THE POTENTIAL PROSPECT OF ARTIFICIAL INTELLIGENCE (AI) IN ARBITRATION FROM THE INTERNATIONAL, NATIONAL AND ISLAMIC PERSPECTIVES

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ABSTRACT

Arbitration is the most widespread mechanism for resolving disputes in the modern and Islamic eras. The current global tendency calls for an increase in the integration of disruptive technology, such as artificial intelligence (AI), into arbitration. Using doctrinal legal research methodology, this article examines the potential prospect of artificial intelligence (AI) in arbitration from international, national, and Islamic perspectives. To achieve that, several international arbitration

laws, such as the Convention on the Recognition and Enforcement of Foreign Arbitral Awards 1958 and UNCITRAL Model Law on International Commercial Arbitration 1985, national arbitration laws, such as Arbitration Act 2005 (Act 646), UK Arbitration Act 1996, and Singaporean Arbitration Act 2011, and the Islamic law were analysed. The collected data was analytically and critically analysed using the content analysis method. It is found that AI technologies would bring added value to arbitration if they are appropriately employed. However, from a legal perspective, arbitration laws are not mature enough to absorb AI technologies. Besides, it has been discovered that Islam does not prohibit AI technologies as long as they can serve humanity. According to the Islamic point of view, an artificial intelligence arbitrator (AIA) cannot replace human arbitrators. Finally, this article provides several recommendations to enhance the use of AI technologies and AIA in arbitration. This, in turn, would help in creating a modern, prosperous, and just world and improving the international relations between nations, international organisations, and individuals from different countries as any of them could resolve their disputes effectively.

Keywords: Arbitration, Artificial Intelligence, Artificial Intelligence Arbitrator, Dispute Resolution Mechanism, Islamic Arbitration.

INTRODUCTION

Arbitration relishes a prominent status because of its remarkable advantages. For instance, it is a private and confidential mechanism (Labanieh et al., 2019). In reality, international arbitration law, such as the United Nations Commission on International Trade Law (UNCITRAL) Model Law on International Commercial Arbitration 1985, does not contain provisions for privacy and confidentiality. However, national arbitration law, such as in Malaysia, has detailed provisions on confidentiality. For example, the Malaysian Arbitration Act 2005 (Act 646), section 41A-41B. Furthermore, arbitration leads to a win-win situation because of its ability to preserve a continuation of the relationship between the disputants. In short, it enhances the contractual relationship between the disputing parties. Besides, arbitration is a fast, cheap, and flexible mechanism (Maita, 2014) compared to litigation. Moreover, it is appealing and preferred for the international and national disputing parties who want to resolve their

dispute with a binding and final decision, for instance, article 35(1) of UNCITRAL Model Law on International Commercial Arbitration 1985 and section 36(1) of the Arbitration Act 2005 (Act 646), unlike other alternative dispute resolution (ADR) mechanisms, such as mediation and negotiation.

Several efforts have been made to define arbitration. According to the linguistic viewpoint, the term arbitration originated from the Latin word *arbitrae*, which means the authority to cope with something with wisdom (Soper, 1959). According to the Oxford English Dictionary, traditional arbitration is an 'uncontrolled decision' to settle a question at issue by one to whom the parties agree to refer their claims to obtain an equitable decision (Oxford, 1969). From an academic point of view, Wang (2018) reveals that arbitration is a form of adjudication with a neutral decision-maker-an-arbitrator, rather than a judge, and the arbitral award is usually enforceable as a court judgment (Wang, 2018).

However, despite the definitions mentioned above, no universal and comprehensive definition describes arbitration. Therefore, this article defines arbitration as an out-of-court dispute resolution mechanism in which its procedures are conducted partly by using the electronic means of information technology to facilitate the resolution, and the parties consensually submit their current or future dispute to an independent and impartial human arbitrator, appointed by or for the disputants, to render a binding award that is based on the merits of the dispute, and is enforceable either voluntarily or by the power of law.

Arbitration is divided into two types, namely, national (domestic) arbitration and international arbitration. In general, the significant difference between them is that under international arbitration, there are elements of foreign sources associated with the subject matter of the dispute or parties. In other words, international arbitration has a foreign element. While the arbitration is considered a national (domestic) arbitration only if one of the following factors exists. First, both parties to the arbitral agreement must be nationals or residents of the same country. Second, the arbitral agreement between the parties stipulates that the arbitration should take place in the parties' country.

In light of the above, several jurisdictions, such as India (section 2 (1)(f) of the Indian Arbitration and Conciliation Act 1996), provide a

key element to differentiate between national (domestic) arbitration and international arbitration. Also, in Malaysia, section 3(2) of the Malaysian arbitration Act 2005 (Act 646) states that intentional arbitration means an arbitration where "one of the parties to an arbitration agreement, at the time of the conclusion of that agreement, has its place of business in any State other than Malaysia." On the other hand, under section 2(1) of the same Act, Malaysian lawmakers define domestic arbitration as "any arbitration which is not an international arbitration."

The world of arbitration is continuously changing and evolving since the benefits of the partial integration of information and communications technology (ICT) in arbitration prove that the power of technology should not be underestimated. This is because ICT would enhance and improve the unique qualities of arbitration as an effective dispute resolution mechanism, namely time and cost-efficiency. On the other hand of the spectrum, the development in the arbitration industry does not stop at that stage; however, such development has paved the way to discover the potential advantages of implementing electronic arbitration (e-arbitration), which is substantially and entirely based on using ICT (Labanieh et al., 2020). This is also followed by the need to invest more in using AI technologies in the arbitration industry (Labanieh & Hussain, 2020).

