



# ARTIFICIAL INTELLIGENCE IN ALTERNATIVE DISPUTE RESOLUTION: A LITERATURE REVIEW ON GUIDELINES, BEST PRACTICES, AND THE ROLE OF ENGINEERING EXPERTS IN COMPLEX CONSTRUCTION CONTRACTS

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## ABSTRACT

The objective of this work is to analyze whether Artificial Intelligence (AI) can be used in Alternative Dispute Resolution (ADR) processes, such as arbitration, mediation, conciliation, and dispute boards, especially in complex construction contracts. The work aims to analyze the connection with law—national and international—as well as with institutional rules and the new ethical standards for engineering experts who intervene in ADR proceedings. It provides a brief overview of AI history, the underlying theories, and their application by engineering experts, focusing on issues related to confidentiality, accountability, transparency, and technological competence. It also examines the standards of the institutions (for example, SVAMC, CIArb, ICC, and VIAC) as well as the current national legislation in Brazil, Europe, and the US. In conclusion, even though the use of AI tools may be a very useful resource for the acceleration of the dispute resolution proceedings and for the improvement of the analysis and investigation made by the engineering experts, the final consideration is that the use of these tools must always be under the control of the humans to preserve fairness, ethics, and the trust in the ADR proceedings. Further research and legislation are recommended.

## KeyWords

Artificial Intelligence; Alternative Dispute Resolution; Arbitration; Engineering Experts; Complex Construction Contracts

## INTRODUCTION

Disputes arise in all aspects of our daily lives. Dispute avoidance is a significant issue in all capital contracts, particularly in complex contracts such as large engineering and infrastructure projects. FIDIC (2022) stated that “Disputes have long plagued engineering projects in common law jurisdictions and engineers have traditionally played a major role in endeavouring to prevent disputes arising and in endeavouring to settle amicably those that do arise”. The engineer’s role as arbitrator, however, was largely diminished due to potential conflicts of interest arising from the engineer's economic subordination to the contractor. Consequently, arbitration has become more popular in order to provide an impartial third-party decision that removes the engineer from any involvement in the dispute. Artificial intelligence and alternative dispute resolution (ADR). The exponential growth of technology, also known as the digital transformation, together with the rapid development of information technologies, has placed Artificial Intelligence at the epicenter of our daily lives. This is particularly true when it comes to resolving conflicts that inevitably arise in our personal and professional lives.

Therefore, the use of Artificial Intelligence in Alternative Dispute Resolution (ADR) processes may be a significant factor in increasing the efficiency and speed of dispute settlement in the construction sector and other fields of law. This article analyzes the development of ADR in Brazil through arbitration, mediation, conciliation, and dispute boards (DBs), as well as the use of Artificial Intelligence in ADR.

