

Adopting Digital Mediation Systems for Patent Dispute Resolution: Lessons from Global Practices for Indonesia's Legal Framework

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ABSTRACT

Patent dispute resolution in Indonesia is crucial for protecting intellectual property rights and fostering innovation. This study employs a normative juridical approach to analyze Indonesia's legal framework for patent dispute resolution, focusing on Law No. 13/2016, Law No. 65/2024, and Perma No. 1/2016. A comparative legal analysis is conducted to examine digital mediation systems in the United States, the European Union, Japan, and Singapore. Challenges persist due to the lack of an institutionalized digital mediation system, leading to prolonged litigation, high legal costs, and judicial inefficiencies. This study analyzes global best practices in digital mediation from jurisdictions such as the United States, European Union, Japan, and Singapore, identifying key regulatory and technological frameworks that enhance patent dispute resolution. This research examines Indonesia's existing legal landscape using a normative juridical and qualitative comparative approach, including Perma No. 1/2016 and Law No. 65/2024, to assess the feasibility of adopting digital mediation. Findings suggest that integrating a structured digital mediation framework can significantly improve legal certainty, reduce litigation burdens, and accelerate dispute resolution.

Keywords: Digital Mediation, Patent Dispute Resolution, Legal Framework, Intellectual Property, Indonesia.

INTRODUCTION

Technological innovation and intellectual property are the main pillars of global economic growth in the rapidly developing digital era. This progress is also accompanied by an increase in patent disputes that often involve various parties from various jurisdictions. Slow and complex patent dispute resolution can hinder innovation, reduce incentives for inventors, and create legal uncertainty for industry players (Emvalomenos, 2021; Saputra et al., 2024a). The conventional dispute resolution system that still relies on the litigation process in court often takes a long time, is expensive, and has complicated procedures (Loon, 2023). The litigation approach tends to be oriented towards competition and victory, so it does not always produce solutions that benefit both parties, an alternative mechanism is needed that is more efficient and oriented towards mutually beneficial solutions, one of which is through digital mediation (Kozhokar & Rusakova, 2023; Wiljer et al., 2020).

Indonesia which is trying to strengthen the innovation and intellectual property ecosystem, needs to consider implementing digital mediation as part of legal reform in resolving patent disputes. With the increasing number of patent applications in Indonesia and the increasing number of intellectual property dispute cases, a faster and more efficient system is an urgent need. The digital transformation in various sectors that is being promoted by the Indonesian government must be accompanied by legal system reform to be more in line with technological developments and industrial needs (Broński, 2017; Sadowski, 2016). Adopting best practices from countries that have successfully implemented this system will provide a strong foundation for Indonesia to build a more adaptive, competitive legal framework that supports the growth of innovation-based industries, digital mediation can be a strategic instrument in realizing a faster, fairer, and more interest-oriented patent dispute resolution system with clear regulations and adequate digital infrastructure (Fach Gómez, 2019; Menkel-Meadow, 2015). Consider the following data:

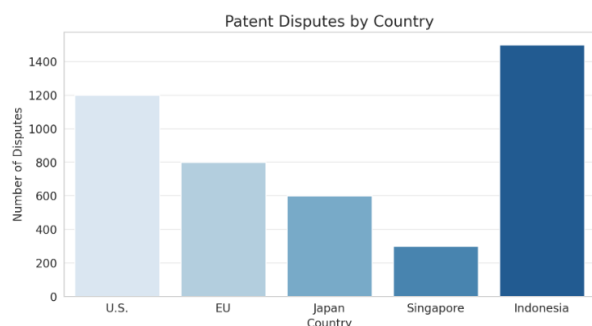


Figure 1. Patent Disputes by Country

Source: data proceed

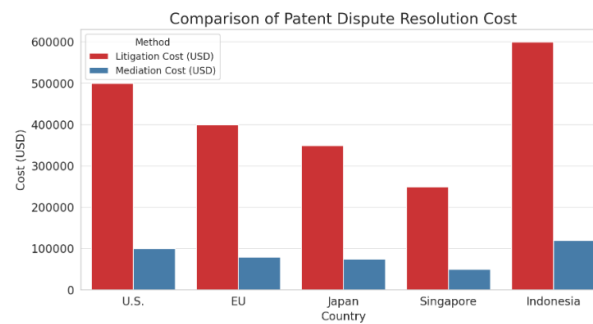


Figure 2. Comparison of Patent Disputes Resolution Cost

Source: data proceed

Indonesia has the highest number of patent disputes compared to other countries, indicating a pressing need for more efficient resolution solutions. The U.S. also has a high number of patent disputes, which is driving the adoption of digital mediation systems to reduce the burden on the courts. Litigation costs significantly more than digital mediation in all countries. Singapore shows a significant difference in costs between litigation and digital mediation, indicating the effectiveness of adopting this system in reducing costs. Indonesia has the highest litigation costs, indicating that implementing digital mediation can be a more economical solution.

