Chapter 1

The Challenges of Taxing Artificial Intelligence

Orçun Avcı[1]

Abstract

Rapid advancements in artificial intelligence (AI) technology are profoundly affecting production processes and economic relations, highlighting the structural limitations of existing taxation systems. Traditional tax regimes, designed based on human labor and physical capital, face significant challenges in the wake of widespread AI-based automation, such as erosion of the tax base, undermining of tax fairness, and threats to the sustainability of public revenues. In this context, the taxation of AI emerges as a natural consequence of rapidly evolving technology and the business world. Many countries are conducting various studies to develop regulations regarding AI taxation. The aim of this study is to identify potential problems in the taxation of AI and to propose possible solutions. The main motivation behind this research is the limited availability of written studies on this topic. The study concludes that, at a global level, a fully structured AI taxation policy has not yet been established. Achieving international cooperation on AI taxation, carefully examining regulatory approaches, understanding the ethical, social, and economic impacts of new technologies, and designing a fair, sustainable tax strategy that does not increase business costs are of critical importance. Otherwise, failing to tax such a powerful force could lead to even greater problems.

1. Introduction

AI enables machines to perform tasks that are typically associated with human intelligence, such as learning, problem-solving, reasoning, perception, and even understanding language. These technologies are creating revolutionary changes across many industries today and are becoming an integral part of daily life. AI provides the ability to solve complex problems through techniques such as big data analytics, machine learning, and deep learning, while also paving the way for the emergence of new business models

1 Assoc. Prof. Dr., Aksaray University, orcun.avci@outlook.com, ORCID: 0000-0002-7917-9802.

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and revenue streams. These technological advancements allow businesses and individuals to operate more efficiently, innovatively, and profitably. This transformation has also affected the field of taxation. Traditional practices in tax law are being transferred to the digital environment through digitization and internet technologies. For example, many books, records, and documents that previously had to be prepared, stored, and presented physically are now prepared, stored, and even submitted digitally. Thanks to increasing technological capabilities, not only digitization but also the use of AI applications in taxation processes has become possible. The use of AI systems, which are becoming indispensable technologies in social life today, has inevitably begun to extend to public services and, more specifically, taxation processes. However, the opportunities offered by AI also bring various legal and regulatory challenges. In this context, the taxation of AI has become an important topic of discussion both among academic circles and policymakers.

Traditional tax systems largely rely on assumptions about human labor and physical capital. However, AI applications deviate from these assumptions due to their ability to operate across borders, intangible structures, and processes that minimize human intervention. In particular, the impact of AI-supported automation on the workforce raises serious concerns regarding the sustainability of public revenues such as income tax and corporate tax. Questions about who and what should be subject to taxation, the legal status of AI, and how the principle of tax justice can be ensured in this new technological context necessitate the development of new normative frameworks beyond existing legislation. Moreover, concerns that excessive taxation could stifle innovation, while insufficient taxation could exacerbate income inequality, require policymakers to strike a careful balance. This study seeks to address the question of how AI, situated in such a sensitive position, should be taxed. In this context, the study first provides information on the definition and scope of AI. It then examines the relationship between AI and taxation. Subsequently, it reviews AI taxation practices in selected countries. Finally, the study identifies the main challenges related to AI taxation and offers possible solutions.

2. Artificial Intelligence: Definition and Scope

Although the concept of AI was officially coined in 1956, the pioneering studies are considered to have been conducted as early as 1943. Inspired by the neuronal structure of the living brain, this research led to the construction of the first artificial neural network computer in 1950 and paved the way for the development of the concept of machine learning (McCulloch &

Pitts, 1943: 115). The concept of AI is derived from the idea that machines can think like humans. Alan Turing's 1950 paper, "Computing Machinery and Intelligence," questioned whether machines could think and how the intelligence of a machine could be tested, laying the foundation for subsequent studies in the field. Turing proposed that machines could exhibit intelligence and perform specific tasks in a human-like manner (Britannica, 2024).

