

THE USE OF ARTIFICIAL INTELLIGENCE TOOLS BY TAX ADMINISTRATION ON THE EXAMPLE OF POLAND AND SPAIN

Dr. Michał Mólka

Nowy Sącz School of Business – National Louis University, Poland
e-mail: mimolka@wsb-nlu.edu.pl; <https://orcid.org/0000-0003-1543-3354>

Aleksandra Jiménez, MA

Nowy Sącz School of Business – National Louis University, Poland
jimenez.aleksandra@gmail.com; <https://orcid.org/0009-0003-3991-4352>

Abstract. The article concerns the use of artificial intelligence tools by tax administration on the example of Poland and Spain. Based on a concise description of the technology used by both the Polish and Spanish tax administration, special attention was paid to the threats to the protection of taxpayers' rights related to its use. The research goal of this work is to determine whether the use of this type of solutions is within the limits of the law and to formulate proposals for solutions aimed at protecting the rights of the taxpayer as the weaker party in the tax legal relationship. The publication uses a dogmatic and legal method.

Keywords: artificial intelligence; tax information processing; protection of taxpayer's rights; right to privacy.

INTRODUCTION

The development of artificial intelligence is increasingly used in the relationship between tax administration and taxpayers. In fact, traditional tax models are slowly being replaced by new systems based on the analysis of huge amounts of data, which are obtained using modern technological tools and increasingly advanced intelligence techniques. This analysis is aimed at both profiling taxpayers and collecting information in order to carry out control activities, which are intended to lead to an increase in the degree of voluntary compliance with tax regulations by entities liable for tax. For this purpose, tax authorities can use modern tools that can be integrated with data management systems collected by the tax administration. On the one hand, artificial intelligence can improve the operation of tax authorities by facilitating the performance of repetitive tasks

and efficient analysis of available information, which in turn may lead to increased compliance with tax law. On the other hand, this technology raises doubts as to the due respect for fundamental rights, in particular the right to effective judicial protection and, above all, the right to privacy, which may pose a real threat to the taxpayer as the weaker party in the tax relationship.

The aim of this article is to analyse the use of exemplary artificial intelligence tools on the example of Poland and Spain, which will result in presenting both the advantages of these modern technological solutions and, above all, drawing attention to the threats resulting from their use for the taxpayer. The formulation of conclusions will be possible thanks to the study and assessment of the positions of both Polish and foreign representatives of legal science, expressed in scientific publications. It should be emphasized that the use of artificial intelligence-based solutions by tax authorities undoubtedly requires appropriate legal regulations that should protect human rights, in accordance with the European Union guidelines. The need to provide special protection for taxpayers' rights results primarily from the nature of the tax-law relationship, which is characterized by inequality of the positions of its parties. However, equipping the tax administration with tools based on artificial intelligence may only intensify this imbalance.

1. DEFINITION OF AN ARTIFICIAL INTELLIGENCE SYSTEM

Artificial intelligence was first defined by John MacCarthy in 1956 as “the science and engineering of producing intelligent machines” [Suberbiola Garbizu 2022, 458]. On July 12, 2024, the world's first Artificial Intelligence Regulation (AI Act) was published in the official journal of the European Commission.¹ Pursuant to Article 3(1) of the AI Act, an artificial intelligence system means a machine-based system, designed to operate with varying levels of autonomy and that may exhibit adaptiveness after deployment, and that, for explicit or implicit objectives, infers from the input it receives, how to generate outputs such as predictions, content, recommendations, or decisions that can influence physical or virtual environments.

Data analysis performed by artificial intelligence allows its results to be used to predict possible future events and influence them.² The difference between

¹ 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 and Directives 2014/90/EU, (EU) 2016/797 and (EU) 2020/1828 (Artificial Intelligence Act), text with EEA relevance, PE/24/2024/REV/1, <https://eur-lex.europa.eu/eli/reg/2024/1689/oj> [accessed: 24.09.2024].

² Government Office for Science, *Artificial intelligence: opportunities and implications for the future of decision making*, <https://assets.publishing.service.gov.uk/media/5a7f96e9ed915d74e622b62c/gs-16-19-artificial-intelligence-ai-report.pdf> [accessed: 12.08.2024], 5.

standard data analysis performed by traditional algorithms and an artificial intelligence system is that the latter learn themselves based on the processed data, and the learning results are then used for further analysis [Więckowska 2022, 245]. For this reason, in the literature, AI is defined as “a machine that can think like humans and imitate human behaviour, including perception, reasoning, learning, planning, prediction, and so on” [Yongjun, et al. 2021, 1].

