

Understanding Technology-Supported Dispute Resolution

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Abstract: In the digital economy, the prospect of new risks and disputes arising from new digital technology will lead to the development of new forms of dispute resolution. Digital technology inevitably leads to unforeseen risks and more complex disputes; however, a flexible dispute resolution mechanism has not yet been established. As well as driving new forms of dispute resolution, AI is an enabler for supporting of dispute resolution. Using digital means in traditional dispute resolution will provide a new way of thinking. Data analytics will play an important role in online dispute resolution. Following a systematic literature review (SLR), we analyze in this study the research on the use of technology for dispute resolution considering key aspects such as the resolution of technology-supported disputes, online platforms, the role of technology, and adjudication. This paper aims to identify the current standing of digital dispute resolution within the literature, while also identifying the major field study and applications.

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Keywords: Digital, Dispute Resolution, Online, Technology, Adjudication

1.0 Background

The digital economy has witnessed significant growth in recent years, with technology playing a pivotal role in transforming various aspects of business and society. From the perspective of the business world and the economy, it has become common to characterize digital technology as “disruptive”. It is believed that digital technology will up-end traditional business models (Wagner & Eidenmueller, 2021).

Technology's reach is broad. There is already general awareness of a range of conflicts linked to cyberspace, such as hacking, identity theft, and intellectual property cases. Laws related to the use and control of information— privacy or free expression, for example— are often in the news (katsh & Rabinovich-Einy, 2017).

In the period of transition, innovation, and growth, dispute resolution— just like every other societal institution— needs to come to terms with machines that use information in extraordinary ways (katsh & Rabinovich-Einy, 2017). As digital applications proliferate and technology utilization increases, the need for effective and efficient dispute resolution mechanisms becomes paramount.

The time has therefore come to think about how digital transformation will affect the resolution of disputes and the enforcement of claims. Using AI to evaluate facts, weigh arguments, and make decisions will likely trigger a series of risks. To date, considerable effort and thought have been devoted to analyzing the legal aspects of the digital economy in various sectors and developing preliminary normative frameworks to evaluate this shift.

One area is where technology-driven change is likely to trigger more complex litigation. Digital tools and the online environment generate both more disputes and disputes of a type that we never could have had in the pre-digital environment (Guerra et al., 2020).

Another area is that digital technology and artificial intelligence will enhance the advantages of ADR in litigation, establishing a new framework for “online dispute resolution” of consumer disputes (Gerhard & Horst, 2021).

2.0 SLR Methodology

In this research, the systematic literature review (SLR) approach was followed (Abou & Saade, 2019). We identify eight primary steps that will lead us to a final set of publications to be used for analysis (Xiao & Watson, 2019):

Step 1: Identify the keywords

By searching “digital dispute resolution” on Google Scholar, Scopus, and Web of Science, some keywords and related synonyms were identified: dispute settlement, digital trade agreements, e-commerce governance, big data, artificial intelligence, alternative dispute resolution, online dispute resolution, digital technology, digital justice, digital age, and smart dispute resolution.

Step 2: Develop a review protocol

Summarizing and analyzing the frequencies of the above keywords and synonyms, five search keywords were finally determined: Digital, Dispute, Resolution, Online, Technology (Sela, 2017; Want & Yuan, 2022). For example, by combining these five keywords, the following search strategies were further clarified:

Step 3: Running the protocol

The next step was to try to implement strategies using different keyword combinations in the Web of Science database and record the retrieval results of each strategy. The final strategy was to choose to include these keywords in the title.

Step 4: Screening for inclusion/exclusion

Next, inclusion and exclusion criteria were established according to the study area, and the results were refined with additional restrictions (Xiao & Watson, 2019). For the selected search strategy, the conditions were filtered to narrow the “year of publication” to “2017-2023”, since dispute resolution in the digital economy is an emerging issue.

Step 5: Reviewing title and abstract

Subsequently, each article was further screened for inclusion. Often, titles can reveal whether a study fits the review criteria mentioned in the review protocol or not. Abstracts and research questions can help exclude articles further (Kraus et al., 2020).

Step 6: Reviewing entire articles

A fine-grained quality assessment was then performed based on the full-text review, and papers that did not meet the quality criteria were excluded. Throughout this process, a list of excluded papers should be maintained for record-keeping, reproducibility, and cross-checking.