### *Historical Development of AI in ADR*

Artificial intelligence was first coined in 1956. It was Alan Turing who explored the mathematical possibility of artificial intelligence in his 1950 paper *Computing Machinery and Intelligence* (Saleem, 2024). Early AI research was primarily concerned with creating a machine that could think rationally and behave like a human. Early attempts to create an artificial intelligence system were, however, met with very little success (Malhoutra & Ahmad, 2022; Al-Kemawee, 2024). Expert systems in the legal sphere developed during the 1980s. They were designed to provide advice on specific areas of law (Ijuo, 2025). With the move to digital databases, it became possible to store and search large amounts of legal information, as in LexisNexis (Saleem, 2024). by Ben-Ari, E, Lavi, A, Rozenberg, J. Since the year 2000, we have been surrounded by Big Data, machine learning, and natural language processing. All these are manifestations of AI for the mundane. Law technology companies have been dealing with issues of search, forecasting, and document review. Generative AI, introduced by ChatGPT in 2022, has brought AI to the forefront across many fields. Arbitrators and mediators are increasingly using AI tools to aid their work and become more effective and precise (Evans et al., 2023). Legal technology companies have been developing tools that enable searching, forecasting, and document review. by Paulo Cardoso, Beatriz Gomes, Mário Raposo, and Tiago Tiedt. Original article published in *Arbitration International*. This article was written for the Young Arbitrators Forum (YAF) of the London Court of International Arbitration (LCIA). China was the first country to apply Artificial Intelligence (AI) to its Judiciary System. The new judicial system in China is called “smart courts,” and AI-based arbitration is called “AI arbitration.” In 2023, an arbitration commission in Guangzhou resolved a dispute using an AI assistant. Currently, the application of AI in dispute resolution is increasing worldwide. Some examples of how new technologies are being used in dispute resolution include: translating documents with DeepL; preparing documents and memoranda with ChatGPT and Lexis+AI; and using AAA’s Clause-Builder for clause analysis and case prediction with Lex Machina and Premonition. The institutions that are applying AI to select arbitrators and for case reporting are Arbitrator Intelligence and Billy Bot. The application of AI to arbitral decision-making, however, is a contentious issue, as fairness and consistency are central to the arbitration process. References Cardoso, P., Gomes, B., Raposo, M., and Tiedt, T. (2024). *The use of AI in Arbitration*. *Arbitration International* Reddy, S. and Singh, A. (2024) “Arbitral Decision-Making in the Age of Artificial Intelligence”; Wang, Y. (2024) “A Roadmap for Smart Arbitration in the Future: Balancing Efficiency and Legitimacy” and Yarbrough, A. (2024) “AI-Assisted Arbitration and the Future of International Dispute Resolution: Challenges and Opportunities”

### *Concepts of AI in ADR*

To use Artificial Intelligence (AI) effectively in Alternative Dispute Resolution (ADR), one needs a basic understanding of its underlying principles. AI is described in the literature as machines capable of performing tasks that would normally require human-level intelligence. In “What is Mediation?” edited by Ijuo (2025) and in an article by Broyde & Mei (2024) it is stated that: “Artificial intelligence is a machine or program that has the human intelligence required to perform any task that typically needs a human” While, in the “ICC Arbitration Rules” (ICC, 2018) it is written that “AI means a machine or device that uses algorithms and hardware to Mimic, supplement or replace human cognition, including through the use of reasoning, learning, adaptation or inference. And in “How to Be a Mediator for Construction Alternative Dispute Resolution Mediation” (SVAMC, 2024), the following explanation is provided for the concept of AI: “Based on the computer program to analyze and deal with the natural language, and has the ability to classify patterns.” Generative AI, or GenAI, is a type of AI that can create new content such as text, code, or images, similar to the creative functions of the human mind. GenAI includes Large Language Models (LLMs), algorithms that enable computers to understand language patterns and generate human-language text (Reddy & Singh, 2024). GenAI, ML, and NLP are all interconnected. Machine Learning, or ML, is a subfield of artificial intelligence (AI) that enables computers to learn and behave intelligently without explicit instructions, using methods such as supervised, unsupervised, and transfer learning (Broyde & Mei, 2024; Awoyomi, 2023). Natural Language Processing, or NLP, is the study of computer science that focuses on human-computer interaction through language processing. The ethical terms that need to be addressed in the context of the new AI-powered Dispute Resolution Platform are accountability, transparency, and

explainability. In this sense, the arbitrators who use the system are held accountable by the decisions the technology provides. Transparency refers to the need to explain the technology's functioning to someone (AI-Kemawee, 2024), while explainability refers to the traceability of the process by which the technology provides its decisions (Cardoso et al., 2024). The so-called 'black box' problem, inherent to the lack of transparency of the neural networks that underpin such technologies, constitutes one of the main challenges for arbitration, as the arbitration institutions lose legitimacy when the arbitrators do not have a clear explanation of the decisions that they communicate (Reddy & Singh, 2024).