Patent disputes play a crucial role in protecting intellectual property (IP), serving as key drivers of technological progress and ensuring fair market competition in a country's rapidly evolving economic landscape (Menell et al., 2019). In an era where innovation is central to national growth, safeguarding patents provides vital security for inventors and businesses, enabling them to maximize returns on their research and development (R&D) investments. Granting exclusive rights to inventions rewards creativity, sustains competitive advantages, and fosters a cycle of continuous technological progress and economic diversification (Nolan-Haley, 2018), a strong patent system helps prevent unauthorized use, reduce market distortions, and attract foreign direct investment (FDI) by reinforcing the exclusivity of innovative outputs (Gurgula et al., 2022).

As Indonesia strives to establish itself as a key player in technological innovation and industrial advancement, the protection of intellectual property rights becomes increasingly crucial. Patents serve as a fundamental pillar in sectors such as pharmaceuticals, information technology, and renewable energy, where substantial research and development (R&D) investments drive groundbreaking innovations. A robust patent system not only incentivizes innovation but also generates wider economic benefits by creating job opportunities, fostering collaboration across industries, and facilitating knowledge transfer. Enforcing patent rights in Indonesia remains a formidable challenge, diminishing the overall effectiveness of intellectual property protections and discouraging both local and international investments. The intricate legal and procedural landscape governing patent disputes frequently leads to prolonged litigation, excessive costs, and inconsistent judicial rulings, further complicating enforcement efforts (Loon, 2023).

Indonesia's legal framework for patent enforcement is primarily outlined in Law Number 13 of 2016, which was recently updated through amendments introduced under Law No. 65/2024 on Patents. These revisions aim to harmonize Indonesia's intellectual property regulations with global standards, particularly those established under the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (Menkel-Meadow, 2015). The revised law marks a significant step forward in the country's ambition to build an innovation-driven economy that supports long-term growth and global competitiveness. By establishing clearer guidelines for patent applications, examinations, oppositions, and enforcement, the law enhances legal predictability and bolsters investor confidence (Fach Gómez, 2019). Despite these advancements, persistent inefficiencies continue to obstruct the timely and effective resolution of patent disputes. One of the most critical challenges is the absence of mandatory mediation in the dispute resolution process, which contributes to court congestion and prolongs the adjudication of patent cases (Hariadi, 2023).

Mediation serves as a crucial mechanism in patent enforcement, providing an effective and efficient alternative to protracted litigation. By fostering dialogue and compromise, it helps reduce legal costs, accelerate dispute resolution,

and preserve business relationships (Cappelli et al., 2023). The absence of mandatory mediation in Indonesia forces disputing parties to navigate the judicial system directly, exacerbating case backlogs and prolonging litigation (Tjandrawinata et al., 2024). This rigid procedural framework places a disproportionate burden on small and medium enterprises (SMEs), which often lack the financial capacity to endure prolonged legal disputes. As a result, many SMEs encounter significant obstacles in safeguarding their intellectual property rights, limiting their ability to scale innovations and maintain competitiveness in the market (N. Alexander, 2022). Furthermore, drawn-out litigation fosters legal uncertainty, discouraging new market entrants and restricting the influx of venture capital into emerging technology sectors.

Beyond impeding economic growth, inefficiencies in Indonesia's patent dispute resolution system present a broader risk to the national innovation ecosystem (Cappelli et al., 2023; Hariadi, 2023). Delays in patent enforcement disrupt collaboration among academia, industry, and government institutions, hampering national research priorities and weakening Indonesia's standing in the global knowledge economy. The lack of timely dispute resolution also erodes investor confidence, discouraging multinational corporations from establishing research and development centers in Indonesia and prompting the relocation of valuable intellectual property to jurisdictions with more reliable legal frameworks (N. M. Alexander, 2024). Addressing these challenges necessitates a comprehensive reform of Indonesia's patent enforcement system, with mandatory mediation playing a central role in driving systemic improvements.

Integrating mandatory mediation into Indonesia's patent dispute resolution system presents a transformative solution to easing judicial congestion, lowering litigation costs, and promoting a culture of collaborative problem-solving (Santoso, 2022; Tjandrawinata et al., n.d.-b). Mediation encourages constructive dialogue by enabling disputing parties to develop customized solutions that align with their shared interests, bypassing the rigidity and adversarial nature of traditional courtroom proceedings (Sudirman & Disemadi, 2021). By institutionalizing mediation as a core component of its patent enforcement framework, Indonesia can align its intellectual property protection mechanisms with global best practices, reinforcing the credibility of its IP system and enhancing its appeal as an innovation hub (Zulkarnain & Zarzani, 2024). Moreover, mediation plays a vital role in preserving long-term business relationships, minimizing prolonged conflicts, and fostering cooperative partnerships that drive sustained technological progress (Widiatmika et al., 2023).

