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Legal Dynamics and Challenges in Protecting Intellectual Property Rights for Digital Products in the Global Marketplace

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ABSTRACT

The digitization of the economy has positioned digital products as central commodities in global marketplaces, creating significant tensions with existing intellectual property (IP) legal frameworks. This qualitative literature study analyzes the legal challenges of protecting digital products in global marketplaces, focusing on copyright and patent regimes. The research identifies three core problems: the inherent conflict between territorial IP laws and the borderless nature of digital commerce; the ineffectiveness of traditional enforcement mechanisms and reactive intermediary liability models in cross-border contexts; and the conceptual disruption caused by innovative digital products like Software-as-a-Service, generative AI content, and Non-Fungible Tokens to conventional IP categories. The analysis concludes that current national and international legal structures are structurally inadequate, often lagging behind technological innovation. This inadequacy creates legal uncertainty, undermines incentives for creators, and weakens the position of rights holders in the global digital economy. The study recommends a comprehensive legal reform in Indonesia that moves beyond piecemeal amendments, advocating for a new digital IP framework, the adoption of verification technologies, enhanced enforcement capacity, and proactive engagement in international norm-setting to better protect digital creations.

INTRODUCTION

Legal protection of intellectual property has been a key foundation in driving innovation and economic growth for centuries. Legal systems designed for copyright, patents and trademarks aim to provide incentives for creators and inventors by granting them exclusive rights to their work for a certain period of time. This principle, reflected in international agreements such as the 1994 Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), recognizes intellectual property as a vital economic commodity. However, this legal framework was historically developed with a basic assumption regarding the physicality of creations, whereby goods or works are attached to tangible media whose distribution can be controlled. This assumption began to falter with the rapid development of digital technology, which transformed information and creations into binary code sequences that could be easily replicated and distributed without geographical restrictions. This digital transformation has not only changed the medium, but has also fundamentally shifted the paradigm regarding the ownership, control, and value of a creation (Cennamo et al., 2020). In the development of modern law, technological changes often require adjustments to the rules so that legal protection remains relevant to practices in the digital society (Darmawan, 2022).

The development of the internet and communication technology has given rise to a new trading ecosystem known as the global marketplace. Digital platforms such as Amazon, eBay, Alibaba, and the Apple App Store have created a borderless market where sellers and buyers from various jurisdictions can easily conduct transactions. These marketplaces have become the main distribution channels for a wide range of digital products, from software, e-books, digital music and films, to graphic design templates and online courses. The characteristics of digital products, which are intangible, can be delivered instantly, and have a marginal reproduction cost close to zero, make them highly vulnerable to intellectual property rights violations. The borderless nature of this global marketplace then comes into direct conflict with the

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highly territorial nature of intellectual property law, where protection and enforcement depend on national sovereignty boundaries (George, 2017). The tension between digital globality and legal locality creates a complex grey area. This phenomenon also shows that the development of digital platforms has changed the patterns of transactions and interactions between businesses and consumers in the online environment (Infante & Mardikaningsih, 2022).

In a more specific realm, digital products present unique challenges for existing categories of intellectual property law. Copyright, for example, which is designed to protect artistic and literary expressions, faces problems with the ease of copying, pasting, uploading, and downloading without permission. Patent protection for algorithms or specific business methods in software is often the subject of legal debate in many countries, as seen in the different approaches between the United States and Europe (Matveev & Martyanova, 2022). Meanwhile, trademarks face the risk of cybersquatting or the use of similar domain names, as well as the sale of counterfeit goods in digital form on marketplaces. This vulnerability is exacerbated by the ability of technology to quickly modify digital products, creating derivative versions that may blur the line between infringement and permitted new works (fair use or fair dealing). This technical complexity often exceeds the conventional understanding of legislators and law enforcement officials. In practice, digital interactions between businesses and users also influence how consumers make decisions in online transactions (Darmawan, 2022).

