



Legal Discoveries in the Digital Age: Challenges in Interpreting New Technology Regulations in Indonesia

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Abstract

Background The rapid evolution of digital technology has generated new legal challenges that remain insufficiently addressed within Indonesia's positive law. This regulatory lag creates normative gaps, making judicial legal discovery increasingly essential in resolving disputes related to digital innovation. This study aims to examine how judges interpret and apply the law when confronting cases involving electronic transactions, artificial intelligence, data protection, and digital assets.

Methods Using a normative juridical method, the research analyzes relevant literature, legal doctrines, and court decisions to identify patterns of judicial reasoning in situations where statutory provisions are unclear or absent.

Results The findings reveal that traditional interpretive techniques are often inadequate to address the complexity and technical nature of digital phenomena. Judges frequently struggle to align existing norms with emerging technologies, and limited technological literacy among legal actors contributes to inconsistent rulings and heightened legal uncertainty.

Conclusion The study concludes that Indonesia requires more adaptive judicial methodologies and timely regulatory reforms to ensure legal certainty, fairness, and utility in the digital era. A progressive interpretive approach is vital to prevent the legal system.

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Keywords

Key words: Legal Discovery; Digital Law; Regulatory Law; Judicial Interpretation; Indonesia Law

Introduction

The development of digital technology over the past two decades has fundamentally changed various aspects of social, economic, and legal life in Indonesia. Advances in the internet, electronic transactions, online platforms, digital financial services (fintech), and artificial intelligence have not only accelerated the flow of information and facilitated community activities, but also given rise to new forms of legal relationships that were previously unknown in the national legal system (Raharjo, 2021). This digital transformation has given rise to increasingly complex legal issues, ranging from personal data protection, cybercrime, digital fraud, digital asset transactions, to the use of algorithms and AI in public and commercial services (Asriani et al., 2025). This complexity requires the legal system to adapt quickly, but in reality, existing regulations are often unable to keep pace with the rapid dynamics of technology.

This situation creates what is known as a legal gap, namely the incompatibility between positive legal norms and the ever-evolving digital phenomenon. Many of the laws currently in force were drafted based on the assumption of conventional legal relationships, and therefore do not cover various legal issues arising from digital innovation. For example, concepts such as electronic evidence, cross-platform digital transactions, algorithm-based contracts, and the existence of digital assets are not comprehensively regulated in many laws and regulations. As a result, when disputes or violations related to new technologies arise, the legal system often lacks adequate normative references.

In line with these dynamics, various studies have begun to map out how the judicial world is responding to digital challenges through a variety of methodological approaches. Studies based on normative analysis, such as those conducted by Pratama Nur Aziz (2024) and Indriati Amarini et al., (2023), highlight regulatory gaps and the need to reconstruct norms in the face of technological innovation. Meanwhile, empirical studies, such as Panji & Febby (2021), reveal an increase in the effectiveness of judicial administration through the implementation of e-courts and e-litigation. On the other hand, studies using a socio-legal approach, such as Setiawan (2022) and Rahardjo (2020), emphasize the role of judicial interpretation in bridging the boundaries of written law when dealing with digital phenomena. This literature review shows that academic debates not only highlight regulatory aspects but also emphasize judicial capacity and authority as important instruments in the process of legal adaptation in the digital era.

At the same time, Indonesian judicial institutions have begun administrative transformation through the application of information technology. The implementation of e-courts, e-litigation, and electronic case management systems are forms of adaptation by judicial institutions to the digital reality. The application of this technology has been proven to increase transparency, efficiency, and public access to judicial services (Panji & Febby, 2021). However, these administrative advances have not been able to immediately overcome the substantive issues arising from technological developments themselves. Many procedural norms have not been fully adapted to digital transaction or interaction mechanisms, and a number of conventional rules were not designed to deal with the dynamics of modern technology (Indriati Amarini et al., 2023).

Regulatory challenges become even more apparent when digital innovation develops much faster than the legislative process. The formation of laws requires a long time, going through political processes, academic drafting, public consultation, and inter-institutional harmonization. Meanwhile, new technologies can emerge in a matter of months and are immediately used widely by the public. This imbalance creates the risk of regulatory lag, which leads to increased legal

uncertainty (Pratama Nur Aziz, 2024). In this context, the role of judges becomes crucial in bridging the gap between written norms and the need for legal certainty in cases involving digital technology.

When written law does not provide adequate answers, judges are required to engage in legal discovery (*rechtsvinding*) through adaptive interpretation, legal construction, and the application of general legal principles. This judicial creativity is necessary to fill normative gaps, interpret ambiguous rules, or adapt conventional norms to very new digital phenomena. However, the application of legal discovery cannot be done freely without limits; judges must uphold the principles of legal certainty, proportionality, and harmony with the national legal system. This raises an important question: how to balance the need for progressive interpretation with the risk of judicial overreach.