McCarthy (2007) was the first who coined the term AI in 1956. He defines AI as "the science and engineering of making intelligent machines" (McCarthy, 2017). Also, AI is defined as software's capability to learn automatically from features or patterns in the data, which makes it 'intelligent' (Paisley & Sussman, 2018). Furthermore, AI is the simulation of human intelligence in a machine programmed to think like humans and mimic their actions (Kevins, 2022). Following that, the Fourth Industrial Revolution (4IR) is described as the developing environment in which disruptive technology, such as AI, is heavily changing the way people live and work (Legal 500, 2022). Therefore, AI is not a futuristic concept; rather, it is a common technology that has been deployed and integrated across several sectors and for different purposes. A straightforward instance of AI is virtual assistants (VA), such as facial recognition by Alexa and Siri, employed to unlock smartphones (Triggs, 2019) and self-driving cars (Micron, 2022).

AI would play a significant role in transforming both developing and developed economies. Research conducted by Accenture concluded that AI has the prospect of doubling annual economic growth by 2035 in twelve developed countries (Mansor, 2021). Another research discovered that AI could help in accomplishing 79 percent of the objectives included in the Sustainable Development Goals (SDGs) (Eliaçik, 2022). For this reason, many countries worldwide are moving forward and taking significant initiatives to invest in the AI industry. Remarkably, Oxford Insights (a company that offers advice to governments on issues related to digital transformation) rated the readiness of 160 countries when it comes to employing AI. The United States of America (USA) ranked first in their 2021 Government AI Readiness Index, followed by Singapore and the United Kingdom (UK), while Malaysia ranked 36th (Oxford Insights, 2022).

Several countries have increasingly employed AI in the legal sector, especially litigation. For example, in Malaysia, the Kota Kinabalu magistrate court in Sabah referred to the recommendations provided by an AI system when sentencing two defendants who pleaded guilty (Ker, 2020). Also, in the case of Loomis v. Wisconsin 137 S. Ct. 2290 (2017), an AI tool determined the criminal sentencing of a defendant (Cyber Laws, 2020). In Colombia, the Siarelis robot is an AI system created by the Colombian government aimed to provide solutions for the resolution of corporate disputes. Siarelis asks the judge and his/her team several specific questions on the case's merits and would later automatically provide them with its opinion. Siarelis shows them the most appropriate and related judgments for similar past decisions (judgments), and finally, it tells them whether they have to accept the petitions of the claimant or not (Supersociedades, 2018).

Meanwhile, in Mexico, an AI system is used to advise the human judge whether the plaintiff is eligible to get a pension or not (Sourdin, 2018). In France, the University of Montreal-Cyberjustice laboratory creates a platform for settling disputes, known as Platform to Aid in the Resolution of Litigation electronically (PARLe), that provides negotiation with the assistance of AI. As a result, in case the parties do not succeed in resolving their dispute using negotiation, mediation and arbitration procedures can be electronically initiated (Cyber Justice, 2022). AI has also been employed to resolve Business-to-Business (B2B) and Business-to-Consumer (B2C) disputes through arbitration (Amro, 2021). For example, eBay has established an AI system to

resolve disputes arising from B2C disputes through arbitration (Amro, 2021). Currently, several AI technologies can be used by parties to arbitration and arbitrators during arbitral proceedings to facilitate dispute resolution, which will be discussed in the following sections. Following the vertiginous progress of the AI industry, there are several speculations over which tasks and professions will be replaced by robots (Vanna, 2022). Fortunately, the arbitration industry has not escaped these speculations and thoughts. This might be because AI does not only play a vital role in altering the traditional form of conducting an arbitration, but also its future is still uncertain. As a result, this article aims to address three main matters: first, the horizon of using AI in arbitration; second, the legal challenges of using AI in arbitration; lastly, the Islamic opinion regarding the use of AI and AIA because the potential advantages of using AI and AIA in arbitration would not be accepted and realised among the Islamic countries and Muslims unless AI and AIA are able to represent and ensure the Islamic principles and values.

METHODOLOGY

This article adopted doctrinal legal research methodology. Primary and secondary data were collected using the library approach. The primary data were obtained from the Holy Quran, Laws, Conventions, Acts, and Court Cases. To illustrate, the article analysed relevant international arbitration laws, such as the UNCITRAL Model Law on International Commercial Arbitration 1985 and the Convention on the Recognition and Enforcement of Foreign Arbitral Awards 1958 (NY Convention 1958), which are regarded as the most successful and significant United Nations (UN) treaty in international arbitration. In the same vein, this article looked at several national arbitration laws, such as the Malaysian Arbitration Act 2005 (Act 646), the UK Arbitration Act 1996, the Singaporean Arbitration Act 2011, Indian Arbitration and Conciliation Act 1996, the Dutch Arbitration Law (DCCP) 2019, the Peruvian Arbitration Law, and French Code of Civil Procedure 2007. The rationale behind using these laws was that they are in an advanced stage, playing an essential role in enhancing the originality and findings of this article and validating the international discussion. Additionally, the secondary data were gathered from several sources such as journal articles, textbooks, and websites. Finally, primary and secondary data were critically and analytically analysed using a content analysis approach.

RESULTS AND DISCUSSIONS

The Horizon of Using AI in Arbitration

At first glimpse, it is challenging to understand how AI may correlate with arbitration. However, the use of AI in arbitration has already begun (Kevins, 2022). For instance, AI is an instrument that arbitrators, parties to arbitration, and their representative lawyers would utilise when providing their services and facilitating arbitral proceedings. The use of AI helps them to perform their tasks and duties quickly and they would benefit from efficiency gains and cost reductions (Kevins, 2022). The following discusses the AI technologies that are currently available and prevail in the legal industry, especially litigation. While some of these AI technologies have already been used in arbitration, others might be used soon.

