

AI-Based Technologies in International Arbitration: An Exploratory Study on the Practicability of Applying AI Tools on International Arbitration

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Abstract—One of the major purposes of artificial intelligence (AI) today is to evaluate and analyse millions of micro and macro data in order to determine what is relevant in a particular case and proffer it in an adequate manner. Microdata, as far as it relates to AI in international arbitration, is the millions of key issues specifically mentioned by either one or both parties or by their counsels, arbitrators, or arbitral tribunals in arbitral proceedings. This can be qualifications of expert witness and admissibility of evidence, amongst others. Macro data, on the other hand, refer to data derived from the resolution of the dispute and, consequently, the final and binding award. A notable example of this includes the rationale of the award and specific and general damages awarded, amongst others. This paper aims to critically evaluate and analyses the possibility of technological inclusion in international arbitration. This research will be imploring the qualitative method by evaluating existing literature on the consequence of applying AI to both micro and macro data in international arbitration, and how this can be of assistance to parties, counsels, and arbitrators.

Keywords—AI-based technologies, algorithms, arbitrators, international arbitration.

I. INTRODUCTION

ONE of the many purposes of AI as it relates to international arbitration is to swiftly overhaul the existing norms and practices, in order to make dealings in the arbitral process very effective and stress free. This research paper aims to give an analytic overview of the possibility of AI-based tools assisting parties, counsels, and arbitrators in international arbitration. In order to do this, this paper will be exploring some existing literature which evaluates the use of AI assistance in international arbitration, thereby coming to a conclusion as to how these tools can be of some sort of assistance in international arbitration.

This paper will be divided into four sections. The first section is the introductory section which highlights the purpose of this research paper. The second section will focus on the possibility of AI-based technologies assisting parties in international arbitration. The third part will focus on AI-based technologies assisting counsels in international arbitration. Lastly, the fourth part will focus on AI-based technologies assisting arbitrators in international arbitration.

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II. AI-BASED TECHNOLOGIES ASSISTING PARTIES IN INTERNATIONAL ARBITRATION

A. Selecting an Arbitrator

Parties have the right by virtue of the principle of party autonomy in international arbitration to select arbitrators [1]. This is perhaps one of the most important decisions parties embarking into a full fleshed arbitral proceeding will have to make [2]. This is because, such selection is imperative to the successful outcome of an arbitral process [3]. This power is derived from several international and national legislations such as: Article V (1) (d) of the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards 1958 which expressly provides for the recognition of an award if only it has been rendered by an arbitral tribunal composed by virtue of a defined agreement of parties. Article 11 (2) of the UNCITRAL Model Law on International Commercial Arbitration, United Nations Commission on International Trade Law 1985 also expressly states that parties to a dispute are the authorities responsible for appointment of arbitrators. This power is also codified in several arbitral regulation frameworks such as: Articles 7-10 of UNCITRAL rules, Articles 12-14 of International Court of Commerce rules, rules 12-16 of American Arbitration Association Commercial Rules amongst others.

Consequently, the resultant effect of this inherent power is that it will then pose a crucial problem for parties as to the determination of who the best candidate for the job will be. A lack of satisfaction with this process has raised several concerns within the industry such as: repetitive appointment [4]; favouritism in decisions making by arbitrators, towards parties who appointed them [5]; lack of information [6]; existence of potential bias in the arbitral process [4]; amongst others. This is linked to the fact that in reality, a party is seen to appoint a particular arbitrator in almost all of arbitral proceedings brought against him [4]. This is hugely associated with the opaqueness of the arbitral industry and how information is generally not published due to the doctrine of confidentiality [2] in arbitration. Parties as well as their counsels have generally stated that the information about arbitrators on the internet are limited to their biographies and nothing significant to their case [2]. Hence, when a party finally selects an arbitrator after a rigorous search, he/she will tend to hold on to the arbitrator in the event of any arbitral dispute arising in future [6]. Arbitrators, on the other hand, seeking to safeguard their retainers are most likely to continue

to decide cases in favour of the appointing authority. This will obviously contravene the principle of impartiality and independence which is one of the criteria of being an arbitrator by virtue of Article 12 of the UNCITRAL Model Law. Furthermore, legal scholars have posited that the lack of information in international arbitration is a strategy to foster the recycling of same faces in the arbitration arena. This was gathered by a 2018 survey where 77% of respondents stated that information about arbitrators is generally gotten or derived by word of the mouth which is usually followed by information by Internal College [7].

