Ibid., p.148).

3. Digital Transformation in Auditing and the Innovations it Brings

In today's world, where digitalization is developing rapidly in every field, digital transformation in control has inevitably been experienced.Making great use of technology in the more effective and efficient execution of audit activities constitutes the basic logic of digitalization in audit. To conduct the auditing process more effectively, there is a growing need for more information. This situation has led to the insufficiency of traditional auditing techniques over time, as more data needs to be obtained and analyzed. The advancement of technology has initiated the inclusion of digital tools and systems in auditing activities. The integration of digital tools into all areas of life, particularly accelerated by the COVID-19 pandemic, has inevitably impacted the field of auditing. Consequently, the need to revisit auditing processes has contributed to the increasing inclination of all stakeholders in the auditing field towards technology (Yeşilçelebi, 2022: 382-383).

This transformation also has a notable impact on professionals in the auditing field. It has become essential for auditors to possess technological competencies and receive training in this area as part of the requirements of digital transformation.

Many factors, especially the spread of digitalization and the pandemic, have encouraged to adapt to the rapidly changing conditions in the audit sector as well as in other areas. From this point of view, there have been a tendency for audit companies to update their existing structures and create various databases in this direction, to increase the efficiency of the audit by archiving certain audit cases, and to provide online and offline audit activities. In the "Creating Information for the CPA Sector" report, it was emphasized that the technological developments of audit activities and processes should be followed

soon; to adapt to the developments in methods, concepts, technologies and tools, to encourage the audit sector to digital transformation in general through information and communication technologies, and to achieve the same parallelism of the digital economy at national and international levels (He, 2023:269).

4. Impact of Artificial Intelligence on Audit and Expectations

The spread of digital technologies affects the activities of businesses and the way they compete. Therefore, businesses take various initiatives to engage in digital transformation. Among them are various applications such as cloud computing systems, big data analytics and artificial intelligence. The main purpose of all these initiatives is to increase operational efficiency and to adopt the technological innovations brought by the age. Thus, it is aimed to add value to the activities of the enterprise. Although the use of artificial intelligence in control is not new, its use is seen to have gained great momentum today and its use is expected to become widespread in the future (Hu et al., 2021: 460).

When today's business world is examined, artificial intelligence has become the basic element of decision-making tools used in both technical and managerial processes in modern businesses (Omoteso, 2012: 8491). Considering that the integration of artificial intelligence technologies into the business world has accelerated in the field of audit, it is obvious that it will make manual audit activities difficult. This situation makes it necessary for the auditors to have cognitive abilities in this field and to update their activities in this direction. Artificial intelligence technologies are expected to bring innovations in the field of control from various angles. Basically, it can be said that the expected change, the future adoption of the artificial intelligence-based approach in the audit sector instead of the traditional audit approach, is one of the biggest effects of digitalization on audit. When the traditional approach is compared to the artificial intelligence-supported approach, it can be said that there are differences in terms of basic stages. These basic stages are shown in Table 1 below:

Table 1: Artificial Intelligence Enabled Audit Approach- Traditional Audit Approach

Phase	Artificial Intelligence Enabled Audit Approach	Traditional Audit Approach
Planning	Analyzing large amounts of data related to business structure, accounting and finance systems.	The auditor's collection of information about the business structure, accounting and financial system.
Contract	Estimating the risk level and determining the required audit period.	Preparation of the engagement letter by the auditor according to the estimated audit period.
Identification of risk factors	Identification and analysis of business-related risk factors.	Identification of risk factors by the auditor and use of professional judgment to make the decision.
Control risk assessment	Monitoring of controls continuously.	Review of business policies by the auditor and performance of various controls tests.
Substantive tests	Carrying out continuous and detailed tests on all (100%) balance sheets of the company and conducting analyses for several economic years and continuous pattern recognition.	Performing detailed tests with various sampling methods, performing analyses over only one year.
Evidence assessment	To be carried out in an integrated manner with the previous section.	The auditor's assessment of the sufficiency and clarity of the evidence to obtain reasonable assurance about the entity's financial position.
Audit report	To be able to obtain an audit report continuously instead of categorizing it as a result of the audit activity process.	Preparation of the audit report based on the information obtained in the previous stage.

Source: (Rodrigues et al., 2023).