AI is a technology that enables computers and machines to mimic human-like learning, comprehension, problem-solving, decision-making, creativity, and autonomy. AI-based systems have the ability to perceive and recognize objects, understand human language, and respond accordingly. These systems can operate independently, providing recommendations to users and experts without requiring human intelligence or intervention (Stryker, 2024). Some countries have incorporated references to AI in their legislation and regulations. In this context, definitions from the United States (U.S.), European Union (EU) member countries, and Türkiye are highlighted. In the U.S., the proposed 2018 AI Act by the National Security Commission mentions the establishment of an independent executive commission to examine AI advancements and defines the term "AI" in the Act to include the following aspects. According to this definition (Barfield & Pagallo, 2020: 18):

(1) Any artificial system that performs tasks under changing and unpredictable conditions without significant human supervision, or that can learn from experiences and improve its performance when exposed to datasets; (2) Any other artificially developed system in computer software, physical hardware, or other contexts that solves tasks requiring human-like perception, cognition, planning, learning, communication, or physical action; (3) An artificial system designed to think or act like a human, including cognitive architectures and neural networks; (4) A set of techniques, including machine learning, designed to approach a cognitive task; and (5) An artificial system designed to act rationally, including an intelligent software agent or embodied robot, that achieves goals through perception, planning, reasoning, learning, communication, decision-making, and taking action.

On July 12, 2024, the EU issued Regulation 2024/1689 (AI Act[2]), the world's first comprehensive regulation in the field of AI. The regulation

2 "*Regulation (EU) 2024/1689 of the European Parliament and of the Council of 13 June 2024 laying down harmonised rules on artificial intelligence and amending Regulations (EC) No 300/2008, (EU) No 167/2013, (EU) No 168/2013, (EU) 2018/858, (EU) 2018/1139 and (EU) 2019/2144*

adopts an approach that prioritizes the protection of individuals' health, safety, and fundamental rights within the EU. To achieve this goal, the Regulation provides a risk-based framework that imposes a set of obligations on individuals and organizations based on the role of actors in the AI value chain, the risk level inherent in the technology used, and/or risks arising from the context of use (e.g., workplace environment).

In Türkiye's National AI Strategy (2021–2025) document, AI is defined as "*in its most general sense, the capability of a computer or a computer-controlled robot to perform various activities in a manner similar to intelligent beings*" (UYZS, 2021: 12). The debates surrounding definitions of AI reveal that these definitions continuously vary depending on their fields of application. In this context, there is a general consensus that AI cannot be confined to a fixed definition (Henckel, 2023: 201). The broad scope of the definition proposed in legislation has given rise to various criticisms. However, considering the rapid development of technology and the resulting impracticality of a fixed definition, limiting the definition through annexes and allowing flexibility may be regarded as a reasonable approach.

For many years, efforts to explain the concept of AI have been based on approaches that reflect the ability to behave like humans and to think in a human-like and rational manner. The term AI contains an explicit reference to the concept of intelligence. However, since intelligence is a vague concept in both machines and humans, it has been studied by psychologists, biologists, and neuroscientists; nevertheless, AI researchers have mostly relied on the concept of rationality. This concept refers to the ability to choose the best possible action to achieve a given goal, taking into account specific criteria to be optimized and the available resources (Gayretli Aydın, 2023: 25–28).

AI is generally defined as the ability of a computer or a computer-controlled machine to perform tasks related to advanced cognitive processes, such as reasoning, inference, generalization, and learning from past experience that are typically assumed to be uniquely human attributes (Nabiyev, 2021: 27). In this context, AI technologies provide managers with unique tools to reduce the complexity of decision-making and create structural transformation across various sectors. They are considered particularly beneficial in enabling complex and time-consuming tasks to be completed more effectively and efficiently (Huang, 2018: 1818). Today, AI systems, whose areas of application and numbers are steadily increasing, have undergone significant and substantial development over the past two decades. The transformation

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and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (AI Act)", https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L_202401689.

of the datasets used into big data has accelerated this process. Indeed, big data refers to high-volume, high-velocity, and/or highly diverse information assets that drive the information, decision-making, and process automation required by AI systems (Houser & Sanders, 2018: 3).

Data, which is of crucial importance for the functioning of AI systems, is conceptually defined as machine-readable and encoded facts, figures, and information. In terms of the technical operation of AI systems, data must be stored in electronic form entirely as numerical expressions, since data has no physical counterpart. These numerical expressions manifest themselves in the form of various signs, letters, symbols, or digits (Güçlütürk, 2022: 12–15). AI accelerates data processing, reduces the number of tasks, and creates concentration forces for economic activities. This technology has played a critical role in preventing the pandemic and in the expansion of consumption (Jiang, 2020: 334).

