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OPPORTUNITIES AND CHALLENGES OF ARTIFICIAL INTELLIGENCE APPLICATION IN INVESTMENT ARBITRATION

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Abstract: Artificial intelligence (AI) is increasingly advancing, developing, and finding applications in various aspects of life and work. Some of the most significant social areas, such as law and dispute resolution, have not remained immune to the influence of AI. In this sense, both the positive aspects, useful elements, as well as the potential dangers and risks that this technology brings, are being increasingly considered. Arbitration, as a contractual and voluntary method of dispute resolution, presents fertile ground for the application of various technological solutions to accelerate and ease the process. Investment arbitration, which deals with resolving disputes between a host state and a foreign investor, has its specificities that need to be addressed in the context of AI application. Therefore, this paper provides a review of the benefits of AI in arbitration, analyzes its shortcomings and risks, offers an overview of certain smart tools available, and presents a general view on the ethical and legal regulation of AI application in arbitration. The conclusion of the paper is that the possibilites for further development and refinement of AI technology for use in arbitration are numerous, but should be approached cautiously. It will be necessary to devise an optimal, flexible regulation to standardize the rudimentary rules of AI application in order to meet the basic requirement: benefit for humanity and society, while respecting the specific values and principles on which investment arbitration is based.

Keywords: International Investment Arbitration, Artificial Intelligence, Law, Technology.

Introduction

Artificial Intelligence (AI) is becoming an integral part of the functioning of the global economy and is increasingly being applied in everyday life. Its potential, as well as the dangers it brings, are widely discussed in professional and scientific literature. In the field of law, it is considered through the lens of accelerating and facilitating legal work, but there is also concern that many jobs will become redundant due to advancements in generative artificial intelligence tools. Generative artificial intelligence is a type of technology that uses existing data to create new and original texts, images, videos, and audio recordings (Russell & Norvig, 2016: 28-29).

Research analyzing the impact of AI on the labor market has yielded intriguing and potentially concerning results. A study conducted by Hatzius and co-authors (2023) found that a quarter of current jobs in the U.S. are likely to be replaced by automated AI, particularly in administrative roles (46%) and legal professions (44%), while this is far less likely in physically intensive jobs such as construction (6%) maintenance (4%).

Regarding the readiness of lawyers to use AI in their work tasks and their opinions on the future of the legal profession, research provides interesting insights. For example, a study conducted among legal professionals in Serbia concluded that respondents are relatively well-informed about AI and ChatGPT, though these tools are rarely actively used in their work. However, the respondents recognized the potential of these “smart“ tools for performing various legal tasks, emphasizing that their use should be limited by legal and ethical regulations (Njegovan & Fišer, 2024).

The subject of this paper is the analysis of the possibilities for applying generative artificial intelligence

in investment arbitration. International investment arbitration is a method of resolving international investment disputes that arise between foreign investors and host states. This method of dispute resolution is highly popular as it is based on the consent of the parties to an international investment agreement for the protection of investments.Through this alternative dispute resolution mechanism, a private legal entity can directly sue a state before an independent international forum, which is considered a more effective means of protection compared to turning to the domestic courts of the host state. Although investment arbitration shares many similarities with commercial and other types of international arbitration, it also has its distinct characteristics. For instance, investment arbitration involves not only legal but also political issues (Dar & Praštalo, 2023). Therefore, this paper analyzes the application of AI specifically in investment arbitration, although many aspects are universal to all types of arbitration.

Although international law and legal scholars increasingly recognize the importance and need to regulate the use of artificial intelligence, international investment law and AI have not yet become the subject of significant scholarly attention. However, certain authors have addressed various aspects of this topic, such as the potential role of artificial intelligence in selecting arbitrators, calculating damages, and predicting the outcomes of investment disputes within the context of investment arbitration (Kryvoi, 2023). McLaughlin (2023) approached the topic from a slightly different perspective, analyzing the interaction between artificial intelligence and international investment agreements. His central thesis posits that the current international foreign investment regime is insufficiently prepared to address the legal and ethical challenges posed by artificial intelligence.

Particularly interesting are writings that consider AI as a potential solution to problems specific to investment arbitration. For example, the system of investment arbitration has long faced criticism for its "lack of consistency, coherence, predictability, and correctness of arbitral decisions by ISDS tribunals" (Knieper, 2021). Moreover, systemic issues existing in investment arbitration between foreign investors and host states have led to a "legitimacy crisis" (Dar & Praštalo, 2023) and discussions within international organizations about directions for its reform. Literature examines the need to regulate AI in arbitration, addressing the ethical, legal, and technological challenges its use entails (Jeeri & Singh, 2024).

