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Use of Artificial Intelligence Technology in Tax Management: Evaluation of the Principle of Transparency Within the Framework of International Legislation Provisions

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A B S T R A C T

Artificial intelligence is a technology that has found its place in all areas of life with the digitalization process and is used in many fields of science and disciplines with its sub-techniques. Within this wide usage area, the services provided by public administrations have also been affected by artificial intelligence technology. The tax management structure formed by the taxpayer and the administration has also changed under the influence of artificial intelligence technology. Most transactions in tax management based on automated decision-making can provide many advantages to the administration and the taxpayer. However, the use of artificial intelligence models with a black box or an intricate coding structure in the taxation process may violate the principle of transparency and may result in damage to taxpayer rights. The aim of the study is the determination of the problems in ensuring transparency, which is a public principle, as a result of the use of artificial intelligence technology in tax management and the presentation of suggestions for this purpose. In this context, the study used the literature review method; considering the current international legislation provisions, concluded that a legal system that protects taxpayer rights should be organized in order to ensure transparency in the use of artificial intelligence technology.

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1. Introduction

Artificial intelligence (AI) technology is a digitalization tool that is being widely used today. AI technology with models based on deep and continuous learning has been used effectively in areas that concern society such as justice, health, security, defense, etc. for some time, thus changing the classical ways of doing business and increasing efficiency by saving human capital in both the private and public sectors. At this point, AI technology, which has the advantage of providing comprehensive services that concern both taxpayers and the administration, has become an important tool for tax management.

In addition to the positive features of AI technology, there is also the possibility of negative and erroneous results because it is a human design and a toolbox that incorporates learning processes in different ways. It is possible that AI technology used in automated decision-making processes, especially in tax management, may make decisions that restrict and damage the fundamental rights and freedoms of taxpayers. The lack of transparency of the algorithms and codes used or the data storage, processing, and, recording processes may have negative consequences. In addition, as a result of an algorithm design that is far from ethical values, AI may make biased and discriminatory decisions. To prevent such negativities, workflows should be open to taxpayers within the framework of the principle of transparency. AI decisions should be transparently explained and justified for taxpayers to have legal recourse in case of any loss or violation of rights.

The study aims to emphasize the importance of the principle of transparency to prevent discriminatory and biased decisions that may occur in automatic decision-making processes in tax management. In this framework, first of all, all the negativities experienced in automated decision-making processes will be discussed in a general way and these problems that may arise in every field where AI is used will be conveyed in holistically. As a matter of fact, although there are no specific legal regulations regarding the evaluation of the problems arising from the use of AI and automated decision-making mechanisms in the field of tax administration, legal texts such as the European Union's General Data Protection Regulation (GDPR) and Artificial Intelligence Act are considered as important sources in terms of legislative studies on AI technology. In this study, the legal grounds for ensuring the principle of transparency will be analyzed concerning these legislative provisions and recommendations will be made in terms of tax management.

2. Digitalisation Process of Tax Management

Tax management is a sub-concept of the concept of financial administration; it refers to tax-related legal regulations, tax administration, and tax judgment process (Akdoğan, 2020: 195). It is possible to say that tax management meets both organizational and procedural meanings. The concept is related to taxation institutions

and the taxation process (Mutlu, 1998: 7). Since the problems related to both the structure of tax offices and the taxation process will be discussed in the study, the concept of tax management is used to be more inclusive. Because the concepts of tax administration or tax office are concepts that exclude the taxpayer, who is the subject of the taxation process, and frame the process more narrowly.

Thanks to new digital technologies such as AI, blockchain, the Internet of Things, big data, cloud computing, and 5G technologies, the digitalization process is improving day by day. Digital transformation has affected many sciences and disciplines, and the legal systems of countries have also started to digitalize. This transformation implies both the structural reform of tax administrations and the improvement of administrative process management. It is envisaged that the administration will collect more efficiently and effectively through the use of digital tools (Ihnatišinová, 2021: 2).

The digital transformation in tax management, is aimed to improve workflows and to improve the quality of the taxation process with the cooperation of taxpayers and the administration. Instead of a declaration-based tax system model, it is desired to establish a tax system where the data flow of all public services is simultaneous and common. At the heart of this new system lies the ideal of creating an automated system in which tax is realized spontaneously, expressed in the form of “tax just happens”. (OECD, 2020). In this system, in which the taxpayer will not actively participate and all kinds of data about the taxpayer will be automatically flowed to the tax administration and tax duties will be fulfilled automatically, the collection step will be secured in this way.