Electronic discovery (e-discovery) is one of the aspects that AI has contributed to arbitration, wherein an AI tool is based on technology-assisted review (predictive coding) used for efficient and accurate document review and production. For example, in the case of *Da Silva Moore* v. *Publicis Groupe et al.*, No. 1:2011cv01279, the decision of Judge Andrew J. Peck paved the way for other cases to use predictive coding without questioning their validity in the USA (Austin, 2022). In the context of the UK, predictive coding is also accepted, as demonstrated in the case of *Pyrrho Investments Ltd* vs. *MWB Property Ltd* [2016] EWHC 256 (Ch), where the judge, Master Matthews, approved the use of predictive coding as an alternative for manual review in disclosure (Chesher, 2016). This is a result of the agreement between the parties and the enormous expenditure on manually reviewing and searching through the three (3) million electronic documents (e-documents) related to this case (Austin, 2022). In the context of arbitration, e-discovery is encouraged by the International Bar Association's Rules on the Taking of Evidence in International Arbitration (Larkin et al., 2021) and has become a new normal due to the increasing costs associated with the production of 'electronically-stored information' and the huge physical space needed to keep it (Frank & Bédard, 2007).

Furthermore, in arbitration, the disputing parties relish greater flexibility because they have the power to control the resolution process. For example, they can select arbitrators and determine the procedures for

appointing the arbitrators (Article 19(1) of UNCITRAL Model Law on International Commercial Arbitration 1985; sections 12 and 13 of the Malaysian Arbitration Act 2005 (Act 646)). Besides, the parties have the power to determine the required skills and qualifications of the arbitrators. This can be deduced from Article 12(2) of UNCITRAL Model Law on International Commercial Arbitration 1985 and section 14(3)(b) of the Malaysian Arbitration Act 2005 (Act 646). Further, if the director of the Asian International Arbitration Center (AIAC) or the Malaysian High Court is the appointing authority, any of them should consider the qualifications mentioned in the arbitral agreement between the parties (section 13(8)(a) of the Malaysian Arbitration Act 2005 (Act 646)). These key features enable the parties to select the most knowledgeable and experienced arbitrator. This is enriched by Tikamdas and Azad, who mentioned that;

> "The preliminary consideration for selecting an arbitrator is his knowledge of the industry or enterprise in which the parties' commercial contract operates. Complex technical matters in building and engineering contracts may require engineers, architects, or quantity surveyors with technical skills and knowledge of construction law. The same applies to arbitrators of maritime, oil and gas, aviation, intellectual property, investment agreements, and Syariah transaction disputes" (Tikamdas & Azad, 2016, p.125).

However, when the parties to arbitration fail to appoint arbitrators or when the selected arbitrators disagree on a presiding or chair arbitrator, the director of AIAC or the Malaysian High Court will be the appointing authority. Therefore, in the context of this article, AI applications might help in selecting arbitrators for arbitration. This happens when an AI system selects arbitrators based on several factors and variables, such as the level of expertise and knowledge in the area of dispute, languages, the number of concluded and pending arbitrations, parties' satisfaction, the potential conflict of interest, and the average time needed to issue the final arbitral award. This suggestion is not science fiction because several AI applications are already in place. Specifically, in 2014, Arbitrator Intelligence was launched. It is dedicated to improve accountability, transparency, and diversity in selecting human arbitrators (Simpson, 2021) who are directly involved in the subject matter of dispute (Arbitrator Intelligence, 2022). It is worth noting that the global adoption of

Arbitrator Intelligence could bring several advantages. First, it could enhance the effectiveness of arbitration by increasing the speed and lowering the cost. Second, it could eliminate the interventionist power of the national courts in arbitration because the selection of arbitrators will be in the hand of the AI system.

Another possible AI application that can be employed in the context of arbitration to help human arbitrators perform their duties and reduce time-consuming tasks is an AI application that concentrates on predicting the future arbitral award issued by human arbitrators. According to our knowledge, there is no dedicated AI application for predicting the future arbitral award in arbitration. However, this type of AI application has already been implemented in litigation and court proceedings, which would benefit the participants in arbitration if applied in the arbitration industry. For instance, in 2016, the University College London designed an AI application capable of formulating legal decisions and predicting future decisions of the European Court of Human Rights (ECHR). This application has successfully analysed 584 cases and provided decisions similar to those of human judges in 79 per cent of the ECHR cases (Hutson, 2017).

Similarly, LexPredict developed an AI application that predicts the future judgements of the Supreme Court of the USA. Its results are more precise than the results acquired from human judges in the intellectual property domain (Mills, 2016). In the same vein, Ravel Law provided an AI application called Judge Analytics that aims to predict future outcomes and compare judges. The inventors of this AI application stated that;

> "Judge Analytics uses citation information to show which cases, circuits, and judges a judge has cited most often. Users can use it to determine when a judge may look to law from an unexpected jurisdiction, to see when a judge demonstrates historical patterns on a subject or procedure, or to see which cases, rules, and exact language a judge may prefer and uses often. Judge Analytics currently covers all Federal Supreme, Circuit, and District Court judges" (Ito, 2015).

It is worth noting that using an AI application to predict the future arbitral award in arbitration could encourage parties to resolve their arbitration dispute while embracing the resolution suggested by an

AI application because this would be less expensive and less time-consuming.

However, using AI applications in arbitration is not an easy task. AI applications are 'data hungry'. In other words, the successful use and implementation of AI applications require access to a large pool of carefully defined data, which is something impossible for now because it is against the arbitration's confidentiality principles that prevent arbitration cases from going public, unlike court cases. Therefore, this article suggests the arbitration industry takes serious action and implements AI applications to predict the future arbitral award, albeit by taking several measures, such as hiding the parties' names. Doing so would guarantee the success of AI applications in arbitration without compromising the confidentiality principle.

