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AI as a tool to enhance digital arbitration effectiveness (Analytical study under silicon valley arbitration center guidelines)

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Abstract: This research addresses the role of artificial intelligence in enhancing effectiveness of electronic arbitration, focusing on Silicon Valley Arbitration Center guidelines. The research is intended to assess effectiveness of those guidelines in enhancing justice, efficiency and transparency of arbitration procedures, analyze impact of artificial intelligence on expediting the arbitration process and assess accuracy and objectivity of arbitral decisions should those guidelines are followed. The research also provides practical recommendations to implement artificial intelligence in the field of arbitration, focusing on improvement of Egyptian Arbitration Act to support using that sophisticated technology. The research highlights significance of technology in improving legal processes and introducing justice in a more efficient and effective form. It also reviews benefits and challenges pertaining to using artificial intelligence in electronic arbitration. Moreover, the research poses key questions on legal and ethical effects and the challenges encounter implementation of artificial intelligence in this field, and how the existing legal systems adapt to that technology.

Keywords: *Arbitration legal regulation, Artificial intelligence in Arbitration, Digital arbitration tools, SVAMC AI guidelines.*

1. Introduction

In light of accelerating technological development, artificial intelligence has become a vital tool to enhance effectiveness of electronic arbitration (Łągiewska, M. (2024). This technology offers unprecedented potentials to enhance the efficiency and transparency of arbitral procedures, which contributes to achieving justice in a faster and more accurate way. Under guidelines of Silicon Valley Arbitration and Mediation Center (SVAMC), artificial intelligence could play a pivotal role in analyzing legal data, predicting cases' findings and managing legal documents efficiently.

This analytical study reviews how artificial intelligence is used to enhance effectiveness of electronic arbitration, focusing on the guidelines set by SVAMC to ensure moral and effective use of this technology. Through analyzing case studies and legal references, we will highlight the benefits and challenges related to AI application in this field, providing practical recommendations to boost arbitral performance and ensure compliance with legal and moral standards. The study will also include proposals to improve the Egyptian Arbitration Act No. 27 of 1994, (Egyptian Arbitration Law, 1994) taking into consideration the amendments introduced to it via Act No. 9 of 1997 and Act No. 8 of 2000 to support using artificial intelligence in electronic arbitration, which contributes to developing legal system and achieving justice more efficiently and effectively.

2. Objectives of the Research

Analyzing the role of artificial intelligence in expediting arbitral process under guidelines of SVAMC Center. Assessment of AI impact on accuracy and objectiveness of arbitral decisions

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through the case study of SVAMC Center. Presenting recommendations to implement AI in the field of arbitration. The importance and need for making research on this subject: Importance of technology in arbitration is manifested through improving legal processes and presenting justice in a more efficient and effective way. This appears clearly through. Legal importance: as the research helps detect the existing legal loopholes and contributes to offer suggestions for them. (Tarmigan, 2023). Technological importance: through understanding the continuous technological change of digital arbitration form. Yıldırım, A. C. (2024). Future directives: it could contribute to providing valuable directives for the future on how to use the artificial intelligence more effectively in digital arbitration. Riepin, P. (2024).

2.1. Questions of the Research

These questions will guide the research and help achieve its set goals as follows:
What are the legal and moral effects of using artificial intelligence in arbitration?
What are the challenges which encounter implementation of artificial intelligence in arbitration?
How can existing legal systems adapt to using artificial intelligence in electronic arbitration?

3. Research Methodology

Reviewing studies and articles on digital arbitration and artificial intelligence.
Analyzing local and international laws pertaining to digital arbitration.
Studying impact of laws on using artificial intelligence in digital arbitration.
Studying assessment of effectiveness of Silicon Valley Arbitration Center guidelines in enhancing justice, efficiency and transparency of arbitration procedures.

3.1. Previous Studies

The article entitled "artificial intelligence and its role in international arbitration" (2020) refers that integrating artificial intelligence not only rebuilds trust in arbitration system, rather it contributes to enhancing principles of law sovereignty and boosts legitimacy, justice and efficiency of procedures at the international level. ((Gicquello 2020).

Artificial intelligence in arbitration and courts (20220): Arbitration relieves pressure on judicial system and offers a partial tool to settle disputes. Artificial intelligence enhances accuracy of prediction and information management; however, its implementation requires laws to be updated. (Zekos, G.I. 2022).

The article entitled digitalization of international arbitration and dispute resolution by artificial intelligence

reviews the role of artificial intelligence in improving international arbitration. (Gulyamov & Bakhramova, 2022).

Study entitled Implementation of Artificial Intelligence in Arbitratio (2021): Artificial intelligence can assist in legal processes, but it still needs to be updated to entirely replace human judges. (Implementation of Artificial Intelligence in Arbitration, 2021.)

Artificial Intelligence in Arbitration: Revolutionary or Impractical (2021)

The article discusses using artificial intelligence in arbitration in India and proposes developing legislations to protect data and ensure integrity. (Singh, 2021).

Artificial Intelligence and the Rule of Law: Capacity Building for Judicial Systems.