AI consists of applications that enable the imitation of human brain functions by machines and involve an ongoing learning process. It primarily operates through software programs embedded in various technological devices and via the internet. AI was initially developed to assist humans in military and technical activities that are dangerous or pose threats to life and safety. Over time, its use expanded to include manufacturing tasks involving sequential and repetitive activities, as well as e-commerce applications such as the use of pre-coded responses to specific questions in customer relations, including virtual assistants. Today, the need for AI has become increasingly unavoidable in enhancing the quality of services across a wide range of fields, including healthcare, education, banking, autonomous vehicles, assistant services used on mobile phones or tablets such as Siri, marketing services that enable online live messaging, the detection and deterrence of security breaches in businesses, and various applications in agriculture. For example, during the pandemic period, the contributions of AI to the healthcare sector, particularly in protecting healthcare workers and reducing the risk of transmission through patient monitoring, conducting tests to identify new cases, and analyzing data obtained from patients, have been noteworthy (Orkunoğlu Şahin, 2022: 52). As can be seen, AI has emerged and will continue to emerge in many fields and under various conditions.

3. Artificial Intelligence and Taxation

AI is becoming a key component of the digital government journey and offers significant benefits in areas such as automation, anomaly detection, and improved decision-making. For example, AI-powered chatbots are used to

respond to citizens' inquiries and assist with form-filling processes. In disaster management, AI contributes to the early prediction of natural disasters and helps accelerate response efforts. In tax administrations, AI is used to detect fraud. Overall, the use of AI in the public sector can enhance government efficiency, responsiveness, and accountability. However, the adoption of AI in the public sector lags behind that of the private sector. Governments face context-specific challenges and constraints that hinder the rapid deployment of AI, including skills gaps, legacy and outdated IT systems, data availability issues, and fiscally constrained environments, as well as higher requirements related to privacy, transparency, and the representation of different social groups (OECD, 2025: 3).

Most of the activities that form the basis of the taxation process largely consist of repetitive and time-consuming tasks such as data collection, analysis and comparison, the acquisition of factual and legal information, and case-based decision-making. Likewise, taxpayers are required to follow legislation, collect data, input data into systems, maintain accounting records, and prepare tax returns while fulfilling their obligations within these processes. These activities can essentially be viewed as data-driven input–output procedures. Indeed, statutory books, accounting records, contracts, and transactions carried out within the framework of rules set out in existing legislation constitute the inputs, whereas the determinations made by tax administration officials or certified public accountants/tax experts regarding the outcomes of transactions carried out in accordance with legal norms (such as tax payment or non-payment, tax rates, and tax evasion) can be characterized as outputs. Considering these characteristics, a potential has emerged for adapting tax concepts and rules to AI-supported business models, and tax administration has begun to be seen as a candidate field for the implementation of AI–based systems (Kuźniacki, 2019).

In recent years, the growing number of taxpayers and the increasing complexity of tax collection processes have been pushing the limits of traditional methods. The high computational capacity of AI plays a significant role in overcoming these challenges. With the Fourth Industrial Revolution, AI technologies have begun to be used in tax practices for critical processes such as data analysis, anomaly detection, and the enhancement of tax compliance. AI both reduces taxpayers' compliance costs and enables tax administrations to conduct more effective and lower-cost audits (Turan, 2020: 67). Moreover, by enabling more effective tax audits, AI can help reduce tax avoidance and tax evasion behaviors. Through AI, tax data can be compared in real time, cooperation and integration with taxpayers and other tax administrations can be ensured, and disputes can be minimized

(Avcı, 2021: 60). These gains are of particular importance for developing countries. Given this position, AI has begun to be adopted by many tax administrations today. In this context, AI is used in numerous areas such as the automated sharing of personalized information, virtual assistants, risk analysis, the detection of tax evasion and fraud, support for administrative decision-making processes, dispute resolution, and ensuring the security of tax systems. Technologies employed for these purposes include chatbots, machine learning, artificial neural networks, multilayer algorithms, and decision trees (Szabó, 2024: 55–58; Yıldız & Köşer, 2025: 11).