Digitalization in patent dispute resolution can speed up the negotiation process, reduce the burden on the courts, and provide flexibility for the parties to reach agreements more effectively. Digital mediation allows parties to participate in dispute resolution without having to be physically present, which is very relevant in the era of globalization and increasing cross-border business transactions. By using technologies such as online communication platforms, artificial intelligence, and blockchain for document transparency, digital mediation offers efficiency in the dispute resolution process. Several developed countries such as the United States, the European Union, Japan, and Singapore have adopted digital mediation systems in resolving intellectual property disputes, utilizing technology to increase accessibility, transparency, and effectiveness of the mediation process.

This study aims to analyze the digital mediation system that has been implemented in resolving patent disputes in various developed countries, such as the United States, the European Union, Japan, and Singapore. These countries have developed technology-based mediation mechanisms that not only increase efficiency in resolving disputes, but also reduce the burden on the courts and accelerate the negotiation process between the disputing parties. Through a comparative study of the legal approaches, policies, and implementation of technology in patent mediation in these countries, this study will explore the advantages, challenges, and impacts of the systems that have been implemented.

This study also seeks to identify how Indonesia can adopt or adapt a digital mediation system within the existing legal framework. The readiness of technological infrastructure, as well as the dynamics of the patent dispute resolution system in Indonesia by considering applicable regulations, this study will formulate policy recommendations that can be implemented to integrate digital mediation into the national legal system. This adaptation is expected to accelerate the patent dispute resolution process, reduce litigation costs, and create a more conducive legal environment for innovation and intellectual property protection in Indonesia.

LITERATURE REVIEW

Digital Mediation in Patent Dispute Resolution

Digital mediation is a dispute resolution process that uses technology as a primary tool to facilitate communication, negotiation, and decision-making between disputing parties. In the context of patent disputes, digital mediation offers a faster, more efficient, and more cost-effective alternative to conventional litigation. Key benefits of digital mediation include accelerated dispute resolution, reduced legal costs, increased accessibility for parties in different locations, and flexibility in conducting the mediation process without having to attend a physical face-to-face session. Digital mediation also helps create a more neutral and conducive environment, which often increases the likelihood of reaching an agreement between the disputing parties (N. Alexander, 2022; N. M. Alexander, 2024; Tjandrawinata et al., n.d.-a).

Technology plays a key role in digital mediation systems. Online mediation platforms integrate features such as video conferencing, artificial intelligence (AI) for document analysis and solution recommendations, blockchain to ensure data security and transparency, and cloud-based case management systems that enable real-time monitoring and management of documents. The use of these technologies not only increases the efficiency of the mediation process but also provides protection for sensitive data and information related to patents. AI has also been applied to assist mediators in identifying dispute resolution patterns based on historical data, thereby increasing accuracy and effectiveness in mediation in some countries (Santoso, 2022; Tjandrawinata et al., n.d.-b).

The success of digital mediation in resolving patent disputes is highly dependent on several key factors. First, the existence of regulations that support the implementation and legal recognition of the results of digital mediation is a crucial factor. Second, the readiness of the technological infrastructure, including the availability of a safe and reliable digital platform, will determine the smoothness of the mediation process. Third, the competence of the mediator in using technology and their understanding of the legal and technical aspects of patents greatly influences the success of the mediation. The level of trust and willingness of the parties to use digital mediation as an alternative to litigation is also an equally important determining factor. If these factors can be met, digital mediation has the potential to be an effective solution in handling patent disputes more efficiently and sustainably (Gromova et al., 2022; Guliyeva et al., 2021; Wang et al., 2024).

Comparative Analysis of Digital Mediation Systems in Selected Countries

The application of digital mediation systems in patent dispute resolution has developed in various countries with different approaches, reflecting variations in regulations, policies, and technological readiness. In the United States (U.S.), digital mediation systems have been integrated into patent dispute resolution mechanisms, with support from the United States Patent and Trademark Office (USPTO). Digital mediation in the U.S. is regulated by the Alternative Dispute Resolution (ADR) Act, which encourages the use of technology in out-of-court dispute resolution. A study by (Van Nam et al., 2022) shows that the adoption of technology in patent mediation in the U.S. has increased the efficiency of dispute resolution and reduced the burden of litigation. The use of online platforms for communication and negotiation is also increasingly strengthened by artificial intelligence (AI)-based systems that assist in document analysis and more objective solution recommendations.

In the European Union (EU), the policy on digital mediation is developed within the framework of Directive 2008/52/EC, which provides a legal basis for member states to implement mediation, including in patent disputes. The European Patent Office (EPO) has adopted an online mediation platform to facilitate the resolution of cross-border patent disputes. A study conducted by (Tieng et al., 2024) shows that the effectiveness of the digital mediation system in the EU depends on the harmonization of regulations between member states and the readiness of the digital infrastructure. In some cases, for example, digital mediation has succeeded in accelerating dispute resolution and reducing costs incurred by patent holders, although challenges related to differences in laws in each country remain a major obstacle (Bygstad et al., 2022; Saputra et al., 2024b; Verdezoto et al., 2023).