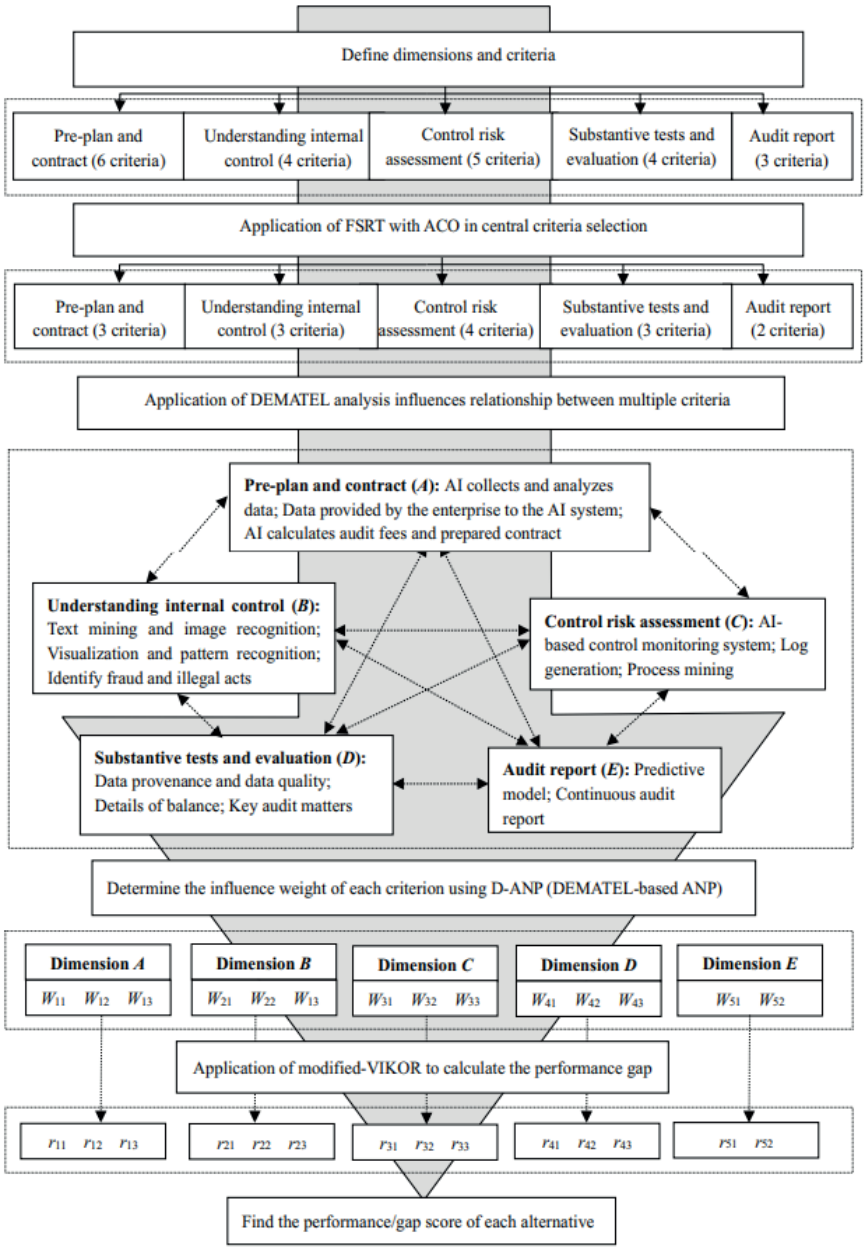
In Table 1, the traditional control approach and the artificial intelligence enabled approach are given comparatively. The AI-supported approach has many advantages over the traditional approach. The audit activity carried out has several advantages in terms of reducing the commitment to the manual and on-site audit, the effectiveness, efficiency and value of the audit. It has many advantages, especially in determining the audit risks, in analyzing very big data, in performing audit tests, and analyzing the information of more than one financial year of the enterprise. In the artificial intelligence-based audit approach, there are no negatives in the selection of audit evidence and

the giving of relevant opinions arising from prejudice and subjective errors of any auditor. In addition, digital audit prevents deficiencies that reduce the effectiveness and efficiency of the audit while focusing on the auditors' evidence collection and regulation in traditional audit, thus a quality audit activity is carried out. One of the advantages of the audit carried out based on artificial intelligence is the benefit it will provide in terms of time and energy. In digital audit, there is no need for standard processes that auditors try to carry out every time in traditional audit. It is also useful in creating more value, as the problems that may occur can be identified by large-scale data sets (He, 2023: 270).

Considering the advantages of artificial intelligence-supported audit in this respect, it is seen that various investments are made in this field by many audit companies. It is seen that BIG 4 audit enterprises, known as the four major audit companies, have taken steps in technological innovations (Hu et al., 2023: 460).

In the future, the adoption of artificial intelligence-supported audit in audit processes is important in terms of increasing the efficiency and efficiency of audit activities. It is expected to be used by a wider number of audit companies in the future, thanks to its advantages such as allowing a very large amount of data to be analyzed by obtaining data from more sources, and providing instant verification by obtaining a general result from complex data. Like the traditional audit approach, the artificial intelligence-supported audit process consists of a series of activities. According to the study conducted by Hu et al., these processes consist of five stages: preliminary planning and contract, understanding of internal control processes, control risk evaluation, basic tests and evaluation, preparation of the audit report, and these stages are shown in detail in Figure 1:

Figure 1: Artificial Intelligence Enabled Audit Process



Source: (Hu et al., 2023).

5. Conclusion

Digitalization all over the world has shown its effect in many areas in the business world. The integration of technological innovations into business processes is one of the most important factors that provide a competitive advantage. At this point, it is a rapidly increasing phenomenon in the trend of using technological products, especially artificial intelligence, in the activities of enterprises. The use of these innovations is expected to become widespread in the audit sector in the future.

In this study, it was aimed to reveal the digitalization experienced in the audit and, as a result, the effect of artificial intelligence on audit, the artificial intelligence-supported audit process and the expectations for the future. In the study, the effects of digital technologies in the field of audit, comparison of traditional audit and artificial intelligence-supported audit processes and future expectations were revealed. In addition, the advantages that artificial intelligence-supported audit activities will provide to businesses are examined.

Audit companies, known as the pioneers of the audit sector and referred to as BİG 4, are among the pioneers that have started to invest in artificial intelligence technologies. One of Deloitte's work in this field is that IBM uses Watson technology in natural language processing (NLP) during auditing. On the other hand, KPMG started to use cognitive information technology in its audit processes. Likewise, it is seen that PwC uses 'Halo' computing in order to increase the effectiveness and efficiency of the audit process. Earn and Youn (EY) also used a system called Robotic Process Automation (RPA) developed by him to provide an efficient inspection service (Hu et al., 2023: 460).

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