### *Use of AI by Engineering Experts in ADR*

What if "AI" and "Engineering"? What could go wrong? Well, as it turns out, a lot less than you might think. In fact, a huge amount of data is generated by engineering work, from reports and BIM models to emails and field logs. And whilst it would be completely humanly possible for another human to trawl through it all, the truth is that much of it is simply too detailed for us to get our heads around. But with the help of Artificial Intelligence (AI), the vast quantities of data can be quickly examined to reveal patterns and insights, including spotting anomalies, predicting the occurrence of future events in construction, such as project delays, assessing the extent of property damage, and more (Broyde & Mei, 2024; Reddy & Singh, 2024). With the advent of GenAI (Generative Artificial Intelligence), it's now possible to make document review easier by surfacing the key terms and conditions in a contract, which can help prepare technical opinions, amongst other things (Reddy & Singh, 2024). It's very important to verify the output of an AI application, as it can sometimes be incorrect. They can have errors, the data could be biased, and they can have "hallucinations" (Murray, 2023). Many engineers use this technology for simulations, searching large databases of 3D models, and preventing fraud, including deepfakes (Reddy & Singh, 2024; SVAMC, 2024). While they do save a lot of time, they should be used with caution and with close scrutiny of quality, privacy, and ethical standards.

## **METHODOLOGY**

The purpose of this paper is to carry out a systematic literature review of published research papers on the use of Artificial Intelligence (AI) in Alternative Dispute Resolution (ADR) of complex construction disputes arising from construction contracts, as well as to collect relevant practices, procedures, laws and guidelines from literature. The methodology adopted is characterized by being as possible, clear, comprehensive and replicable.

### *Scope of the Review*

The review concentrates on three main dimensions:

The AI & Law course looks into an in-depth analysis of the interactions among AI, Law and arbitration in Brazil and worldwide. Topics:

- Legal and regulatory frameworks: Brazilian legislation (such as Law No. 14.133/2021, CPC/2015 and OAB guidelines) and international instruments (such as EU AI Act, ICC policy statements, CIArb guidelines, SVAMC directives and VIAC notes).
- Institutional practices and rules and guidelines: Arbitration center rules, publications of arbitration organizations and associations (ICC, ICCA, AAA/ICDR, JAMS, IBA).

The papers in this section concern the following topics: - Academic and professional literature: Peer-reviewed articles, doctoral theses, SSRN papers, and law journals on the topics of AI in ADR, arbitration and judicial decision-making.

### *Sources and Selection Criteria*

The references were compiled from multiple sources:

Sources of Primary Academic Research: - Online academic databases (e.g. SSRN, ResearchGate) - Law journals IP law journals include, inter alia, the Richmond Journal of Law and Technology, the Global Trade and Customs Journal.

- Institutional repositories: ICC, CIArb, SVAMC, VIAC, OAB, CNJ.
- Legislative portals: Brazilian government websites (Planalto, OAB.org.br).

- Authority: Preference for peer-reviewed journals, official institutional documents, and legislative texts.

- Diversity: Openness to a wide range of criteria and opinions, with respect to both Brazilian and foreign cultural contexts.

### *Analytical Framework*

The literature was analyzed through thematic coding, identifying recurring concepts such as:

- Confidentiality and data protection
- Accountability and human oversight
- Transparency and explainability
- Competence and technological literacy
- Ethical risks (bias, hallucinations, deepfakes)

The main themes identified in the evaluations were matched against the role of the engineering expert in Alternative Dispute

Resolution (ADR) as well as the potential application and use of the AI tools and the implications for current best practices and guidelines.

#### *Limitations of the Methodology*

Because this review only addressed studies available in the scientific literature, it is a preliminary analysis, and it is important to highlight the lack of research on the use of ADR and AI in the Brazilian scenario. Almost all existing materials were normative and/or conceptual, and there were very few empirical studies on the implementation of new technologies in the ADR context. This review was prepared in 2025, and its results are therefore already outdated, given the accelerated evolution of technology.

## **THEMATIC LITERATURE REVIEW**

### *Historical Evolution of ADR and AI*

In Brazil and globally, the process of Alternative Dispute Resolution (ADR) has been becoming increasingly court-less, consensual and specialized. The Brazilian Arbitration Law, Law No. 9.307/1996, as amended by Law No. 13.129/2015, and the Mediation Law, Law No. 13.140/2015, provided the necessary legislative foundation for the development of ADR in Brazil. This new perspective on the dispute resolution process was also reaffirmed by the 2015 Civil Procedure Code (CPC/2015), which introduced mandatory mandatory conciliation hearings before the presentation of a lawsuit and provided for the enforcement of arbitral awards (Brasil, 2015).