In the continuation of this paper, we will review the advantages and disadvantages of applying artificial intelligence in investment arbitration. First, the benefits of using AI tools in investment arbitration will be analyzed, followed by the negative aspects highlighted in the literature. Next, we will present some AI tools already implemented in arbitration practice, as well as an overview of fundamental strategic and legal documents in this field. Finally, the main conclusions of the research will be presented.

Advantages of Applying AI in Investment Arbitration

Artificial intelligence can find its application in various stages of the arbitration process, potentially overcoming some of the problems associated with investment arbitration, which is known for being a lengthy and costly dispute resolution process.

For instance, electronic review and document sorting have numerous advantages over traditional handling methods. However, for this to be implemented, data must be collected and processed before being uploaded onto specific data processing platforms. Furthermore, artificial intelligence can facilitate document creation by identifying relevant sources, anonymizing sensitive data, and sorting confidential documents (Haelser & Visler, 2024).

One of the key applications of AI in arbitration is searching through regulations, doctrinal sources, or arbitral practice. Since AI can process an extremely large volume of data based on various parameters, its scope of sources that can be explored is far greater than that of a human. Additionally, AI's ability to translate

different languages presents a significant advantage and relief in arbitration proceedings between parties from different countries (Jovanović, 2024).

The facilitation of arbitrator selection is also mentioned as one of the positive applications of AI in arbitration. Specifically, searching for potential candidates would be faster and more comprehensive, and the assessment of a candidate's suitability could be made in a quicker and more objective manner, based on a greater number of criteria, not all of which are of equal relevance (Jovanović, 2024).

Another important advantage of AI is predictive analytics, which helps predict the outcome of individual cases based on previous, similar cases. This allows parties to assess the likelihood of success in arbitration and decide whether to continue with the proceedings or turn to alternative methods (Al Fatayri, 2024).

The potentially most significant role of the AI, yet also the most controversial, could be the generation of procedural tools or parts of them, which is a minor issue, or even the creation of arbitral decisions, which could lead to far-reaching consequences. Procedural acts can be divided into those created by the parties and their representatives (e.g., request for arbitration, claim, response to the request for arbitration, response to the claim, submissions on various matters and contents, cost statements...), acts created by arbitrators (e.g., procedural management acts and decisions), and acts in which both the parties and the arbitrators participate (e.g., minutes of oral hearings) (Jovanović, 2024). Since all of these documents vary in complexity, some would be more suitable for creation using AI tools, such as the most routine acts, which typically take up a lot of time but do not require significant creative effort.

Decision-making is certainly the most complex task that could potentially be entrusted to artificial intelligence. However, making an arbitral decision is the result of a creative process that requires human thinking and reasoning. Careless use of AI tools, no matter how advanced, poses a significant risk to the accuracy, reliability, and quality of arbitral decisions. However, certain parts of decisions, which are predominantly template-based, such as decisions on costs and similar matters, could be delegated to AI, which would accelerate and make the process more cost-effective, as well as save time for the arbitrators (Jovanović, 2024). Moreover, determining the amount of damages could be entrusted to AI, especially considering the fact that expert opinions in disputes are often very diverse (Efstathiou & Apostol, 2023), while AI would adhere to objective parameters.

Problems of Applying AI in Investment Arbitration

Despite the numerous potential benefits of AI, the literature also addresses the drawbacks and problems associated with "smart" tools in international arbitration. For instance, in order to "train" AI language models to generate content, significant initial investments and resources are required. Additionally, the data necessary for generating any content, such as previous decisions and submissions, are not always available.

AI is also criticized for its lack of human flexibility and adaptability, as it operates based on pre-set patterns, meaning it cannot independently arrive at innovative solutions for new circumstances that have not yet been encountered in arbitration practice. In other words, AI, at its current level of development, cannot come up with new solutions in practice, nor can it fully adhere to the principle of fairness, which is characteristic of investment arbitration and requires special attention and creativity, qualities that are currently only available to humans (Jovanović, 2024).

It is important to emphasize that AI often makes mistakes. Generating text composed of words that are most likely to appear in a given context does not always provide an accurate and meaningful response (Kucharavy, 2023). If such responses are used without verification and due diligence, they can lead to significant consequences, such as the well-known case of an American lawyer who cited non-existent cases in a court submission, generated by ChatGPT (Weiser, 2023). AI can also create deep fakes, mimicking the style of emails, voices, or even videos of real people. Since it is not easy to distinguish between real and fake

evidence without the appropriate technical tools, this is another risk associated with the use of AI in arbitration.