Japan has a digital mediation model that is more integrated with its judicial system. The Japan Patent Office (JPO) has developed a technology-based dispute resolution mechanism, including the use of video conferencing and a cloud-based system for secure sharing of legal documents. A study by (Kurniawan et al., 2024) showed that the implementation of digital mediation in Japan has increased the efficiency of dispute resolution, especially for companies engaged in technology and manufacturing. Government support in the form of subsidies and incentives for companies that use digital mediation has also accelerated the adoption of this system in resolving patent disputes.

Singapore has been one of the pioneers in digital mediation innovation through the Singapore International Mediation Centre (SIMC). The Singapore government, through the Singapore Mediation Act 2017, has recognized mediation outcomes as legally binding decisions, providing legal certainty for parties using digital mediation. A study by (Binder, 2019) highlights Singapore's success in developing a digital platform that enables efficient resolution of cross-border patent disputes. Digital mediation in Singapore has proven to be faster and more cost-effective compared to conventional litigation by leveraging blockchain technology for document authentication and AI for case analysis. Comparative analysis from various countries shows that the success of digital mediation in resolving patent disputes depends on a combination of clear regulations, technological readiness, and acceptance from stakeholders (Sudirman & Disemadi, 2021; Widiatmika et al., 2023; Zulkarnain & Zarzani, 2024). Experiences from the U.S., EU, Japan, and Singapore can be a reference for Indonesia in developing an effective digital mediation system that is in accordance with the existing legal framework.

Challenges and Opportunities for Indonesia

The adoption of digital mediation for resolving patent disputes in Indonesia still faces significant challenges, both in regulatory frameworks and infrastructure readiness. Currently, dispute resolution outside the court is governed by Supreme Court Regulation (Perma) No. 1 of 2016 on Mediation Procedures in Court, which mandates mediation for all civil cases before trial. However, this regulation does not explicitly accommodate the use of technology in mediation. The recent enactment of Law No. 65 of 2024, amending Law No. 30 of 1999 on Arbitration and Alternative Dispute Resolution, provides broader opportunities for digitalization in dispute resolution, including patent-related cases. Despite this progress, the lack of specific regulations supporting digital mediation remains a key barrier to its effective implementation. Research by (Chen & Kimura, 2021) highlights that although Indonesia already has a basic policy regarding ADR (Alternative Dispute Resolution), there is still a gap in terms of technology adaptation in the legal system.

Another challenge in implementing digital mediation in Indonesia is the readiness of infrastructure and stakeholder awareness. A study by (Setyowati et al., 2024) shows that many industry players and legal practitioners still prefer conventional dispute resolution due to a lack of understanding of the technology used in digital mediation. Limited stable internet access in several areas is also an obstacle to implementing online mediation, especially for parties outside big cities. In addition, the lack of data protection mechanisms in the digital mediation process is also a major concern, considering that patent disputes often involve sensitive information that requires a high level of security.

Indonesia has a great opportunity to adopt the digital mediation model that has been implemented in other countries. The United States' experience in using artificial intelligence (AI)-based systems to support the negotiation process can be a reference for Indonesia in developing a similar platform. In addition, the European Union's approach to harmonizing cross-border regulations can be an inspiration for Indonesia in integrating digital mediation systems into a broader legal ecosystem. Japan, which has successfully adopted cloud-based technology for patent mediation, can also be an example in developing digital infrastructure that supports the efficiency of the mediation process. Singapore, with its success in implementing blockchain to ensure the security of mediation documents, can be a model for Indonesia in increasing transparency and accountability in resolving patent disputes (Van Nam et al., 2022).

Indonesia can develop a more efficient digital mediation system that is in line with the needs of the industry and the national innovation ecosystem by adjusting existing regulations and building adequate digital infrastructure. The success of other countries shows that digitalization in resolving patent disputes not only increases efficiency but also provides better legal certainty for stakeholders. Synergy is needed between the government, legal practitioners, and the industrial sector to adopt and adapt the best model for the Indonesian legal system.

METHOD

This study employs a normative juridical approach to analyze Indonesia's legal framework for patent dispute resolution, focusing on Law No. 13/2016, Law No. 65/2024, and Perma No. 1/2016. A comparative legal analysis is conducted to examine digital mediation systems in the United States, the European Union, Japan, and Singapore. This study identifies best practices that can be adapted to Indonesia's legal system by evaluating their regulatory frameworks and technological implementations. A qualitative legal approach is used to gather insights from legal practitioners, judiciary members, and policymakers on the challenges and opportunities of implementing digital mediation in Indonesia. Case studies from global patent offices, such as the USPTO, UPC, JPO, and SIMC, provide

empirical evidence of how digital mediation enhances efficiency and reduces litigation costs. The theoretical foundation of this research is based on dispute resolution theory, economic analysis of law, and law and development theory. These perspectives highlight the inefficiencies of prolonged litigation and the potential benefits of ADR in fostering innovation and economic growth. Legal realism is also applied to propose pragmatic reforms that consider Indonesia's socio-economic conditions, particularly for SMEs. This study provides concrete recommendations for adopting digital mediation in Indonesia's patent dispute resolution system, aiming to bridge regulatory gaps and align with global best practices by integrating doctrinal, comparative, and empirical analysis (Prastyowati & Prakoso, 2024).