2. AI TOOLS USED BY THE POLISH TAX ADMINISTRATION

In Poland, since 2016, a gradual digitization process has been taking place in relation to reporting tax information. The Polish tax administration collects huge amounts of data about taxpayers, which can be used by artificial intelligence tools. The following will briefly describe the artificial intelligence tools used by the tax administration, such as the Communication System of Clearing House and the analysis engine. A noteworthy project will also be presented, involving the implementation of an intelligent robot to fight cybercrime.

2.1. The Communication System of Clearing House

The Communication System of Clearing House (Polish abbrev. STIR) is part of new regulations aimed at tightening the tax system by preventing the financial sector from being used for tax fraud. The justification for the introduced legislative changes was to be the early detection of possible tax frauds, as well as the possibility of blocking the possibility of transferring funds that should be used to pay tax or customs arrears, together with possible late payment interest, outside the Polish system banking.³

Pursuant to Article 119zv(1) of the Act of August 29, 1997, the Tax Ordinance, the Head of the National Tax Administration may request the blocking of the account of a qualified entity for a period not longer than 72 hours, if the information held, in particular the results of the risk analysis referred to in Article 119zn(1), indicate that a qualified entity may use the activities of banks or cooperative savings and credit unions for purposes related to fiscal fraud or for activities aimed at fiscal fraud, and blocking the account of a qualified entity turns out to be necessary to counteract this. Moreover, pursuant to Article 119zw(1) of the Tax Ordinance, the head of the National Tax Administration may, by way of a resolution, extend the deadline for blocking the account of a qualified entity for a specified period, not longer, however, than three months, if there is a justified fear that the

³ Report on counteracting the use of the activities of banks and cooperative savings and credit unions for purposes related to fiscal fraud for 2020, see <https://www.gov.pl/web/kas/struktury-stir> [accessed: 18.08.2024].

qualified entity will not fulfil an existing or future tax liability or liability arising from tax liability of third parties, exceeding the equivalent of EUR 10,000 converted into Polish zloty at the average euro exchange rate announced by the National Bank of Poland on the last working day of the year preceding the year in which the decision was issued.

The above-mentioned regulations are related to the Communication System of Clearing House (STIR), which, in accordance with Article 119zha of the Tax Ordinance is used in particular to receive and process data in order to determine the risk indicator, transfer data and information about the risk indicator to the Central Register of Tax Data and to the IT systems of banks and cooperative savings and credit unions, or mediate in the transfer of data, information and demands between the Head of the National Tax Administration and banks and cooperative savings and credit unions. The STIR institution operates based on a secret algorithm that selects a qualified entity based on data collected in bank accounts [Mikuła 2018, 375]. The grounds for blocking a bank account are also the selection results made by STIR. Therefore, analytical activities resulting from the applied algorithms constitute the basis for the tax authorities to take specific actions towards the taxpayer [Majka 2018, 372].

STIR provides three levels of data analysis [Asquith 2024]: a) risk assessment – based on daily examination of the history of taxpayers' cash flows. This ensures that the Head of the National Tax Administration may decide to block the bank account and initiate control proceedings; b) network analysis – consisting in the analysis of connections between entities liable for tax, which aims to identify unusual and suspicious transactions; c) assault communication – aimed at sending the so-called behavioural messages (letters, e-mails or text messages) that are related to the actions taken by taxpayers and are intended to encourage them to voluntarily comply with the provisions of tax law. As rightly pointed out in the Polish tax law doctrine, sending behavioural letters by the tax administration should be classified as an action that has no legal basis and is contrary to the principle of the rule of law [Brzeziński and Nowak 2024, 29-55]. Concerns are also raised about the secrecy of the algorithm on which STIR operates. After all, the use of this technology may lead to the blocking of the bank account of an entrepreneur who has not committed any offenses.