Furthermore, another possible AI application to be used in arbitration appears in formulating and preparing the arbitral award. This is demonstrated by Clay (2019), who states that the calculation power and the formidable research of AI would help human arbitrators to prepare and draft an arbitral award (Clay, 2019). Unfortunately, there is no actual AI application that is devoted to helping human arbitrators in drafting and preparing such an award. However, several AI applications are used in terms of contract drafting. For instance, Lexis® Clause Intelligence is "a legal drafting analysis tool designed to help in delivering a comprehensive contract with AI-enhanced analysis from an extensive bank of clauses, authored by experts" (LexisNexis, 2022). In the same vein, Robot Lawyer Lisa (LISA), an AI application developed in the UK, helps interested users to create binding non-disclosure agreements (NDA) quickly, freely, and without the assistance of human lawyers (Robot Lawyer Lisa, 2022). Based on the previous, one may argue that using AI applications is a starting point for replacing human arbitrators. However, it is suggested that the arbitration industry has to implement and use AI applications in arbitration because of their ability to provide several opportunities for participants of arbitration and the arbitration industry at large. This might include inter alia, speed, creativity, efficiency, and productivity.

The Legal Challenges of Using AI in Arbitration

The following discusses the challenges to be considered when using AI applications in the context of arbitration, specifically, the legal

validity of using AI applications in arbitration, the legal validity of appointing an AIA in arbitration, and the legal validity of issuing an arbitral award by an AIA in arbitration.

The Legal Validity of Using AI Applications in Arbitration

Starting from the international context, the principle of party autonomy is the key characteristic of arbitration. International arbitration law has enriched this principle (article 19 (1) of the UNCITRAL Model Law on International Commercial Arbitration 1985). In the same vein, NY Convention 1958 acknowledges the party autonomy principle in the agreement concluded in writing by the disputing parties where both of them decide to submit their future or current dispute to arbitration (article II (1) of the NY Convention 1958).

At the national level, several national arbitration laws have assured the principle of party autonomy in arbitration. For instance, section 19 (2) of the Indian Arbitration and Conciliation Act 1996 states that the disputing parties have a right to agree on the procedure to be followed by an arbitral tribunal. Similarly, section 23(1) of the Singaporean Arbitration Act 2011 and section 21(1) of the Malaysian Arbitration Act 2005 (Act 646) have also recognised this principle. They state that within the confines of this Act, the parties are free to design and craft their own rules of procedure in line with their preferences and needs.

An exception to the above is the principles of due process. Specifically, section 20 of the Malaysian Arbitration Act 2005 (Act 646) states that "The parties shall be treated with equality and each party shall be given a fair and reasonable opportunity of presenting that party's case". Also, section 22 of the Singaporean Arbitration Act 2011 states that "The arbitral tribunal must act fairly and impartially and must give each party a reasonable opportunity of presenting the party's case". Similarly, article 18 of the UNCITRAL Model Law on International Commercial Arbitration 1985 indicates that "The parties shall be treated with equality and each party shall be given a full opportunity of presenting his case".

In light of previous arguments, article 19 (1) of the UNCITRAL Model Law on International Commercial Arbitration 1985, section 23(1) of the Singaporean Arbitration Act 2011, and section 21(1) of

the Malaysian Arbitration Act 2005 (Act 646) might play a vital role in enabling parties to resolve their dispute by using an AI system in order to assist human arbitrators in an arbitral process, especially within the confines of section 20 of the Malaysian Arbitration Act 2005 (Act 646), section 22 of the Singaporean Arbitration Act 2011, and article 18 of the UNCITRAL Model Law on International Commercial Arbitration 1985. Otherwise, the arbitral award will be set aside under section 37 (1)(a)(iii) of the Malaysian Arbitration 2005 (Act 646), section 48(1) (a)(iii) of the Singaporean Arbitration Act 201, and article 34(2)(a)(ii) of UNCITRAL Model Law on International Commercial Arbitration 1985. For this reason, to ensure that procedural justice will not be compromised during the arbitral proceedings, the relevant lawmakers should modernise the laws mentioned above to accommodate and support the use of an AI system to assist human arbitrators. This can be achieved when these laws accept the use of AI systems to assist human arbitrators, subject to several factors, such as the parties' acceptance and equal access to AI systems. Doing so would take the arbitration industry to the next level and attract more disputes to be resolved via arbitration. This, in turn, would enhance the arbitration market globally.

The Legal Validity of Appointing an AIA in Arbitration

After discussing whether the parties to arbitration have the right to use AI systems in arbitration, it is vital to highlight the debatable issue of whether the parties to arbitration can appoint an AIA as an arbitrator. In other words, whether the parties to arbitration can replace human arbitrators with an AIA.

Several national arbitration laws clearly state that an arbitrator should be human. For instance, article 1450(1) of the French Code of Civil Procedure 2007 stipulates that "only a natural person having full capacity to exercise his or her rights may act as an arbitrator". In addition, other national arbitration laws require the arbitrator to have the capacity to exercise his/her civil rights. For instance, article 4.1.2 of the Peruvian Arbitration Law states that "any individual with full civil rights and without an international criminal conviction may be appointed as arbitrator". Furthermore, the UK Arbitration Act 1996 in article 26 addresses the issue of the death of an arbitrator. This, in turn, constitutes an implied decision that the arbitrator should be a human. So, it is clear that the parties have no right to appoint an AIA under the law mentioned above.