Although each country has different efforts towards digitalisation, countries go through similar paths in this process. These studies are shaped according to each country's level of digital development and infrastructure. Although it is clear that these efforts contribute to each country independently of each other, it is desired that tax systems are interconnected and functional between countries, and for this purpose, efforts are being made to ensure the digitalization of tax management within the international framework. Regular studies on digitalization are carried out within the Organisation for Economic Co-Operation and Development (OECD) and the European Union (EU) and reports are prepared and certain criteria are set for the digital transformation of tax management. OECD has prepared the most comprehensive and detailed digitalization plan among the reports.

Digital transformation in tax management continues in the form of declaration and accounting transactions that start in an electronic environment and the electronic audit and evaluation process in the following process (Marchenko, 2022: 128). On a global scale, it is observed that the books and documents related to the taxation process are transferred to the electronic environment and e-declarations have become widespread. It is possible to say that most countries have moved or are trying to move the physical taxation process to the electronic environment. In this context, the OECD's Tax Administration 3.0 report dated 2020 (subsequently revised on various dates), which

is the most comprehensive study conducted in the recent period, is guiding in terms of showing the path followed by countries in the process of digitalization of tax administrations and making comparisons.

According to the OECD report, the level of development of tax offices has three stages. The first of these is Tax Administration 1.0. At this stage, there is a paper-based, slow, and costly tax administration. The next step, Tax Administration 2.0, is the stage that can be called e-administration, where the tax administration increases efficiency and effectiveness by using digital data and technology tools, where public and private sector cooperation is ensured at the point of digitalization, and where it is possible to identify problems in workflows more easily. Tax Administration 3.0 is the stage where interconnected taxpayer-tax administration ecosystems are created and automatic and seamless taxation is realised. At this stage, the main objective of the report is to realize a taxation process that is integrated into taxpayers' natural systems. The true digitalization of tax administration should not only involve the adoption of new tools and technologies but also a comprehensive legal and institutional transformation (OECD, 2020).

3. Using AI Technology in Tax Management

3.1. AI Technology

AI refers to the ability of a computer technology or computer to fulfill the commands given to it, to make inferences by reasoning, and to learn based on previous experiences (Kerinc & Romani, 2022: 3). AI, which has capabilities such as monitoring, reasoning, diagnosing and analyzing, is an engineering component that can be used in many sciences and disciplines (Ahmed et al., 2022: 5032). AI technology is also a meta-concept that covers many sub-technologies such as machine learning, natural language processing, robotic process automation, explainable AI, and advanced data analytics application (Zaqeeba, 2024:2). AI, which is a technology open to learning with these sub-components, continues to be developed to provide convenience to humanity (Thiebes, 2021: 448).

The concept of AI was first used at the Dartmouth conference organized by computer scientist John McCarthy. McCarthy defined AI as “the science and engineering of making intelligent computer programs or machines”. AI collects data on a large scale with its various sensors, analyses and processes this data with its operational logic, makes predictions and decisions to reach various results, and physically implements the instructions it receives with machine motors, in other words, actuators, which enable the system to operate. (Kerinc & Romani, 2022: 3).

At this stage, AI has been used in many fields. It serves humanity in many important fields such as medicine, physics, defense, security, and justice. For example, it is an important digital tool used to detect any fraud in bank or credit card accounts or

to ensure security in nuclear processes in industry (The Department for Science, Innovation and Technology, 2023).

3.2. Integration of AI Technology into Tax Management

With digitalization, information technologies, and blockchain technology have started to be used in tax management. All taxation procedures carried out in the physical environment have been transferred to the electronic environment thanks to computer technologies; tax systems have been developed as a result of applications such as e-declaration, e-filing, and e-payment (Adelekan et al., 2024: 312). With the inclusion of AI technology in tax management, efficiency, transparency and tax security have started to increase in this process. These transactions, which take place in an electronic environment, increase the collection capability of the state and create an effect that increases tax compliance in a tax system based on trust for taxpayers (Adelekan et al., 2024: 315).

Big data technology uses AI technology to collect, transform, process, and analyze data in a large and unlimited flow. Thus, AI technology has become a functional tool at many points for the control of big data in tax management. AI, digitalization of the organizational structure of tax administration has transformed the structure of tax administrations regarding the distribution of tasks and the taxation process (Adelekan et al., 2024: 313). With AI, records, and documents are automated, administration and taxpayer relations are improved, tax inspections are carried out more effectively, and time and cost savings can be achieved in the taxation process (Kuźniacki et al., 2022a: 221).

One of the most common examples of AI in tax administration is digital assistants or chatbots, which are general-purpose applications of AI technology. Taxpayers can direct their taxation questions to AI-based chatbots and get quick answers . For example, VAT assistants have been used in Spain since 2017 as chatbots (Ihnatišinová, 2021: 5). A second example is the Swedish Tax Agency's (STA) AI-supported risk assessment model for distinguishing between high and low-risk cases. As a result, the STA identified and cancelled incorrect tax deduction claims amounting to SEK 300 million (representing SEK 42 million in tax) (OECD, 2023). In the resolution of tax disputes, AI can identify similar case files and send them to the same court clerk to make decisions faster within the scope of the litigation project in Brazil (OECD, 2022).