The function of global marketplaces as intermediaries adds another layer of complexity to the legal protection equation. These platforms generally operate under the principle of safe harbor or protection from liability for infringements committed by their users, provided they comply with certain procedures such as notice and takedown. This principle, which is regulated in the 1998 Digital Millennium Copyright Act (DMCA) in the United States and replicated in various forms in many countries, places the burden of initial detection and reporting on rights holders. However, this model poses problems when the volume of infringements is massive and cross-border. Rights holders must constantly monitor hundreds of marketplaces around the world, while infringers can easily move or duplicate their product listings. This dynamic raises questions about the balance between platform responsibility, intellectual property rights, and the public interest in accessing information and innovating. The responsibility of platforms is also increasingly important to ensure consumer protection and smooth transaction processes, including in mechanisms for returning goods or resolving disputes (Anugroh et al., 2023). Legal protection is also important to ensure consumer safety from various forms of abuse or fraud in online systems (Ali et al., 2024).

Therefore, a study of the interaction between the existing intellectual property legal framework and the reality of digital product trading in the global marketplace is an academic necessity. Developments since the beginning of the millennium show that the law always lags a few steps behind technological innovation. This literature study attempts to map this legal landscape, analyses the main points of friction, and identify the gaps that arise between legal theory and commercial practice in the digital world. By focusing on digital products as objects of protection and global marketplaces as their arena of trade, this analysis seeks to provide a systematic overview of the contemporary legal challenges faced by creators, consumers, platform intermediaries, and regulators in various jurisdictions. This understanding is necessary as a basis for discussing the future of the intellectual property legal regime in the rapidly growing digital economy era. In addition, the management of increasingly large amounts of data and information in the digital economy also influences how organizations make strategic decisions in the modern business environment (Ali & Darmawan, 2023).

One of the core issues is the fundamental incompatibility between the territorial nature of intellectual property law and the borderless nature of the global marketplace and digital products. Patent, copyright and trademark laws are essentially national in scope; protection granted in Indonesia, for example, does not automatically apply in the United States or Japan. A software creator in Brazil must register their rights separately in each country where they wish to obtain protection, a process that is costly and time-consuming. Meanwhile, the digital products they sell on marketplaces such as Google Play Store can be accessed and purchased by users in over a hundred countries in a matter of seconds. When a user in a country that does not provide legal protection for the work commits an infringement, the rights holder has almost no effective legal recourse. This complexity is compounded by substantive differences in the laws of different countries. What is considered copyright infringement in one jurisdiction may be considered fair use in another. The absence of truly global legal harmonization, despite efforts through TRIPS and other agreements, creates an uncertain and high-risk environment for owners of digital intellectual property, while opening up opportunities for infringers to exploit these legal differences (forum shopping). This situation

also highlights the importance of legal certainty for small and medium-sized enterprises so that they can participate safely in the global digital economy (Hardyansah & Putra, 2023).

In addition, there are problems with the limitations and inadequacies of traditional law enforcement mechanisms in dealing with the speed and scale of violations in the digital world. Conventional enforcement mechanisms rely heavily on the identification of physical perpetrators, proof of actual material losses, and lengthy court proceedings. In the global marketplace, violators often easily conceal their identities, use pseudonyms, or operate from jurisdictions with weak law enforcement. Even if perpetrators can be identified, the economic value of each individual violation (e.g., one illegal download) is often too small to be economically viable to take to court, even though the cumulative losses are enormous. The notice and takedown model, which is the backbone of enforcement on online platforms, also has many weaknesses. In the practice of digital contract law, the principle of good faith is also an important basis for the parties to carry out their obligations honestly and responsibly (Irfansyah et al., 2024). This system can be abused for baseless removal requests, silencing legitimate competition, or suppressing criticism. On the other hand, for legitimate rights holders, this process is reactive and resembles a game of "cat and mouse"; after one list of pirated products is removed, a similar list can reappear within minutes with minor modifications. This continuous monitoring burden is a heavy operational burden, especially for individual creators or small and medium-sized enterprises.

Another challenge arises from the development of new forms of digital products and innovative business models that are not yet fully accommodated within the existing intellectual property legal framework. Legal categories such as copyright and patents are designed for relatively stable and clearly defined forms of work. However, contemporary digital products are often dynamic, interactive, and service-based. The quality of digital services has also been shown to influence user satisfaction and their decision to return to the same marketplace service (Fared, Darmawan, & Khairi, 2021). Examples include software-as-a-service (SaaS), artificial intelligence that generates creations, non-fungible tokens (NFTs) that represent digital ownership, or user-generated content on social media platforms. The legal status of creations generated by machines, or collaborative works involving thousands of users around the world, remains unclear and debatable. These changes are also in line with the transformation of working relationships and management in increasingly digitized global companies (Darmawan et al., 2023). Can the output of an AI algorithm be copyrighted, and if so, who owns the rights? How can the concept of infringement be applied to a continuously updated digital product (continuous deployment)? Global marketplaces are often the first place where these innovative and legally ambiguous products are traded, putting platforms in a difficult position to determine their internal policies. This legal uncertainty can hinder the very innovation that intellectual property law seeks to protect, as developers and investors become reluctant to participate in a market fraught with legal risk.

