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ARTIFICIAL INTELLEGENCE IN ARBITRATION: PROSPECTS AND CHALLENGES

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Abstract:
The integration of AI powered tools in arbitration is transforming convention dispute resolution process through increased procedural efficiency, analytical accuracy, improved consistency, and accessibility. AI functions as a valuable assistant to arbitrators. Tools of artificial intelligence are increasing used in arbitration because it reduces time and cost by offering prospects like predictive analysis, categorization of data, language translation, case analysis/assessment, procedural coordination, and recognizing trends. However, the adoption of AI tools in arbitration introduce notable challenges like lack of transparency, potential biases in embedded data, data privacy, concern regarding ethical issues, legitimacy in arbitral proceedings etc. The absence of clear regulatory framework also raises considerable challenges. Despite its challenges, AI is believed to be promising in the sector of arbitration.

Key Words: Arbitration, Artificial Intelligence, Online Dispute Resolution, Relation of AI and Arbitration,

Introduction of Arbitration:

Alternative dispute resolution (ADR) is a significant mechanism to resolve disputes outside the traditional justice system. The courtroom is no longer the only place where justice is delivered. Although an alternative to formal court litigation, it does not replace it in all regards, but rather co-exists with court procedure and is concurrent with other forms of settlements.[1] Arbitration is a dispute resolution process that based on the mutual consent of the parties involved. Such consent is established through an arbitration clause. The clause provides that any future disputes arising from the agreement will be settled by arbitration instead of being taken to court. Alternative dispute resolution is a broad term encompassing a range of methods used to resolve disputes outside the courts including mediation, conciliation, negotiation and arbitration.

Arbitration has been recognized as one of the most popular means of alternative dispute resolution. It can be defined as a mechanism for the resolution of disputes which takes place usually in private pursuant to an agreement between two or more parties, under

[1] Robert Mnookin, *Alternative Dispute Resolution*. Paper 232 Harvard Law School John M. Olin Center for Law, Economics and Business Discussion Paper Series. (1948)

which the parties agree to be bound by the decision to be given by the arbitrator according to law or, if so agreed, other considerations, after a fair hearing, such decision being enforceable at law"[2] **Arbitration** is regarded as dispute-resolution proceeding governed by an agreement (contract) between the parties, in which the dispute is decided by an impartial adjudicator chosen by the parties themselves. The arbitrator's decision is final and binding on the parties and is based on principles of equity and justice, as well as the applicable law. It is also considered as fast, effective and efficient means of dispute resolution. Rather than taking disputes to court, the parties chose to decide their dispute through neutral arbitrator or panel of arbitrators.

Arbitrator is a person who needs to decide the dispute, fairly, amicably and neutrally, and whose decision is known as "award."[3] The decision made by the arbitrator(s) appointed for each case or those made by permanent arbitral bodies to which the parties have submitted is usually binding and enforceable, providing a final resolution to the commercial dispute. Arbitration is based on the consent of parties which is often expressed through valid contractual clauses.

Thus, arbitration is a consensual dispute resolution process based on the parties' agreement to submit their disputes for resolution to an arbitral tribunal usually composed, of one or three independent arbitrators appointed arbitrators appointed by or on behalf of the parties.[4]

Features of Arbitration:

Arbitration has witnessed an increasing application due to its tremendous features like; -

a. Autonomous Party: Arbitration is based on party's will. Parties have autonomy to choose professional arbitrators, free to decide how their arbitration will be conducted, decide the venue, applicable law, procedures, language, set arbitrator's power, to agree on the use of AI or a specific AI tool etc.
b. Voluntarily Agreement: Parties voluntary refer their dispute to an impartial third person, an arbitrator, selected them in order to deliver decision (award) based on the available evidences and arguments to be presented before arbitrators.[5]
c. Involvement of Neutral Arbitrators: Disputes are settled through the involvement of neutral arbitrator or arbitrators.
d. Expertise: Arbitrators are especially chosen because of their professional experience, specialized knowledge and understanding of subject matter and arbitral proceedings. They may have expertise in related domain such as law, construction, international trade, finance and so on. This expertise assists to resolve disputes in reasoned manner.