In addition to methodological challenges, capacity issues are also a concern. Not all judges have digital literacy, technical understanding, or the ability to map new legal risks arising from technologies such as artificial intelligence, blockchain, or digital assets. The complexity of technology often makes it difficult for judges to understand the full context of a case. This has the potential to result in inconsistent, casuistic legal discovery processes, or even disparity in decisions between similar cases.

In view of these issues, this research is urgently needed to provide an empirical and analytical picture of how judges discover the law when dealing with digital phenomena that are not yet clearly regulated in legislation. This understanding is necessary to ensure that the Indonesian legal system remains adaptive and responsive without sacrificing the principles of certainty and justice for the community.

Based on this background, this study focuses on two main areas. First, how judges apply the concept of legal discovery in dealing with normative gaps or regulatory lag due to the development of digital technology in Indonesia. Second, what are the challenges of legal interpretation that arise when conventional norms are applied to new technological phenomena such as electronic transactions, artificial intelligence, fintech, and digital assets. Thus, this study is expected to provide conceptual and practical contributions regarding the role of judges as key actors in maintaining the relevance of law in a highly dynamic digital era.

Methods

This study uses a normative legal approach as its main framework, combined with qualitative analysis, to explore how the concept of legal discovery and the challenges of interpreting new technology regulations have developed in Indonesia. In line with legal methodology literature, the normative legal approach allows for an in-depth study of written legal norms, doctrines, and jurisprudence as the main sources of data (Setia Negara, 2023; Disemadi, 2024). Data was collected through document studies and literature reviews covering legislation related to digital regulation, court decisions on digital technology and e-litigation cases, as well as relevant scientific articles and legal literature. This technique is in line with normative legal research practices in Indonesia, where library research of primary and secondary legal materials forms the basis for conceptual and normative analysis.

Data analysis was conducted using descriptive qualitative methods, focusing on identifying legal gaps, judges' methods of interpretation in dealing with technological phenomena, and the impact of interpretation on legal certainty and justice. This study mapped methods of interpretation such

as evolutionary interpretation, legal analogy, and the application of general legal principles, and assessed the adequacy of norms in responding to digital issues. The results of the study are tested through a critical approach to develop recommendations for adaptive legal discovery strategies that are relevant to developments in the digital age. Thus, this methodology enables systematic and norm-based legal analysis, while also providing space for normative reflection so that the results of the study are applicable in the national legal system.

Result and Discussion

The Application of Judicial Discovery in the Absence of Digital Regulations

The development of digital technology has become a global phenomenon that has penetrated almost all aspects of human life, from daily social interactions to the fulfillment of individual and group needs in society. In Indonesia, technological innovations such as the internet, electronic transactions, online platforms, fintech, and artificial intelligence (AI) have changed the way people communicate, transact, and access public and commercial services (Danuri, 2019). This transformation has progressed much faster than the ability to formulate formal regulations, creating a legal gap, where existing positive legal norms are unable to address new issues arising from digital innovation. In this context, judges no longer act merely as executors of regulations, but also as law finders, who must engage in legal discovery (*rechtsvinding*) to close this normative gap.

The application of legal discovery by judges in the digital context is carried out through several approaches. First, evolutionary interpretation, which is adjusting the meaning of existing legal norms to the dynamics of technology and digital social practices. Second, legal analogy, which is expanding the application of existing legal principles to similar cases that arise in the digital realm. Third, the application of general legal principles, including the principles of certainty, justice, proportionality, and protection of fundamental rights, to fill normative gaps that have not been specifically regulated. A concrete example of the application of this method can be seen in disputes over digital transactions or the use of electronic evidence, where judges must interpret laws that did not previously explicitly regulate these new forms of transactions. Thus, the role of judges becomes very strategic in maintaining the relevance of the law while ensuring certainty and justice in the digital age.

Jurisprudence faces significant challenges in responding to technological issues. Court decisions related to cybercrime, privacy violations, or digital disputes are still limited and have not formed a consistent legal pattern. In fact, jurisprudence plays an important role as an interpretive source of law to fill gaps in positive legal norms. In addition, international treaties and legal doctrines are also beginning to show their strategic role in dealing with technological issues. Indonesia, for example, has ratified various international conventions related to cyber security, data protection, and digital intellectual property rights. Meanwhile, the doctrines of legal experts point to the formation of new technology-based legal frameworks, such as cyber law, AI law, and digital forensic law (Lestari, 2025).

However, law enforcement in the digital context still faces significant obstacles due to overlapping regulations or regulations that are not in line with technological developments. The fragmentation of regulations between institutions, such as the OJK, Kominfo, BI, and BSSN, creates the potential for conflicts of norms and difficulties in harmonization. This makes law enforcement less effective and reduces legal certainty for the public and digital industry players. Therefore, harmonizing laws and developing an adaptive regulatory framework is crucial to

creating a legal system that is clear, consistent, and capable of adapting to technological dynamics (Mardianto, 2023).