The global economy is increasingly dominated by the digital sector, where the value of intangible assets such as data, software, and design has surpassed the value of physical assets in many industries. Transactions of digital products through global marketplaces are no longer marginal activities, but rather the mainstream of world trade. In this situation, the effectiveness of the intellectual property protection regime is directly related to national economic competitiveness and innovation growth. Consumer behavior in marketplaces is also growing rapidly, including the emergence of impulsive buying influenced by ease of access and digital promotions. Countries that can provide a clear and enforceable legal environment for digital products will be more attractive to investors and creative digital talent. Conversely, a legal framework that is unable to address rampant violations can erode trust in the digital ecosystem, encourage defensive business practices and hinder open collaboration. A systematic literature review to identify existing legal weaknesses and analyses the evolving responses of various jurisdictions is urgently needed. Such analysis provides an intellectual roadmap for policymakers, legal practitioners, and industry players to understand patterns of challenges and potential solutions that have been tested in different settings.

Exponential technological developments, such as cloud computing, blockchain, and generative artificial intelligence, continue to push the boundaries of what is possible with digital products. These technologies are both tools for protection (e.g., blockchain-based Digital Rights Management) and tools for more sophisticated violations (e.g., deepfakes or automated piracy). The speed of technological change far exceeds the pace of legislative processes, which are typically slow and fraught with political compromise. Therefore, there is a widening regulatory gap. Examining how existing laws interact with current technologies and projecting future challenges is

crucial to ensure that the law does not become an obstacle to beneficial innovation or, conversely, becomes too weak to provide adequate incentives. A review of the literature allows us to trace the evolution of legal thinking in response to previous technological disruptions, such as the response to peer-to-peer file sharing in the early 2000s, and draw valuable lessons for dealing with current and future disruptions.

At the international level, there has been a shift and renewal in the policy discourse on internet governance and the digital economy. Discussions in forums such as the World Intellectual Property Organization (WIPO), the World Trade Organization (WTO), and in new generation free trade agreements continue to raise the issue of digital intellectual property protection. For example, there is debate about the need for a new international agreement specifically for copyright in the digital environment or the expansion of patent protection coverage for software-based innovations. A comprehensive literature review provides evidence-based material to support these policy discussions. In addition, a legal framework is also needed to ensure fair competition practices that do not harm small businesses in the digital marketplace (Indarto et al., 2023). By highlighting the consistency, contradictions, and gaps in existing academic research, this study can help guide the future research agenda and inform more evidence-based policy negotiations. A better understanding of the legal complexities and challenges in the global marketplace is a prerequisite for formulating balanced policies that protect creators' rights without stifling public access, reasonable innovation, and healthy competition in the digital marketplace.

This study aims to analyses the suitability and gaps in national and international copyright and patent law frameworks in protecting digital products in the global marketplace. Furthermore, this study evaluates the effectiveness and limitations of conventional law enforcement mechanisms and intermediary liability models in dealing with cross-jurisdictional infringements. Finally, this study examines the challenges posed by new forms of digital products to the categorization and principles of established intellectual property law. Theoretically, this study is expected to contribute to academic mapping of the interaction between law, technology, and global trade, as well as identify areas that require further development of legal doctrine. Practically, the results of the analysis can be taken into consideration by legislators, regulators, platform owners, and rights holders in formulating more adaptive and sustainable policies, agreements, and business strategies in the digital economy era.