Artificial intelligence expedites judicial procedures and improves their accuracy, with the need for judge education and legal oversight to ensure justice (UNESCO, 2023)

Annual Arbitration Survey 2023: The Rise of Machine Learning. BCLP Law: (Burn, Morel de Westgaver, & Clark, 2023). Use of Artificial Intelligence in International Arbitration: The report explores how AI tools are being used in international arbitration processes. These tools can improve efficiency, reduce costs, and enhance quality, but they also pose ethical, legal, and technical challenges and risks. Survey Results: More than 200 arbitration practitioners from around the world participated in the survey.90% of participants were aware of AI tools that can perform various tasks in arbitration. Use of Artificial Intelligence in International Arbitration: The report explores how AI tools are being used

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in international arbitration processes. These tools can improve efficiency, reduce costs, and enhance quality, but they also pose ethical, legal, and technical challenges and risks. Survey Results: More than 200 arbitration practitioners from around the world participated in the survey %90.of participants were aware of AI tools that can perform various tasks in arbitration.

Artificial intelligence is regarded a modern tool that can enhance effectiveness of digital arbitration through improving accuracy and speed of decisions and reducing cost. EU Artificial intelligence Act (European Commission, 2021) Artificial intelligence can analyze huge amounts of data quickly and precisely and provide recommendations based on judicial precedents and advanced legal analyses, which improves quality of arbitral decisions. However, using artificial intelligence is facing legal and moral challenges (Ali.2022) such as ensuring transparency and justice and protecting personal data. Therefore, it is necessary to set a legal and regulatory framework that identifies how to use artificial intelligence in digital arbitration, and ensures compliance with moral and legal standards. So, I preferred to review the guidelines released by Silicon Valley Arbitration Center as an applied case, (SVAMC, 2024). It is important to clarify the reason for selecting that center to be worthy of study before proceeding to analyze its guidelines as follows: SVAMC presents practical solutions (Benton, 2015) for disputes in the technological sector in cooperation with technology companies, law firms and ADR institutions. Arbitrators and mediators at the center are recognized by their peers and staff of leading institutions. (SVAMC, 2023). International arbitration offers impartial forum to solve disputes at a world level. (SVAMC, 2023). SVAMC provides educational programs and resources to solve disputes over technology. (SVAMC, 2023). SVAMC supports diversity of arbitration and enhances equal representation. (SVAMC, 2023). Therefore, Silicon Valley Arbitration Center guidelines are regarded a practical reference to implement artificial intelligence in electronic arbitration, and are intended to enhance justice, efficiency and transparency. Guidelines include three key parts:

General guidelines present use, limits and risks of artificial intelligence, focusing on protecting confidentiality and non-delegation in decision making. Guidelines for parties and their representatives assert respect of required legal procedures and integrity of arbitration. Guidelines for arbitrators ensure transparency, justice and commitment to right legal procedures when using tools of artificial intelligence.

4. How to Implement the Guidelines in the Context of Electronic Arbitration

Artificial intelligence can be used to analyze documents and evidences quickly and accurately, which reduces time and cost related to arbitration and enhances effectiveness. ERTAQY.COM Website Editor. (2024) Artificial intelligence can provide accurate records of all procedures and decisions, which facilitates reviewing decisions and ensures transparency.

Through using impartial algorithms, human bias can be reduced and fairer and more objective decisions can be guaranteed. (Sokharcoviski, et al, 2024), (Abdullah 2024).

The guidelines ensure protecting sensitive data and information via using sophisticated encryption and security technologies. (Atsmon,2023 (Bi & Sokharcoviski, 2024)

Implementation of these guidelines can contribute in improving effectiveness and efficiency of electronic arbitration, while maintaining high standards of integrity and transparency.

5. Review of Domestic and International Laws Concerning Digital Arbitration and Artificial Intelligence

5.1. Domestic Laws

Egypt: Act No.151 of 2020 on personal data protection (Plaza, n.d.) was issued and is intended to regulate collecting and processing personal data and ensure their protection against illegal use. The aforementioned act applies to electronically-processed data, either partially or fully, and it includes natural individuals. This act is regarded a pivotal step to enhance cyber security in the field of electronic arbitration, as it ensures protection of the data that can be used in arbitral procedures. Arbitration Act in civil and commercial matters (Act No. 27 0f 1994) with amendments of Act No.8 of 2000, includes

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some rulings that can be amended to be implemented in electronic arbitration, however, no specific law that especially regulates digital arbitration has existed so far. Also, the Digital Signature Act (Act No. 15 of 2004) supports using electronic signature in legal procedures, which facilitates implementation of electronic arbitration processes.

The United States: no comprehensive federal act on data protection has been implemented at national level. However, specific privacy acts are being implemented in some states and in certain contexts. Federal Arbitration Act: this act generally supports arbitration and can be applied to electronic arbitration. Electronic Signature Act (E-Sign Act) in World and National Commerce: this act recognizes electronic signatures, which facilitates procedures of electronic arbitration.

5.2. International Agreements and Laws

New York Agreement 1958: this agreement recognizes and implements arbitration foreign rulings, including those that are electronically implemented.

UNCITRAL Model Law on International Commercial Arbitration (1985 with 2006 amendments): this law provides a framework for electronic arbitration, and urges countries to adopt legislations that support electronic arbitration.

AI Moral Principles: the moral principles set by international organizations, such as Organization of Economic and Cooperation Development (OECD), provide a moral framework for using artificial intelligence. These principles influence arbitration through:

There should be a human oversight on AI decisions to reduce the risks of bias or errors. AI systems have to be transparent and accountable to enhance confidence in arbitration (ERTAQY.COM Website Editor, 2024).