Despite all these developments, the widespread use of AI creates various challenges from the perspective of international taxation. The digital economy is characterized by a unique reliance on intangible assets, the intensive use of data, the widespread adoption of multi-sided business models that derive value from externalities generated by free products, and difficulties in determining jurisdiction. This situation raises fundamental questions regarding how businesses operating in the digital economy add value to their operations with the help of AI, how they generate profits, and how this relates to the characterization of income for tax purposes. At the same time, the fact that new ways of doing business may lead to the relocation of core business functions and, consequently, to a different allocation of taxing rights, and thus to lower taxation, does not in itself indicate flaws in the existing system. Closely examining how businesses in the digital economy create value and generate profits through AI, taking into account the specific characteristics of the sector, is important in order to determine whether existing rules need to be adapted and, if so, to what extent (OECD, 2023: 10). AI applications with such significant potential to produce far-reaching outcomes are today most commonly manifested through chatbots and data analytics in many countries. The use of machine learning and robots by an increasing number of countries, both in taxpayer services and in tax auditing, is also becoming more prevalent. However, the taxation of AI itself remains one of the key issues that continues to be widely debated.

4. Studies on the Taxation of Artificial Intelligence in Selected Countries

Learning the details of efforts to tax AI and thus being able to propose various solutions to potential issues in this field will be possible through examining and evaluating the practices of different countries. Some countries have conducted studies or developed plans regarding the taxation of AI. In this study, regulations concerning advanced countries leading in AI and

Türkiye have been examined. In this context, the U.S. was examined first. The U.S. Department of the Treasury and the Internal Revenue Service (IRS) use AI as one of the cornerstones of their modernization strategies, aiming to improve taxpayer services, optimize enforcement, and strengthen fraud detection capabilities. Early applications, such as AI-powered chatbots, intelligent automation, modernization of legacy applications, and machine learning for file selection, provide measurable gains in efficiency, accuracy, and response speed. At the same time, governance frameworks emphasize privacy, transparency, and ethical oversight. Additionally, they recognize the sensitivity of taxpayer data and the importance of public trust. Although challenges remain, such as integrating AI with legacy systems and ensuring fair use, the Treasury's multidimensional approach demonstrates a conscious balance between innovation and accountability. As AI capabilities advance, it will be critical to continue focusing on privacy safeguards, policy updates, and transparency to maintain operational improvements and public trust in the IRS's mission (Shaikh, 2025: 3; Zhao & Wang, 2025: 1).

In some U.S., particularly California, efforts to tax AI and automation are being intensely debated. However, comprehensive regulation at the federal level has not yet been enacted. The taxation of AI has increasingly become a topic of discussion today. The main issue that often arises is the potential of AI (and other automation technologies) to transform the workforce and the implications of this for tax policies. AI and automation can replace traditional jobs, leading to changes in the labor market. This may result in increased unemployment or decreased labor demand in certain sectors. On the other hand, the economic growth and productivity gains generated by AI and automation technologies should not be overlooked. These technologies have the potential to create new job opportunities, optimize processes, and enhance competitiveness. How tax policies should be adapted to encourage the economic benefits of these technologies and support innovation is also an important point of discussion. Consequently, the taxation of AI and automation should be addressed in a balanced way, taking into account the economic impacts of technology and its societal consequences. In this process, factors such as the transformation of the labor market, the restructuring of tax policies, and the promotion of technological innovation need to be considered (Bolahatoğlu, 2024: 76-77). Some policy proposals in the U.S. have suggested drafts aimed at prohibiting discriminatory tax practices specifically on AI services. For example, the model policy draft titled the "AI Tax Non-Discrimination Act" envisages making "preferential or excessive taxes" on AI subscriptions or services illegal (ALEC, 2025). Currently, there is no federal tax specifically targeting AI in the U.S. discussions regarding

AI taxation remain at the level of policy proposals. However, AI has already become an important tool in the operational processes of the U.S. tax administration.

Looking ahead, the IRS and the Department of the Treasury appear ready to expand the use of AI in emerging areas such as cryptocurrency compliance, adaptive audit strategies, and predictive analytics aimed at reducing the tax gap. Greater integration of natural language processing (NLP) tools, secure digital services, and multilingual accessibility could further enhance taxpayer engagement. At the same time, the development of explainable AI and bias mitigation techniques will be critical to maintaining fairness and trust. Future progress will depend not only on technological innovation but also on transparent governance and ongoing public dialogue to ensure that AI strengthens, rather than undermines, public confidence in the tax administration (Shaikh, 2025: 3).