RESEARCH METHOD

This research is a qualitative literature study, which is fundamentally based on analysis of secondary data sources. These data sources include primary legal documents such as international agreements, national laws, and sectoral regulations governing intellectual property and electronic commerce. In addition, the data sources used include legal textbooks, reputable scientific journal articles, policy reports from international organizations such as WIPO and the WTO, and analytical publications from trusted think tanks. A qualitative approach was chosen because it is appropriate for the research objective of understanding, interpreting, and constructing arguments regarding the complexity of legal relationships and normative challenges, rather than statistically measuring or testing hypotheses. As stated by Darmawan (2015), qualitative research with literature studies allows researchers to conduct in-depth exploration of a concept or issue through tracing and synthesizing existing thoughts, thereby producing a comprehensive and critical understanding.

The analysis techniques applied in this study are content analysis and legal narrative analysis. Content analysis is used to identify patterns, themes, and consistency (or inconsistency) in the collected legal and academic materials (Patton, 2002). This process involves repeated reading, coding of key concepts such as "territorial rights", "cross-border enforcement", "intermediary liability", and "definition of digital products", as well as grouping findings based on the problem formulation. Meanwhile, legal narrative analysis focuses on understanding the rationale (ratio legis) behind a rule, the development of judicial interpretations of important cases, and the policy narratives underlying regulatory changes. This method allows the study to not only describe existing laws but also evaluate their effectiveness and coherence in the face of technological realities. The search was conducted systematically using legal and academic databases such as Google Scholar, Garuda, JSTOR, HeinOnline, as well as the official websites of government agencies and international organizations.

The operational stages of the research began with the formulation of sharp research questions to guide the literature search process. Next, sources were critically collected and selected, taking into account the credibility of the publisher, citation rate, and temporal relevance. The selected sources were then studied in depth, with analytical notes made for each source (Krippendorff, 2004). The synthesis stage is the core of this process, where findings from various sources are integrated, compared, and contrasted to construct an argument that answers the problem formulation. The validity of the analysis is maintained

through source triangulation, namely by comparing and balancing perspectives from various types of literature (positive law, academic studies, policy reports) and from various jurisdictions. Thus, this literature study is expected to produce a coherent, argumentative, and textually evidence-based discussion that contributes to the academic understanding of the dynamics of intellectual property law in the global digital space.

RESULT AND DISCUSSION

Analysis of the Legal Framework for Copyright and Patents for Digital Products in the Global Market

The legal framework for copyright and patents in Indonesia seeks to adapt to the challenges posed by digital products. The legal framework for copyright and patents in Indonesia, as stipulated in Law No. 28 of 2014 on Copyright and Law No. 13 of 2016 on Patents, has sought to accommodate the existence of digital products. The Copyright Law explicitly includes computer programs in the category of protected creations, equating them with literary works (Simangunsong et al., 2020). Protection of digital works is becoming increasingly important as many economic activities are now carried out through digital platforms that enable rapid and widespread distribution of works (Negara et al., 2024). This protection is automatic once the creation is realized in tangible form, although registration provides stronger evidence. This is particularly relevant for digital products such as applications, games, or plugins traded on marketplaces, as it provides a legal basis for creators to seek compensation for piracy or unauthorized distribution. However, the characteristics of digital products, which are easy to copy and modify, raise questions about the limits of protection. Is it only the source code that is protected, or also the user interface and specific functions? Indonesian copyright law tends to protect expression, not ideas, procedures, or operational methods. This condition shows that intellectual property law needs to be understood comprehensively so that digital businesses can optimally protect their work and innovations (Mardikaningsih et al., 2022).

The Patents Act provides strict protection for the functional aspects of digital products. Meanwhile, the Patents Act provides a different and stricter protection pathway for the functional and technical aspects of digital products. To obtain a patent, an invention must meet three main requirements: novelty, inventive step, and industrial applicability. Protection of technological innovations is often an important factor in maintaining a company's competitiveness in the global market (Putra & Wibowo, 2023). In the digital realm, these inventions can take the form of new algorithmic methods for data compression, unique biometric authentication systems, or business processes implemented through computers. Patent protection is territorial and is granted after a lengthy substantive examination by the Directorate General of Intellectual Property. For digital product developers operating in the global marketplace, obtaining patents in multiple jurisdictions is a significant investment. Differences in interpretation regarding novelty and inventive step for software-related inventions between countries, for example between the more lenient United States and the more stringent Europe, add to the complexity of protection strategies. Indonesian digital entrepreneurs must carefully consider which jurisdictions are most critical to their business before embarking on the costly and time-consuming patent application process. A global patent strategy requires careful selection of jurisdictions to ensure that investments in digital protection are not wasted.