Step 7: Extracting data

In this step, data was extracted systematically. Papers were organized according to the research questions and the nature of the papers analyzed. It is necessary to use tables for data extraction and further synthesis.

Step 8: Analyze and synthesize data

Data synthesis is one of the most important steps in SLR. The combination of charts, tables, and textual descriptions would more intuitively reflect the research results. In addition to analyzing the research results, the research methods involved in different studies are also worthy of comparison and analysis.

3.0 Development of Research Questions

Technology impacts every area of business in every sector. It is integral to the management and operation of a company and its systems, processes, and data, delivering products and services, engaging with customers, and creating new business models. The emergence of technologies including blockchain, big data, artificial intelligence (AI), and quantum computing has opened further opportunities (Wing et al., 2021). However, this increased reliance on technology and the novel legal questions raised by new technologies can give rise to complex disputes across multiple jurisdictions.

On one hand, disputes involving technology can lead to startups losing their initial capital or competitive advantages, necessitating swift resolution mechanisms. On the other hand, as new and evolving technologies are being pioneered across a range of sectors, they continue to raise novel questions concerning the conduct of product liability claims (Waye et al., 2021). Failure to adequately address the risks and responsibilities arising from technology use gives

rise to contractual disputes with supplier contracts, investment agreements, and collaboration documents. Based on the above we posit the following research question:

RQ1: What are the characteristics of technology-related disputes and what new requirements have been put forward on the rules of dispute resolution?

Some consumer-facing technology platforms already use embedded online dispute resolution processes for disputes arising out of C2C and B2C transactions (Yang, 2022), enabling a high volume of low-value disputes to be resolved at a low cost. Online platforms are a fundamental aspect of the digital economy, and they must ensure fair and just dispute-resolution processes to maximize their advantages (Yeoh, 2018). Concerns have been raised about automated decisions on these platforms, which may lack reasoning and judicial review (Yu & Zhang, 2022; Zelenznikow, 2020), especially in cases of automatic execution. Additionally, participants in the decision-making process using algorithms have prompted calls for ethical standards and best practices to be established. As such, we formulate the second research question as follows:

RQ2: Could the online dispute resolution platform resolve technology disputes more efficiently?

4.0 Bibliometric Analysis

Figures 1 and 2 show the number of publications resulting from the SLR for different years and types, respectively. More than 50% of the documents were published in 2022, 2021, and 2020, and more than 25% of the documents were published in 2019 and 2018. Only a small part of the literature was published before 2017. This shows that most of the research on digital dispute resolution has been concentrated in the last five years.

From the distribution of document types in figure 2, most of the document types are articles, patents, and meetings. This shows that researchers are increasingly interested in dispute resolution issues involved in the digital economy and are committed to discovering and solving problems in this field.

Figures 3 and 4 show the research areas and the titles of publications/sources, respectively. More than 40% of the literature is in the field of computer science and government law, and more than 20% is concentrated in the fields of engineering and business economics. In addition, it also involves many fields such as international relations, social sciences and other topics, telecommunications, public administration, sociology, behavioral sciences, development studies, environmental sciences ecology, and so on. This shows that researchers on the digital economy and dispute settlement issue have diverse backgrounds. Some literature is based on legal aspects, while other literature is based on technical aspects.