Generative AI models still cannot process large documents or answer questions based on information located in multiple sections of them (Filippo et al., 2024). Consequently, AI is unable to generate long texts or summarize complex ones. This limits their use in investment arbitration, as proceedings between foreign investors and the host state typically involve large amounts of data and very large documents (Garrido, 2023).

Furthermore, generative language models often do not contain the most up-to-date information, which means that arbitration practitioners must rely on other sources to obtain recent decisions and other necessary information (Garrido, 2023).

Another problem under consideration is bias. Generative language models are trained on vast amounts of data, which undoubtedly contain some biases (Garrido, 2023). Since AI models rely on statistical probability based on existing data, it inevitably results in repeating established choices, such as arbitrators being characterized as male, white, from Western countries (Haelser and Visler, 2024). For example, if a state frequently loses in investment disputes (due to lack of resources for competent representation), AI will conclude that this is the norm and predict that the state is more likely to lose in the future (Kryvoi, 2023).

In addition to the inherent issues of AI technology, the nature of arbitration itself presents challenges for automated decision-making. Specifically, there is no typical investment arbitration case. Decisions are based on broadly defined standards such as fair and equitable treatment, and each case is unique. Moreover, there is no system for reviewing decisions, such as an appeals mechanism, which leads to frequent inconsistent arbitral rulings (Kryvoi, 2023).

The working process of AI is not sufficiently clear. AI is often referred to as a "black box," whose contents are of unknown or difficult-to-ascertain origin. The algorithms that drive AI do not provide enough transparency to understand how they work. Even if there is some transparency, understanding how AI operates is difficult for lawyers who are not technically trained, which in turn undermines confidence in artificial intelligence (Kryvoi, 2023).

A potentially significant issue with the use of AI in arbitration proceedings concerns privacy protection. Arbitration is, by default, a confidential process, unlike regular court proceedings (Alternkich and Hossbach, 2024). Smart tools like OpenAI's ChatGPT, in their privacy policies, state that OpenAI collects information about accounts, user content, communication data such as contact information, and similar details. The company also collects technical information such as IP addresses, locations, login data, device access data, and more (OpenAI, 2024). ChatGPT generates information when something is entered into the search bar, which could also be collected as it qualifies as input. In other words, the use of AI models can lead to the identification of parties, cases, and arbitrators who have been collected and analyzed (Efstathiou and Apostol, 2023).

Finally, in addition to the aforementioned negative aspects of AI at its current level of development, it is important to emphasize that the use of this technology could lead to the disappearance of certain jobs and positions, particularly repetitive ones. Jobs such as reviewing documentation, preparing standardized documents, and similar tasks typically performed by young trainees, technical secretaries, etc., would be at risk or could see a complete decline in demand (Kryvoi, 2023).

Examples of technology that is already in use

Various artificial intelligence-based software are increasingly gaining popularity in international arbitration. Some of the tools used for faster document translation include "DeepL A.I.," "Google Translate," and similar platforms (Gore et al., 2024). There are legal research platforms that have significant impact and use, such as "Wolters Kluwer: International Arbitration & Mediation" and "Jus Mundi." These platforms use

machine learning to collect a broad database of international arbitration cases, agreements, contracts, and more (Gore et al., 2024). The company LexisNexis integrates AI into its platform "Lex Machina" to improve search capabilities, providing predictive analytics to suggest relevant cases, laws, and secondary sources (lexmachina.com).

A smart tool that is claimed to be able to answer questions, draft legal arguments, prepare contracts, client letters, as well as summarize and analyze documents is "Lexis+A.I." There are other tools such as "Westlaw Edge," which is designed to enable analytics on cases, courts, judges, attorney fees, and types of cases. "Jus-AI" uses ChatGPT to answer questions based on the Jus Mundi database (jusmundi.com).
For checking arbitrators and conflicts of interest, the following tools are available: "Arbitrator Intelligence," "Kluwer Arbitration's Profile Navigator & Relationship Indicator," and "Global Arbitration Review's Arbitrator Research Tool (ART)" (Gore et al., 2024).

Thus, smart, AI-powered tools that are currently being used or could be used for various purposes in arbitration procedures already exist. It is certain that this technology is in its early stages, and faster development is expected, with more powerful, precise, and versatile capabilities for legal research, text generation, document translation, case and arbitrator analysis, and advancements in the creation of complex legal documents such as arbitration awards.