RESULTS AND DISCUSSION

The Current Legal Framework for Patent Dispute Resolution

Patent disputes in Indonesia are regulated under Law No. 13 of 2016 on Patents, which serves as a comprehensive legal framework aligning the country's intellectual property (IP) regulations with international standards, particularly the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (Government of Indonesia, 2016). This law establishes fundamental procedures for patent application, protection, and enforcement, covering key issues such as infringement, revocation, and licensing (Khan, 2024). As technological advancements continue to reshape various industries, the existing legal structure faces mounting pressure to adapt. In response, Indonesia enacted Law No. 65 of 2024, introducing amendments aimed at strengthening enforcement mechanisms and providing clearer legal avenues for patent holders seeking protection (Ariyanti & Mashdurohatun, 2024).

A key element of Indonesia's patent dispute resolution framework is Supreme Court Regulation (Perma) No. 1 of 2016, which promotes mediation as an alternative dispute resolution (ADR) mechanism (Government of Indonesia, 2016). This regulation acknowledges mediation's ability to expedite case resolution, reduce judicial workload, and encourage amicable settlements. However, since mediation remains optional, disputing parties frequently choose to bypass it in favor of litigation (Government of Indonesia, 2016). As a result, many patent holders resort to court proceedings, further burdening Indonesia's Commercial Court and extending dispute resolution timelines (Koulu, 2019). This voluntary mediation system stands in contrast to international best practices, where mandatory mediation has proven effective in significantly shortening litigation durations and reducing legal expenses (Heath & Sanders, 2019).

Indonesia's legal framework offers two primary avenues for patent enforcement: civil litigation and criminal prosecution. In civil cases, patent holders typically bring claims before the Commercial Court, seeking financial compensation and injunctive relief to prevent further infringement (Sudirman et al., 2023). The absence of legal fee reimbursement places a heavy financial burden on litigants, particularly small and medium enterprises (SMEs), which often lack the resources to endure prolonged legal battles. This structural challenge discourages SMEs from asserting their intellectual property rights, leaving them vulnerable to infringement (Nasution & Judijanto, 2024).

The second enforcement route involves filing criminal complaints with civil investigators or the Indonesian National Police (Government of Indonesia, 2024). This method aims to deter infringement through punitive measures such as fines and potential imprisonment. While criminal enforcement acts as a strong deterrent, the process is often slow and procedurally complex, further straining the judicial system. The necessity for extensive evidence and the potential for drawn-out investigations can lead to delays in dispute resolution, ultimately weakening patent protections and diminishing patent holders' confidence in the legal system (Lelisari, 2021).

Despite the available enforcement mechanisms, Indonesia's patent dispute resolution process continues to face delays and inconsistencies, primarily due to the absence of mandatory mediation. Since mediation under Supreme Court Regulation (Perma) No. 1/2016 remains optional, enforcement remains fragmented, with many disputes escalating into litigation rather than being settled through cooperative negotiation (N. Alexander, 2019). This dual-track system prolongs legal uncertainty and discourages foreign investment, as patent holders often experience lengthy delays in obtaining injunctions or securing compensation (Weiwei et al., 2024).

The inefficiencies within Indonesia's current patent enforcement framework highlight the pressing need for procedural reform. Implementing mandatory mediation could help reduce judicial congestion, lower litigation costs, and create a more conducive environment for innovation (Eviani et al., 2024). Such reforms would bring Indonesia's intellectual property enforcement in line with global best practices, increasing its appeal to foreign direct investment (FDI) and fostering domestic technological progress (Danesh et al., 2023). While Indonesia's legal framework offers

fundamental intellectual property protections, its reliance on voluntary mediation continues to fuel inefficiencies and legal uncertainty. Addressing these issues through legislative reform and integrating mandatory mediation could significantly improve judicial efficiency, enhance patent rights, and solidify Indonesia’s role as a center for innovation and technological development.

Overview of Digital Mediation Systems in Patent Disputes

The implementation of digital mediation systems in patent dispute resolution has gained significant traction in several jurisdictions, each adopting unique frameworks tailored to their legal and technological landscapes. In the United States, the United States Patent and Trademark Office (USPTO) has integrated online dispute resolution (ODR) mechanisms to facilitate early-stage patent mediation, reducing court congestion and expediting settlements. Similarly, the European Union has introduced the Unified Patent Court (UPC), which, alongside its traditional adjudicatory function, incorporates digital mediation platforms to streamline cross-border patent disputes. Japan, through the Japan Patent Office (JPO), has developed an ADR system that leverages cloud-based mediation tools, enhancing accessibility for disputing parties while maintaining regulatory oversight. Meanwhile, Singapore has emerged as a leader in digital ADR, with the Singapore International Mediation Centre (SIMC) pioneering technology-driven mediation, including AI-assisted case management and blockchain-secured documentation, ensuring both efficiency and data security.