[2] BERSTEIN. HAND BOOK OF ARBITRATION PRACTICE, 13 (3 ed.,) (1998).
[3] NOMITA AGGARWAL, JURISPRUDENCE LEGAL THEORY 74 (8d ed., Central Law Publications) (2010).
[4] Hong Kong International Arbitration Center, https://hkiac.org
[5] ROBERT BEADGATE & FIDELMA WHITE, COMMERCIAL LAW 3 (3rd ed., Blackstone Press Ltd) (1997).

e. Reduction of Time: Disputes are often resolved faster than court litigation because arbitration follows flexible, simplified and faster procedures.
f. Limited Right to Appeal: There are very limited grounds to challenge arbitral awards in court.
g. Flexibility: Involved parties can choose the place, arbitrators, language, applicable law of the arbitration.
h. Confidential Process: Unlike court proceedings, which are generally open to the public, arbitration is a private process. The proceedings are closed to the public and information about the dispute is not disclosed ensuring confidentiality of the parties.

Online Dispute Resolution:

ODR digitalized the way of dispute settlement process. Online dispute resolution (ODR) is considered as the byproduct of the creation of cyberspace.[6] It is a technology mediated mechanism for resolving disputes between parties involved in disputes, often geographically dispersed. ODR helps to digitalize dispute resolution mechanism preventing the barriers caused by location or geography.

Through online space parties of different countries involved in disputes put their claim, facilitate their communication in order to seek remedy. Use of digital platform allows parties to settle dispute without physical presence. Virtual hearing, submission of evidences, communication with the arbitrator takes place through online platforms. However it poses some limitations like maintaining data privacy/ security, procedural fairness and confidentiality.

Artificial Intelligence:

The origin of modern AI can be traced back to the Turing Test proposed by Alan M. Turing in 1950. Often regarded as the father of artificial intelligence, Turing predicted that creating the machines with real human intelligence was possible in the future. Since the mid twentieth century, artificial intelligence has captured human interest in a new way. It is inspiring to see that AI has achieved a tremendous progress in various fields. The legal profession, including the field of international arbitration, is increasingly embracing technological advancements. The use of technology in arbitration enhances efficiency, lowers costs, and enables arbitration services to reach new market segments.[7]

Artificial intelligence refers to developing computer systems that can perform tasks that typically require human intelligence. These tasks include making decision, learning, reasoning, problem-solving, perceiving visual elements, recognizing human speech, translating language and language understanding.

There is no single universally defined definition of Artificial Intelligence. The Oxford English Dictionary defines AI as "the capacity of computers, or other machines, to exhibit

[6] Ballesterds, T. (2021), "International Perspectives on Online Dispute Resolution in the E-Commerce Landscape", International Journal of Online Dispute Resolution, 2 p. 87.

[7] Ljiljana, B., 'International commercial arbitration in cyberspace: Recent developments' Nw. J. Int'l L. & Bus. 22 (2001): 319, p. 345

intelligence behvior". This definition refers AI tools appear to act and think like human beings. It means AI tools can perform tasks like human beings and in some cases exceed the capabilities of human. Similar to this, John McCarthy at the 1956 Dartmouth Conference outlined the artificial intelligence is about letting a machine stimulate the intelligence behavior of humans as precisely as it can be.[8] He also officially introduced AI as a new discipline at the 2-month long Dartmouth Conference, which marks the birth of AI.[9]

Artificial Intelligence and Arbitration:

Artificial intelligence (AI) significantly influencing the field of arbitration. The emergence and rise of artificial intelligence undoubtedly played an important role in the field of arbitration. Interplay between human expertise and technological innovation is a matter of prime concern in legal sphere. AI in arbitration has transformed the way through which disputes are resolved. Artificial Intelligence (AI) is rapidly disrupting the traditional way of conducting arbitrations. In International Commercial Arbitration (ICA) some innovative AI applications are improving the efficiency and quality of arbitration proceedings.[10]

The need to embrace artificial intelligence into arbitration is becoming essential. Uses of AI tools in arbitration are source of both opportunities and challenges. The potential benefits of AI in arbitration are undeniable. Undoubtedly, uses of artificial intelligence in arbitration enhance procedural efficiency of through automated scheduling, review of documents, handling large volume of data, virtual hearings, identifying relevant information, document review, data processing, translation services and so on. AI tools can predict the outcome of arbitral proceedings. AI helps parties to overcome geographical barriers, language barriers, save time and cost reduction as well as increase accuracy of outcome. It facilitates smoother cross-border collaboration. AI may lead to well-reasoned decision or reason oriented output. It helps to trace out trends or pattern in arbitration.