Expert systems, the precursor to modern-day dispute resolution technology, had a long and arduous journey that spanned over three decades. From the pioneering expert systems of the 1980s, to Big Data and machine learning in the 2000s, the applications of expert systems to the practice of law were gradually evolving (Ben-Ari et al., 2017; Ijuo, 2025). And then in 2022, ChatGPT (Generative AI) emerged, and the whole world began to see the impending changes that would arrive in the field of dispute resolution. (McNamara, 2025; Broyde & Mei, 2024)

### *Institutional Guidelines and Best Practices*

Guidelines issued by institutions for the use of AI in ADR ICC (2018) called for 'human centred' AI policies. More recently, the ICCA and NYC Bar published best practices for the use of technology in arbitration to "preserve the confidentiality of the arbitration at all stages of the process and prevent any breach of confidentiality arising from the use of technology" (Reddy & Singh, 2024). The AAA/ICDR (2023) published Principles and Guidelines for the Use of Artificial Intelligence in Alternative Dispute Resolution (ADR), focusing on independence, impartiality and technological competence (Evans et al., 2023; Cardoso et al., 2024).

Standards of Valuation and Modelling for Chartered Accountants 2024 The standard contains comprehensive coverage on confidentiality, disclosure, competence and integrity of valuations and models. Guideline on AI in Arbitration – 2025 The 2025 edition of CI Arb's Guideline on AI in Arbitration recognises the imperative for speed in arbitration, while also acknowledging the need for fairness and enforceability in arbitral proceedings. VIAC Rules 2025 – Use of Artificial Intelligence The 2025 Edition of the VIAC Rules broadly defines 'artificial intelligence' in order to ensure that developments in the technology can be incorporated into the definition. Overall, the developments are moving in the direction of accountability, explainability, confidentiality and human control.

### *Judicial Orders and Case Law*

Courts around the world begin to regulate the use of AI in court proceedings and ADR In the United States the *Mata v. Avianca* decision was issued in 2023 in which the court held that AI had generated numerous fabricated judicial decisions that were then relied upon by the defendant in the case. Sanctions and mandatory disclosure were imposed on the party that attempted to use the fabricated precedents (Imam & Ahmed, 2024; Murray, 2023). In Canada the use of AI was prohibited on a temporary basis while there was a period of public consultation (Socol de la Osa & Remolina, 2024). In the Supreme Court of New South Wales in Australia Practice Note SC Gen 23 (2025) was issued prohibiting the use of GenAI in respect of the submission of evidence.

On the other side, in the case of *Muhammad Iqbal v. Zayad* (2023) the Supreme Court of Pakistan treated the use of the technology for adjudicative purposes as a matter of a "necessary tool" (Imam & Ahmed, 2024). The world is undergoing a global battle between on one hand and on the other hand. ADR is a part of it.

### *Legislative and Regulatory Frameworks*

Legal framework of the use of #ArtificialIntelligence (AI) in Alternative Dispute Resolution (ADR) As highlighted in the recent study by Al-Kemawee (2024) and Cardoso et al. (2024) the EU AI Act classifies "justice-related AI systems" as high-risk, which will need to be heavily regulated. In the United States, the standards laid out in the #AI Bill of Rights (2022) and the Executive Order No. 14110 (2023) are supposed to ensure that #AI systems are fair, transparent and hold people accountable (Cardoso et al., 2024). The United Nations Resolution on the Future of Work adopted in 2024 among others "calls upon all relevant stakeholders, including Member States, in conjunction with all levels of government, international organizations, business, civil society and other actors, to promote, inter alia, the safe and equitable development of AI to ensure that it is used in a way that supports human review and protects human rights".

The use of Artificial Intelligence (AI) in the Brazilian judiciary system has been approved by the Brazilian National Council of Justice (CNJ). According to Cardoso et al. (2024), the explainability and absence of bias are some of the necessary measures for the development of the judicial AI tools. In Brazil, the OAB (Bar Association of Brazil) published the Recommendation No. 001/2024, which high-

lights the confidentiality of the information, truth and human liability in the legal practice. In summary, all these laws and recommendations demonstrate the need for regulatory control of the development of judicial tools based on AI and, mainly, an ethical control over these technologies.