France is one of the leading countries in the taxation of AI and similar technologies. Regarding policies proposing the collection of taxes on AI and robotics are being debated in the country. In France, discussions on the taxation of AI have intensified especially since 2018, and several policy proposals have emerged (Bastani & Waldenström, 2024: 3). Under the current tax system, income generated by AI or the earnings of companies using AI are taxed through standard corporate income tax (Impôt sur les sociétés) and value-added tax (VAT). Within the context of the 2026 budget, a proposed draft aims to introduce an "AI solidarity tax" (Taxe de Solidarité sur l'Intelligence Artificielle), which would impose a direct, low-rate tax on income derived from AI. The main motivation behind the draft is to finance the social costs generated by the AI economy, particularly job losses due to automation and the need for skill transformation. According to the proposal, this tax (Lebrun, 2025):

- It would cover income generated from AI services and products,
- It would target high-earning actors, such as multinational technology companies,
- The revenue collected would be specifically allocated for social purposes, particularly for programs supporting workforce reskilling and employment initiatives.

This proposal remains at the level of public discussion and has not yet become formal legislation. However, its emergence indicates that the debate on taxing AI has begun in France. Policy work on AI taxation continues in the country, as France is evaluating various legal regulations to support

the digital economy and align tax policies with these new technologies. In addition, France implements various programs that provide tax reductions and incentives to encourage the development of AI and digital technologies. Through these programs, companies seeking to invest in AI-related R&D are offered various tax benefits (Bolahatoğlu, 2024: 79).

Another country is the United Kingdom (UK). In the UK, there is no specific legislation or dedicated "AI tax" regarding the taxation of AI and similar technologies. However, the UK is one of the countries that evaluates the effects of AI and the digital economy and develops policies on this topic. The UK has published various reports and strategies examining the economic and societal impacts of technologies such as AI. These reports emphasize the potential effects of AI on economic growth and employment, as well as the need to reconsider taxation policies. For example, reports published by the UK Treasury provide comprehensive assessments of the taxation of the digital economy, including AI, and examine the implications of digital technologies for tax policy. At this stage, however, no separate tax mechanism has been specifically established for AI. Overall, the UK takes a cautious approach to taxing technological advancements such as AI and automation, while attempting to adapt existing tax systems to accommodate these new technologies (Coventry University, 2025).

The UK tax authority, HM Revenue & Customs (HMRC), is developing strategies to use digitalization, automation, and AI systems as tools for tax compliance and auditing. For example, HMRC's "Transformation roadmap" states that AI and automation will be used to increase tax compliance, enhance data analytics, and manage compliance risks. By leveraging AI to quickly identify and prevent issues related to the tax system, HMRC aims to improve its approach to focusing on broader compliance efforts. With new risk-targeting capabilities, the goal is to identify cases for review and enhance case selection processes (HMRC, 2025). HMRC and the government are showing a clear tendency to increase the use of AI in tax administration and compliance processes.

In Germany, the taxation of AI and similar digital technologies is an important agenda item, as in other European countries. Work is being carried out on the taxation of AI and automation. However, Germany does not have a specific tax mechanism under the name "AI tax" (OECD, 2025: 69). Germany provides various tax incentives to encourage R&D and innovation in AI and digital technologies. Companies can deduct their R&D expenditures on AI from the tax base and, in some cases, benefit from additional tax advantages. Policy proposals also take into account the effects

of AI and automation on the labor market. Tax incentives and grants are being considered to support workforce training and digital transformation. Germany actively participates in EU-level discussions on the taxation of AI and digital technologies. Accordingly, new steps are expected in the coming period regarding how tax policies for the digital economy will be shaped and how they will adapt to emerging technologies such as AI (Bolahatoğlu, 2024: 79). At the same time, the integration of AI systems into tax return evaluation and risk analysis systems is at the pilot stage in Germany. Efforts are ongoing to use AI and machine learning algorithms to automatically classify tax returns, conduct risk analyses, and support auditing within the tax administration (PWC, 2025).