2.2. The analysis engine

The analysis engine is a modern analytical tool implemented by the National Tax Administration in 2019. It is based on innovative methods, such as machine learning in particular, which use extensive data sets for learning. Thanks to the created algorithms, numerous discrepancies in the settlement of tax on

goods and services, which have been transferred to tax offices and customs and tax offices, are identified with increasing precision.⁴ The so-called VAT carousel fraud. Information about suspicions of such fraud is forwarded on an ongoing basis to tax offices with a request to carry out activities verifying the correctness of the settlement of the tax on goods and services. Actions are also taken to remove a given taxpayer from the register of active VAT taxpayers in connection with the detection of tax fraud. Thanks to the operation of the Network Analyzer of the Analysis Engine, it is possible to create an interactive and automatic analysis of the network of connections between entities, which is presented in a graphical form and also includes transactions concluded between entrepreneurs [Sarnowski and Selera 2020, 36].

2.3. Intelligent robot to fight cybercrime

In 2019, the Chamber of Tax Administration in Opole announced a competition to create an intelligent robot to fight crime. The demand for this type of software results from the need for officers of the National Revenue Administration (KAS) to monitor many online auctions and announcements related to gambling or smuggling of illegal goods.⁵ This is a very time-consuming task, and what is more, a significant part of such websites cannot be found through available search engines. The purpose of using an intelligent robot was to make it easier to find places on the Internet where law is broken. The solution would undoubtedly facilitate the work of the tax administration. Unfortunately, according to the letter from the Director of the Chamber of Tax Administration in Opole, obtained under the Act on Access to Public Information, “the intelligent robot to fight cybercrime referred to in the regulations for the competition of September 4, 2019 has not been implemented.” for use in the Tax Administration Chamber in Opole.⁶ However, this is undoubtedly an idea worth considering in the future.

3. AI TOOLS USED BY THE SPANISH TAX ADMINISTRATION (LA AGENCIA ESTATAL DE ADMINISTRACIÓN TRIBUTARIA AEAT)

In May 2024, a strategy was developed in Spain regarding the use of artificial intelligence by the tax administration, which was defined as an essential transformation technology for the evolution and improvement of efficiency

⁴ See <https://www.gov.pl/web/kas/analizy-rozliczen-vat-z-wykorzystaniem-jpkvat-stir-i-silnika-analiz> [accessed: 20.08.2024].

⁵ See <https://konkursy.govtech.gov.pl/start/postepowanie/42> [accessed: 23.08.2024].

⁶ Letter from the Director of the Tax Administration Chamber in Opole of September 3, 2024, No. 1601-IWK.0150.74.2024, obtained under the Act on Access to Public Information, Journal of Laws of 2022, item 902, as amended.

in the provision of information services to the taxpayer and in the area of prevention, but also in fight against tax and customs fraud.⁷ The Spanish National Agency for Tax Administration (AEAT) has a whole catalogue of artificial intelligence tools that allow it to carry out control tasks. Importantly, in accordance with the strategic plan for 2024-2027 regarding the use of artificial intelligence, it is emphasized that automated administrative activities will in no case be based solely on the results obtained from the AI system. In such situations, human intervention is always guaranteed to supervise, approve or even reject options that may have been proposed by the system, which is undoubtedly an acceptable solution. The plan indicated that ultimately all decisions would be made by people.⁸ Selected instruments used by the Spanish tax administration will be briefly described below.

First of all, it is worth mentioning the ZÚJAR tool, an initiative of AEAT, which, after testing the first version in 1993, enables the processing of information contained in databases for the purpose of selecting taxpayers [Ribes Ribes 2020, 133]. As indicated in the doctrine, “it is a multi-dimensional tool for analytical processing and online data storage (Data Ware-house), which facilitates the analysis and comparison of all information existing in the system with the content downloaded from the operational database. It also allows you to browse, list, filter, group, order, cross, calculate statistics, expressions between fields, segment, draw charts, export data” [Suberbiola Garbizu 2022, 461].

In turn, the PROMETEO solution is defined as “a type of ZÚJAR specializing in the analysis of information provided during the verification of a specific taxpayer. It enables reconciliation of accounting information with bank statements by comparing them with any information from the State Treasury’s own databases” [ibid., 462].

TESEO is a technology developed by AEAT, which uses information repositories to analyse, visualize and graphically edit relationships between taxpayers in real time [Gonzalez Garcia 2018, 41]. Thanks to this tool, you can search, filter, group information, as well as, in particular, store and export queries. Moreover, the tool allows you to create presentations in hierarchical, orthogonal and cyclical systems [Suberbiola Garbizu 2022, 462]. GENIO, in turn, is “a reporting tool also created by AEAT itself, which issues standard online reports, also enabling autonomous design and visualization of reports based on queries entered in the multi-dimensional analysis tools ZÚJAR and PROMETEO” [ibid.].