#### *Ethical and Practical Challenges*

There are many potential benefits to the use of AI in Alternative Dispute Resolution (ADR) but there are also a number of ethical and practical issues to be considered. Some of the issues that have been identified include: • Discrimination arising from bias in the training data (Reddy & Singh, 2024) • Breach of confidentiality where third party technology has to be brought in to process confidential information (for example, SVAMC, 2024 and CI Arb, 2025) • Greater transparency and explainability to combat the black box effect (Cardoso et al., 2024). The real struggles seem to be falling on the engineers. The AI is supposed to assist and augment the capabilities of these humans by providing a wealth of information, streamlining the process of simulations, and doing audits for discrepancies (Murray, 2023). The engineers are then required to check and validate these findings in an attempt to eliminate any mistakes that may be introduced by humans. They are also tasked with preventing deepfakes and finding fake information (Imam & Ahmed, 2024, SVAMC, 2024). So the role of the AI system is still considered as an augmentation to the capabilities of the human, and not a replacement.

## **RESULTS ANALYSIS AND SYNTHESIS**

### *Convergences Across Literature*

A clear convergence emerges around four central principles: - Human Responsibility. The rules and standards are likely to change, and it remains to be seen how each jurisdiction will implement them. As indicated in the latest editions of the SVAMC (2024), CI Arb (2025) guidelines, and the OAB (2024) standards, all are of the view that the use of technology and AI is for the benefit of professionals and should be treated as a tool in their hands. - Confidencialidade: obrigação, baseada em legislação internacional e brasileira, que protege a confidencialidade das informações. AICCPR, Declaração de Magalhães, Convenção Americana sobre Direitos Humanos e as Leis nº 12.610/2012 e nº 13.467/2017. Além disso, nos princípios do protocolo de segurança cibernética elaborado pelo ICCA (2020) e nas diretrizes propostas pelo CNJ para a prestação de serviços notariais e de conservadoria, escriturários. Transparency and Explainability. There is a considerable consensus in academia and within institutions that the use of so-called “black box” models or unexplained decision-making procedures in AI systems is generally not a good idea. Recommendation: Disclosure should be required where an AI system is used, particularly in high-risk decision-making situations (SVAMC, 2024; CI Arb, 2025). Competence and Technological Literacy The following expertise is relevant to the tasks of arbitration, mediation or expert determinations carried out using AI, or those that relate to such use: - Competence and Technological Literacy: Engineers and lawyers involved in AI-related arbitration, mediation or expert determinations should be at least broadly aware of the potential capabilities and limitations, including the potential for biases and risks, of any AI used in relation to that process. This is alluded to in the AAA/ICDR principles (2023) and mentioned in the VIAC notes (2025).

### *Divergences and Tensions*

Despite these convergences, divergences remain: The report covers the following topics: Judicial Approaches. There is a vast difference in how the Courts have dealt with the use of this technology. In Pakistan, the government accepted the use of artificial intelligence to generate judgments (Imam & Ahmed, 2024), whereas in Canada, it prohibited its use until consulted (Socol de la Osa & Remolina, 2024). - Disclosure Requirements The disclosure requirements are case-specific in SVAMC, mandatory in high-risk situations in CI Arb, and given to the tribunal's discretion in VIAC. - Regulatory Intensity EU - The EU AI Act will impose many controls on the use of Justice AI technologies. US - The US AI Bill of Rights and Executive Order 14110 both have a strong focus on Justice AI but use principle-based regulation. Brazil - Although the CNJ and the OAB published guidelines on the use of AI in the justice system, no legislation has yet been enacted.

### *Integrated Framework for Engineering Experts in ADR*

The purpose of this section is to identify variables that need to be synthesised as part of the process of synthesising the literature to

develop a holistic framework for the application of AI technologies by expert engineers in Alternative Dispute Resolution.

- *Responsibility Finality*: AI outputs must always be validated by human experts.