Therefore, the existence of a technological tool which can assist parties in selecting arbitrators who have skills and relevant qualifications to their case is very crucial. Some of the available tools as of present includes: the Kira system, Clause Builder, EBRAM, amongst others. These technological tools evaluate and analyse millions of micro data using developed algorithms to determine which arbitrator is best qualified for the case. These technological tools process millions of micro data, from specialty of the arbitrator to feedback or reviews from other parties, and then match it to cost associated with appointing such an arbitrator. The existence of this technological tool is very advantageous, as it will save time and energy that would otherwise be spent on searching for arbitrators who have relevant qualifications.

Nevertheless, such technological tools can also be very destructive. This is because of the possibility of data bias, as these tools produce outcomes based off on the data fed to it by humans who have malicious tendencies. Moreover, as earlier stated, there has been significant backlash as to the selection of arbitrators where known faces are appointed more than qualified faces, as well as more men than women. Statistics suggest that in 2018, the London Court of International Arbitration appointed only 13% of first-time arbitrators, and in 2017, only 17% of first-time arbitrators were appointed [8]. In 2019, Stockholm Chamber of Commerce published that only 23% of appointed arbitrators were women [9]. In addition, scholars have stated that race bias is also a major issue as 45% of ICSID cases were determined by Anglo-European Arbitrators and 4% (11 cases) were determined by persons of a different races [10]. This goes to show that gender and ethnic bias are major issues in the field of arbitration and if such data are fed to algorithms the outcome will be catastrophic as the cycle of appointing known faces, as well as other known vices will persist [10].

It is however pertinent to note that efforts are now being made by several existing databases to curb gender and race bias. For example, the GAR (Global Arbitration Review) arbitration research tool provides data on arbitrators and filters on relevant qualifications including gender [11]. The AIQ (Arbitration Intelligence Questionnaire) is also said to assist in this process as it provides information on qualifications, this enhances diversity in the arbitrator selection process [12].

B. Predicting the Outcome of a Proceeding

One of the major criticisms international arbitration has acquired over the years is lack of legal consistency in

decisions rendered by arbitral tribunals [13]. That is, arbitral tribunals render different decisions in similar matters, and as such parties to existing arbitral proceedings go into the dispute settlement arena blind folded, hands tied, and very much worrisome as there might be a possibility of them losing not just money but time to their opponent. This then means that parties will most likely be open to a legal means of predicting the outcome of the arbitral process before embarking on it. This will save the time, energy and cost that might be associated with the proceedings.

Therefore, the existence of such an AI prediction tool will be of great significance in international arbitration, however, this unfortunately is not the case at present [14]. Nonetheless, an AI prediction tool, which uses a machine learning software often referred to as the 'decision tree', has been in existence in the United States (US) legal sector for decades [15], [16]. The popularity of the aforementioned came into prominence in 2004 where Andrew Martin, a political scientist and professor at University of Michigan, together with his colleagues, employed the use of a 'decision tree' technology in predicting the outcome of a US Supreme Court case [17]. In 2014, Daniel Katz, a scientist and professor of law, developed an algorithm which could predict outcome of cases with a 70% accuracy rate using the same decision tree technology [18]. Subsequently, in 2017, he made use of a forest algorithm where he furnished precedent cases between 1815-2015 therein and this algorithm became even better than the decision tree [18]. Furthermore, trial prediction also exists in Europe as outcomes of proceedings in the European Court of human right were predicted in 2016 [15] by an algorithm referred to as the Support Vector Machine (SVM) developed by University College London, University of Sheffield and Pennsylvania State University with a 79% accuracy [15]. This inherently means that such a tool, if developed for international arbitration, would be of great impact as a party would likely foresee the probability of winning or losing, possible compensation he might be awarded if he wins or cost, he might pay if he loses, the duration of the case amongst others [14]. This would act as a check and balance on the possible merits or demerits of embarking into such a proceeding and the possibility of exploring alternative dispute settlement mechanisms such as negotiation, mediation amongst others [19].