When AI is used together with other digital tools such as the Internet of Things (IoT), data analytics, and other technologies, it provides many administrative solutions and can be used in automated decision-making processes by collecting large amounts of data (Kerinc & Romani, 2022: 4). The use of AI technology in tax management accelerates the traditional process of collecting, processing and sorting information about taxpayers by people working in the tax office. Especially in cases where there are complex and numerous problems, the automated decision-making process of AI will be

able to produce more objective and effective solutions than the human decision-making process. The use of AI technology, just like other digital tools, can provide transparency and efficiency in tax management and have positive effects on the administration-taxpayer relationship (Adelekan et al., 2024: 313).

AI collects, sorts, and analyses large amounts of taxpayer data, and takes an interventionist action by identifying non-compliant or fraud-prone taxpayers in the grouping process (Adelekan et al., 2024: 314). Therefore, AI can prevent the commission of tax evasion offences by risk assessment, and fraud detection (Adelekan et al., 2024: 313). After processing big data, AI performs profiling / behavioral patterning. According to this process, detailed profiles of taxpayers are created. As a result of the observation of taxpayer behaviours by AI, future profiles of taxpayers can be created. For example, through machine learning techniques, AI can list the consumption habits of taxpayers by tracking e-invoices (Kerinc & Romani, 2022: 4). AI also provides benefits at audit points in tax offices. For example, in France in 2019, about a quarter of tax inspections for tax losses and evasion were supported by AI data mining, and combining the technology with human tax inspectors resulted in a 30% increase in tax collection compared to 2018. Another example is the collection of data from different databases and cross-checking it with declaration data using AI since 2010 for fraud detection. This risk assessment by the Connect AI, although costly, has helped to save the UK more than GBP 3 billion in taxes since its launch (Kuźniacki et al., 2022b: 5).

3.3. Automated Decision-Making Capability of AI Technology

Automated decision-making is an AI function that has become used in many important aspects of life, such as diagnosis in medicine, lending or borrowing in finance, and recruitment in business life (Mökander & Axente, 2023: 153). AI analyses large data sets by processing them and determines the future behavioural patterns of individuals with predictive algorithms. In tax management, AI technology can access almost all data of taxpayers, extract behavioral patterns by storing and processing them, and create certain taxpayer stereotypes by profiling (Pica, 2022: 148).

An example of automated decision-making in tax administration is the application announced by the State Administration of Taxation (SAT) of China in 2017, where taxpayers receive automatic assistance in detecting and correcting calculation errors before filing their returns (Faúndez-Ugalde & Mellado-Silva, 2023: 10). Similarly, in Australia, the Online BAS Check (OBC) system is used to issue the Statement of Business Activities (BAS) for businesses to reduce the number of inadvertent errors (such as honest mistakes, transposition and arithmetic errors). The system can send nudge messages while the relevant declaration is being issued, and taxpayers are directed to fill in an error-free and correct declaration using nudge messages that report errors while filling in the declaration. AI-supported OBC can predict future results and reduce the number of errors as a result of analyzing the business data it collects. The Argentine

Federal Administration of Public Revenues (AFIP) uses a risk profiling system called SIPER, which allows monthly profiling of taxpayers. SIPER can categorize compliant/non-compliant payers and provides risk assessment from low to high. With the categorization made by AI, the decisions taken are explained to the taxpayers with their reasons; taxpayers are also offered the opportunity to correct the faulty points in the system with different data in case of AI error. Risk management allows the Argentine tax administration to focus on high-risk taxpayers and follow them closely, and to initiate judicial proceedings in case of any offense without wasting time (OECD, 2022).

3.4. Problems That May Arise from the Automated Decision-Making Process

In automated decision-making processes, AI has the possibility of bad consequences such as showing a biased and discriminatory attitude towards some people, using personal and private data without consent, making wrong inferences based on the data it collects, and making wrong groupings (Mökander & Axente, 2023: 155). Especially the unsupervised version of AI can make prejudiced and discriminatory judgments about individuals, and can be used in a non-transparent manner that prevents individuals from seeking legal remedies or obtaining information (Górski et al., 2024: 6). However, in some cases, after processing all the data and information it collects, AI technology may deviate from its coded purpose to collect all of the big data, and may also create false, erroneous, discriminatory data and information by entering a re-processing process over data and information (Mökander & Axente, 2023: 155., Furche et al., 2016).