Italy is another country examined in this study. In 2025, the Italian Parliament adopted a comprehensive AI law. In line with the EU's AI regulations, the law governs the ethical, safe, and human-centered use of AI. Within this framework, rules have been established regarding the use of AI in business, public services, or criminal contexts. Nevertheless, there is no specific tax legislation for AI-based products or outputs generated by AI. In other words, while the legal framework for AI is regulated, the tax regime remains outside these regulations (Reuters, 2025). This situation parallels the general trend seen in many countries. Although AI tax proposals are under discussion, no AI-specific tax has yet been enacted. However, income generated from AI-supported services within digital revenues is taxed under the digital services tax (EY, 2025).

Experiments on the taxation of AI in Italy are gaining importance alongside the rapid development of the digital economy. AI applications generate income by offering innovative services and products across many sectors. Taxing this income requires a reconsideration of traditional tax systems, as Italy seeks to develop new tax models that account for the economic value created by AI. Approaches such as digital services taxes and special technology taxes are emerging in this context. However, reviewing tax policies to ensure the fair distribution of wealth generated by AI is highly important, as measures aimed at reducing income inequality are critical. Since AI is a global phenomenon, Italy is also working with other countries to develop common tax standards and regulations, which is crucial in combating issues such as tax evasion. Additionally, Italy has developed new transfer pricing rules for valuing digital transactions conducted through AI. These rules encourage the use of non-cost indicators to ensure fair valuation. Italy also offers tax incentives to companies developing AI, aiming to support innovation. This can foster the emergence of new technologies and business models. These efforts are critical for understanding the economic impact of

AI and adapting the tax system to these changes (Bolahatoğlu, 2024: 80; Erdös & Bodnár, 2024: 98-100).

In Turkish tax law, there is currently no separate tax liability for AI or a new AI-specific tax type (such as a "robot tax"). Efforts are underway in Türkiye to establish an independent legal framework related to AI. In this regard, the AI Draft Law has been submitted to the Grand National Assembly of Türkiye (GNAT) but has not yet been finalized. The draft primarily addresses responsibilities, transparency, and compliance obligations related to AI systems. There is no specific provision concerning taxation. In Türkiye, AI-supported digital services and revenues are already taxed under existing indirect taxes, such as VAT and the digital services tax. In addition, the use of AI by the tax administration serves as a tool to enhance efficiency in tax audits and collection processes. The National AI Strategy, published by the Presidency's Digital Transformation Office, indicates that the issue is being closely monitored; however, the report does not provide information regarding taxation (Karakaş, 2024: 89-90). The absence of a legal step on AI taxation in Türkiye, combined with the lack of an international standard or general practice, represents a significant gap.

It is clear that tax administrations face a complex challenge regarding the taxation of AI systems. Imposing an AI-specific tax to prevent the uncontrolled rapid advancement of AI and sudden waves of unemployment involves numerous difficulties in terms of designing and implementing the tax. Ensuring that such a tax does not hinder productivity gains is particularly important. Despite these challenges, it is crucial for countries to redesign their existing corporate tax structures in a way that encourages AI and automation systems (Brollo et al., 2024: 25).

5. Key Issues in the Taxation of Artificial Intelligence

The taxation of AI brings with it numerous challenges, as traditional tax systems may struggle to adapt to these new technological developments. In particular, current efforts to tax international AI activities have made the issue even more complex and difficult to navigate. The existence of such a situation has led countries to converge around the Base Erosion and Profit Shifting (BEPS) Action Plan of the Organisation for Economic Co-operation and Development (OECD). These actions are intended to help address these concerns. However, there are specific characteristics that need to be considered. This requires a comprehensive analysis of different business models, the continuously changing business environment, and a better understanding of value creation in this sector. Additionally, indirect

tax considerations must also be taken into account. Leveraging other actions outlined in this plan to establish a workforce dedicated to the digital economy is of great importance (OECD, 2023: 19). Despite all these efforts, the issue of AI taxation remains a broad and complex topic encompassing many factors.