A comparative analysis of these systems highlights the superiority of digital mediation over conventional litigation in patent disputes, particularly in terms of time, cost, and success rates. Studies indicate that digital mediation significantly reduces dispute resolution time—cases that would typically take years in litigation are often settled within months through online mediation. For instance, data from the USPTO shows that mediated patent disputes are resolved 40–60% faster than litigated cases. In terms of cost, digital mediation eliminates extensive legal fees associated with prolonged court proceedings, making it a more viable option, especially for small and medium enterprises (SMEs). The success rates of mediated settlements are considerably higher, as parties retain greater control over the resolution process, fostering mutually beneficial agreements. The success of these international models underscores the potential benefits of digital mediation for Indonesia, particularly in optimizing patent dispute resolution and supporting the country’s innovation ecosystem.

Table 1. Overview of Digital Mediation Systems in Patent Disputes

Country	Implementation of Digital Mediation	Effeciency Compared to Ligitation
United States	The United States Patent and Trademark Office (USPTO) has incorporated Online Dispute Resolution (ODR) as a key component of its patent mediation framework, aiming to alleviate the burden on courts and facilitate early settlements. By leveraging digital platforms, ODR streamlines patent dispute resolution by enabling parties to negotiate and reach agreements remotely, reducing the time and costs associated with traditional litigation.	40–60% faster dispute resolution, lower litigation costs, higher settlement rates.
European Union	The Unified Patent Court (UPC) has integrated digital mediation as a crucial component of its dispute resolution framework, specifically designed to handle cross-border patent disputes within the European Union (EU). This approach significantly enhances accessibility, efficiency, and cost-effectiveness, addressing the complexities associated with multinational patent litigation.	Faster resolution of international patent disputes, cost-effective for businesses.
Japan	The Japan Patent Office (JPO) has embraced cloud-based Alternative Dispute Resolution (ADR) tools to enhance accessibility, efficiency, and transparency in patent mediation processes. Recognizing the complexities and costs associated with traditional litigation, JPO has integrated digital solutions to facilitate faster, more equitable dispute resolution for patent holders, businesses, and innovators.	Streamlined resolution process, reduced legal expenses, increased voluntary compliance.
Singapore	The Singapore International Mediation Centre (SIMC) leverages AI-assisted mediation and blockchain-secured documentation to	High adoption rate due to structured legal

	enhance efficiency, transparency, and security in patent dispute resolution. AI-driven tools facilitate case analysis, predict settlement outcomes, and assist mediators in structuring fair resolutions, while blockchain technology ensures the integrity and immutability of legal documents, reducing the risk of tampering or disputes over evidence. By integrating these advanced technologies, SIMC streamlines the mediation process, minimizes litigation costs, and strengthens Singapore's position as a global leader in intellectual property dispute resolution.	framework, ensures data security and efficiency.
Indonesia (Potential)	Indonesia currently lacks a clear legal framework for digital mediation in patent disputes. While Perma No. 1/2016 permits voluntary mediation as an alternative dispute resolution (ADR) mechanism, its implementation remains largely traditional, with limited integration of digital tools. The absence of standardized digital mediation procedures hampers accessibility, efficiency, and broader adoption, preventing Indonesia from fully leveraging technology to streamline dispute resolution and reduce judicial burdens.	Needs regulatory reform, investment in digital infrastructure, and stakeholder awareness.

Source: data proceed

Despite its proven advantages, the adoption of digital mediation systems is influenced by various factors, including regulatory frameworks, technological infrastructure, and user acceptance. In jurisdictions like the United States and the European Union, strong institutional backing and clear legal provisions for ADR (Alternative Dispute Resolution) have facilitated the seamless integration of digital mediation into their patent dispute resolution mechanisms. Japan's emphasis on technological innovation has allowed its patent office to implement sophisticated digital tools, making mediation more accessible and efficient. Singapore, with its pro-business and tech-driven approach, has successfully positioned itself as a global hub for digital dispute resolution. The country's structured legal framework and investment in digital ADR infrastructure have contributed to its high adoption rates. These examples demonstrate that a well-defined legal structure, coupled with technological advancements, plays a critical role in ensuring the effectiveness of digital mediation.

Challenges remain in achieving widespread adoption, particularly in jurisdictions with less-developed legal frameworks for digital mediation, such as Indonesia. Key obstacles include the absence of explicit regulations governing digital mediation, limited technological infrastructure, and reluctance from stakeholders to transition from traditional litigation methods. Many businesses and legal practitioners in Indonesia still prefer conventional dispute resolution mechanisms due to concerns over the enforceability of digital mediation outcomes. Issues such as data security, confidentiality, and authentication of digital evidence must be addressed to build trust in the system. Learning from the experiences of the U.S., EU, Japan, and Singapore, Indonesia needs to establish a clear legal basis for digital mediation, invest in secure and user-friendly platforms, and promote awareness among stakeholders about the benefits of this approach. Indonesia can enhance the efficiency of its patent dispute resolution system while aligning with global best practices.