5.3. EU Legal Framework for Digital Arbitration and AI Technology

The EU has not issued a specific legislation on electronic arbitration, but current acts such as digital signature and E-commerce provide an applicable legal framework. The EU is working on setting a comprehensive framework to regulate use of artificial intelligence, aiming, through an act proposed by the European Commission in April 2021, at classifying systems according to level of risks and ensuring protection of citizens' rights. Gulyamov, S., & Bakhramova, M. (2022). This framework balances between innovation and rights protection, which ensures a safe and an effective use of artificial intelligence in digital arbitration. Mentioned below is a summary of its content:

Liability: the EU act on regulating artificial intelligence ensures safe and liable use of artificial intelligence through:

Classifying systems according to risks:

Systems with unacceptable risks: such systems are fully prohibited as they pose a significant threat for individuals' rights and integrity.

High-risk systems: these systems are allowed but they are subject to an array of requirements and duties to ensure their safety and transparency before they are introduced to European market and they are subject to strict requirements.

Limited-risks systems: these systems are waivered from additional requirements as they do not pose significant risks for individuals.

High-risks systems need assessment of compliance before marketing. European and national bodies are there to monitor compliance and implement penalties. Developers and users have to commit to providing transparent information, following decisions, prohibiting risky practices, behavioral manipulation and biometric social classification. (Kluwer Arbitration Blog, 2024)

Moral principles: the European Union is focusing on developing a man- centered approach over using artificial intelligence, with respecting European values and principles. In 2019, the European Commission published non-binding guidelines on ethics in artificial intelligence, (EUR-Lex - 52019DC0168 - EN - EUR-Lex, 2019) which include seven key requirements that developers of artificial intelligence must follow: human agency and oversight, technological robustness and safety, privacy, data governance and transparency, non-discrimination and equity, social and environmental well-being.

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- Electronic arbitration: the European Union is aiming at enhancing using technology in arbitration processes to ensure efficiency and transparency. This includes using artificial intelligence to analyze data, documents management and providing legal recommendations. However, this use must be in line with the legal and moral framework set by the European Union to ensure integrity and transparency of procedures. AI implementation in digital arbitration is encountering key challenges such as algorithmic bias and lack of clarity of systems internal processes. Difficulty of verifying the decisions taken by systems could impact transparency as follows (European Parliamentary Research Service, 2021)

5.4. The Challenges Which Encounter Transparency When Using Artificial Intelligence in Arbitration

Algorithmic bias:Algorithmic bias of artificial intelligence in arbitration might lead to unfair decisions due to biased data. In order to ensure transparency, data must be screened and bias must be reduced.

Lack of clarity of systems internal processes:Internal processes of AI systems are often complicated and not transparent, which triggers doubts about integrity of decisions. In order to ensure transparency, (Burn, Morel de Westgaver, & Clark, 2023) clear interpretations for decisions must be provided and internal processes must be documented.

Difficulty of verifying decisions:Verifying decisions of artificial intelligence poses a challenge due to complexity of algorithms. In order to ensure transparency, mechanisms of verification, such as periodic reviews, must be developed by independent experts, and analytic tools should be used to assess performance.

6. Strategies to Ensure Transparency When Using AI in Arbitration

6.1. Audit and Review

Periodic review of systems and data to ensure accuracy of decisions and lack of bias. Independent experts review systems to ensure integrity and detect bias.

6.2. Full disclosure:

Systems must provide understandable interpretations for decisions, clarifying affective factors and how to analyze data. Documenting internal processes in a reviewable way, including algorithms description, entered data and used standards.

Training and awareness:

Training arbitrators and solicitors on how to use systems and understand their limits through workshops and training courses. Getting parties aware of potential risks such as algorithmic bias and lack of clarity of internal processes to enhance understanding and acceptance.

Transparency in systems development:

Sharing information on systems development to build trust. Ensuring commitment to standards through cooperation with regulatory authorities and provide periodic reports.

Using analytic tools: verification and performance monitoring tools.

These strategies are generally compatible with those included by SVAMC guidelines to ensure transparency when using artificial intelligence in arbitration. I will review some key points from those guidelines: Parties must understand use and limits of artificial intelligence and its associated risks. Maintaining confidentiality of sensitive data and information when using artificial intelligence. The need for disclosing how to use artificial intelligence, including algorithms and used data. Parties and arbitrators must use artificial intelligence efficiently to ensure integrity of procedures. Respecting integrity of procedures and evidences when using artificial intelligence in arbitration. (SVAMC, n.d.) Saudi Center for Commercial Arbitration. (2023).

7. Discussing Mechanisms of Accountability to Ensure Trust in Arbitration Outcomes

Mechanisms of accountability are regarded an essential part to ensure trust in arbitration outcomes, particularly in light of using artificial intelligence in these processes. Under Silicon Valley Arbitration Center (SVAMC) guidelines, they can be adopted to achieve their set goal. Arbitration processes must be transparent, including how artificial intelligence is used in decision-making. This requires disclosure

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of the algorithms used and the standards they are based on. Some jurisdictions, such as the Court of King's Bench of Manitoba, Canada, issued directives require disclosure of the use of artificial intelligence in legal (Court of King's Bench of Manitoba, 2023), which reflects a trend towards boosting transparency in arbitration procedures. In order to ensure accuracy and equity of decisions, there have to be a human review of the decisions made by artificial intelligence. Human arbitrators can intervene in case there are any doubts over integrity or accuracy of the decision. Independent bodies could be appointed to audit arbitrations and ensure that AI is operating in line with specific criteria (Saudi Data & AI Authority (n.d.). This helps enhance confidence in outcomes. Artificial intelligence must be continually trained on up-to-date acts and standards to ensure that its decisions are compatible with legal developments. Clear mechanisms must be available to appeal arbitration decisions that are based on AI, granting disputing parties an opportunity to review and reconsider decisions if necessary. Using AI in arbitration must be in line with domestic and international acts, ensuring that all parties receive fair and equal treatment. Saudi Center for Commercial Arbitration. (2023).