In contrast, the Malaysian Arbitration Act 2005 (Act 646) is not exact regarding the validity of appointing an AIA as a human arbitrator (Labanieh & Hussain, 2020) because the definition of arbitral tribunal does not expressly prohibit or approve the use of AIA. In other words, it does not mention that arbitral members should be human or have the capacity to exercise his/her civil rights. However, the Malaysian Arbitration Act 2005 (Act 646) contains several articles that make a specific reference to an arbitrator as 'human' (Labanieh & Hussain, 2020). The same argument applies to the Singaporean Arbitration Act 2011, the Indian Arbitration and Conciliation Act 1996, and the UNCITRAL Model Law on International Commercial Arbitration 1985. It is argued that the legal loophole that existed in the previous laws could be exploited in a way that enables the parties to arbitration to appoint an AIA. For more legal certainty, it is recommended that the previously mentioned laws take a clear position regarding the ability to appoint an AIA. This can be accomplished once they redefine the term arbitral tribunal in a way that either accepts or rejects the appointment of AIA.

The Legal Validity of Issuing an Arbitral Award by an AIA in Arbitration

Even though it might be beyond belief that an AIA would replace human arbitrators soon, the following focuses mainly on the legal validity of the arbitral award issued by an AIA in arbitration. The rationale behind this is the previous legal loophole that could be indirectly interpreted to allow the appointment of an AIA. Before analysing the legal validity of the arbitral award issued by an AIA in arbitration, it is important to examine whether an AIA can fulfil the element of impartiality and independence of human arbitrators.

First of all, it is significant to note that the appointed human arbitrator should be independent and impartial, as stated in national and international arbitration laws (article 13(6) of the Singaporean Arbitration Act 2011; section 11 of the Indian Arbitration and Conciliation Act 1996; section 13(8)(b) of the Malaysian Arbitration Act 2005 (Act 646); article 9 of the German Arbitration Institute (DIS) 2018; article 1023 of the Dutch Arbitration Law (DCCP) 2019; article 12(1) of UNCITRAL Model Law on International Commercial Arbitration 1985). On that ground, human arbitrators should not accept an appointment or persist in serving as an arbitrator if there

is any doubt regarding his/her independence or impartiality (General Principle 2 of the International Bar Association (IBA) Guidelines on Conflicts of Interest in International Arbitration) because the absence of independence and impartiality could enable the parties to arbitration to challenge human arbitrators (article 12(2) of the UNCITRAL Model Law on International Commercial Arbitration 1985).

One may argue that AIA is impartial and independent. However, in reality, an AIA is based on the way it is coded and programmed. So, if the used and planted data within an AIA are biased, the AIA would be prejudiced and biased. For instance, an AIA could be programmed and developed in a way that inherently favours white-skin opponents over black-skin opponents. Therefore, it is argued that an AIA could "learn from human biases and exaggerate them" (Scherer, 2019). This argument is justified. From a theoretical perspective, Pavlovskaya (2020) argued that "machine arbitrators could help to remove the majority of human biases, but they would not be able to overcome the systemic bias in certain situations; human involvement would be necessary" (Pavlovskaya, 2020). From a practical perspective, in 2019, a study found significant racial bias in the commercial algorithm employed to determine if patients should be registered in a care management programme and would benefit from it (Obermeyer & Mullainathan, 2019). This study revealed that white patients had more opportunities to be registered in that programme compared to black patients (Obermeyer & Mullainathan, 2019). This, of course, would negatively impact the principle of access to justice that is essential to achieve the SDGs (OECD, 2016) and consolidate access to justice for those who need it regardless of their ethnicity, colour, and religion. This is because justice is a human virtue, not a simple algorithm (Rehbein, 2019). Therefore, it is believed that the possibility of an AIA exercising human virtue, possessing emotional intelligence such as sympathy, and getting rid of human input (the planted biased data) in dispute resolution is impossible.

Concerning the legal validity of the arbitral award issued by an AIA in arbitration, it is vital to know that the arbitral award does not only contain the decision of human arbitrators on a dispute, but it contains a suitable justification and explanation of that decision. In other words, the arbitral award provides detailed and elaborated reasoning illustrating why and how the party to arbitration lost. Therefore, the arbitral award should contain the reasons upon which it is based

(section 33(3) of the Malaysian Arbitration Act 2005 (Act 646), article 31(2) of the UNCITRAL Model Law on International Commercial Arbitration, section 31(3) of the Indian Arbitration and Conciliation Act 1996, article 32 (2) of the ICC International Court of Arbitration Rules of 2020, and article 52(4) of the UK Arbitration Act 1996). This is because the interested party wants to evaluate the possibilities of setting aside the arbitral award or predicting the obstacles concerning the recognition of the arbitral award.

In the context of this article, one may argue that an AIA could provide logical reasoning in a conventional manner similar to human arbitrators. However, Zamora (2018) asserts that a robot could not explain the reasons for its decision in understandable and unambiguous languages (Zamora, 2018). Similarly, it might be difficult for the parties to arbitration to understand the logical reasoning behind the decision of an AIA, unlike data analysts (Lehr & Ohm, 2017). In light of this, it is believed that the AIA could play a supplementary role in arbitration. To illustrate more, an AIA could draft the arbitral award while a human arbitrator provides the reasoning behind it. Doing so would enhance participants' trust in arbitration and increase the effectiveness and accuracy of arbitration.

Finally, it is worth mentioning that the NY Convention 1958 is "described as the most successful treaty in private international law" (New York Convention, 2022). Therefore, using an AIA to assist human arbitrators in issuing the arbitral award should be legally acknowledged. Under this convention, 160 states, including Malaysia, are parties to this convention (New York Convention, 2022). This can be accomplished by amending article I(2) of the NY Convention 1958. Specifically, the term arbitral award in this convention should be expended to the arbitral award issued by the permanent arbitral institutions or centres to which the parties to arbitration have submitted or the human arbitrators, with or without the assistance of an AIA appointed for each case. Doing so would enhance international uniformity and reflect the cooperation of the states' parties in order to create a modern, prosperous, and just world.