Unfortunately, this is not the case for a host of reasons. Firstly, there is no data pool or not enough information available to develop the algorithm, and secondly, the doctrine of confidentiality in international arbitration will stand in direct contradiction to this technology. The arbitral industry, as discussed earlier, is opaque and awards are generally not published. Arbitration is a private dispute settlement mechanism in which confidentiality of decisions has been characterized as one of its most cherished attributes. The Secretary General of the ICC in a report stated that 'parties in an arbitral dispute place the highest value on confidentiality as this is one of the most essential attributes in arbitration' [20]. Confidentiality of the process is also statutorily backed by several procedural rules of international arbitration such as:

Article 30 of the London Court of International Arbitration, Article 43 of the Swiss Rules on International Arbitration, Article 46 of the Arbitration rules of the Arbitral Institute of Stockholm Chamber of Commerce, amongst others, which all expressly provide for confidentiality in the process with certain exceptions. This doctrine of confidentiality originated from the famous case of *Dolling-Baker v Merrett* [21] where Parker LJ delivering the lead judgment in March 1990, stated that parties are under some form of 'Implied Obligation' to keep arbitral proceedings private and confidential. Nonetheless, it is pertinent to note that this doctrine of confidentiality does not have global recognition as some jurisdictions do not see this as an obligation. We take for instance, the famous case of *Esso Australia Resources Ltd v Ministry of Energy and Mineral*, [22] where it was held that privacy of the arbitral process does not give rise to an obligation of confidentiality, thereby rejecting the decision of the English court. However, even in a situation like this, the awards are not fully published except if consented by parties [23], [24]. This goes to show how limited the information on arbitral awards is.

Furthermore, although having a predictive algorithm might be beneficial in international arbitration on the one hand, this might deny parties of the due process of law and fair hearing [25], therefore being a destructive tool on the other hand. This is because if parties can decipher who will win or lose, the loser may be frightened of going into arbitration and wasting resources if they are eventually going to lose [25]. They may decide to settle out of court, in this case outside arbitration. However, even as the US Courts have a predictive tool, cases emanating therefrom are known to be unpredictable as the onus lies on a party to prove his case. In the famous case of *State v Loomis* [26], the Wisconsin Supreme Court held that an algorithm developed for risk assessment for sentencing will deny parties of fair hearing because they already feel condemned [26].

Nevertheless, it is important to note that attempts are being made to provide more data in arbitration. For example, a database known as *Dispute Resolution Data (DRD)* [27] provides macro data on arbitral proceedings which has been presided over by at least 18 arbitral institutions such as ICC, AAA amongst others [28]. The data furnished amounts to over 5000 arbitral proceedings with parties from 185 countries [28]. Some other AI tools are now currently developed which may assist in predicting outcomes of arbitral proceedings. Some of these tools include: *ArbiLex* [29], *Ravel Law* [30], *Solomonic* [31], amongst others. *ArbiLex* is an AI prediction tool specifically designed for arbitration. It makes use of the Bayesian machine language to point out risk factors that may be occasioned if parties resort to arbitration [32]. It should be noted that results derived from this tool are based on circumstances of each case [32]. *Ravel Law* is another AI prediction tool which is said to predict hundreds of cases from several law firms at the same time [30]. *Solomonic* is an AI tool which predicts and analyses cases at the same time [31].

III. AI-BASED TECHNOLOGIES ASSISTING COUNSELS IN INTERNATIONAL ARBITRATION

Legal representatives of the parties in international arbitration are not excluded from the use of AI-based technologies in international arbitration. If anything, they are provided more assistance by these AI tools than parties. This is seen in legal research, drafting, and analysis of arbitral clauses, provision of case summary and precedent decisions, provision of legal materials necessary and incidental to their cases, amongst others. An example of such a tool is *Ross Intelligence*. This has been described as the first AI attorney [33]. *Ross Intelligence* is an AI machine developed by IBM [34], this machine was initially designed to help doctors read, analyse, and summarise exceptionally large medical journals in order to help them diagnose a certain medical condition and provide solutions or treatment [35]. Subsequently, it became used in law. This machine read and analysed large volumes of legal data and provided comprehensive summaries. *Ross Intelligence* is endowed with very high-tech features such as: voice recognition. This machine also gives accurate answers to legal questions asked, and drafts memos and materials for proceedings in court [33]. Some other forms of AI legal tools which assist legal practitioners in litigation include but not limited to: *eBravia*, *Everlaw*, *West law*, *Lexis Nexis*, *DISCO* for document evaluation, amongst others.