7.1. Analyzing AI Role in Expediting Arbitral Processes and Promoting Their Accuracy

Artificial intelligence offers automation of several routine tasks, such as collecting evidences, documents analysis and reporting, which reduces the time spent on such tasks, analyzing large amounts of data at high speed, which expedites the decision-making process. Through automation, it also reduces the human errors that might occur when data are being collected and analyzed. Artificial intelligence can use machine learning techniques to analyze patterns and trends in data, providing more accurate and reliable outcomes. (Kumbure et al., 2022).

Practical examples on using AI in e-arbitration, which contributes in achieving equity faster and more effectively.

E-documents review (E-Discovery): platforms like Relativity One depend on machine learning techniques (Sahota, 2024) and large language models to improve efficiency and accuracy of documents review, which expedites arbitration process dramatically. Legal research: tools like Lexis Nexis and Ross Intelligence help conduct legal researches rapidly and accurately, (Chauhan, 2020) saving arbitrators and solicitors' time and eeffort.

Arbitrators' selection: platforms like Arbitrator Intelligence and BillyBot use artificial intelligence to analyze data and select the right arbitrators under specific criteria, which ensures integrity and effectiveness of arbitral process.

Predictive data analysis: AI techniques are used to analyze patterns and trends in data to present accurate expectations on cases outcomes, helping parties make right decisions. (AI in International Arbitration, 2023) Translation and transcription services: artificial intelligence can provide instant translation and transcription, facilitating communications among different parties in international arbitration. (SVAMC, n.d.),) ADR.ORG, 2023).

7.2. Discussing the Procedures Adopted to Protect Personal Data Under Silicon Valley Center Guidelines

Encryption techniques are used to protect personal data during transmission and storage, ensuring prevention of unauthorized access to sensitive information. Strict policies are applied to control access to data, so only authorized individuals have access to personal information. Roles and liabilities are clearly defined to ensure that individuals know limits of their prerogatives when handling data, periodic audit processes are also conducted to ensure compliance with the policies and procedures concerning data protection. Surveillance tools are continually used to detect any unusual activity or hacking attempts. (SVAMC, 2024) SVAMC Publishes (SVAMC, n.d.). Regular training programs are offered to staff to raise their awareness on significance of data protection and how to handle them safely. Concerned parties are educated regarding potential risks and how to avoid them. Data protection detailed and clear policies are set and include how to collect, process and store them. Specific procedures are also set to rapidly respond to any incidents pertaining to data safety. International criteria like General Data Protection Regulation (GDPR)(European Union. (2018). are complied with to ensure personal data protection. Policies and procedures are regularly updated to keep abreast with technological and legislative developments. These procedures contribute to boosting personal data protection and

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ensuring integrity and transparency of electronic arbitration. (Saudi Data & AI Authority (n.d.), (OHCHR, n.d.)

Data protection is facing various challenges (European Union, 2018), ((My.gov.sa, 2023), Karoun, Siham. (2020 that I will briefly present along with a proposal to overcome them as follows: Different data protection policies among countries. It is better to adopt policies that are compatible with international criteria like GDPR. Sophisticated technology has made data protection complicated. Solution could lie in investment in advanced safety techniques and regular update of policies. compliance with regulatory requirements and having them implemented by small and medium firms. Government support and training programs could contribute to solving the problem. Security breaches represented by cyber-attacks. They can be resolved with implementing multiple-layered security strategies and staff training. Privacy and transparency in achieving balance between data collection and privacy protection. It is better to adopt transparent policies and obtain individual's consent. These measures could help overcome legal challenges and ensure personal data protection.

7.3. Significance of Human Oversight on AI Decisions to Reduce Risks of Bias and Errors

AI systems are considered prone to acquiring biases from training data, which could lead to unfair or discriminatory decisions. Human oversight is necessary to detect and tackle these biases, in order to ensure taking fair and impartial decisions. Should an error or a harm caused by AI decision, it could be difficult to identify liability (Springer, 2021). Human oversight ensures a body that can be legally held accountable, which enhances confidence in using these systems. Using artificial intelligence in making decisions that affect human rights requires human oversight to ensure that these rights are not violated. ‹(Choi, Hall, Mayhew, & Singla, 2023) This includes decisions related to employment, healthcare, criminal justice, and other sensitive areas. 193 countries have adopted the first global agreement on AI ethics, which sets a global regulatory framework and holds countries accountable for its implementation at the national level. This agreement asserts significance of human oversight to ensure ethical and responsible use of artificial intelligence. UNESCO Recommendation on the Ethics of Artificial Intelligence, 2021.) (Masaar, 2024).