TRIPS forms the international foundation for copyright and patent protection, including digital products. On an international scale, the main agreement that shapes the legal landscape is the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) under the auspices of the World Trade Organization. Indonesia has ratified this agreement through Law No. 7 of 1994. TRIPS sets minimum standards for copyright and patent protection that must be adopted by all member countries. Such international standards are important because digital trade currently involves many countries with different legal systems (Oluwatosin, 2024). For copyright, TRIPS requires protection for 50 years after the creator's death and includes computer programs as literary works. For patents, TRIPS requires protection for 20 years for inventions in all fields of technology, without discrimination, including pharmaceutical products and digital technology. These TRIPS norms were then adopted and further elaborated in Indonesia's Copyright Law and Patent Law. The implication for digital products in the global marketplace is the creation of a common normative basis which, in theory, allows for the recognition of rights from one country to another. TRIPS creates global standards, but the principle of territoriality still leaves fragmentation in the protection of digital products.

WIPO provides global harmonization instruments that complement TRIPS standards in the protection of works and patents. Further harmonization is sought through agreements under the World Intellectual Property Organization (WIPO), such as the Berne Convention for the

Protection of Literary and Artistic Works and the WIPO Patent Agreement. Indonesia is a party to the Berne Convention, which affirms the principle of automatic protection without the need for registration and the principle of national treatment (where foreign works must be treated the same as domestic works). The WIPO Patent Agreement simplifies international patent application procedures through the PCT (Patent Cooperation Treaty) system. This type of international cooperation shows that law not only functions at the national level but also plays an important role in regulating cross-border legal relations (Muhammad et al., 2023). International cooperation is key for each country to be able to face the challenges of the digital economy more effectively and not work alone in forming legal policies (Zulkarnain et al., 2024). In policy analysis and research, Triadic Patents (TP) and applications through the Patent Cooperation Treaty (PCT) are often used as data to assess the level of innovation and the extent to which a party's research and development (R&D) activities are international in scale (Zhu et al., 2023).

ASEAN is striving to establish a framework for intellectual property cooperation to address the challenges of cross-border digital products. Effective legal protection also plays a role in maintaining business stability and supporting the development of digital businesses at the regional level (Negara & Darmawan, 2023). At the ASEAN regional level, there are efforts to create a cooperation framework through the ASEAN Framework Agreement on Intellectual Property Cooperation and the ASEAN Strategic Action Plan on Intellectual Property. These initiatives aim to facilitate registration, raise awareness, and strengthen intellectual property law enforcement in the region. For Indonesian digital entrepreneurs, harmonization at the ASEAN level can provide a more integrated market and more uniform procedures for protecting their products in neighboring countries. However, to date, progress towards a single ASEAN patent or copyright system has been very slow. Each member country continues to maintain its own national system with significant procedural and substantive differences. This situation reflects the greater challenge of creating truly integrated laws for digital products that inherently cross these boundaries. The global marketplace operates at high speed, while the process of legal harmonization moves at a very different diplomatic pace. ASEAN harmonization provides opportunities for digital market integration, but is hampered by significant differences in national systems.

The ITE Law is an important accessory instrument in digital transactions as well as intellectual property protection. Law Number 11 of 2008 concerning Electronic Information and Transactions, as amended, serves as vital accessory law. The ITE Law provides legal recognition of electronic signatures, electronic documents, and electronic transactions, thereby providing certainty that contracts for the sale and purchase of software or digital licenses in the marketplace have binding legal force. Ultimately, this strengthens the argument that the current legal framework does not yet fully provide legal certainty for consumers in e-commerce transactions, particularly regarding the obligations of manufacturers and distributors to customers (Rahma et al., 2022). Furthermore, the ITE Law regulates criminal acts related to information technology, which may intersect with copyright and digital patent infringements, such as unauthorized access to computer systems or the dissemination of malicious code. Articles in the ITE Law are often used in conjunction with the Copyright Law to prosecute pirates who distribute counterfeit digital products through websites or online platforms. The existence of these regulations is also related to efforts to protect consumers and the security of transactions in the ever-evolving electronic trading system (Mujisulistyo et al., 2024). However, the application of the ITE Law for intellectual property protection raises its own complexities, particularly regarding the definition of protected "electronic data" and the distinction between copyright infringement and pure cybercrime. Overlap in jurisdiction and sanctions between the ITE Law and the Copyright Law can sometimes lead to uncertainty in prosecution. The synergy between the ITE Law and the Copyright Law needs to be clarified to ensure more certainty in consumer protection and digital law enforcement.