Arbitration is not any different as certain AI tools have been developed to assist lawyers in the arbitral process. Some of the software created includes: *Electronic Business-Related Arbitration and Mediation Platform (eBRAM)* [36] developed and used in Hong Kong. This platform provides AI functions such as transcription of recorded sessions, security checks such as facial recognition software [37], it also drafts final and binding awards for arbitrators. Furthermore, a machine learning software known as the *Kira System* [38] has been developed for reviewing and analysing arbitral clauses and/or contracts. In addition, the American Arbitration Association's (AAA) on-line tool called the '*Clause-Builder*' [39] also analyses arbitral contracts and determines whether there are ambiguities, errors or omissions contained therein. This software also assists clients to draft arbitral clauses or agreements.

Nevertheless, there is still great room for improvement, as tools which will help in certain compulsory roles of attorneys has not been developed yet. For example, an AI tool which will assist in cross examination has not been developed yet. Cross examination is a very vital role in the duties of lawyers in not just arbitration but also litigation as it has been described as the only weapon that can sift truth out of falsehood in a trial except a person willingly confesses [40]. Cross examination helps in putting across the story of the party, exposing loopholes if any by challenging the credibility of the opponent's story and assessing the reliability of the evidence given. However, it is pertinent to note that studies and research are being conducted as to the possibility of developing an AI tool capable of assisting in cross examination. Presently, there is an AI tool which examines the credibility or otherwise of testimony given by respondents in a

court with a 90% accuracy rate [41]. This might soon be the case in international arbitration.

IV. AI-BASED TECHNOLOGIES ASSISTING ARBITRATORS IN INTERNATIONAL ARBITRATION

AI tools can assist arbitrators in many different ways such as: case management, legal research, gathering of evidence and legal decision [28]. Nonetheless, there has not been any specific algorithm developed for managing proceedings or cases for arbitrators at the moment but there are digital tools which assist in setting up and organizing meetings online, scheduling smart meetings making use of the arbitrator's calendar amongst others [28]. In 2021, the International Chamber of Commerce rendered a report [42], stating that the virtual and hybrid hearing were the solutions for arbitral proceedings in the pandemic [43]. These solutions made use of digitalized video conferencing software such as Zoom, Microsoft Teams, or any other video conferencing software found appropriate at the time [43]. The ICC also made use of Logitech rally and Polycom video conferencing tool in order to deliver a sound and studio-quality video [43]. These platforms were used by ICC in order to prevent time that would have otherwise been wasted in adjourning cases as no one could possibly foresee the end date of the pandemic at the time [43]. This they justified statutorily in their report by stating that by virtue of Article 22(1) of the ICC Rules the tribunals and parties are obligated to conduct proceedings in any way which they believe is most expeditious and cost-effective bearing in mind the circumstances of each case. They further noted that by virtue of Article 22(4), every proceeding held virtually should be fair and consistent with the tribunal's rules.

There are also AI-based tools used by arbitrators, however, not limited to just arbitrators, which helps in scheduling and planning meetings. The most commonly used is X.Ai [44]. X.Ai is a smart scheduling assistant which communicates with humans through emails and takes account of certain features such as dates, times, and location in order to set meetings using very minimal human intervention [45]. There are also AI software and databases in place which assist in conducting necessary and incidental aspects of legal proceedings [46]. These tools assist in drafting, reviewing and summarising clauses or cases for legal practitioners [46]. These tools also assist arbitrator(s) in gathering and analysing evidence determining which is admissible and which is not [28]. These AI tools make use of Natural Language processing (NLP) and Optical Character Recognition (OCR) in identifying micro and macro data relevant to any case [28]. Some of these tools include but not limited to: eBREVIA, DISCO, CASE ASSIST, EVERLAW amongst others. The eBREVIA reviews large volumes of legal documents in minutes in natural language [47]. The eBREVIA has the capacity to review more than 50 large volumes of arbitral data in a minute. It has been argued that this AI tool produces more accurate reviews than a manual review handler. Arbitrators use this AI tool to review large volumes of exhibits, evidence amongst others in order to render a final and binding arbitral award.

DISCO [48] is an AI tool that uses predictive algorithms to review large volumes of arbitral data and suggest the document or case laws relevant to a case. It employs the use of a scoring system to predict results, which makes use of numbers such as -100 to +100 to predict how relevant a material or case is relevant to the proceedings at hand. Case Assist [49] reviews and analyses legal documents by creating identifiable patterns in NLP. Arbitrators using this AI tool can analyse evidence by tracing patterns of behaviour of either the claimant or respondent which may have formed part of evidence in previous cases and linking it to the present case at hand.