7.4. Practical Models for Balancing Artificial Intelligence and Human Intervention

In healthcare field: artificial intelligence is used to analyze medical images and present preliminary diagnoses. However, doctors remain responsible for making final decisions on treatment. For instance, artificial intelligence can detect tumors in X-ray photos, but doctor is the one who determines treatment plan according to final diagnosis. In recruitment field: some companies use artificial intelligence to screen resumes and define potential candidates for vacancies. However, final interviews are conducted by humans to ensure candidates full assessment. This balance helps reduce biases that could exist in AI algorithms. (IEEE, 2023),) UNESCO, 2023

In education field: AI-powered adaptive learning platforms are being used to customize syllabuses according to students' needs. However, teachers remain responsible for providing personal support and guidance for students, which ensures a balance between technology and human interaction. (Houssein et al., 2022).

In criminal justice field: some judicial systems use artificial intelligence to provide recommendations on rulings and penalties. However, judges remain responsible for making final decisions, which ensures that individual circumstances of each case are separately taken into consideration. (sarah, 2023), (Sadagopan S, 2024).

8. Evaluation and Recommendations for Updating Egyptian Arbitration Law No. 27 of 1994 to Integrate Artificial Intelligence

I will review some articles from the Egyptian Arbitration Act No. 27 of 1994, showing to what extent some of these articles can be updated to accommodate the use of artificial intelligence. This requires innovating legal definitions to keep abreast with this proposal, such as precise and comprehensive definitions of artificial intelligence, electronic arbitration and digital signatures as binding legal evidences in digital arbitration processes, to ensure clear understanding of these terms in

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arbitration context. It also requires specifying the scope of use, like the fields where artificial intelligence can be used, such as evidence analysis, predicting decisions and documents management. These articles are:

Article No.01 of the Egyptian Act No.27 of 1994 states that rulings of the act apply to every arbitration among parties of public or private law, whether arbitration is domestic or international. This article paves the way for using sophisticated technologies, including artificial intelligence through the following points:

Flexibility in procedures: article No.01 does not specify certain procedures for arbitration, which grants parties freedom to agree to use sophisticated technologies in arbitration management. Parties may agree to use artificial intelligence in evidence analysis or making recommendations.

compatibility with technological developments: since article No.01 covers all types of arbitration, it opens the way to adopt sophisticated technologies that could enhance efficiency and effectiveness of arbitration process. Artificial intelligence may be used to improve accuracy and speed of arbitral procedures.

Recognition of private agreements: article No.01 recognizes parties' agreements over arbitration procedures, which means that should parties agree to use artificial intelligence as part of arbitration process, this will be legally binding.

International application: since article No.01 covers international arbitration, it allows the use of artificial intelligence which might be more common in international contexts, boosting compatibility of arbitral procedures with global standards.

Article No.09 of the Egyptian Act No.27 of 1994 concerns jurisdiction to consider arbitration matters referred by law to the Egyptian judiciary. This article may accommodate artificial intelligence through the following points:

Specifying jurisdiction: artificial intelligence can help courts specify jurisdiction to consider arbitration matters rapidly and precisely, which contributes to expediting legal procedures.

Cases management: artificial intelligence may be used to manage the cases that concern arbitration, including tracking deadlines and making reminders to concerned parties.

Data analysis: artificial intelligence can analyze the data relating to arbitral cases and provide reports help judges make right decisions.

Making recommendations: artificial intelligence can make recommendations on appropriate legal procedures based on a comprehensive analysis of applied laws and regulations.

Article No.17 of the Egyptian Arbitration Act No.27 of 1994 concerns appointment of arbitrators and setting the lists from which arbitrators are selected. This article can accommodate the use of artificial intelligence through the following points:

Setting arbitrators' lists: artificial intelligence can be used to analyze arbitrators' data and specify the most appropriate ones based on certain criteria such as experience and major. This may help improve accuracy and speed of arbitrator's selection process.

Making recommendations: artificial intelligence can make recommendations on the appropriate arbitrators of each case based on analysis of the case-related data, ensuring selection of the most competent and appropriate arbitrators.

Data management: artificial intelligence can be used to periodically manage and update lists of arbitrators, ensuring that data is always up-to-date and accurate.

Performance analysis: artificial analysis can analyze former arbitrators' performance and provide reports that help make right decisions on appointment of arbitrators in the future.

Article No.19 of the Egyptian Arbitration Act No.27 of 1994 relates to procedures of recusing arbitrators. This article may accommodate the use of artificial intelligence through the following points:

Submitting recusal applications: artificial intelligence can be used to submit applications electronically, which makes it easier for parties to submit applications on time and in an organized matter.

Analyzing reason for recusal: artificial intelligence can analyze the reasons mentioned in the recusal applications and provide reports help arbitrators make right decisions on whether to accept or deny applications.

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Data management: artificial intelligence can be used to manage the data related to recusal applications, including tracking deadlines and providing reminders to concerned parties.

Making recommendations: artificial intelligence can make recommendations on the appropriate procedures based on a comprehensive analysis of applied laws and regulations.

Article 26 of the Egyptian Arbitration Act No.27 of 1994 concerns treating the two parties of arbitration equally. This article may accommodate the use of artificial intelligence through the following points:

Evidence analysis: artificial intelligence can analyze the evidences presented during hearings and provide aiding reports to arbitrators, which contributes to making right decisions.

Documents management: artificial intelligence can be used to manage the documents related to the case, including evidences and correspondences, which makes them easier to access when needed.