An example of algorithmic bias is Tay (bot), an intelligent chatbot launched by Microsoft Corporation on Twitter. Tay is a robot that has daily conversations with people. However, she learned racist and sexist sentences from the people she chatted with and after a while, she started to repeat discriminatory, racist, and sexist sentences just like those people (Kerinc & Romani, 2022: 10). Like a chatbot that has been exposed to racist and discriminatory data for a while, any tax virtual assistant will inevitably become prejudiced as a result of collecting problematic, erroneous data.

While biased algorithmic systems can produce more objective results besides the complex and non-objective decision-making structure of human nature, they can move away from objectivity due to people who add their biased thoughts and value judgments to AI algorithms. Although human prejudices are not always obtained as a result of a judgment, they may also consist of implicit prejudices shaped by the place where people are born, the family they grow up in, the city they live in, the institutions where they receive education and work (Kerinc & Romani, 2022: 5). Therefore, there is a high probability that the instructions given to the AI consciously or unconsciously carry value judgments and are discriminatory.

Secondly, the fact that AI collects and encodes many biased subjective data from unlimited and diverse sources without discriminating between true-false or good-bad to

collect big data is also one of the reasons for the emergence of biased algorithms. Another point of prejudice is that problems may arise in systems run by AI to speed up workflow processes by copying the process by AI and creating instances (Kerinc & Romani, 2022: 6). For example, an AI developed by Amazon to evaluate candidates' CVs in workflow processes was found to replicate recruitment programs while also replicating the biases of these practices.

Although AI, which can advance a more objective and faster process compared to human decision-making processes, is seen as a digital tool that offers positive contributions in terms of tax administration, there are also negative aspects that may arise in the process of use. For example, the fact that the information loaded into AI algorithms and programs is based on moral norms instead of universal ethical values may cause the directives to be discriminatory or biased in the automatic decision-making process of AI (Kerinc & Romani, 2022: 5). This situation is likely to have undermining, anti-democratic and subjective consequences on taxpayers' rights, especially fundamental human rights. In terms of tax management, AI also has the potential to disclose taxpayer data in the category of personal and private information that it collects and processes. This situation reveals the necessity to prepare various norms and standards to protect taxpayer rights based on data security (Adelekan et al., 2024: 318). Another point to be noted in the AI-automated decision-making process is that it differs from the human decision-making process at the point of responsibility. Because it is much easier for the people affected by the decision to hold a human responsible for that decision than to hold the AI responsible. The position of AI in the context of liability law is still complex (Information Comissioner's Office, 2022).

4. Evaluating the Use of the Transparency Principle in Combating Biased Algorithms

4.1. Ensuring the Principle of Transparency in Tax Management

Transparency, when used in terms of public administration, refers to the openness of political power to the public (Olsen et al., 2024: 2). It is accepted as a principle that prevents the abuse of power by the administration in democratic societies. From a more holistic perspective, it is a principle that ensures that the administration acts by the principle of accountability and combats crimes such as corruption and fraud (Larsson & Heintz, 2020: 5). In the EU Commission's ethical guidelines published in 2019, transparency is stated as one of the principles necessary to create trustworthy AI (Larsson & Heintz, 2020: 2). Some criteria have been identified to ensure AI transparency (Nunes et al., 2024: 7):

- Using techniques such as activation maps and salience, these can be analyzed to find out which parts of an image or text influence AI decision-making and how much they influence AI decision-making processes.

- AI algorithms can be coded by introducing logic rules or heuristics. These methods can make decisions more consistent and understandable and simplify the process for AI users.

- Visual tables and graphs of AI's automated decision-making processes can be made. These visual materials will be able to provide information on how data is processed and how data outputs are achieved, and visualize the mathematical reasoning of AI for users.

- An information text can be created that answers questions such as how AI algorithms are trained, how coding is done, which data is transferred to the codes, and what actions the model takes in which situations. This text will be useful for users as a guide explaining the working principles of AI in detail.

The transparency of AI gains meaning in automated decision-making processes. The fact that the algorithms, codes, and mathematical calculations behind a decision can be explained and understood shows that the system is transparent (Zalnieriute et al., 2019: 15). With the publication of all algorithm and program components, data sets, model designs, input-output information of AI, holistic transparency in AI systems will be achieved (Parycek et al., 2023: 16). Ensuring transparency in AI is only one of the necessary steps for a reliable AI design. Especially in generative AI models with deep learning design, transparency is important to make the decisions of the system understandable. For example, according to Chinese AI regulations, productive AI models are required to publish the basic operating mechanisms, principles, and objectives. However, according to the AI regulations in this country, individuals can only obtain disclosure of AI decisions under the right to information when there is a major impact on them. How to determine this major impact is unclear (Cai, 2023).