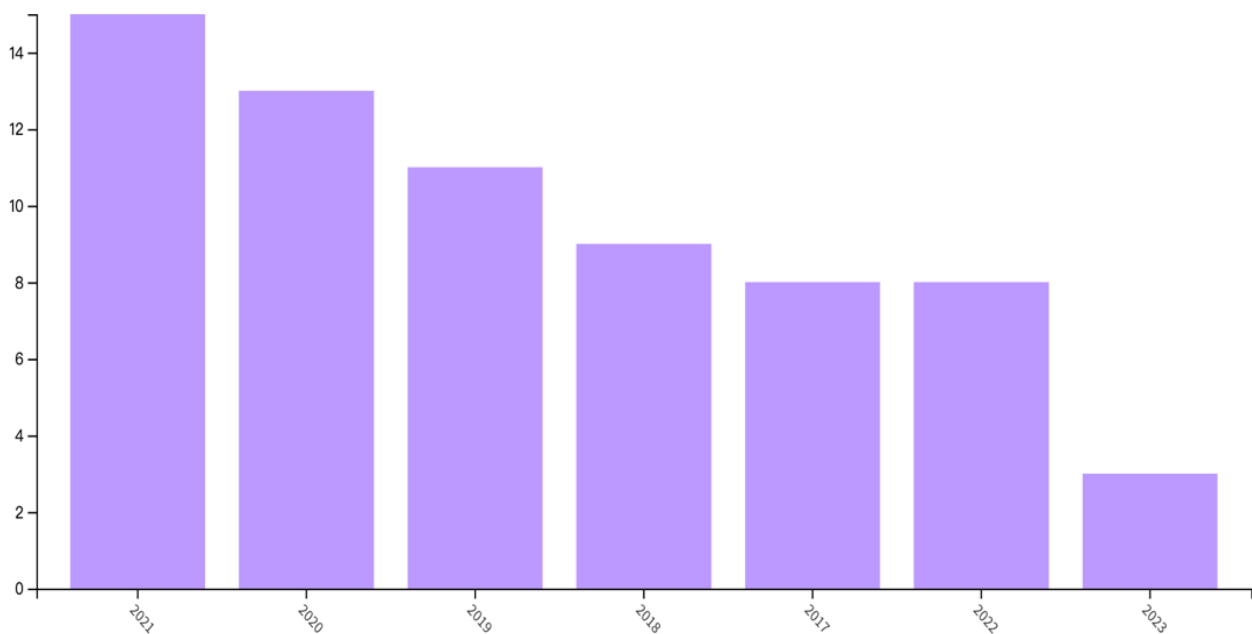


Figure 1. Publication Years.

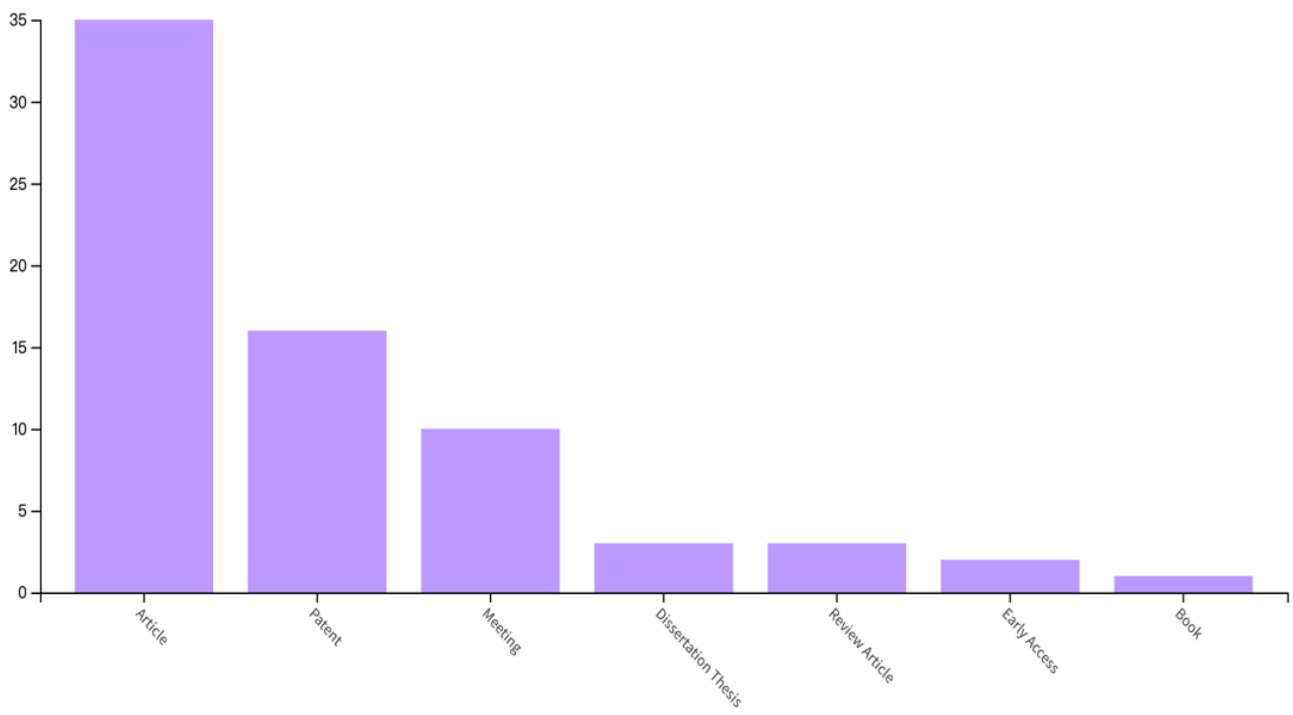


Figure 2. Document Types.