The Islamic Opinion Regarding the Use of AI and AIA

Several urgent issues need to be explored regarding AI technology and Islam (Nawi et al., 2021). This is because an AI is based on the

idea of how devices can imitate the mental and intelligent capacities of human intelligence and behaviour. This means that the creators and inventors of AI do not give importance to the soul, which is the main element distinguishing humans (such as human arbitrators) from machine learning (such as AIA). On the base of this, it is essential to examine the Islamic opinion regarding the use of AI and AIA.

As a start to this endeavour, it is vital to highlight that, as far as we know, there is no direct statistic showing that Muslim countries are involved in using AI in arbitration. However, in empirical research, it was discovered that 95 per cent and 76 per cent of the respondents agreed that AI has the prospect to enhance the quality of life of Muslims and umma, respectively (Nawi et al., 2021). So, through the application of the analogy, it is clear that Muslims and Islamic countries would benefit if AI applications and technologies are used in arbitration because of their ability to facilitate and accelerate access to justice for those who could be excluded from an effective and adequate redressal of their grievances. This would help in achieving *maqasid al-shariah*, one of the main Islamic objectives known as the preservation of wealth (*hafiz al-mal*), for Muslims as they would not be obligated to spend unnecessary time and expenditures to access justice.

Islamic law is a divine law applicable to Muslims (Bawazir & Hussain, 2018). Islamic law has recognised the concept of arbitration as it is referred to as *tahkim*. Indeed, *tahkim* has been acknowledged by four sources which are Shariah, the Holy Quran, *Sunnah* (the body of Islamic customs and practices based on Prophet Muhammad's words and deeds), *ijma'* (consensus of opinions), and *qiyas* (reasoning by analogy), along with, four Islamic primary schools of thoughts, namely Hanafi, Maliki, Hanbali, and Shafie (Alqurashi, 2004). Also, there are direct and clear verses in the Holy Quran approving the utilisation of *tahkim* as a dispute resolution mechanism (The Holy Quran: chapter 4, verse 35; The Holy Quran: chapter 4, verse 58; The Holy Quran: chapter 4, verse 65).

From the *Sunnah* perspective, during the time of the Prophet Muhammad (PBUH), there were several occasions when he practised *tahkim*. He often acted as a *muhakkam* between individuals or tribes to resolve their disputes (Zahraa & Hak, 2006). The application of *tahkim* is not restricted to family disputes, as its application is

extended to financial, commercial, and other types of disputes. The earliest record of an arbitration agreement in the Islamic world was that between 'Ali Bin Abi Talib and Muawiyat bin Abi Sufyan, the governor of Syria, over the succession to the Caliphate.

Regarding the definition of *tahkim*, it is described as the spontaneous and impromptu decision by two or more parties in dispute to submit their case to a third party called a *hakam* or *muhakkam* 'the arbitrator' (Saleh, 1984). The Islamic schools of thought also define arbitration. For example, the Hanafi school defines arbitration as the method of appointing a person to resolve a dispute (Yaacob, 2014). The Maliki school refers to it as the method of selecting a person to resolve a dispute between two or more parties, and both parties need to agree on the decision made by that person (Yaacob, 2014). In the same vein, the Hanbali school defines it as selecting an arbitrator to resolve disputes with a binding decision on the parties (Al-Mawardi, 2006). According to the Shafie school, arbitration is a legal practice, whether or not there is a judge in the place where the dispute emerged (Hossain, 2013). Based on the previous facts, it is clear that the emergence of the Islamic religion has given *tahkim* substantial support. This is because the Islamic religion underlines the concept of harmony rather than hostilities, and it adopts the principle of compromise instead of confrontation.

The golden age of the Muslim civilisation is the central pillar in the emergence of several sciences, such as mechatronics (Ikram & Kepli, 2018), Maths, Physics, and Robotics. These sciences and knowledge constitute the cornerstone for secular countries to develop AI. As far as we know, there is no explicit Quranic verse or *Hadith* prohibiting or allowing the use of AI according to the Islamic point of view. However, the use of AI would be valid according to Islam due to the Islamic legal maxim that stipulates, "Everything is permissible except what involves an Islamic prohibition". Therefore, it is believed that as long as the use of AI enhances the quality of life for humanity and the Muslim umma as a whole in accordance with Islamic law, there would be no place for prohibition. This is supported by fatwa no. 211585 (Islam web, 2013).

Furthermore, it is vital to examine Islamic opinions regarding the use of AIA, especially whether AIA can replace human arbitrators. In order to do so, it is vital to highlight the qualifications of human

arbitrators according to Islamic law. Notably, the four Islamic primary schools of thought unanimously agree that the qualifications of arbitrators are similar to judges (Alqurashi, 2004). This includes (1) maturity (*rushd*) and puberty (*bulugh*), (2) justice (*adalah*) and trustworthiness (*amanah*), (3) the gender should be man, (4) juristic reasoning (*ijtihad*), (5) free from physical defects (Cusairi & Zahraa, 2015), and (6) the religion should be Islam (Bawazir & Hussain, 2018). The following discusses these qualifications in the context of the robot, such as AIA.

Regarding the first qualification, maturity and puberty are the characteristics that determine the legal competency of an individual. For instance, section 2 of the Malaysia Age of Majority Act 1971 (Act 21) states that the age of majority in Malaysia is the age of 18 years old. So, anyone, who is under the age of 18, is not legally mature. Hence, he/she is not allowed to arbitrate between people. However, the first qualification is quite challenging to be satisfied by a robot, such as AIA, because the robot is a machine that is not subject to age development or growth. Also, the organs of the human body are constantly evolving, unlike the robot. In short, unlike humans, there is no adult robot or mature robot.