The privacy policies of global platforms create an additional layer of regulation that affects the protection of digital rights. The interaction between national laws and the policies of global marketplace platforms creates a highly influential layer of private regulation. Platforms such as Amazon, Google Play, and Steam have terms and conditions (Terms of Service) and internal intellectual property policies that all sellers must comply with. These policies often refer to the laws of the country where the platform is legally domiciled, such as the United States' Digital Millennium Copyright Act (DMCA). In addition to state regulations, internal platform rules can also influence how a product is marketed and legally protected in the digital marketplace (Negara et al., 2021). The DMCA provides a notice and takedown mechanism that requires platforms to remove

allegedly infringing content after receiving notification from the rights holder. Article 55 of the Indonesian Copyright Law also adopts a similar principle, requiring Service Providers to suspend access to or remove infringing content after receiving notification. This mechanism is at the forefront of practical day-to-day protection for digital rights owners. However, this model has also been criticized for placing the burden of monitoring on rights owners, being vulnerable to abusive takedowns, and being purely reactive. Its effectiveness is highly dependent on the responsiveness and capacity of the platform's policy enforcement team, which can vary. The notice and takedown mechanism are effective in practice, but it still leaves the problem of burden and risk of abuse.

The dissonance between territorial law and global digital trade poses a serious challenge to rights protection. The main challenge of this entire legal framework is the dissonance between the territorial nature of the law and the global nature of digital trade. An application that is copyrighted in Indonesia and patented through the PCT can still be easily pirated by users in a country with weak law enforcement, then resold on the global marketplace by third parties. The rights owner then has to deal with local laws, which may have different procedures, heavier standards of proof, or very long court proceedings. This legal uncertainty is a significant obstacle for small and medium-sized digital entrepreneurs with limited resources. They often rely on marketplace policies as their first and only line of defense, as international litigation is financially unattainable. This situation creates an imbalance where large entities with robust legal departments can more effectively protect their digital assets than individual creators. The imbalance in enforcement capacity underscores the need for a more inclusive global mechanism for small digital creators.

The development of digital technology has given rise to new forms of infringement that are difficult to address under traditional legal frameworks. This phenomenon shows that the law must continue to adapt to technological changes in order to provide relevant protection for society (Noor et al., 2023). In addition, existing legal frameworks often lag behind in addressing new forms of infringement. For example, the practice of code lifting (taking part of the source code from a copyrighted program for use in a new program) or the use of patented algorithms in cloud-based services without permission are grey areas that are difficult to detect and prove. Traditional copyright laws are designed for more obvious infringements such as the physical reproduction of books or CDs. Proving patent infringement for methods executed on servers in other jurisdictions is also a major technical and legal challenge. The gap between the speed of technological innovation and the speed of legislative and judicial response is a permanent loophole exploited by infringers. This approach is important so that the law can maintain a balance between protecting innovation, economic interests, and public access to technology (Wiyandarini et al., 2021). International agreements such as TRIPS are not easy to revise to address issues specific to digital products, as they require consensus from all WTO member countries, which have diverse national interests. This regulatory gap emphasis's the need for legal innovations that are more adaptive to the dynamics of digital infringement.

The protection of digital products in the global marketplace requires a multi-faceted and adaptive policy strategy. From a policy perspective, the protection of digital products in the global marketplace requires a multi-faceted approach. At the national level, Indonesia needs to continue to conduct outreach and capacity building for law enforcement officials, judges, and business actors regarding the complexities of digital intellectual property. Improvements to technical regulations derived from the Copyright Law and Patent Law to regulate matters such as Digital Rights Management (DRM) protection and clear exceptions for fair use in the digital environment are also necessary. At the international level, Indonesia's legal diplomacy must actively promote the strengthening of bilateral and regional law enforcement cooperation, as well as participate in discussions in forums such as WIPO to formulate new, more responsive norms. However, the most sustainable solution may lie in the development of the technology itself, such as the use of blockchain for more transparent and automated verification of digital ownership and licensing. Synergy between national policy, international diplomacy, and technological innovation is key to sustainable digital protection.