Achieving full transparency is becoming increasingly difficult for all rapidly evolving AI models. For example, generative AI models with deep learning methods that perform natural language processing and produce human-like texts, such as Generative Pre-trained Transformer 3 (GPT-3) and 4 (GPT-4) developed by OpenAI, are being developed on very large datasets. These models can automatically mimic human speech. GPT-3 has 175 billion (continuously updated) machine learning parameters, making it practically impossible to provide comprehensible access to the model (Olsen et al., 2024: 5). It seems difficult to create a completely transparent model in this type of technology. Because many of the most effective AI models are black box models. Millions of numerical coefficients of data are stored in the neural networks of AI and the model receives this data during the training phase. Even if all parameters are known, it is difficult to learn the background of the decisions since the performance of neural networks depends on the complex relationships between them (Hosain et al., 2023: 169). In such a situation, it is difficult to expect transparency in the classical sense.

As AI models evolve and continue to be rapidly adopted by public institutions, it is clear that more data will be collected and processed. With the developments in the

digitalization process, the concern of collecting big data in tax offices may lead to continuous monitoring and control of taxpayers. On the other hand, this situation also reveals the necessity for the state to use digital tools in the taxation process that do not violate taxpayer rights, constitutional principles of taxation, and fundamental public principles such as transparency (Faúndez-Ugalde & Mellado-Silva, 2023: 13,14).

At this point, there is a need to develop various taxpayer protection mechanisms to ensure the accuracy and precision of taxpayer data collected by tax administrations. These mechanisms protect the personal data of taxpayers and prevent the uncontrolled collection of personal data by the administration. Most importantly, it is necessary to adopt the principle of algorithmic transparency, which explains why and how the data used by the administration in automated decision-making processes are collected and the process itself (Faúndez-Ugalde & Mellado-Silva, 2023: 15). For example, in automated declaration systems, taxpayers have the right to follow the AI steps and obtain information about the process within the scope of algorithmic transparency in case there may be various errors in the declarations prepared by the AI. Thus, taxpayers will be able to request error correction by intervening with the AI at erroneous points (Faúndez-Ugalde & Mellado-Silva, 2023: 16). Algorithmic transparency is a principle that should be included in the system for process stakeholders (distributors, implementers, users, etc.) to understand and question AI decisions (Hosain et al., 2023: 166). In other words, the explainable AI model created by providing algorithmic transparency is a procedure used to understand the outputs created by the system and to ensure people's trust in AI. In addition, this model can be used to eliminate biases that may arise in the decision-making process (Hosain et al., 2023: 167).

4.2. Disclosure and Freedom of Information Rights to Ensure Algorithmic Transparency

Transparency, one of the principles of AI regulated in the Artificial Intelligence Recommendation adopted by the OECD in 2019 (Recommendation of The Council on Artificial Intelligence) is regulated in the legal text in question. In this context, it is necessary to raise awareness of the actors in AI processes about their interaction with this technology and to provide clear and understandable information about data inputs and outputs, decisions, and inferences used in automated decision-making processes (OECD, 2019 – 2024a).

According to the OECD Recommendation on Artificial Intelligence, while the principle of transparency can explain how AI is trained and developed and how the coding works, it does not cover the disclosure or sharing of AI data sets and code, as algorithms are complex and subject to intellectual property. AI actors should use clear and comprehensible language to explain the summary of the decision to the people by mentioning the main points and should be able to provide information about the structure of the algorithmic process in the background, especially about the difference between the result from similar situations and events (OECD, 2019-2024b).

In this framework, it is possible that AI actors, when explaining an outcome, are willing to explain, in clear and simple terms and accordance with the context, the main and decisive factors in the decision, to provide the data, logic, or algorithm behind a particular outcome, or to explain why seemingly similar circumstances produced a different outcome. It would be appropriate to organize this process in a way that allows individuals to understand and challenge the outcome in compliance with personal data protection obligations (OECD, 2019-2024b).

Within the scope of transparency, there are several types of disclosures: A rationale disclosure of the reasons that led to the decision, a responsibility disclosure indicating the point of contact for management and oversight in the AI process, a data disclosure of how data was used in the decision, a fairness disclosure of whether each user was treated equally, a security and performance disclosure that the decisions are reliable and robust, and finally an impact disclosure of the steps in the design process to measure and evaluate the impacts of the AI system on stakeholders. (Information Commissioners Office, 2022). These explanations differ according to the field or technical expertise of the individuals and institutions. Since each stakeholder in the automated decision-making process of AI needs to be informed about different aspects of the system, the types of disclosures need to be tailored to the stakeholders (Kuźniacki et al., 2022b: 11).