Legal and Ethical Framework for the Use of AI in Investment Arbitration

The regulation of AI usage in various aspects of life is still in its early stages. Several organizations are making efforts to create a global AI regulatory framework, which is mostly at the level of guidelines, recommendations, and general frameworks. For example, UNESCO created the "Recommendation on the Ethics of A.I." in 2021, which has been adopted by over 193 countries worldwide (UNESCO, 2023). Other initiatives include the G7 Hiroshima Process International Guiding Principles for Organizations Developing Advanced AI Systems (2023), which aim to create safe, secure, and trustworthy AI, and the US AI Bill of Rights, which aims to provide a framework for protecting civil rights in the age of artificial intelligence (whitehouse.gov).

In terms of legally binding documents, the European Union has enacted the "AI Act," which will regulate AI usage in member states, with implementation expected by mid-2026. The goal is to protect fundamental rights and limit high-risk AI, while setting conditions for the transparent operation of general-purpose AI systems. According to EU regulations, high-risk AI systems include those used in the provision of justice (EU Regulation 2024/1689).

However, the regulation of AI usage in international arbitration, specifically in investment arbitration, has not yet led to the creation of a general framework or centralized mechanism (Jeeri & Singh, 2024). Given the potential significant consequences of using this technology, regulation is needed in investment arbitration as well. However, how this regulation should be implemented is a matter for legal scholars and practitioners to consider. For instance, Fach Gomez (2024) suggests putting efforts into creating both soft and hard laws regarding AI use in arbitration. Ethical guidelines are necessary to ensure that AI tools do not undermine the core values of resolving disputes between foreign investors and states. Jeeri & Singh (2024) argue that regulating AI in arbitration through soft law could be achieved in three ways: first, through an international legal document under which countries would draft their own regulations (model laws); second, by encouraging arbitration tribunals to follow soft law guidelines as best practices; and third, by prompting arbitration institutions and courts to include relevant AI clauses in their procedural rules.

Regarding specific documents that address the regulation of AI in arbitration, a significant initiative has been launched within the Silicon Valley Arbitration and Mediation Center, with the publication of the "Guidelines on the Use of AI in Arbitration" in 2023 (SVAMC, 2024). This guide aims to reflect best practices

and potential risks when applying AI in arbitration proceedings (Friedman et al., 2024). Additionally, the Council of Europe has developed the "Framework Convention on Artificial Intelligence and Human Rights," which discusses AI usage in terms of human rights, democracy, and the rule of law (Committee on Artificial Intelligence).

Therefore, at the international level, there are currently no binding legal regulations regarding the use of AI in international arbitration. However, certain arbitration rules do anticipate the use of technology. For example, Article 14.1 of the LCIA Rules requires arbitrators to ensure the efficiency of the procedure and acknowledges the court's power to "employ technology to enhance the efficiency and expeditious conduct of the arbitration" (LCIA Rules, art. 14.6(iii)). Furthermore, the diversity of national regulations concerning AI use in decision-making, which are important for lex arbitri, complicates this issue (Efstathiou & Apostol, 2023). Therefore, the development of soft law is necessary to determine the acceptable and optimal use of existing AI tools. Since the use of AI in arbitration is still unclear, as confirmed by our research, it is crucial to develop guidelines and a sufficiently flexible framework that would standardize AI usage and provide a foundation for future, legally binding regulations (Jeeri & Singh, 2024).

Conclusion

Artificial intelligence is increasingly becoming an integral part of numerous industries and professions, and its future in the field of law is actively being considered. Investment arbitration is a popular method for resolving disputes between foreign investors and host countries, as provided by various international investment agreements. Although it has numerous positive aspects, it has been subject to criticism in recent decades. The application of artificial intelligence is seen as a potential solution to some of the mentioned issues, but the negative aspects of this modern technology are also being considered.

Facilitating the selection of arbitrators, searching for arbitration practice, international and domestic regulations, and other relevant data, translating large volumes of documents, generating legal arguments, and similar tasks represent just some of the examples of the advantages of AI application, which can ease, speed up, and reduce human error in arbitration. However, there are numerous dangers that the use of generative artificial intelligence may bring: mistakes, outdated information, inherent biases, lack of transparency in content creation, threats to privacy and protection of sensitive data, limited ability to create complex legal arguments and decisions due to the absence of a sense of justice, the disappearance of certain legal jobs, and so on.

Despite these limitations and risks, smart tools are increasingly serving lawyers, judges, and arbitrators. With the right balance of technological development, ethics, and law, they can make the field of investment disputes simpler, more efficient, and more predictable. Therefore, this issue should be approached from multiple angles: analyzing existing technology, improving it, working on creating soft and hard law frameworks that would establish ethical and secure use of AI without jeopardizing the core principles and values of arbitration, nor the fundamental ethical imperative of AI development, as stated by UNESCO: it should benefit humanity, society, and the environment.

Conflict of interests
The authors declare no conflict of interest.

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