The first issue that arises is the concept of the taxable event. A taxable event is a concept that occurs at the very beginning of the taxation process and is linked to specific tax consequences. It emerges when taxpayers engage with various tax matters. The relationship between the tax subject and the taxpayer is essentially the relationship between a concrete life event and an abstract law (Çolak, 2025: 200; Sarılı, 2020: 53; Şenyüz, Yüce & Gerçek, 2025: 97). Accurately determining the timing of the taxable event is crucial for both the tax administration and the taxpayers. This is particularly important in terms of defining the taxation period and understanding the legal consequences of the statute of limitations (Tosuner & Arıkan, 2021: 75). The taxable event, as the most fundamental building block of taxation, is a dynamic and evolving concept. Depending on time and changing conditions, the elements considered within the framework of the taxable event also diversify. One of the factors influencing the taxable event is undoubtedly technological advancement. Developments in technology enable the emergence and market introduction of numerous tangible and intangible products, such as new tools, machines, devices, and software that need to be taxed for economic, political, or social reasons. As a result of technological progress, when a product previously absent from our lives is introduced, a taxable event arises in relation to its production and sale, impacting various types of taxes. This clearly demonstrates the effect of technological developments on the taxable event. For example, the production and market introduction of smart devices, which have rapidly become widespread worldwide in recent years and have become indispensable in daily life, are considered taxable events for certain direct and indirect taxes. While these devices had no impact on taxable events before their invention, today they generate transactions subject to income tax, corporate tax, VAT, excise duty, and customs duties, thereby influencing the taxable event (Yegen, 2023: 142-143).

Despite all these considerations, the issue of defining AI as a taxable asset and accurately determining the taxable event still arises. AI systems should be taxed based on ownership rights, usage rights, or business revenues. However, current tax laws have generally targeted physical assets and human entities. This issue can only be addressed by developing new tax categories or definitions for the ownership and operation of AI. Additionally, digital tracking and reporting systems should be developed to monitor the revenues

generated by AI applications. These systems can help identify revenue sources more clearly. Companies could be required to report the income generated through AI in a standardized format (Zhao & Wang, 2025: 2).

Another reason why the digital economy remains difficult to tax and why businesses can avoid taxation is that they do not need factories, stores, or other fixed places of business to sell their services to consumers in a particular country. Current international tax regulations base tax jurisdiction on the concept of a permanent establishment, which allows cross-border businesses operating within the digital economy to conduct nearly tax-free operations. Another reason is that corporate value is increasingly concentrated in intangible assets, such as patents and copyrights on software and digital content. These assets can be easily transferred to tax havens to minimize taxable business income in high-tax jurisdictions. Business models pioneered by U.S.-based technology giants like Google, Apple, Facebook, and Amazon.com leverage such international tax avoidance strategies. They rely on today's digital technologies, the boundless economy, and outdated tax rules to avoid taxes and shift profits to low-tax countries (Morinobu, 2018).

Another taxation-related issue concerns intangible assets, including patents and copyrights on software and digital content. Companies often transfer these intangible assets to tax havens to avoid paying taxes or to reduce their taxable base (Grant Thornton, 2018: 2). With advancing technology, companies may increasingly use AI tools to shift revenues to tax havens. This results in tax losses, reducing government tax revenues (Chand et al., 2020: 751). To address this, stricter international cooperation and the development of global tax standards are necessary. The OECD's BEPS framework can serve as a starting point for such collaboration (Souguir et al., 2025: 1). Tax havens are typically known for low tax rates and strong confidentiality, enabling companies to conceal their actual revenues and evade tax obligations. AI-based analytical systems should be developed to monitor revenue transfers and tax compliance. These systems can be effective in detecting anomalies and preventing tax evasion. AI systems analyze large volumes of data, but uncertainties remain regarding the use and ownership of such data in tax havens. To ensure greater transparency, companies operating in tax havens should face increased reporting obligations regarding their revenues and activities (Bolahatoğlu, 2024: 84).

Another issue is that, due to the borderless nature of AI technologies, they can increase the risks of tax evasion and base erosion at the international level. International cooperation and standardization are therefore essential

(Saragih et al., 2023: 500). International tax treaties and regulations should be strengthened to balance the global spread and impact of AI technologies. Countries should enter into international agreements to protect their tax bases, which could be a significant step toward preventing tax evasion. Common standards for taxing AI and the digital economy should be developed among countries. Tax authorities should enhance data sharing and information exchange by cooperating with other nations.