Another issue where transparency is important in the use of AI technology is that this technology affects people's lives at critical points (credit scores, insurance offers, hiring). Therefore, AI decisions made at these points should not be arbitrary and should be justified (Office for Artificial Intelligence, 2023). Documenting the source, structure, data inputs, and outputs of AI code designs can increase transparency (Parycek et al., 2023: 16). Explanation can enable not only users but also practitioners to explore new concepts and improve AI (Confalonieri et al., 2021: 2). To overcome this, given the difficulty of explaining the workflows of the technologies used by AI, in 2021 the ICO and the Alan Turing Institute published a guide for explaining decisions made with AI (Office for Artificial Intelligence, 2023). The guide is intended for AI developers and practitioners to assist them in providing services for the process and in providing explanations to the individuals affected by the decisions (Information Commissioner's Office, 2022).

In a situation where people are affected by a decision, learning the background and rationale of the decision within the scope of obtaining information can enable them to produce arguments to defend themselves (Information Commissioner's Office, 2022). Depending on the reader of the justification, it must be comprehensible and adequate, clearing all doubts of the party requesting the justification and ensuring a full understanding of the process (Oswald, 2018: 5). However, the mere disclosure of decisions made using AI technology is not enough to ensure transparency; human control of AI after decisions must also include making clear to the affected party the means to challenge or overturn the decision. To make this happen, it is recommended that AI controllers, in addition to explaining the decision, also make recommendations,

which may include reversing the decision, further examining the rationale for the decision, or requesting assistance from a colleague to clarify it (Olsen et al., 2024: 6). In this process, if after the reasoned explanation, people are not convinced by the explanation, they will have the right to appeal the AI-supported decision against them. The appeal may be for the annulment or modification of the decision or a request for human intervention to improve it (Information Commissioner's Office, n.d.). On the other hand, when decisions of the AI are challenged, it is expected that the decision of the AI will also be subject to judicial review in cases where people's right to appeal is not recognized, where information is allegedly incomplete, or where it is claimed that the decisions taken are inappropriate or unlawful (Information Commissioner's Office, 2022).

At this point, it is necessary to mention the problems that the system, which constitutes the structure of AI technology in ensuring transparency, creates during use. When examining the decisions of AI models with machine learning functions, decisions cannot be explained by examining the codes due to the data-driven coding used, unlike models that do not use explicit instructional coding. Because AI obtains results by using the data collected in decision-making processes in a predictive manner. Some machine learning techniques are referred to as black boxes, and the inner workings of these models cannot be directly observed, threatening transparency (Hosain et al., 2023: 168). Apart from algorithmic biases, the complexity of the data and coding and the multiplicity of data during the time from input to output of AI affect the transparency of automated decision-making processes. In this case, it becomes difficult to access the algorithms of an AI in a black box structure and to demand an explanation of the decisions taken by the principle of transparency (Nunes et al.,2024: 6).

Although ensuring transparency poses challenges from different perspectives, where it can be achieved, it is still important to make the necessary disclosures within the scope of access to information. Indeed, with explainable AI, the system will provide trust to individuals, making it possible to create an environment where AI is allowed to collect more data (Kuźniacki et al., 2022b: 7).

However, it is also obvious that the disclosure procedures of an explainable AI by ensuring transparency of the entire code will create a burden on the administration. In this case, it may be more appropriate to scale according to whether the taxpayers are real person or legal entities, their income levels, the income elements they have, their business and working models, and the types of taxes they have to pay (Kuźniacki et al., 2022a: 232). There is a possibility that the explanations of AI may not be understood by all taxpayers and professionals, lawyers, or judges as they require more technical knowledge. For example, it may be necessary to appoint an expert witness or obtain an expert opinion for an explanation to be made in the case that the judge is hearing during the trial phase (Górski et al., 2024: 4).

4.3. Legal Arrangements in International Legislation Provisions to Ensure the Principle of Transparency and Their Reflections on Tax Management

Many legal regulations can be evaluated internationally that impose disclosure obligations to ensure transparency in areas where AI technology is used. Although there are different regulations in terms of countries, the General Data Protection Rules (GDPR) and Artificial Intelligence Act will be included in the context of EU countries to cover more countries in terms of the subject of the study. The GDPR, which is a comprehensive regulation on the protection of personal data, has many provisions for transparency. In particular, there are many articles and recitals for the requirement that the processing of personal data must be fair and transparent. Regulations on the right to information to inform data subjects regarding the processing of personal data are also included in the GDPR.

It is possible to say that the GDPR has provisions applicable to AI decisions as well, concerning automated decision-making and profiling methods (Information Comissioner's Office, 2022). However, the most important point of the GDPR regarding AI's algorithmic decision-making process is Article 22. Recital 71 of this Article is helpful for interpretation and sets out in detail the right of the AI to object to the processing of personal data in a discriminatory and biased manner in decision-making processes, including profiling (Information Commissioner's Office, 2022). Articles 13, 14, and 15 of the GDPR are the provisions that give data subjects the right to obtain information in processes, including automated decision-making processes, and impose an obligation to disclose to the AI to ensure the principle of transparency (Olsen et al., 2024: 8). In addition, data protection impact assessments should be conducted for profiling and other automated personal data assessments used in automated decision-making processes (GDPR Article 35) (Information Commissioner's Office, 2022).