However, different questions raised by the use of AI in arbitration related to transparency, data privacy, trustworthiness, suspicion and due process which remain a constant challenge. In this era of artificial intelligence,[11] it is crucial to adopting with the new technological demands with ensuring effectiveness. As the use of AI tools in arbitration becomes more widespread, arbitrators need to adopt best practices ensuring compliance with applicable laws. An arbitral tribunal should adopt the positive aspects of artificial intelligence while rejecting its negative aspects or potential pitfalls.

Thus, analyzing positive and negative impact of using AI, AI can be considered as the new fire in the hands of mankind, which has potential to cause great destruction to life and

[8] Official Textbook for Huawei ICT Academy, Artificial Intelligence Technology, Springer, (2023)P.1

[9] Ibid, p. 7

[10] Azael Socorro Márquez, Can Artificial Intelligence be used to appoint arbitrators? AVANI, Nro. 1, 2020. pp. 249-272

[11] Kissinger, H., Schmidt, E. Y Huttenlocher, D. (2003). La era de la Inteligencia Artificial y el future de la humanidad, Anaya, pp 1-240.

property. It can also be used to provide warmth, make life more comfortable, and take civilization to new heights.[12]

Human - AI Relationship:

Artificial intelligence is steadily diminishing the reliance on human manpower, transforming societal structures into machine-regulated systems. According to Demis Hassabis, Nobel Prize Winner for Chemistry (2024) states, everything in nature that exhibits patterns can be modeled by artificial intelligence. This statement also brings deep concern regarding the replacement of humans by AI in near future.

While AI can contribute to the arbitration process, there is ongoing skepticism about its application, especially when it comes to replacing human decision-makers. Artificial Intelligence is merely a tool, if applied appropriately, serve a supportive tool that can meaningfully play supportive role in arbitration, but ultimate decision making power should stay with qualified and trained human arbitrators. Data containing inherent biases can bring outcomes that are neither neutral nor fair. To some extent, AI can replace routine based tasks having low cognitive capacity like pattern recognition, data processing, document review, scheduling, summarizing cases, making reports etc. Arbitrator can be benefited from such works.

AI cannot replace the work like rendering award which needs sequence of negotiations between parties. Arbitrators should independently verify the reliability and accuracy of information or data obtained through AI tools in order to ensuring their judgment remains free from confirmation bias. Only human brain can analyze the given raw data to AI are enough or not. AI provides fair result as long as it receives enough and precise data. Arbitrators using AI must be mindful of both the information provided in the system and the result or output it produces. Arbitrators must not delegate their decision making authority to AI and must always exercise independent judgment. The outcome of AI tools regarding arbitration should confirmed by human arbitrators. Final decision-making authority and discretionary judgment continue to rest with human arbitrators.

Arbitration practitioners independently verify AI generated outputs before being relied upon. The use of AI tools does not replace the arbitrators' responsibility. Even when AI tools are used, the arbitrator must think independently, decide fairly, and remain accountable for the reasoned award. AI cannot replace of human intelligence in terms of intellectual insight and artistic creativity.[13] One factor that must always be taken into account is that no matter machines can act on their own, but they always require a human assistance and supervision.[14]

Tools of artificial intelligence assists human or arbitrators to draft contract, review of contract, scheduling time slot, evidence management, multilingual transcribers etc. Arbitrators are encouraged to consult with the parties involved in disputes regarding the

[12] D.P. Mittal, Handbook on Artificial Intelligence and Machine Learning, Commercial Law Publishers (India) Pvt Ltd, (2025 Edition) P. 13

[13] D.P. Mittal, Handbook on Artificial Intelligence and Machine Learning, Central Law Publishers (India) Pvt. Ltd. (2025) P .7

[14] Purvi Polhariyal and Amit K Kasyap eds, Artificial Intelligence Law and Policy Implications, (Reprinted 2024) p 41

use of AI tools. If the concerned parties oppose the use of AI tools in the proceedings, the arbitrator should refrain from using such tools in order to resolve disputes. AI must always remain subject to human oversight to preserve fairness, legitimacy, and due process.