- *Evidence Integrity*: Vigilance against deepfakes and fabricated data is essential.

- *Confidentiality Safeguards*: Sensitive information must only be processed in secure environments. Recommendation 1: Transparency Protocols It is recommended that transparency protocols be imposed in relation to the use of AI in situations where there is high risk of injury to people. Artificial Intelligence: Skills need to learn - Competence Development There is a need to develop the knowledge and skills in relation to the AI technology and ethics.

- *Supervision and Non-Delegation* The human decision can never be substituted by the AI system. Therefore, it is necessary that the intervention is always under active and permanent supervision.

### *Critical Reflection*

There are many different opinions about AI in the literature, ranging from very positive to very cautious. The advantages of using AI for mediation, arbitration, and other forms of alternative dispute resolution (ADR) include greater speed and efficiency, lower costs, and a more detailed analysis of the dispute. On the other hand, the disadvantages include the risk of discrimination, breach of confidentiality, and a breakdown in the relationship between the parties. These are only a few of the many disadvantages, and they are especially relevant to engineering experts. These experts act as a link between the technical and legal aspects of the dispute, thereby playing a crucial role in determining the impact of AI on ADR.

## **DISCUSSION AND IMPLICATIONS**

### *Broader Implications of AI in ADR*

We regularly ponder the consequences of using Artificial Intelligence (AI) in Alternative Dispute Resolution (ADR) for building and construction disputes in the context of law and engineering. There are many other consequences that we have to take into account. The use of AI systems can make them more efficient. They can then handle large amounts of data, search for patterns, and draw conclusions. Politics, society, and even our personal lives will also be affected. The misuse of AI, such as deepfakes or fake news, can undermine public trust in institutions and damage individuals' reputations. In the context of ADR, we can expect that the adverse effect will be distorted evidence, and the integrity of the dispute resolution proceedings will be undermined.

### *Opportunities in ADR Processes*

AI offers distinct opportunities across different ADR mechanisms: (a) *Arbitration*: All AI's functions can be applied to arbitration proceedings, searching for precedents and preparing documents, which contributes to economic efficiency and judicial acceleration. *Mediation*: The approach uses negotiation analysis and potential sources of concessions to mediate between two opposing sides. AI is used in many fields. Our main research focus is on the application of AI to the field of Negotiation. Negotiation is a highly dynamic and complex process, which requires the modeling of negotiation scenarios and strategies in order to be able to generate acceptable solutions for all the parties involved. *Conflict Analysis* PeaceTech Lab is applying the principles of Artificial Intelligence (AI) to understand the causes, triggers and underlying dynamics of violence and to pre-empt the outbreak and escalation of conflict. The use cases featured in this paper illustrate how the use of Artificial Intelligence (AI) in Alternative Dispute Resolution (ADR) activities can lead to greater efficiency, accessibility, and fair dispute resolution provided that appropriate ethical safeguards are put in place.

## *Challenges and Limitations*

Despite these opportunities, several challenges persist: (a) Human Emotional Behaviour, the Mediator's Tool Kit recognises that current AI systems do not have the understanding of human emotional behaviour required to effectively mediate and negotiate these complex issues. (b) - Bias in Training Data The original data used to train an AI or algorithm may contain inherent biases, and if those biases are not caught, the resulting product can propagate those biases. - Discrimination in Services Based on Protected Characteristics. If an algorithm is used to make determinations in critical areas, such as hiring, loan processing, pricing, and education, it may discriminate based on protected characteristics in violation of numerous laws. - Discrimination in Advertising Based on Protected Characteristics. (d) Discrimination in Products or Services Provided Based on Protected Characteristics. (e) - Transparency and Trust, the AI parties involved will probably not accept a decision if they do not understand how the AI reached that decision, because there currently lacks transparency. (f) Confidentiality Risks: Sensitive information may be compromised or leaked to third parties through the use of external AI tools. All of these underscore the necessity of continuous human involvement and ethical assessment of ADRs.