With a legal discovery approach, judges can bridge this normative gap through adaptive interpretation and general legal principles, while still paying attention to certainty, fairness, and proportionality. This strategy makes legal discovery an important instrument for maintaining the relevance of the national legal system amid the acceleration of digital innovation, while also encouraging the creation of court decisions that are responsive to social and technological changes.

Challenges of Legal Interpretation of New Technological Phenomena

Legal systems that emphasize the principle of certainty tend to be slow to adapt to technological innovations that are developing at an exponential rate. This gap poses fundamental challenges in applying traditional legal concepts to new digital entities. Legal interpretation becomes complex when classical concepts such as “legal subject,” “object of agreement,” or “malicious intent” (*mens rea*) must be applied to artificial intelligence (AI) systems that have the ability to act autonomously. Laws that have been based on conventional and written norms have not been fully able to accommodate these disruptive changes (Nikmah Dalimunthe et al., 2025).

If judges interpret old laws too literally (*vintage law*), the essence and characteristics of digital technology will not be captured, rendering legal decisions irrelevant. Conversely, overly flexible interpretations have the potential to erode the principle of legal certainty, which is the main foundation for the stability of the legal system. This condition requires legal interpreters to apply an adaptive and contextual approach: flexible in understanding technology, but still adhering to basic legal values and normative objectives to be achieved. Thus, legal interpretation in the digital age requires a careful balance between innovation, certainty, and justice, so that the law remains relevant while maintaining its legitimacy and credibility in the public eye.

When conventional legal norms are applied to digital technology phenomena, several challenges arise, including: (1) Limited understanding of technology by legal officials, which can affect the accuracy of interpretation and court decisions. For example, understanding AI algorithms, blockchain mechanisms, or the complexity of fintech transactions requires technical competence that judges do not always possess. (2) Regulatory lag, whereby existing norms are often general or analogical in nature, so that their application is not always directly relevant to the technological context. (3) Cross-sector regulatory fragmentation, where various institutions regulate aspects of digital technology, such as the OJK, Kominfo, BI, and BSSN, giving rise to potential conflicts of norms or overlapping regulations. (4) The dilemma between innovation and public protection, for example, between encouraging the development of fintech or AI and the protection of personal data and cybersecurity, which requires balanced and proportional legal interpretation.

Digital innovation has produced new types of evidence, such as smart contracts and NFT-based data, which present significant challenges for legal interpretation. One of the main issues is determining the authenticity and probative value of digital evidence that can be easily replicated or modified. This requires an adaptive legal approach to ensure that digital evidence is admissible in court without compromising the principles of legal certainty and integrity. In the context of globalization, Indonesia also needs to adjust its legal regulations to international standards so as not to fall behind in the development of digital law (Jannati, M Ruhly, 2025).

In addition, there are difficulties in interpreting the chain of accountability. In cases of losses

resulting from AI decisions or smart contract failures, judges must be able to clearly identify the responsible party, whether it be the developer, platform owner, or user. To overcome this uncertainty, the use of the precautionary principle is crucial in legal interpretation, especially to ensure consumer protection and data security. Thus, the legal system needs to balance interpretive flexibility with certainty and public protection in order to remain relevant in the face of the complexity of digital innovation.

This challenge shows that traditional methods of legal interpretation, such as grammatical or systematic interpretation, are often insufficient to deal with the complexity of digital cases. Therefore, judges need to combine contextual interpretation, general legal principles, and international practices as references to interpret norms appropriately.

Although judicial discovery can temporarily fill regulatory gaps, regulatory updates are still necessary to maintain legal certainty and justice. Synergy between legislative innovation and judicial discovery is key to enabling the legal system to respond effectively to the dynamics of digital technology. This approach includes strengthening judges' capacity to understand technology, harmonizing cross-sector regulations to prevent overlap, and developing guidelines for interpreting digital law. With this strategy, judicial discovery can serve as a bridge between conventional norms and legal demands in the digital age.

Conclusions

The development of digital technology has created a legal vacuum that is not fully accommodated by conventional regulations in Indonesia, so that phenomena such as electronic transactions, artificial intelligence, digital assets, and personal data require adaptive legal interpretations to ensure that court decisions remain relevant to the dynamics of the digital world. In this context, legal discovery has become an important tool for judges to deal with cases that are not explicitly regulated, even though this practice faces significant challenges such as legal uncertainty, ambiguity of norms, and potential inconsistencies between decisions. Furthermore, the limited technological literacy of law enforcement officials, outdated regulations, and a lack of methodological guidance underscore the need for improved legal capacity and creative interpretive approaches. While recommended strategies include updating regulations to be responsive to technology, developing adaptive legal interpretation methodologies, and improving the digital literacy of judicial officials in order to balance legal certainty, justice, and benefits for the digital community.

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