Making recommendations: artificial intelligence can provide recommendations to arbitrators based on the data entered and analyses, which contributes to boosting accuracy and speed of ruling-issuance.

Article 33 of the Egyptian Arbitration Act No. 27 of 1994 concerns Advocacy of arbitration. This article can accommodate artificial intelligence through the following points:

Hearings management: artificial intelligence can organize schedules of hearings and send reminders to involved parties, which contributes to improve time management efficiently.

Recording hearing minutes: artificial intelligence can record hearing minutes accurately and quickly, saving much time and effort for arbitrators and parties.

Evidence analysis: artificial intelligence can analyze evidences presented during hearings and provide aiding reports to arbitrators, which contributes to make right decisions.

Documents management: artificial intelligence can be used to manage the documents related to the case, including evidences and correspondences, which makes them easier to access when needed.

Making recommendations: artificial intelligence can provide recommendations to arbitrators based on the data entered and analyses, which contributes to boosting accuracy and speed of ruling-issuance.

Article 43 of the Egyptian Act No. 27 of 1994 relates to procedures of issuing arbitration rulings. This article could accommodate the use of artificial intelligence through the following points:

Drafting rulings: artificial intelligence can help arbitrators draft rulings through providing drafts based on the data entered and analyses. This could save much time and effort for arbitrators.

Evidence analysis: artificial intelligence could be used to analyze the evidences presented during arbitration hearings, which helps provide accurate and comprehensive reports that support decision-making process.

Verifying compliance: artificial intelligence can revise rulings to make sure they are compatible with applied laws and regulations, reducing the likelihood of legal errors.

Document management: artificial intelligence can be used to manage case-related documents, including evidences and analyses, which makes them easier to access when needed.

Article 47 of the Egyptian Arbitration Act No. 27 of 1994 relates to implementation of arbitration rulings. This article could accommodate use of artificial intelligence through the following points:

Documents management: artificial intelligence can manage documents relate to arbitration rulings, including saving and organizing them, making them easier to access when needed.

Analyzing compliance: artificial intelligence can be used to analyze the extent to which rulings comply with applied laws and regulations, reducing likelihood of legal errors.

Tracking implementation: artificial intelligence can track implementation of rulings and provide periodic reports on the extent of its implementation progress, which helps ensure full compliance.

Making recommendations: artificial intelligence can make recommendations on the procedures required to ensure implementation of rulings effectively and quickly.

9. Conclusion and Recommendations

Artificial intelligence and digital arbitration represent a qualitative leap in the field of disputes resettlement, as they boost efficiency and reduce costs. Under guidelines of Silicon Valley Arbitration and Mediation Center (SVAMC, 2023), using artificial intelligence in digital arbitration could lead to essential improvements in efficiency, transparency and justice. One of the significant legal outcomes is

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the possibility to boost accuracy of arbitral decisions through effective data analysis and evidence assessment. Artificial intelligence can also contribute to reduce the cost and time spent in procedures, which makes arbitration easier and more effective for parties involved.

However, legal and ethical challenges concern data protection, privacy, and ensuring impartiality of the decisions issued by smart systems remain. So, guidelines recommend setting a strict legal and regulatory framework to ensure accountable and ethical use of these technologies in arbitration. This requires cooperation between lawmakers and experts to ensure balance between innovation and rights protection, which makes artificial intelligence and effective tool should it be used in a wise and accountable way. This analytical study also reviewed how to use artificial intelligence to boost effectiveness of e-arbitration, with a focus on the guiding principles set by SVAMC to ensure ethical and effective use of that technology. Through analyzing study cases, legal references and EU guidelines, benefits and challenges associated with AI implementation in this field were highlighted, providing practical recommendations to improve arbitral performance and ensure compliance with legal and ethical standards. The study also included proposals to improve the Egyptian Arbitration Act and achieve justice efficiently and effectively.

Given significance of the research theme, mentioned below are recommendations concerning future researches and the next steps to develop a deeper understanding of use of artificial intelligence in boosting effectiveness of e-arbitration, the following points may be considered:

The necessity to understand how to use artificial intelligence in arbitration.

The need for a legal framework that regulates the use of artificial intelligence, while focusing on safety and equity, and there is nothing prevent, as a beginning, adapting existing laws to accommodate those new technologies, as having laws rule these matters is better than leaving them unregulated.

Boosting cooperation to develop unified international standards.

Understanding the challenges associated with digital evidences, legal liability and privacy. There might be a need for more researches to understand how artificial intelligence could affect legal system, including the cases relate to digital evidences, legal liability, privacy and safety.

Copyright:

References

[1] Abdullah, (2024), et al, administrative decisions issued by artificial intelligence *Qu.edu.qa.* http://hdl.handle.net/10576/50579

[2] *ADR.ORG. (2023). Artificial Intelligence: A New Horizon in Arbitration and Mediation. Retrieved from https://www.adr.org/blog/AI-A-New-Horizon-in-Arbitration-and-Mediation*

[3] AI in International Arbitration (November 26, 2023) https://www.international-arbitration-attorney.com/ar/ai-in-international-arbitration/

[4] Ali, K. (2022). *AI Legal Sides.* JiL.Center. Retrieved from https://jilrc.com/archives/15801

[5] Atsmon, Y. (2023, January 27). *AI Role in Strategy Development.* McKinsey & Company. Retrieved from https://www.mckinsey.com/featured-insights/highlights-in-arabic/artificial-intelligence-in-strategy-arabic/ar