In Alternative Dispute Resolution, engineers play a major role by serving as a communication bridge between technical and legal issues. With the use of Artificial Intelligence for data analysis, simulations, or fraud detection, the role of engineers and their credibility are increased. Engineers are then responsible for validating, or at least reviewing, the AI's outputs. They have to inform about the use of those technologies and to ensure the confidentiality of the data provided. In any case, the role of the expert in ADR demonstrates that Artificial Intelligence should be considered a supporting tool, and that the human factor should not be eliminated from the dispute resolution process. This literature review contributes to the ongoing debate on the use of Artificial Intelligence (AI) in Alternative Dispute Resolution (ADR) by compiling international recommendations, court orders, and legislation. The use of technology, specifically AI, in ADR has a dual function. On the one hand, it can resolve disputes more efficiently, quickly, and thoroughly. On the other hand, it can jeopardize the fairness and integrity of the ADR process. Our research confirmed that ethics principles for technology in ADR, including accountability, openness, confidentiality, and competence, are essential for the proper use of technology in ADR and for the integration of AI in this context. Apart from construction and engineering ADR, one can easily think of many other fields where the application of AI to negotiation and conflict-resolution processes is relevant. Several recent studies have addressed negotiation structures and design science maturity models to ensure the proper and ethical application of AI to negotiation and dispute-resolution decision-making processes. In Dias & Silva Junior (2026), a new DSRES Index is introduced to assess research maturity, which can be used to evaluate the maturity of AI applications in Alternative Dispute Resolution (ADR). In Filho & Dias (2026) and Castro & Dias (2026) the authors show the application of AI in negotiation strategies for real estate and in international trade; therefore providing a vision on how AI can be used in order to improve logistics, exclusivity agreements and cross border commerce, thus connecting the lessons learned from the ADR to the wider scope of negotiation therefore illustrating the interdisciplinary application of AI governance. According to the literature, numerous fields can apply AI principles to ADR, including health, luxury real estate, and B2B. More specifically, the papers by Alevato & Dias (2026) and De Jesus & Dias (2026) demonstrated the application of negotiation techniques to the doctor's salary and to home care management. In addition, the papers of Chacur & Dias (2026) and Martins & Dias (2026) illustrated the application of the value creation and complex negotiation techniques in real estate. Finally, the papers by Dias, Schmitz & Lafraia (2026) and Gadelha & Dias (2026) demonstrated the application of conflict management techniques in the construction industry, which can also be aligned with the ADR context explored in this review. Finally, in numerous fields where negotiation has a central role, such as healthcare or international trade, the ethical and procedural safeguards identified for the application of AI in ADR, namely confidentiality, transparency, and human intervention, remain the most relevant.

## **LIMITATIONS OF THE REVIEW**

Although a high number of sources were examined in the present literature review, there are several limitations that need to be considered: (a) Lack of Empirical Data. There is a plethora of conceptual, normative, and policy-oriented literature on the use of AI in Alternative Dispute Resolution (ADR) in general; however, the arbitration, mediation, and dispute boards literature in this respect is almost entirely composed of futuristic announcements with very few empirical reports on the implementation of technological innovations. In Brazil, there is almost no empirical work on the use of AI in Arbitration. Available information does not allow for even a tentative generalization, and even less to assess the impact of the numerous recommendations for the practical use of Arbitration, Mediation, and Dispute Boards. (b) Rapid Technological Evolution. The rate of technological advancement in AI is increasing rapidly, and the time between research and market implementation is decreasing. Features that were considered bleeding-edge technology in 2025 may become outdated, obsolete, or even redundant in a relatively short time. This review, as of the date of publication, presents an overview of current attitudes and perceptions, with full recognition that this document will require future updates and revisions to reflect developments in technology and law. (c)

Jurisdictional Variability. The AI regulatory and governance approaches worldwide are diverse and changing. The EU AI Act is an example of a highly prescriptive approach; the US has chosen to regulate AI through a set of guiding principles, while the Law on Digitalization in Pakistan endorses the use of AI in judicial decision-making. This also limits the universality of the observations drawn. (d) Focus on Engineering Experts. The focus on the engineers' role in ADR (alternative dispute resolution) in the context of a technically complex construction contract is understandable and well explained. It does not, however, consider the broader role of AI in other forms of dispute resolution or the work that others, such as mediators, arbitrators, and lawyers, may undertake.