Strategic Recommendations for Indonesia's Legal Framework

Indonesia faces several regulatory gaps in implementing digital mediation for patent disputes compared to jurisdictions such as the United States, the European Union, Japan, and Singapore. While Perma No. 1/2016 encourages mediation in civil disputes, including intellectual property (IP) cases, it remains voluntary and lacks explicit provisions for digital mediation. In contrast, countries like the U.S. and EU have established frameworks that integrate digital dispute resolution into their patent enforcement systems, ensuring structured procedures and legal certainty. Law No. 65/2024, which amends Indonesia's patent law, does not yet comprehensively address alternative dispute resolution (ADR) mechanisms in the digital sphere. This regulatory gap limits the ability of businesses and innovators to resolve patent conflicts efficiently and transparently, increasing reliance on conventional litigation, which is often costly and time-consuming.

Indonesia still faces challenges in adopting digital mediation platforms. Unlike Japan and Singapore, which have integrated cloud-based ADR systems, AI-driven mediation, and blockchain-secured case management, Indonesia lacks a centralized and secure online dispute resolution (ODR) platform tailored for patent disputes. While the

Indonesian judiciary has made progress in digitizing court proceedings, including e-court systems, the adoption of advanced mediation technologies remains limited. Moreover, access to reliable internet and digital literacy among legal practitioners and businesses—especially SMEs—remains uneven, further hindering the scalability of digital mediation across the country.

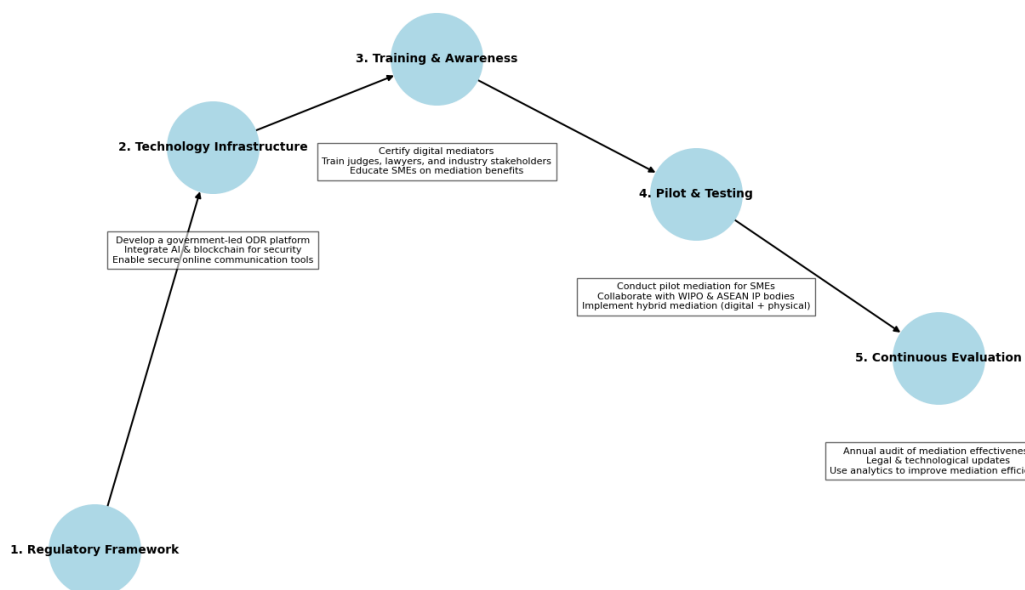


Figure 3. Digital Mediation Flowchart

Source: data proceed with networkx and matplotlib

Legal and social challenges also present obstacles to digital mediation adoption. Stakeholder awareness and acceptance remain low, with many businesses and legal professionals still preferring traditional litigation due to concerns about the enforceability of digital mediation outcomes, data security, and neutrality of mediators. Additionally, Indonesia's legal culture has long been litigation-centric, making the transition to ADR methods—especially digital ones—more complex. The integration of digital mediation with Indonesia's existing court and IP enforcement mechanisms also raises questions about its harmonization with judicial procedures, evidentiary rules, and cross-border dispute resolution frameworks.

Indonesia has significant opportunities to leverage digital mediation in patent disputes despite these challenges. If properly implemented, digital mediation could reduce litigation backlog, cut legal costs, and accelerate dispute resolution, benefiting both large corporations and SMEs in protecting their innovations. Drawing lessons from Singapore's SIMC and Japan's JPO ADR system, Indonesia could develop a regulatory framework that formalizes digital mediation, establishes a secure dispute resolution platform, and promotes capacity-building programs for legal professionals. Furthermore, integrating digital mediation with Indonesia's economic vision of becoming an innovation-driven economy could enhance investor confidence, encourage R&D growth, and strengthen the overall IP protection ecosystem in the country.

Legal Uncertainty and the Need for Mandatory Mediation

The absence of mandatory mediation in Indonesia's patent dispute resolution framework perpetuates legal uncertainty, creating obstacles for both intellectual property protection and the promotion of innovation (Gans, 2007). Supreme Court Regulation (Perma) No. 1 of 2016 introduced voluntary mediation as part of the alternative dispute resolution (ADR) system, aiming to reduce judicial workload and expedite case resolution. However, because participation remains optional, mediation is often underutilized, with many disputing parties preferring litigation over out-of-court settlements. This tendency toward courtroom proceedings further contributes to case backlogs, prolongs dispute resolution, and escalates legal expenses. Ultimately, these inefficiencies undermine the fundamental objective of the patent system—ensuring legal certainty and protecting the rights of inventors (N. M. Alexander et al., 2024).