As for the second qualification, in general, a just judge (*qadi*) is defined as a person who avoids all major and minor sins, as well as enjoys an honourable personality and behaviour not only in religious matters but also in worldly matters (Cusairi & Zahraa, 2015). In the same vein, it is argued that justice is a feature in a human being that restricts him from doing major sins and retains him from minor sins. Therefore, a sinner is not allowed to be an arbitrator (al-Anshari, 1994). In addition, the four Islamic schools of thought have agreed that justice is a fundamental requirement for an arbitrator (Cusairi & Zahraa, 2015). However, this qualification cannot be fulfilled by a robot, such as AIA, because it is only a machine that cannot act as an amiable *compositeur* (Labanieh & Hussain, 2020), and up to our knowledge, a robot such as AIA does not have empathy, conscious, or any idea of justice. This is important because justice is a human virtue that goes beyond the coded and programmed algorithm (Rehbein, 2019).

Concerning the third qualification, there is a disagreement between the Islamic schools of thought regarding the gender of the arbitrator.

For instance, Maliki, Shafie, and Hanbali schools argue that the appointed arbitrator should be a male, unlike Hanafi, which allows women to be appointed as an arbitrator in civil issues like family and property issues (Bawazir & Hussain, 2018), excluding *hudud* and *qisas* cases. Moreover, it is worth noting that Omar bin al-Khattab, the third Caliphate in Islam after Prophet Muhammad (PBUH), appointed a woman as a judge (Rlawyers, 2013). In the context of this article, the Holy Quran stipulates that the origin of humans is from a mere inanimate sperm-drop, which undergoes several changes in the womb of the mother (Islamic Studies, 2022). The Holy Quran states that:

> "And indeed, We created humankind from an extract of clay, then placed each human as a sperm-drop in a secure place, then We developed the drop into a clinging clot of blood, then developed the clot into a lump of flesh, then developed the lump into bones, then clothed the bones with flesh, then We brought it into being as a new creation. So Blessed is Allah, the Best of Creators. After that you will surely die, then on the Day of Judgment you will be resurrected" (The Holy Quran: chapter 23, verses 12-16).

One may argue that countries around the world are moving towards building robots that have their nationalities. For instance, in 2017, a robot named Sophia was the first robot in the world to be granted citizenship in Saudi Arabia (Hart, 2018). Based on the previous facts, it is argued that an AIA is a human-made machine, unlike human beings that are God-made, regardless of the scientific debates that support the evolution theory. Besides, an AIA is a machine without a determined and identifiable gender. Therefore, AIA cannot be classified as a human based on its biological nature, even if it is titled or classified in the future as a male or female robot.

As to the fourth qualification, juristic reasoning (*ijtihad*) is defined as the total expenditure of effort by a jurist to infer, with a degree of probability, the rules of Islamic Shariah from their detailed evidence of the sources. So, in order to ensure the validity of the arbitral award issued in Islamic law, the arbitrator should be a *mujtahid* and a knowledgeable person. This means that if the arbitrator lacks knowledge of Shariah law, he/she should not be selected as an arbitrator (Bawazir & Hussain, 2018). In the context of this article, it is

argued that an AIA could be programmed and coded with information such as Islamic principles and rules. Also, an AIA could be trained in a manner that provides it with the required skills to be versed in applying the principles of interpretation and *ijtihad*. So, based on this, an AIA could fulfil the above-mentioned qualification.

As far as the fifth qualification, the appointed human arbitrator should be free from physical defects. In other words, human arbitrators should be in good health conditions. So, deaf and blind individuals are not allowed to serve as an arbitrator (Bawazir & Hussain, 2018). This requirement cannot be literarily applied to an AIA. However, an AIA has somehow fulfilled this requirement because an AIA has to pass several technical tests before putting in service. For instance, if AIA is not able to talk or see, it will not be put in service.

Regarding the need for a Muslim arbitrator, there is no Muslim or non-Muslim robot or AIA. One may argue that in the future, there is a possibility of having Muslim robots. This happens when the robot is programmed in such a manner to recognise Islamic principles and rules and equipped with the ability to recite the two testimonies (*Shahada*) [I bear witness that there is no God except Allah, and I bear witness that Muhammad is the Messenger of Allah]. However, it is believed that an AIA cannot be classified as a Muslim because an AIA is human made and is completely based on programmed and coded algorithms (an AIA has no free will). In light of this, if an AIA is coded and programmed to recite two testimonies (*Shahada*) in order to convert to Islam, it would not be considered a Muslim robot because it is forced to do so, and this is against the Islamic religion that prohibits compulsion in religion (The Holy Quran: chapter 2, verse 256; The Holy Quran: chapter 10, verse 99). Hence, an AIA cannot meet the last needed qualification of a human arbitrator according to the Islamic point of view.

CONCLUSION AND RECOMMENDATIONS

Arbitration is the most widespread mechanism for resolving disputes in the modern and Islamic eras. The current global tendency calls for an increase in the integration of disruptive technology, such as artificial intelligence (AI), into arbitration. In this regard, using doctrinal legal research methodology, this article examined the potential prospect of

artificial intelligence (AI) in arbitration from international, national, and Islamic perspectives. Specifically, it discussed three main issues associated with using AI and AIA in arbitration. First, the horizon of using AI in arbitration, second, the legal challenges of using AI in arbitration, and lastly, the Islamic opinions regarding the use of AI and AIA.