## CONCLUSION

The use of Artificial Intelligence (AI) by expert engineers in Alternative Dispute Resolution (ADR) is in a phase of transformation, as is the way that ADR institutions and courts all over the world treat the subject. In fact, institutions and courts such as SVAMC, CIArb, ICC and VIAC published guidelines on the ethical use of technology, including AI, in expert determinations. Also, the Brazilian CNJ and OAB published guidelines also to the effect that all parties involved in ADR proceedings should be reminded of the irreplaceable role of human discretion in ADR proceedings. Hence, it seems to be a world-wide consensus that technology, such as the AI, is an excellent resource to be used, but always under the control that will allow the expert engineers to maintain the highest ethical standards when carrying out their ADR work. This review sets out the rules and recommendations that we consider relevant for an alternative dispute resolution (ADR) process that involves expert engineers and technology. The 8 basic principles that are respected by an expert engineer in an ADR process that uses technology are as follows: Responsibility; Finality of the Expert; Integrity of Evidence; Rigorous Confidentiality; Transparency and Disclosure; Technological Competence; Continuous Updating; Active Supervision; and Non-Delegation of Decision-Making. The principles mentioned above are a guide for expert engineers who undertake the challenging task of integrating artificial intelligence technologies in an ADR process, in order to ensure an efficient service for the parties involved, while maintaining the reliability and credibility of the process, and thereby maintaining the trust of the users. Our research can certainly contribute to the field of Alternatives Dispute Resolution (ADR) in construction disputes resolution. Other researches such as Dias et al. (2026) also identified the same challenges in negotiation frameworks in real estate, healthcare, international trade and business-to-business (B2B) relationships, including the maintenance of confidentiality, transparency and ethical conduct. Using the DSRES Index (Dias & Silva Junior, 2026) applied to ADR may be a starting point to evaluate the AI-readiness of the alternative dispute resolution strategies. Moreover, using case studies from logistics (Filho & Dias, 2026), exclusivity negotiations (Castro & Dias, 2026) and healthcare remuneration (Alevato & Dias, 2026) also demonstrates the interdisciplinarity of the regulation of AI. Our research, therefore, confirms the universality of ethical standards related to the use of technology, and that the principles applied to ADR can also be applied to other negotiation and conflict resolution contexts. This study concludes that new risks and challenges have been created and will continue to arise in Alternative Dispute Resolution (ADR) due to the digital transformation. It highlights the need for further research into the effect of new technologies on ADR and calls for empirical studies of the use of new technologies such as artificial intelligence (AI) and Generative AI in the context of ADR, as well as an evaluation of the current best practices designed to prevent the risks that they entail. It also calls for further exploration into the confidentiality risks arising not only for the technology providers (for example, the companies providing the AI technologies) but also for the systems (for example, search engines, operating systems, and virtual assistants) and for the recommendation engines used on devices such as mobile or tablet phones. The study also finds that international arbitration can involve substantial amounts that can exceed USD 500 million and that data breach and cyber attacks therefore pose a significant threat and further research is required in relation to the prevention and mitigation of the risks that are posed by the use of technology in ADR and to ensure that technology furthers access to justice.

## FUTURE RESEARCH DIRECTIONS

This research will form the basis for future studies, as it has identified the technologies used by lawyers and arbitrators in Alternative Dispute Resolution, as well as the proposed regulations governing their use, including Artificial Intelligence and Generative AI. Future studies will be required to assess in detail how these technologies are being utilised within ADR, and how the proposed regulations are being implemented and enforced. In addition, the research has highlighted several previously unconsidered confidentiality risks. In particular, those of technology providers, operating system providers, virtual assistants, and recommendation engines that may be installed on devices. These are important, as many international arbitration cases involve substantial monetary claims that can exceed \$500 million. In the event of a data leak or cyber attack, substantial financial losses may be incurred. Therefore, future studies should investigate these risks and identify measures to mitigate them. In doing so, it should be possible to ensure that the use of AI

technologies in ADR makes the justice system more efficient and effective.

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