Legal certainty serves as a cornerstone of intellectual property (IP) law, ensuring that patent holders can rely on consistent and predictable enforcement of their rights (Noerhadi, 2022). In the absence of efficient dispute resolution mechanisms, prolonged litigation fosters ambiguity, discouraging both innovation and investment. Inventors and businesses, particularly small and medium enterprises (SMEs), may be reluctant to allocate resources toward research and development (R&D) when faced with protracted legal battles and the risk of weak patent enforcement (Hall & Harhoff, 2012). As a result, this legal uncertainty inhibits key stakeholders from advancing innovation, ultimately slowing technological progress and economic growth.

A major factor contributing to legal uncertainty in Indonesia's patent dispute resolution framework is the absence of a formal discovery process. Unlike jurisdictions such as the United States (U.S.) and the European Union (EU), where discovery enables parties to compel the disclosure of evidence and access key documents from opposing parties, Indonesia lacks such procedural mechanisms (Pooley & Huang, 2011). As a result, litigants must independently gather evidence, often without access to critical technical data held by their adversaries (Rouse, 2021). This imbalance disproportionately affects patent holders, especially when challenging well-resourced entities capable of withholding crucial information. The absence of a structured discovery process not only prolongs litigation but also undermines the effective enforcement of patent rights.

Judicial expertise in patent litigation in Indonesia remains a significant challenge. Judges in the Commercial Court, responsible for handling patent disputes, often lack the specialized knowledge necessary to evaluate complex technical claims and assess evidence accurately (N. Alexander, 2019). Countries like Japan and Germany have specialized intellectual property (IP) courts staffed with judges who possess technical expertise, enabling them to interpret patent claims more effectively, particularly in sectors such as biotechnology, pharmaceuticals, and information technology (Nasution & Judijanto, 2024). The absence of such specialization in Indonesia increases the likelihood of misinterpretation or misapplication of patent law, resulting in inconsistent rulings and exacerbating legal uncertainty.

This gap in judicial expertise highlights the need for alternative dispute resolution (ADR) mechanisms, particularly mandatory mediation, where mediators with both technical and legal backgrounds can facilitate dispute resolution (Menell et al., 2019). By involving industry experts or patent examiners as mediators, the process can become more informed and impartial, ensuring fairer outcomes. Beyond improving decision-making, this approach promotes a more cooperative dispute resolution environment, reducing adversarial litigation, preserving commercial relationships, and strengthening Indonesia's innovation ecosystem (Siregar & Saraswati, 2021).

Beyond reducing legal uncertainty, mandatory mediation enhances judicial efficiency by decreasing the number of cases that proceed to court. Countries like Singapore have successfully implemented mandatory mediation, leading to a decline in intellectual property (IP)-related litigation and allowing courts to focus on more complex cases. Similarly, in the U.S. Northern District of California, mediation in patent disputes has shortened trial durations and streamlined case resolution (Nolan-Haley, 2018). These precedents illustrate how incorporating mandatory mediation into Indonesia's patent enforcement framework could reinforce legal certainty, accelerate dispute resolution, and reduce financial burdens on litigants. Ultimately, such a reform would contribute to a more dynamic and innovation-driven economy.

Indonesia's current voluntary mediation framework, outlined in Supreme Court Regulation (Perma) No. 1/2016, fails to resolve systemic inefficiencies in the patent dispute resolution system. The lack of a formal discovery process and specialized judges exacerbates legal uncertainty, prolongs litigation, and discourages investment in innovation. Introducing mandatory mediation as a prerequisite to litigation would help address these challenges by fostering a more structured and efficient dispute resolution process. Aligning Indonesia's patent enforcement mechanisms with global best practices through mandatory mediation would not only enhance intellectual property protection but also stimulate economic growth and solidify Indonesia's role in the global innovation landscape.

CONCLUSION

Adopting mandatory mediation in Indonesia's patent dispute resolution framework is a strategic step toward enhancing legal efficiency, reducing judicial congestion, and fostering innovation. Drawing insights from successful implementations in the United States, European Union, Japan, and Singapore, this study highlights how digital mediation can streamline dispute resolution, lower legal costs, and improve judicial efficiency. Indonesia can establish a robust alternative dispute resolution mechanism that aligns with global best practices by addressing key

challenges such as regulatory gaps, infrastructure readiness, and stakeholder acceptance. Implementing mandatory mediation will not only enhance investor confidence but also ensure that patent enforcement does not hinder technological progress, making Indonesia a more attractive hub for innovation and economic growth. Urgent legislative reforms are essential to institutionalizing digital mediation as a cornerstone of Indonesia's intellectual property protection system.

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