⁷ *Estrategia de inteligencia artificial. Agencia Tributaria* (27.05.2024), https://sede.agenciatributaria.gob.es/static_files/AEAT_Intranet/Gabinete/Estrategia_IA.pdf [accessed: 24.08.2024].

⁸ *Plan estratégico de la Agencia Tributaria 2024-2027*, https://sede.agenciatributaria.gob.es/static_files/Sede/Agencia_Tributaria/Planificacion/Plan_estrategico_2024_2027/PlanEstrategico2024.pdf [accessed: 24.08.2024], 59.

When it comes to a risk management tool that is based on information stored in Zújar, it is also worth paying attention to a solution called HERMES [Ribes Ribes 2020, 134]. Based on the predictive data analysis method, HERMES analyses the differences between the taxpayer's behaviour in his declaration and the way he should do it according to the data held by the administration, which allows for the development and use of tax risk profiles when the results differ from expected standards [Suberbiola Garbizu 2022, 462]. The main use of this tool is the selection of taxpayers for whom a tax audit will be carried out.

Irune Suberbiola Garbizu also mentions commercial tools such as Business Intelligence, which were not developed by AEAT and are defined as predictive models that focus on data analysis [ibid.]. Like other tools, they are used to detect unusual behaviour and fraud patterns. The results obtained by these tools are transferred to the analytical platform, and specific risks are sent to the HERMES global risk system.

The presented analysis shows that in Spain artificial intelligence systems are used by the tax administration in a much broader way than in Poland. At the same time, unlike in Poland, a strategy was also developed regarding the use of artificial intelligence by the tax administration, as well as a strategic plan for the years 2024-2027 regarding the use of this technology.

4. THREATS TO TAXPAYERS' RIGHTS RELATED TO THE USE OF AI

The use of artificial intelligence by tax administrations may pose a risk to taxpayers' rights. First of all, it should be noted that the algorithm on which artificial intelligence is based can itself generate new information about added value, which will go beyond the information possessed by the tax administration. This applies to algorithms equipped with self-learning artificial intelligence (AI), which have the ability to self-improve, which in turn may lead to independent reprogramming, allowing for a high degree of independence, both from the data originally stored, as well as from initial programming. As indicated in the doctrine, an artificial intelligence algorithm, by definition, strives for maximum accuracy approximations that do not constitute mathematical certainty [Lai 2022, 83]. It does not operate on the basis of true-false logic, but on the basis of the "more likely than not" criterion.

The possibility of generating biases that threaten the principle of tax equality should also not be ignored. After all, artificial intelligence learns from the cases that feed it. The principle of equality, also known as the principle of non-discrimination, assumes that entities in the same factual situation will be treated in the same way [Brzeziński 2017, 294]. The 2020 White Paper on Artificial Intelligence already indicated that the use of artificial intelligence

may affect the values founding the European Union and lead to violations of fundamental rights, including the right to non-discrimination.⁹ The way to avoid this threat should be to introduce supervision procedures to analyse the operation of the system. Moreover, you may consider involving people from different backgrounds in the supervision to ensure a diversity of opinions.¹⁰ On the other hand, as indicated in the strategy on the use of artificial intelligence by the Spanish tax administration, a properly designed artificial intelligence system is able to carry out identical actions in the same situations, thus helping to mitigate possible errors that may occur in human actions.¹¹ Therefore, through the use of artificial intelligence, it is also possible to identify patterns of bias and discrimination that may be taking place, which may not be detected and corrected without the use of these technologies.