[6] Benton, G. L. (2015). *Advancing ADR for tech disputes.* Silicon Valley Arbitration & Mediation Center. Retrieved from https://www.svamc.org/wp-content/uploads/2015/11/Advancing-ADR-for-Tech-Disputes.pdf

[7] Bi, L., & Sokharcoviski, A. (2024, September 10). *Realism and creativity: Wings of AI Development.* McKinsey & Company. Retrieved from https://www.mckinsey.com/featured-insights/highlights-in-arabic/the-key-to-accelerating-ai-development-pragmatism-plus-imagination-arabic/ar

[8] Burn, G., Morel de Westgaver, C., & Clark, V. (2023). *Annual Arbitration Survey 2023: The Rise of Machine Learning.* BCLP Law. Retrieved from https://www.bclplaw.com/a/web/tUW2SW6fjHrpXVrA7AfWkS/102932-arbitration-survey-2023-report_v10.pdf

[9] Chauhan, A. S. (2020, September 26). *Future of AI in Arbitration: The Fine Line Between Fiction and Reality.* Kluwer Arbitration Blog. https://arbitrationblog.kluwerarbitration.com/2020/09/26/future-of-ai-in-arbitration-the-fine-line-between-fiction-and-reality/

[10] Choi, M., Hall, B., Mayhew, H., & Singla, A. (2023, January 4). *AI Mode- in 2022 with a revision for five years.* McKinsey & Company. https://www.mckinsey.com/featured-insights/highlights-in-arabic/the-state-of-ai-in-2022-and-a-half-decade-in-review-arabic/ar

[11] Court of King's Bench of Manitoba. (2023). *Practice Direction: Use of Artificial Intelligence in Court Submissions.*

Retrieved from https://www.manitobacourts.mb.ca/site/assets/files/2045/practice_direction_-_use_of_artificial_intelligence_in_court_submissions.pdf

[12] Egyptian Arbitration Law No. 27 of 1994. (1994). Retrieved from https://lawyer-egy.com/eg-law-codes/kanon-eltahkem-elmasri-27-sanat1994.html

[13] ERTAQY.COM Website Editor. (2024). EU Council approves a pioneering law to regulate artificial intelligence. Iamaeg.net. https://iamaeg.net/ar/media-center/arbitration/un-council-approves-a-pioneering-law-to-regulate-ai

[14] EUR-Lex - 52019DC0168 - EN - EUR-Lex. (2019). Europa.eu. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0168

[15] European Commission. (2021, April 21). *Proposal for a Regulation of the European Parliament and of the Council laying down harmonised rules on Artificial Intelligence (Artificial Intelligence Act) and amending certain Union legislative acts*. Retrieved from https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021PC0206

[16] *European Parliamentary Research Service. (2021). BRIEFING EU Legislation in Progress. Retrieved from https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/698792/EPRS_BRI%282021%29698792_EN.pdf*

[17] European Union. (2018). General data protection regulation (GDPR). General Data Protection Regulation (GDPR). https://gdpr-info.eu/

[18] Gicquello, M. (2020). Artificial Intelligence in International Arbitration. *Oxford University Press EBooks*, 591–616. https://doi.org/10.1093/law/9780198796190.003.0025

[19] Gulyamov, S., & Bakhramova, M. (2022). Digitalization of international arbitration and dispute resolution by artificial intelligence. *World Bulletin of Management and Law*, *9*, 79-85. https://scholar.googleusercontent.com/scholar?q=cache:-Hj6D8QdYgQJ:scholar.google.com/+EU+legal+framework+for+digital+arbitration+and+AI+technology&hl=en&as_sdt=0,5

[20] Houssein, E. H., Abohashima, Z., Elhoseny, M., & Mohamed, W. M. (2022). Machine learning in the quantum realm: The state-of-the-art, challenges, and future vision. *Expert Systems with Applications*, *194*, 116512. https://doi.org/10.1016/j.eswa.2022.116512

[21] IEEE. (2023). Ethical issues related to data privacy and security: Why we must balance ethical and legal requirements in the connected world. Retrieved from https://digitalprivacy.ieee.org/publications/topics/ethical-issues-related-to-data-privacy-and-security-why-we-must-balance-ethical-and-legal-requirements-in-the-connected-world

[22] Implementation of Artificial Intelligence in Arbitration. (n.d.). *Implementation of Artificial Intelligence in Arbitration*. Retrieved from https://www.duo.uio.no/bitstream/handle/10852/92206/ICTLTHESIS—Master-Thesis.pdf?sequence=1&isAllowed=y

[23] Karoun, Siham. (2020). The Commitment of the Electronic Supplier to Protect the Consumer's Personal Data in Law No. 18-05 Related to Electronic Commerce. Journal of Academic Researcher Studies, 7(2), 1013–1031. https://www.asjp.cerist.dz/en/article/124442

[24] Kluwer Arbitration Blog. (2024, June 27). *JAMS Publishes Artificial Intelligence Arbitration Rules, but Are They Fit for Purpose?*. Retrieved from https://arbitrationblog.kluwerarbitration.com/2024/06/27/jams-publishes-artificial-intelligence-arbitration-rules-but-are-they-fit-for-purpose/

[25] Łągiewska, M. (2024). New technologies in international arbitration: A game-changer in dispute resolution?. *International Journal for the Semiotics of Law*, 37, 851–864. https://doi.org/10.1007/s11196-023-10070-7