AI tools using relevant algorithms can also assist in drafting arbitral awards [50]. This is gradually coming into existence [28] in most parts of the world. We take, for instance, in 2019, the Arbitration Community in Hong Kong launched a software, 'Electronic Business-Related Arbitration and Mediation Platform' (EBRAM), with the capability to draft final and binding arbitral awards. There are also AI tools that can analyse awards rendered by competent arbitral tribunals [51]. This has already been sufficiently discussed earlier.

V. ETHICAL CONSIDERATIONS/LIMITATIONS ASSOCIATED WITH AI-BASED TOOLS IN INTERNATIONAL ARBITRATION

The use of AI-based tools in international arbitration has raised a lot of controversies over the years as to the risk factors associated with the process. Some of most acclaimed criticisms include:

A. Data Bias

AI-based tools have been known to produce biased results in the past due to their very rigid nature. We take for instance, Allen & Overy, a well-known international law firm encountered a data bias issue when its AI tool, whose algorithm was trained with US data, produced an inaccurate output when it was fed UK data [52]. This poses a problem as AI-based tools cannot be very diverse in their usage; that is when an AI algorithm has been trained or has become accustomed to one system, it can only produce results based on that system and no other [52]. Moreover, as explained earlier, AI-based tools are likely to create racial and gender biases as it relates to selection of arbitrators by parties [10]. This is due to the already prevalent problem in the regime, and thus the output of an AI tool will tend to reflect a biased opinion.

B. Error in Judgement

AI-based tools work on a garbage in, garbage out basis, therefore, results emanating therefrom can be inaccurate due to lack of information. As explained earlier, due to the confidential nature of international arbitration [21], some vital information is usually not made available and thus, cannot be uploaded to AI algorithms to produce an accurate output. This means that results produced by such algorithms will increasingly be unreliable and dangerous to consume.

Conversely, an overload of inaccurate or inconsistent data might be problematic, as algorithms will tend to produce

results based on this misinformation which will consequently result in an unfair trial [53]. Furthermore, AI-based tools lack human reasoning and emotions which is a very important feature in decision making [54]. In creating an AI-based tool capable of assisting or rendering decisions, the reasoning behind a decision rendered will be unavailable, thereby nullifying and voiding such a decision [54].

C. Confidentiality/Privacy Concerns

As explained earlier, AI algorithms in international arbitration require large volumes of accurate and consistent data to produce the desired outcome. This poses a huge problem in the international arbitration regime due to the 'Doctrine of Confidentiality' [21]. Nonetheless, if the reverse were to be the case and data necessary for the proper functionality of a desired AI model were made available, issues relating to data protection would be profound. We take for instance, when a Samsung employee entered certain confidential data into Chat GPT in search of an answer to a question, and Chat GPT reproduced those data and shared it with some other users [55].

More so, cyberattacks are becoming increasingly popular in international arbitration, as malicious scammers have begun to launch destructive malware onto official websites and exposing confidential data. We take for instance in 2015, hackers leaked vital information concerning the China-Philippines boundary dispute from the Permanent Court of Arbitration's website [56]. It is however, important to note that certain steps are being taken in the international community to tackle this problem, such as the Protocol on Cybersecurity in International Arbitration amended in 2022 [57].

VI. CONCLUSION

Artificial Intelligence has continually paved a way in international arbitration, by making the everyday dealings of parties, counsels, and arbitrators somewhat smoother and more effective. Whilst some of the essential AI tools have not been fully developed, the ones that are available and have been put to use have assisted various users in international arbitration immensely. AI-based tools, although having significant benefits, pose several risk factors to users which are indeed destructive and catastrophic. These destructive and catastrophic tendencies potentially hinder some of the benefits of this system.

Nonetheless, there is a need for the development and usage of newer technologies specific to this sector, bearing in mind the cost and benefit of such a technology, as well as the rights of parties in the proceedings. Recourse should be made to the types of technologies to be developed, and their usage, in order not to create an unfair advantage to one party. Moreover, futuristic AI tools that might be capable of drafting final and binding award, predicting winners of cases, amongst others, should not necessarily be welcomed with open hands but be fact checked as to the validity of their outputs as well as any potential bias.

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