There should undoubtedly be transparency in the process of generating information using artificial intelligence tools. The secrecy of the operation of the algorithms used makes it impossible to understand the reasons underlying a given decision, which may result in the taxpayer's helplessness and threatens his right to court protection. In the literature, algorithms are compared to legal codes by pointing out that, like legal regulations, they are used to assess the circumstances of a specific case, based on logical conclusions, intended to lead to predictable legal consequences [Suberbiola Garbizu 2022, 468]. After all, as follows from the case law of the CJEU, the law should be characterized by certainty, and its application must be predictable by legal entities.¹²

An issue that deserves special attention is the protection of taxpayers' privacy. The use of artificial intelligence solutions by tax administrations involves the collection of more and more data about taxpayers, which can then be used by AI tools. Tax authorities have more and more powers in this respect. For example, we are talking about obtaining information on the basis of EU regulations on reporting tax schemes. In Poland, pursuant to Article 45(1) of the Act on the National Tax Administration, tax authorities, in order to carry out statutory tasks, may request access to documents containing information, including personal data. Moreover, on July 1, 2024, the Polish amendment to the Act on the exchange of tax information with other countries¹³ entered into force, implementing the EU Council Directive (EU) 2021/514 of March

⁹ *White Paper On Artificial Intelligence – A European approach to excellence and trust*, Brussels, 2020, 12, <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52020DC0065> [accessed: 24.08.2024].

¹⁰ *Ethics Guidelines For Trustworthy AI High-Level Expert Group on Artificial Intelligence*, 12, <https://digital-strategy.ec.europa.eu/en/library/ethics-guidelines-trustworthy-ai> [accessed: 24.08.2024].

¹¹ *Estrategia de inteligencia artificial...*, p. 6.

¹² The judgment of the Court of Justice of 9 July 2015, ref. no. C 144/14, *Cabinet Medical Veterinar Dr. Tomoiagă Andrei*, EU:C:2015:452, point 33 and the case-law cited therein.

¹³ The DAC-7 directive was implemented in Poland under the Act of May 23, 2024 amending the Act on the exchange of tax information with other countries and certain other acts.

22, 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, the so-called DAC7 directive¹⁴ regarding the obligation to report trade via the Internet. The Act imposes an obligation to collect and transmit to tax administration authorities information about sellers making transactions via Internet platforms. This obligation is addressed to owners of digital platforms and covers all Member States of the European Union. After all, in order to function properly, artificial intelligence must process data, without which its functioning would be meaningless. Therefore, there is a risk that the increasing powers of tax authorities to access taxpayers' data and the use of this data by AI solutions will violate taxpayers' privacy.

Undoubtedly, data processing by tax authorities using AI tools must be carried out in accordance with the provisions protecting personal data. The Court of Justice of the European Union has already commented on this matter in its judgment of 27 September 2017 in the *Puskár* case,¹⁵ in which it noted that the management of taxpayers' data by tax administrations, as well as the preparation of files for tax audit purposes, must be prepared in accordance with fully respecting data protection regulations, with particular emphasis on the rights of the persons concerned in this area. As Agnieszka Franczak rightly points out, the limits of interference with the taxpayer's right to privacy are determined by the principle of proportionality [Franczak 2023, 355]. Any restrictions in this respect must be expressly indicated in the act, and what is more, they must be justified and necessary due to the general interest arising from the protection of the rights and freedoms of other persons [ibid.].

An issue that also requires particular attention is the fact that, according to recital 59 of the AI Act, artificial intelligence systems intended specifically for use in administrative proceedings conducted by tax and customs authorities should not be classified as high-risk AI systems used by law enforcement authorities for the purposes of preventing, detecting, investigating and prosecuting crimes. The above may increase the risks related to the protection of taxpayers' fundamental rights in connection with the use of artificial intelligence by tax authorities.

CONCLUSION

Human intervention, and therefore the ability to deduct, are still factors that cannot be ignored in the application of tax law. For this reason, artificial

¹⁴ Council Directive (EU) 2021/514 of 22 March 2021 amending Directive 2011/16/EU on administrative cooperation in the field of taxation, <https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32021L0514> [accessed: 24.08.2024].

¹⁵ The judgment of the Court of Justice of September 27, 2017, C 76/16, *Peter Puskár*, ECLI:EU:C:2017:725.

intelligence should not replace humans, but can support them in their work, enabling automation and simplification of bureaucratic procedures. Undoubtedly, the implementation and use of new technologies based on artificial intelligence requires ensuring such guarantees as, above all, protection of the privacy of processed data, transparency of the principles of operation of algorithms and the definition of clear rules of responsibility for decisions resulting from the use of these new solutions. The development of a strategic plan regarding the use of artificial intelligence by the tax administration in Spain is undoubtedly commendable, which indicates that administrative activities will in no case be based solely on the results obtained from the AI system. In such situations, human intervention should always be provided to supervise, approve or even reject options that may have been proposed by the system. However, it would be worth introducing regulations at the statutory level, guaranteeing that all decisions in tax matters will ultimately be made by people.