[26] Law No. 27 of 1994 on Arbitration in Civil and Commercial Matters, Egypt, WIPO Lex. (2024). Wipo.int. https://www.wipo.int/wipolex/en/legislation/details/8334

[27] Masaar. (2024, September 9). *Technology and law community*. Masaar. https://masaar.net/ar/

[28] My.gov.sa. (2023). *Data and cyber security systems and legislations*. Retrieved from https://www.my.gov.sa/wps/portal/snp/aboutksa/digitaltransformation/dtcontentdetails/legal-and-regulatory-framework/2-2

[29] OHCHR. (n.d.). *A/77/196: Principles underpinning privacy and the protection of personal data*. Retrieved from https://www.ohchr.org/en/documents/thematic-reports/a77196-principles-underpinning-privacy-and-protection-personal-data

[30] Plaza, A. (n.d.). S H A R K A W Y & S A R H A N L A W F I R M. Retrieved October 7, 2024, from https://www.sharkawylaw.com/wp-content/uploads/2021/05/Data-Protection-Law-Translation-dual-text.pdf

[31] Riepin, P. (2024). Can Artificial Intelligence and Modern Technologies Address the Common Issues of Consumer Online Dispute Resolution in the EU?. *Teisė*, *130*, 111-128.

[32] Sadagopan S. (2024, September 12). Council Post: Balancing AI And Human Expertise: The Key To Impactful Digital Transformation. *Forbes*. https://www.forbes.com/councils/forbestechcouncil/2024/09/12/balancing-ai-and-human-expertise-the-key-to-impactful-digital-transformation/#:~:text=Putting%20Humans%20In%20The%20Loop&text=AI%20excels%20at%20processing%20data

[33] Sahota, N. (2024, February 12). *AI in International Arbitration: Reforming Justice*. Neil Sahota. https://www.neilsahota.com/ai-in-international-arbitration-reforming-justice/

[34] Sarah. (2023, May 22). *Artificial intelligence: achieving balance between innovation and human rights* Masaar. https://masaar.net/ar/%D8%A7%D9%84%D8%B0%D9%83%D8%A7%D8%A1-%D8%A7%D9%84%D8%A7%D8%B5%D8%B7%D9%86%D8%A7%D8%B9%D9%8A-

%D8%AA%D8%AD%D9%82%D9%8A%D9%82-%D8%A7%D9%84%D8%AA%D9%88%D8%A7%D8%B2%D9%86-%D8%A8%D9%8A%D9%86-%D8%A7%D9%84/?nowprocket=1

[35] Saudi Center for Commercial Arbitration. (2023). *Arbitration Rules*. Retrieved from https://sadr.org/ADRServices-arbitration-arbitration-rules

[36] Saudi Data and Artificial Intelligence Authority. (n.d.). *Regulations and Policies*. Retrieved from https://sdaia.gov.sa/ar/SDAIA/about/Pages/RegulationsAndPolicies.aspx

[37] Silicon Valley Arbitration & Mediation Center. (2023). *SVAMC provides educational programs and resources to solve disputes over technology*. Retrieved from https://www.svamc.org

[38] Singh, S. K. (2021, January 19). *Artificial Intelligence In Arbitration: Revolutionary Or Impractical*. Mondaq.com; AKS Partners. Retrieved from https://www.mondaq.com/india/arbitration-dispute-resolution/1027248/artificial-intelligence-in-arbitration-revolutionary-or-impractical

[39] Springer. (2021). *Data privacy and security: Some legal and ethical challenges*. Retrieved from https://link.springer.com/chapter/10.1007/978-3-030-72120-6_4

[40] SVAMC. (2024, April 30). *SVAMC Publishes Guidelines on the Use of Artificial Intelligence in Arbitration*. Silicon Valley Arbitration & Mediation Center. Retrieved from https://svamc.org/svamc-publishes-guidelines-on-the-use-of-artificial-intelligence-in-arbitration/

[41] Tarmigan, A. L. New Technologies are Shaping Arbitral Proceedings. In *Recent Debates in Cyberspace and Artificial Intelligence Law* (pp. 73-80). ADJURIS–International Academic Publisher

[42] UNESCO. (2023). *A special interview to learn how to use artificial intelligence in a fair, comprehensive and transparent way*. Retrieved from https://www.unesco.org/ar/articles/hwar-khas-lltrf-ly-kyfyt-astkhdam-aldhka-alastnay-fy-mjal-altlym-ly-nhw-mnsf-wshaml-wshfaf

[43] UNESCO. (2023). *Artificial Intelligence and the Rule of Law: Capacity Building for Judicial Systems*. Retrieved from https://www.unesco.org/ar/artificial-intelligence/rule-law/mooc-judges

[44] UNESCO's Input in reply to the OHCHR report on the Human Rights Council Resolution 47/23 entitled "New and emerging digital technologies and human rights" UNESCO Recommendation on the Ethics of Artificial Intelligence. (n.d.). https://www.ohchr.org/sites/default/files/2022-03/UNESCO.pdf

[45] Yıldırım, A. C. (2024). The use of technology in case management in international investment arbitration: a realistic approach. Arbitration International, aiae010.

[46] Zekos, G.I. (2022). AI in Arbitration and Courts. In: Advanced Artificial Intelligence and Robo-Justice. Springer, Cham. https://doi.org/10.1007/978-3-030-98206-5_10

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