AI and automation technologies can reduce labor demand in certain sectors, thereby affecting tax revenues. In this context, tax policies that are adapted to new technologies can help ensure revenue fairness. For instance, policies and regulations can be developed to ensure that fair taxation is applied to earnings generated through the use of AI (Rahayu, 2024: 38). On the other hand, a major challenge is how tax policies can adapt to the rapidly changing technological environment. AI and other automation technologies can fundamentally transform traditional business models and work processes, necessitating a reevaluation of tax policies. The potential impacts of AI and automation on labor markets should also take into account issues such as income inequality and social welfare systems. Finally, AI technologies typically rely on large volumes of data. The use of this data can raise sensitivities, particularly regarding personal privacy. Appropriate regulations must be implemented in the taxation process to ensure the responsible use of data and the protection of privacy (Huang, 2024: 178).

6. Conclusion and Recommendations

Although the increasing integration of AI technologies in the field of taxation has the potential to transform tax systems, this process also involves certain challenges and risks. It is essential to establish regulatory frameworks for the management of AI and digital technologies within tax regimes. The inadequacy of legal regulations related to AI slows down developments in this area and reduces the potential benefits that could be achieved. Formulating tax policies based on AI is a complex issue, considering the rapid development of the technology and its economic impacts. While countries' policies on AI and digital technologies generally focus on promoting innovation, balancing the economic effects of these technologies and ensuring tax fairness has also become an important concern.

A sector like AI, which offers high returns, cannot remain informal, and the sectors and living conditions directly and indirectly affected by this field need to be subject to regulations within a certain framework. The taxation of AI is currently a legally and economically debated issue. As AI systems

become increasingly complex, their impacts on the economy and society also grow. Taxation reflects the necessity to fairly distribute the revenues generated as a result of these impacts. Developed countries, in particular, are conducting studies on the taxation of AI and the digital economy. However, in the countries examined in this study, U.S., France, UK, Germany, Italy, and Türkiye, there is no specific AI tax in place. France, however, stands out in terms of AI taxation. It taxes the revenues generated by AI or the earnings of companies using AI through standard corporate taxes and VAT. In the context of the 2026 budget, a proposed bill called the "AI solidarity tax" aims to impose a direct, low-rate tax on income derived from AI. This proposal is still at the level of public discussion and has not yet become established legislation. Nevertheless, the emergence of this proposal indicates that discussions on AI taxation have begun in France. In Italy, efforts are being made to develop new tax models that take into account the economic value created by AI. In this context, approaches such as digital service taxes and special technology taxes are being considered. Despite all these efforts, implementing regulations alone will still be insufficient for AI taxation. Effective results can only be achieved if a global standard is established. This standard should be accepted by the international community, and AI taxation should be adopted by all countries. Otherwise, it will not be possible to achieve success.

Numerous challenges arise regarding the taxation of AI. It is unclear whose income is generated by AI, which complicates the taxation process. Additionally, updating the definitions of income and permanent establishment in the context of the digital economy could help clarify taxation procedures. International cooperation is crucial for AI taxation. The global nature of these technologies makes it necessary to ensure tax harmonization between countries. International regulations can help prevent tax evasion and avoid double taxation. These regulations should be specifically designed for AI technologies and continuously updated. Another issue is the creation of tax reductions or incentive programs to encourage AI and digital innovations. Such measures would promote wider adoption of AI. Another challenge is that AI systems use large amounts of data. Uncertainties regarding data ownership and usage can complicate tax calculations. Legal regulations concerning data ownership and usage should be developed, and transparency should be increased. Additionally, social security systems should be strengthened to address potential job losses caused by automation. Workforce transformation should be supported through retraining programs.

As can be seen, it is of great importance to develop up-to-date and innovative tax policies, implement regulations suitable for technology, and continuously adapt to constantly changing economic and technological conditions. Moreover, it is essential to establish mechanisms that ensure transparency, fairness, and economic efficiency. These issues, among others, create a complex global debate regarding the taxation of AI. Considering the ongoing transformations in the world and the uncertainties about how work will be shaped in the future, it is evident that discussions on AI taxation will continue for some time.

In conclusion, the taxation of AI is an important issue within tax law. The use of AI technology in tax processes can be beneficial in areas such as the automatic review of tax declarations, combating tax evasion, and determining the tax base. However, it is necessary to establish the criteria to be used in AI taxation and to adopt a fair approach. Steps taken within this framework can make the process more efficient. This represents a significant step for the future economic growth and sustainability of development. Future researchers can contribute to the literature by examining the issue from a broader perspective and analyzing it in the context of different groups of countries.

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