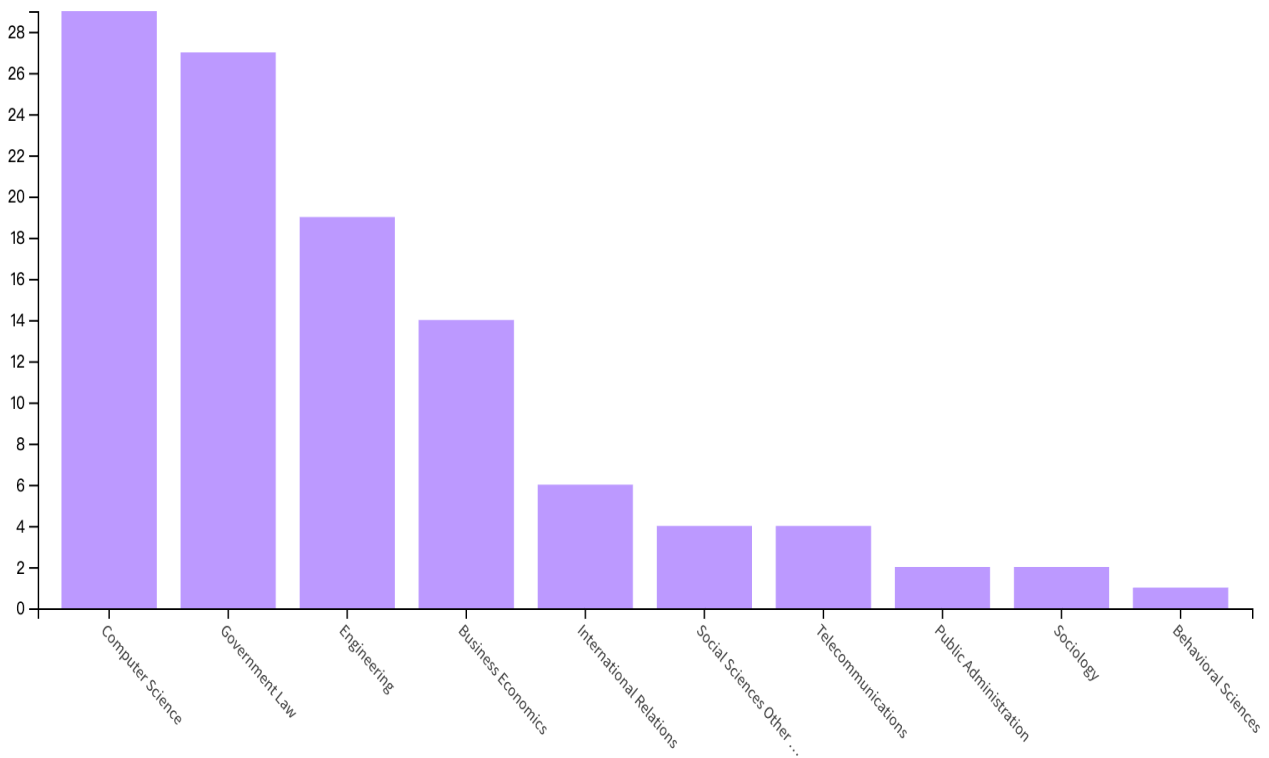


Figure 3. Research Areas.