Article 22 of the GDPR concerning automated decision-making processes states that "*The data subject has the right not to be subject to a decision based solely on automated processing, including profiling, which has legal consequences concerning him or her or similarly significantly affects him or her*". This is a provision that raises questions about whether people can exercise their right to information about the results of AI models outside the automated decision-making process. This provision is controversially accepted in the doctrine on the issue of disclosure by the AI (Gyevnar et al., 2023: 967). However, while this debate was ongoing, the Court of Justice of the European Union (CJEU) ruled in December 2023 in support of the existence of a "right to information" (Gyevnar et al., 2023: 965). The main issue in this article is whether the article is applicable when the automated decision-making process is completely unmanned. When there is human involvement in or at the end of the decision-making process, it becomes unclear whether the decision is automatic or not. For example, in a model where decisions are made using AI algorithms in a busy workflow, it is unclear how Article 22 would apply if the human stakeholder were to implement an AI decision that normally has a low margin of error (Kuźniacki et al, 2022b: 21).

Beyond Article 22 of the GDPR, issues related to human-AI decision processes can also arise. For example, there are fundamental differences between humans and machines in terms of prejudice. This can be an obvious distinction in addressing prejudices in AI. Just as every human being has prejudices, machines tend to transform into a prejudiced form in line with the coding. Even if a consciously working person knows that he/she should be free of prejudices as required by business ethics while doing the work defined for him/her, he/she may be prejudiced due to the implicitness of his/her prejudices, the will to continue the decision-making process unconsciously or simply due to his/her mistakes due to human nature. However, since the bias of AI is related to its design and codes rather than its nature, the concept of bias differs in human and machine subjects. This can make AI unregulated, as AI is not subject to any liability law, whereas humans are liable for every bias-based mistake they make in their work. This point strengthens the argument that AI should be subject to human control as it does not yet have exclusive decision-making authority (Nunes et al., 2024: 8). Moreover, given the possibility that AI is still fallible, it seems more appropriate for this technology to assist human workers in carrying out an administrative action rather than establishing it as an independent administrative body (Nunes et al., 2024: 9). As the requirements of the controllable form of AI in tax management; it is possible to say that every public official and other stakeholders working in tax management will need a tax expertise knowledge based on a more technical infrastructure. At this point, AI and tax management employees will be able to further develop their knowledge and skills in the machining process in cooperation (Buckley et al., 2022: 22).

The EU AI Act, which has the broadest regulation of AI technology, states that the principle of transparency applies to all AI designs[3]. However, the law also introduces a risk-based approach. The law classifies unacceptable risk, high risk, limited risk and no risk. AI models on issues such as fundamental rights and freedoms, the rule of law, democracy, and the environment are considered high risk (Resseguier & Ufert, 2024: 148). According to Article 61 of the AI Act, despite the possibility of non-transparency, AI models that are used in researching and interpreting the law and applying the rules of law to concrete cases in violation of the right to a fair trial are also considered high-risk models. AI models used by alternative dispute resolution bodies with legal consequences for individuals are also high risk (EU AI Act Article 61). As stated in Recital 4 of the EU AI Act, AI "*may harm public interests and fundamental rights protected by Union law. Such harm may be tangible or intangible, including physical, psychological, social or economic harm*." (Kusche, 2024: 2.) Therefore, according to Article 13 of the AI Act, certain transparency obligations apply to risky and limited-risk models that are not detrimental to public interests and fundamental rights (Resseguier & Ufert, 2024: 148). It requires that "the operation of the system must be sufficiently transparent so that users can interpret and make appropriate use of its outputs". According to the relevant article, high-risk AI systems should be designed to ensure that the process is sufficiently

[3] https://www.euaiact.com/key-issue/5.

transparent to enable distributors to interpret and make appropriate use of a system's output. The principle of transparency here is about the process, targeting the distributors operating such AI models, not those affected by algorithmic decisions (Olsen et al., 2024: 9). The relevant article is an article for AI control chiefs in a public institution. Specific AI transparency obligations do not apply to very low-risk or non-risk AI models, which are subject to general transparency obligations (Resseguier & Ufert, 2024: 148).