AI Models/ Tools for Arbitration:

a. **ArbiLex:** In arbitration, it refers to a digital legal research platform. It is used for predictive arbitration analytics and case strategy. This helps to analyze historical case data and legal precedents to predict the winning probability of claims. According to Arbilex founder, Isabel Yang, ArbiLex analytics solution leverages expert knowledge and probabilistic modeling to inform high value strategic decisions, starting with the selection of arbitral tribunals which is arguably the highest value decision in any arbitration case.[15]

b. **Case Text CoCounsel:** For AI assisted legal research and case law.

c. **DISCO:** Helps to organize evidence, review of witness videos, transcripts and find documents.

d. **Modron Spaces:** For digital arbitration sessions and evidence handling.

e. **Zoom AI**: Zoom is widely used for virtual arbitration hearings, witness testimony, live transcription and meeting summaries. It assists legal professionals or arbitrators to conduct real time discussion through video/ audio, screen sharing as well as private breakout rooms. This tool makes arbitral proceedings more accessible for multi-jurisdictional arbitration.

f. **LegalMation:** For automating legal document generation.

g. **Ross**: This is an artificial intelligence app allows arbitrators or parties to navigate through documents, submissions, exhibits and case law.

h. **Kira:** This app helps to extracts and analyzes texts like contracts in single second of time. In arbitration process, it helps to review relevant information on contracts.

i. **NetCase:** Through Web based service NetCase, arbitration proceedings can be managed in a secure virtual setting where all participants communicate and share documents via a secure platform managed by the ICC.

j. **Luminance:** A well-known artificial intelligence platform for legal works especially in contracts and arbitration related matters. This legal platform used by law firms, arbitrators to trace timelines, link evidence to claims and in order to analyze large volumes of legal documents quickly. This also helps to categorize legal documents by legal issues, themes and facts. This AI tool is very useful in international arbitration where document production is extensive.

[15] https://legalfundingjournal.com, Launch of ArbiLex Brings AI and Predictive Analytics to International Arbitration. (AUG 5, 2019)

Benefits of the Use of AI in Arbitration:

Some of the benefits of using AI in arbitration are mentioned below:

a. Increased Efficiency: AI can assist in routine based task like analyzing data, document review, case management, scheduling, taking of evidence, generating text, drafting of awards etc.
b. Enhanced Consistency: Use of AI in arbitration promotes uniformity in procedural steps, uniformity in research, supports standardized processes etc.
c. Improved Accuracy: AI tool supports the processing of voluminous data, helps to recognize pattern, reduce potential accuracies.
d. Reduce the time required: AI reduces the time required for document review, evidence review, case preparation, legal research and so on.
e. Legal Research: AI can support legal research by summarizing legal materials and identifying relevant authorities.
f. Text Generation: AI tools used in arbitration can help to generate text, formatting documents, documentation, preliminary analysis etc.
g. Translation: In arbitration, documents of multiple languages may arise. AI tools can assist with language translation of legal documents and communications. It may also help to harmonize the interpretation of materials across different languages.
h. Case Analysis: AI tools assists in arbitration by extracting legal issues of case, identifying relevant facts, detecting trends or patters in prior decisions, providing well-informed decisions, organizing evidences, outcome prediction etc.

Challenges of Using AI in Arbitration:

Maintaining Data security and Client Confidentiality: Arbitrators must maintain data security and confidentiality while using AI tools. Appropriate safeguard must be used to keep data security.

a. AI Generated Content: AI generated content may contain outdated legal provisions, factual errors, fabricated authorities which can mislead arbitral tribunals if not verified. If not carefully checked or scrutinized such content
b. Ethical Uncertainty/Ambiguity: Integrating AI tools in arbitration creates ethical concern. Us of AI tools in arbitration proceedings raises ethical uncertainty related to procedural fairness, biasness, accountability, confidentiality, transparency, evidence integrity etc. Ensuring impartiality and procedural fairness in arbitral procedure is equally critical, as these constitute fundamental pillars of arbitration. Clear guidelines or regulatory framework is needed to minimize ethical uncertainty concerning use of AI tools in arbitration.