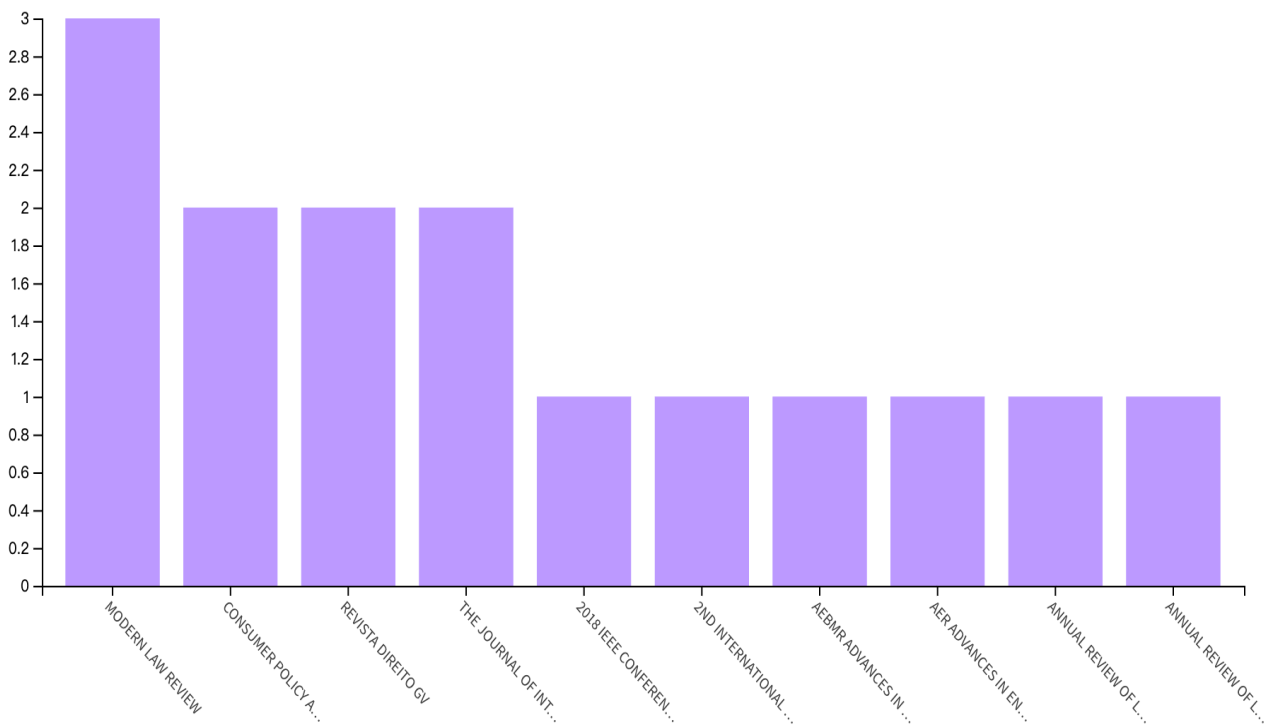


Figure 4. Publication/Source Titles.

5.0 Analysis of Research Questions

The paradigm for dispute resolution is shifting with the emergence of digitization, which has widened the reach of dispute resolution to various sectors and actors. There has been an emergence of digital applications and increased use of technology leading to more efficiency. With dispute resolution services becoming more accessible, there have also been calls for greater accountability and legitimacy, including about the impact on the environment.

RQ1: What challenges does digital technology bring to dispute resolution and how to deal with them?

The technology is applied to all stages of dispute resolution, in preparation for and in managing the proceedings. Innovative solutions to engage different means of dispute settlement through escalation clauses and to predict the outcome of the dispute are being utilized. Such developments have raised certain challenges, which may be inherent in technology and resulting from uneven access to technology. Consequently, the benefits of using technology should be maximized while addressing any negative impact of such use.

The potential digital divide means the gap between those who have access to technology and those who do not. The stocktaking project should take this into account not only from the perspective that the infrastructure might be lacking in some jurisdictions but also from the viewpoint that not all parties have access to the same level of technology. Along the same lines, the use of technology entails costs, which could be burdensome for small and medium-sized enterprises and those in less-developed economies. On the other hand, the benefits of increased accessibility and cost savings (for example, for travel) would generally outweigh the cost of using technology.

Regarding building the capacity of all those involved about the technology that could be utilized in the dispute-resolution process. The arbitrators and all those involved would need to be trained to take full advantage of the recent developments, for example, when predicting the outcome, finding a basis for settlement, and ensuring coherent awards.

Developments in digital disputes have required arbitral institutions to adapt their services. Some arbitral institutions already have experience adopting technologies for filing, appointing arbitrators, managing cases, hearings, exchanging documents including digital evidence, and making awards. It is noted that the increased role of appointing authorities in overseeing the use of technological means. Several arbitral institutions have promulgated guidance material to facilitate the use of technology by the parties and the arbitral tribunal. For example, the ICC Checklist for a

Protocol on Virtual Hearings and Suggested Clauses for Cyber-Protocols and Procedural Orders Dealing with the Organization of Virtual Hearings and SIAC Guides – Taking Your Arbitration Remote.