To sum up, the use of artificial intelligence by tax administrations should undoubtedly be seen as part of a natural evolution, of which the digitalization of the entire world is a part. It represents a huge progress in process automation, which will certainly affect the speed and effectiveness of tax authorities. Focusing on development will allow us to adapt to the requirements of the 21st century, and thus improve operational efficiency and improve tax collection. On the other hand, these solutions also have certain weaknesses that may affect taxpayers' rights. For this reason, the analysis carried out aims to indicate these threats in order to eliminate them through the prism of the proposed legal regulations.

REFERENCES

- Asquith, Richard. 2024. "Poland's machine learning STIR tackles missing trader VAT fraud." <https://www.vatcalc.com/poland/poland-ai-and-e-invoicing-fights-vat-fraud/> [accessed: 19.08.2024].
- Brzeziński, Bogumił. 2017. *Prawo podatkowe. Zagadnienia teorii i praktyki*. Toruń: TNOiK.
- Brzeziński, Bogumił, and Ireneusz Nowak. 2024. "Pisma behawioralne' a kwestia podstaw prawnych działania krajowej administracji skarbowej." *Studia Prawno-Ekonomiczne* CXXXI:29-55. <https://doi.org/10.26485/SPE/2024/131/2>
- Franczak, Agnieszka. 2023. "Ochrona praw podatnika a dopuszczalny zakres informacji przekazywanych w trybie art. 45 ust. 1 ustawy o Krajowej Administracji Skarbowej. Glosa aprobująca do wyroku Naczelnego Sądu Administracyjnego z dnia 4 maja 2021 r. (III FSK 928/21, LEX nr 3181325)." *Studia Iuridica Lublinensia* 32, no. 2:347-58. <https://doi.org/10.17951/sil.2023.32.2.347-358>
- Gonzalez Garcia, Ignacio. 2018. "Analytics and big data. The new frontier cases of use at AEAT." *Tax Administration Review* 44:35-49.

- Lai, Luigi. 2022. "When and how artificial intelligence can help the court's day-to day work." In *Prawo sztucznej inteligencji i nowych technologii 2*, edited by Bogdan Fisher, et al, 83. Warszawa: Wolters Kluwer.
- Majka, Paweł. 2018. "Procesowe problemy stosowania regulacji systemu teleinformatycznego izby rozliczeniowej – glosa do wyroku WSA w Warszawie z dnia 20 września 2018 r. (III SA/Wa 2057/18)." *Studia Prawnicze KUL* 1(81):367-86.
- Mikuła, Paweł. 2018. "System Teleinformatyczny Izby Rozliczeniowej – wybrane szanse i ryzyka." In *Nowe narzędzia kontrolne, dokumentacyjne i informatyczne w prawie podatkowym. Poprawa efektywności systemu podatkowego*, edited by Bogumił Brzeziński et al., 367-94. Warszawa: Wolters Kluwer.
- Ribes Ribes, Aurora. 2020. "La inteligencia artificial al. Servicio del 'compliance tributaria'" *Revista Española de Derecho Financiero* 188:125-70.
- Sarnowski, Jan, and Paweł Selera. 2020. "Narzędzia informatyczne wykorzystywane w administracji skarbowej i ich wpływ na szczelność systemu podatkowego w Polsce w latach 2015-2019." *Studia BAS* 4(64):29-50.
- Suberbiola Garbizu, Irune. 2022. "La deseable consideración de la IA utilizada en el ámbito tributaria como sistema de alto riesgo en la propuesta de Reglamento sobre IA del Parlamento Europeo y el Consejo." In *Inteligencia artificial legal y administración de justicia*, edited by Sonia Calaza López, and Mercedes Llorente Sánchez-Arjona, 457-85. Thomson Reuters Aranzadi.
- Więckowska, Mariola. 2022. "Artificial intelligence, machine learning, deep learning, etyka i rodo – jak to wszystko połączyć?" In *Prawo sztucznej inteligencji i nowych technologii 2*, edited by Bogdan Fisher, et al, 245. Warszawa: Wolters Kluwer.
- Yongjun, Xu, et al. 2021. "Artificial intelligence: A powerful paradigm for scientific research." *The Innovation* 2, no. 4:1. <https://www.sciencedirect.com/science/article/pii/S2666675821001041>