c. Issue of Confidentiality: AI tools can be viewed as third - party in arbitration. This raises serious concern regarding confidentiality which is also a fundamental feature of arbitration. When Ai tools are used, information may be shared to AI platform or to service provider. This can lead to risks of unauthorized access to sensitive data/ information or misuse of confidential data. The protection of commercially confidential and sensitive data is especially important in arbitration.
d. Explaining AI Outputs: Many AI systems operate as "black boxes," making it difficult for arbitrators and the parties involved understanding the reasoning behind their conclusions. Arbitrators and parties involved in disputes may find it difficult to comprehend how decisions are produced, reducing transparency, weakening procedural fairness, and hindering the evaluation of reliability, potential bias, and compliance with due process standards. The output may be inaccurate or flawed due to the use of unrepresentative or biased data.
e. Limitation of Generative Language Models: In arbitration, the use of generative language models whose text is produced by forecasting the most probable word sequences rather than through deliberate legal reasoning presents challenges, as their outputs may convey an impression of authority while often lacking accuracy, contextual relevance, and a solid legal foundation. A lack of awareness of this limitation may lead arbitrators to rely on or cite fabricated or inaccurate cases.
   Generative language models still struggle to handle long documents and to provide answers that integrate information dispersed throughout different parts of the text. Generative language models often lack access to the most current information and may provide outdated or incomplete data.
f. Black Box Problem: The internal decision making process is not fully understandable by involve parties and arbitrators. Parties may not trust the process of reasoning behind the conclusion generated by AI. It becomes difficult to determine who is responsible for errors. It is hard to detect the hidden errors made by AI tools.

Guidelines:

<u>The Chartered Institute of Arbitrators Guideline on the Use of AI in Arbitration (2025):</u>

The CIArb Guideline enables parties to take advantages of the benefits of AI in arbitration. The Chartered Institute of Arbitrators Guideline on the Use of AI in Arbitration seeks to give guidance on the effective and ethical use of AI in a manner that allows dispute resolvers, parties, their representatives, and other participants to take advantage of the benefits of AI, while supporting practical efforts to mitigate some of the risk to the integrity of the process, any party's procedural rights, and the enforceability of

any ensuring award or settlement agreement.[16] The Guideline seeks to balance the advantages of AI with safeguards for confidentiality, procedural fairness, and the integrity of the arbitral process.

This Guideline divided into four sections covering a framework for arbitrators and parties to maximize the benefits of using artificial intelligence in arbitration. Part I outline the benefits and risks of the use of AI in arbitration, Part II sets out general recommendations on the use of Ai in an arbitration, Part III addresses arbitrators' powers to give directions and make rulings on the use of AI by parties in arbitration and Part IV addresses the use of AI in arbitration by arbitrators. Appendix A is about agreement on the use of AI in arbitration, and Appendix B is a template procedural order on the use of AI in arbitration. The Guidelines highlight some risks including potential biases in AI algorithms, impact on due process rights, enforceability of awards etc.

The Guidelines provide recommendations on the use of AI in arbitration such as arbitrators have the authority to issue procedural orders specifying the manner in which AI tools are incorporated in the process, a party may propose certain AI tools that may or may not be used, appoint AI experts, parties may be required to know the role of AI to preserve the integrity of the arbitration, arbitrators have power to rule on use of AI, and admissibility of AI-generated material/ evidence in the arbitration process.

Guide on the Use of Generative Artificial Intelligence Tools by Court Users:

Reflecting the growing emphasis on AI adoption in legal sphere of Singapore, this guide sets out some principles to promote accountable and ethical use of AI in court proceedings. Such principles are equally valuable in the field of arbitration also.

This guide defines artificial intelligence as "refers to technology said to be able to perform tasks that require intelligence. These tasks include reasoning, problem solving, learning and planning. For the avoidance of doubt, it does not include technology which merely corrects spelling or grammar and does not generate content based on prompts."

Suggestions regarding use of AI in Arbitration:

- The arbitrator remains responsible for all the procedural fairness, findings and awards regarding arbitration.
- In arbitration, AI should be used as an assistive tool that supports arbitrators, not as a substitute for their judgment and expertise.
- Parties involved in arbitration should not rely on AI Generated content without verification.
- Arbitrators should write or deliver final judgment or award. AI should act as a drafting assistant rather than a decision maker.

Conclusion:

To sum up, AI has emerged as a viable aid in arbitration. AI in arbitration has both positive as well as negative sides. It can help with administrative tasks by supporting tasks like translation, transcription, evidence organization, effective handling of large

[16] Guideline on the use of AI in Arbitration (2025), P. 1

volumes of information and procedural management but arbitrators must independently assesses or evaluate legal arguments as well as evidence. AI tool may enhance efficiency in arbitration but their uses always align with ethical rules and confidentiality.

However, the role of artificial intelligence in arbitration is limited. Some fundamental tasks like safe guarding procedural fairness, privacy of confidential data, transparency, interpretation of legal principles, fair evaluation of evidence must be handled by human arbitrators. Excessive dependence on AI tools may leads to erosion of human judgment, potential biasness, breach of data security, reduced transparency, and challenges to the legitimacy regarding the enforcement of arbitral awards.