Regarding the horizon of using AI in arbitration, it is argued that even though the use of AI in arbitration is still at an embryonic stage, its inherent power in arbitration should not be underestimated. To illustrate further, it is discovered that several AI applications have already been in place and used in arbitration to accomplish several tasks, including selecting a human arbitrator and analysing and reviewing documents submitted during arbitral proceedings. Also, AI applications can enhance the effectiveness of arbitration by increasing the speed and lowering the cost. On the other hand, it is found that AI applications concerned with predicting the future arbitral award are not used in arbitration, especially litigation, unlike in the legal industry because AI applications are 'data hungry'. In other words, the successful implementation and use of AI applications require access to a large pool of carefully defined data, which is an impossible task for now because the arbitration's confidentiality principle prevents arbitration cases from going public, unlike court cases.

Therefore, it is suggested that the arbitration industry strives to implement AI applications to predict the future arbitral award. This can be achieved by taking several measures, such as hiding parties' names. Doing so would guarantee the success of AI applications in arbitration without compromising the confidentiality principle. In the same vein, it has been discovered that AI applications that are concerned with preparing and drafting the arbitral award are not employed in arbitration. The reason might be the fear of human arbitrators being replaced by an AIA. However, it is suggested that the arbitration industry has to implement and use AI applications in arbitration because of their ability to provide opportunities for participants in arbitration and the arbitration industry at large. This might include inter alia, speed, creativity, efficiency, and productivity.

Under the legal challenges of using AI in arbitration, this article analysed three main issues. First, the legal validity of using AI applications in arbitration. Second, the legal validity of appointing

an artificial intelligence arbitrator (AIA) in arbitration. Third, the legal validity of issuing an arbitral award by an artificial intelligence arbitrator (AIA) in arbitration. Concerning the first issue, this article found that the principle of party autonomy has already been enriched and recognised not only in international arbitration laws, such as article 19(1) of the UNCITRAL Model Law on International Commercial Arbitration 1985 and article II(1) of the NY Convention 1958, but also in the national arbitration laws, such as section 19(2) of the Indian Arbitration and Conciliation Act 1996, the Singaporean Arbitration Act 2011, and section 21(1) of the Malaysian Arbitration Act 2005 (Act 646). This can be indirectly interpreted that the parties to arbitration could use an AI system to assist human arbitrators in an arbitral process. However, it is suggested that relevant lawmakers appreciate the role and advantage of using AI systems to assist human arbitrators. Particularly, they have to modernise the laws mentioned above to accommodate and support the use of an AI system to assist human arbitrators. This can be achieved when these laws accept the use of AI systems to assist human arbitrators, subject to several conditions, such as the parties' acceptance and equal access to an AI system. Doing so would take the arbitration industry to the next level and attract more disputes to be resolved via arbitration and enhance the arbitration market globally.

Regarding the legal validity of appointing an AIA in arbitration, it is found that there is no certainty and uniformity among the arbitration laws adopted by countries. For instance, some arbitration laws clearly state that an arbitrator should be human, such as the French Code of Civil Procedure 2007, or has the capacity to exercise his/her civil rights, such as Peruvian Arbitration Law. However, other arbitration laws, such as the Singaporean Arbitration Act 2011, the Indian Arbitration and Conciliation Act 1996, the Malaysian Arbitration Act 2005 (Act 646), and the UNCITRAL Model Law on International Commercial Arbitration 1985, do not clearly state the nature of arbitrator. Specifically, they do not state that the arbitrator should be human or has the capacity to exercise his/her civil rights. This constitutes a legal loophole that enables the parties to arbitration to appoint an AIA as an arbitrator. For more legal certainty, it is recommended that the previously mentioned laws take a clear position regarding the ability to appoint an AIA. This can be accomplished once they redefine the arbitral tribunal in a way that either accepts or rejects the appointment of AIA.

With regard to the legal validity of issuing an arbitral award by an AIA in arbitration, it has been discovered that it is impossible for an AIA to exercise human virtue and possess emotional intelligence such as sympathy, and eliminate human input (the planted biased data) in dispute resolution. This is because an AIA could be programmed and developed in a biased way and learn from human biases. This, of course, would negatively impact the principle of access to justice that is essential to achieve SDGs and consolidate access to justice for everyone regardless of their ethnicity, colour, and religion. Moreover, it has been found that an AIA could not explain the logical reasoning behind its decision in an understandable and unambiguous language, similar to human arbitrators. Therefore, it is recommended that, for now, an AIA plays a supplementary role in arbitration. For example, an AIA could draft the arbitral award while a human arbitrator provides the reasoning behind it. Doing so would enhance participants' trust in arbitration and increase the effectiveness and accuracy of arbitration. Furthermore, it is argued that using an AIA to assist human arbitrations in issuing the arbitral award should be legally acknowledged under the NY Convention 1958. This can be accomplished by amending article I(2) of the NY Convention 1958. Specifically, the term arbitral award in this convention should be expended to the arbitral award issued by the permanent arbitral institutions or centres to which the parties to arbitration have submitted or the human arbitrators with or without the assistance of an AIA appointed for each case. Doing so would enhance international uniformity and reflect the cooperation between the states' parties in order to create a modern, prosperous, and just world.

With respect to the Islamic opinion regarding the use of AI and AIA, it was discovered that although there is no explicit Quranic verse or *Hadith* that prohibits or allows the use of AI (according to the Islamic point of view), using AI would be valid in Islam by applying the Islamic legal maxim that stipulates, "Everything is permissible, except what involves an Islamic prohibition". Additionally, it was discovered that an AIA does not fulfil the needed qualifications of human arbitrators according to Islamic law. However, it is recommended that in order to ensure the permissibility of using AI in Islam, the use of AI should be line with the Islamic religion that comes to enhance the quality of human lives and bring benefits to humanity and Muslim umma at large.

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