The EU AI Act sets stricter rules on transparency than the GDPR. To make the decisions of model manufacturers more understandable in EU AI, it is expected to prepare technical documents about the models, produce catalogues for the training processes of the models, and disclose some information about their algorithms. The EU AI Act specifically stipulates these regulations for AI in the black box model, while free and open source models are mostly exempted from transparency obligations under the law, provided that there are no systemic risks and high transparency is ensured. For generic models with systemic risks, the AI Act expects them to conduct model pre-assessments, perform various competitive and adversarial tests on the AI, and ensure cybersecurity by reporting algorithmic errors to mitigate these risks (Larsen & Küspert, 2024)

Due to the specific nature of tax law, there is also uncertainty in delineating the boundaries of discriminatory and biased decisions caused by AI. It is possible to say that the taxation power of the state based on its sovereign power is wide-ranging, although it has limits in interfering with fundamental rights and freedoms. However, it is questionable how strong the non-discrimination right, which is a fundamental right that can provide legal protection from the legal consequences of AI technology used by tax administrations, can provide taxpayers with a strong protection since the subject matter is both tax and the transaction is carried out by a digital tool. This situation points to the necessity of revising countries' legal regulations on non-discrimination in a way that also covers the consequences of technologies such as AI (Kuźniacki et al., 2022a: 230).

When we look at the EU AI Act, which is a comprehensive regulation, there is a limited regulation on taxation. In terms of ensuring the principle of transparency, only Recital 59 provides narrow explanations in terms of tax law. In the aforementioned justifications, AI designs used by law enforcement agencies are considered high-risk models; AI systems used by financial business units that conduct business in cooperation with tax and customs authorities are not classified as high-risk AI systems used for the prevention, investigation, and prosecution of crimes. When we look at the law, it is seen that there is no regulation on the AI models used in the taxation process (Kuźniacki et al., 2022b: 18). However, the EU AI Act, which considers AI models that interfere with fundamental rights and freedoms as high-risk, should include AI models and areas related to taxation that directly concern taxpayers' property rights in the high-risk group. Such a revision would be much more appropriate in terms of ensuring transparency in tax management.

5. Conclusion

AI technology has become popular with the transfer of almost every stage of human work to machines due to its effects of accelerating the process and increasing the quality of outputs for all disciplines and sciences. AI not only speeds up workflows and saves time, but it can also control human work at most points. In the taxation process, AI models are preferred by the administration to obtain effective results. In this context, AI technology continues to be utilized extensively in tax management. In particular, medium-high-risk AI models that can perform profiling and categorization working with deep and continuous learning methods with data collection, processing, and recording capabilities are used.

However, there are major shortcomings in the supervision and control of the activities of AI technology. For the time being, the design and users of AI are using this technology to improve manual processes; however, the issue of controlling AI based on the fact that AI is a machine that can make mistakes has not yet become an important discussion in the world. The importance of this supervision stems from the fact that the working methods of AI models based on the black box model violate fundamental rights and freedoms.

The expansion of the areas of use of AI technology and the existence of legal violations that may arise as a result of the use of this technology has brought along legal regulations. In particular, the European Union's AI Act and the GDPR are prominent legal regulations in this field. These regulations include articles regulating the forms of AI technology, the conditions they must meet, areas of use, supervision, etc., or preventing violations of rights that may arise in data mining and automated decision-making processes. In particular, although the AI Act contains detailed regulations, this Act does not contain specific and enlightening regulations for tax law. When looking at the 59th Recital of the relevant Act, there is no article and justification regarding the use of AI in taxation, except for the regulation that AI technologies used by tax and customs authorities are not subject to high-risk classification. At this point, contrary to the fact that the use of AI that threatens fundamental rights and freedoms is considered high-risk according to the AI Act, the opposite arrangement is made in terms of the taxation process. However, due to the nature of taxation that directly harms the essence of property rights, the AI technology used in this process should be considered high-risk in the AI Act. In this case, the conditions that AI models, which will be classified as high risk, will be heavier, and strict measures may be taken in terms of supervision.

Violations that may arise as a result of the realization of any AI automated decision-making process that violates or eliminates taxpayer rights by medium-high-risk models will be prevented. The fact that AI, which can make decisions and applications that affect the lives of taxpayers, is subject to high-risk protection against unlawful decisions, may also be useful for taxpayers to apply for legal remedies. Especially with the AI Act and GDPR, the obligation to disclose data sets, codes, and algorithms to AI within the scope

of the right to information to prevent the violation of personal data and protect fundamental rights and freedoms may have a protective effect on taxpayers in the taxation process.

In this context, the AI Act, which can be considered the most comprehensive and detailed legal regulation for now, should include regulations on the use and supervision of AI to the extent possible to ensure algorithmic transparency and ethical practices in taxation, and countries should work on an explainable ethical AI regulation that provides basic public principles such as transparency, accountability, subject to supervision, and working within the principle of legal security concerning these international regulations.

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