RQ2: What are the challenges of online dispute resolution?

With the development of technology, online dispute resolution has made cross-border dispute resolution more convenient, cost-effective, and efficient. But it still involves facing the following challenges:

1. Building the Inclusive Global Legal Innovation Platform on Online Dispute Resolution needs to consider maintaining the integrity of the ODR platforms as well as due process and procedural fairness of the proceedings thereon. A harmonized regulatory framework could be developed to ensure quality control and to address other relevant issues like the protection of data and confidentiality.
2. The scope of services to be provided by ODR platforms will have an impact on the legal framework. Disputes could be resolved entirely on an ODR platform or some parts thereof. In that context, it is anticipated that ODR platforms would not be limited to dispute resolution in the more conventional sense, but also actively utilized in dispute prevention and avoidance. Similarly, it is noted that the potential of ODR platforms in assisting parties to reach an amicable settlement, possibly by providing them with an analysis of similar disputes and further guidance through sample templates.
3. Issues surrounding the use of AI in the different stages of the dispute, AI can be more helpful in the earlier stages of the dispute (for example, to support negotiations and to suggest solutions), while caution is warranted when AI is involved in rendering decisions based on a set algorithm. In that context, the need to ensure impartiality, possibly through the review of the algorithms by a third party or of the decision by humans, was underscored.
4. Regarding the implementation of the enforcement of the outcome of ODR, it is necessary to consider whether the Convention on the Recognition and Enforcement of Foreign Arbitral Awards (New York, 1958) (“New York Convention”) and the United Nations Convention on International Settlement Agreements Resulting from Mediation (New York, 2018) (“Singapore Convention on Mediation”) could provide the basis for cross-border enforcement. Meanwhile, the increased use of automated solutions through so-called “smart contracts” deployed on distributed ledger systems could facilitate the enforcement of decisions rendered on an ODR platform.

6.0 Conclusions

Dispute resolution in the digital economy is undergoing significant transformation due to the integration of technology and the proliferation of online platforms. While technology offers increased efficiency, maintaining fairness and equity remains essential. Innovations like automated decision-making, online platforms, arbitration, and tailored dispute-resolution mechanisms are reshaping the landscape. However, these developments also present challenges related to accountability, accessibility, and the potential for a digital divide.

In terms of developments of technology-related disputes, with the increasing use of technology in alternative dispute resolution, it should be considered whether there has been a paradigm shift. It also focuses on legal issues related to dealing with any negative effects of the use of technology, and how technology can improve the efficiency of dispute resolution procedures while maintaining their integrity. Effective dispute resolution in the digital age necessitates a careful balance between technological advancement and the preservation of fundamental principles of justice and fairness.

In terms of online dispute resolution, developments in the digital economy have generated an explosion of online platforms for trade and dispute resolution, which the pandemic has further accelerated. Several legal issues have been identified but the landscape is also constantly changing. Therefore, work in this area might begin with a narrow scope, while the results of such work could have a broader application. The wide range and different degrees of technology embodied in these platforms should also be considered. At the same time, any legal standard to be developed should be based on the principle of technological neutrality to ensure further innovations. Lastly, due account should be taken of the so-called digital divide not only among States but also among businesses in utilizing technology to access online platforms.

Concerning digital dispute resolution, the work should not aim to develop a new set of rules but rather to prepare model clauses, which disputing parties can easily refer to or include in their dispute resolution clause. It is also noted that arbitration was increasingly being utilized due to the flexibility of the process, the possibility to introduce confidentiality measures, the decisions being rendered by arbitrators with technical expertise, and the cross-border enforcement mechanism provided by the New York Convention. In the future, involved issues in technology are increasing in

number and there is a need to examine how the existing legal frameworks for dispute resolution can be used and possibly adapted to resolve such disputes.

Concerning adjudication, it promotes the resolution of disputes within short time frames by promoting simplified mechanisms, involving third parties with relevant expertise, and making awards enforceable across borders. The future research could be based on building on an analysis of whether it would be desirable to utilize adjudication in a cross-border context and other industries (including the technology industry) and an assessment of whether it would be feasible to harmonize the applicable legal instruments, including for enforcement. In addition, it could involve the preparation of model clauses on the appointment and role of experts/neutrals, short time frames, and confidentiality, which parties could use for disputes that require a swift resolution.

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