The legal foundations for copyright and patents are in place, but the practice of digital protection faces structural pressures. Overall, the national and international legal frameworks for copyright and patents have provided an important normative foundation for the protection of digital products. Indonesia's Copyright Law and Patent Law, which are in line with TRIPS and WIPO agreements, recognize and provide legal instruments for digital creators and inventors. However, this analysis shows that this foundation faces significant structural pressures. The main challenge is no longer the absence of rules, but rather the inability of traditional territorial law enforcement mechanisms to keep pace with the speed, scale, and borderless nature of infringements in the

global marketplace. Effective protection in practice depends heavily on a combination of compliance with national laws, utilization of private protection mechanisms provided by platforms, and willingness to engage in complex and costly international legal processes. The gap between the law on paper and the reality of enforcement in the digital world is the central issue that needs to be addressed. Bridging the gap between legal norms and digital reality is key to effective protection of digital products.

Effectiveness and Limitations of Intellectual Property Law Enforcement Mechanisms in Cross-Border Digital Marketplaces

Traditional law enforcement mechanisms face serious limitations when dealing with digital intellectual property infringements. Traditional law enforcement mechanisms for intellectual property in Indonesia, which are primarily regulated by the Copyright Law, Patent Law, and Trademark Law, are essentially designed for a physical trading environment and clear territorial jurisdiction (Mustafa, 2022). In the current digital economy, various forms of cross-border transactions are becoming increasingly common, often presenting national legal systems with situations that cannot be fully addressed by conventional mechanisms (Rahman et al., 2024). Civil litigation in commercial courts requires the identification of a specific defendant, a serviceable address, and proof of quantifiable material damages. In the case of digital products on online platforms, the identity of the perpetrator is often hidden behind a username and IP address that can be easily spoofed or originate from servers in other countries. Even if the identity can be traced, the perpetrator may be located in a jurisdiction that does not have an extradition agreement or effective mutual legal assistance with Indonesia. This anonymity and digital mobility fundamentally paralyse the first step of traditional law enforcement: finding and bringing the alleged violator to justice. Existing legal procedures are not equipped with adequate tools for rapid and effective cross-border digital investigation, so many law enforcement efforts fail before they even begin. These procedural limitations underscore the need for cross-border enforcement instruments that are more adaptive to the digital reality.

The aspect of evidence is a major substantive challenge in the enforcement of digital copyright and patents. The next substantive limitation lies in the aspect of evidence, which is the cornerstone of any civil lawsuit or criminal prosecution. Section 96 of the Copyright Act does regulate the burden of proof, but the transformation of infringement into digital form creates unique challenges. Proof of copyright ownership for a piece of software can be relatively easy to demonstrate with a registration certificate. However, proving that a seller on a global marketplace has committed an infringement requires evidence that the digital product being sold is an unauthorized copy of the original creation. This requires digital forensic analysis to compare code, trace metadata, and prove the chain of illegal distribution. The existence of electronic documents and evidence is also increasingly recognized as an important part of digital transactions that require adequate legal protection (Sulaiman et al., 2023). The Electronic Information and Transactions Law recognize electronic documents as valid evidence, but the credibility of such digital evidence is highly vulnerable to being challenged in court regarding issues of authenticity, integrity, and the possibility of falsification. Handling digital evidence is a complex process because this evidence can provide powerful and almost irrefutable information (Karagiannis & Verdigis, 2021). The technical capacity of judges and legal advisers in understanding the complexity of digital evidence is often limited, potentially resulting in decisions that do not fully reflect the reality of the violations that have occurred. The limited technical capacity of law enforcement officials increases the risk of uncertainty in proving digital violations.

The intermediary liability model emerged as a solution to the limitations of traditional law enforcement in the digital realm. The intermediary liability model, as embodied in the notice and takedown mechanism of Article 55 of the Copyright Law and Article 26 of the ITE Law, emerged as a response to the inadequacies of the traditional model. The legal approach also needs to take into account the principles of ethical and responsible technology development so that it not only protects business interests but also the interests of the wider community (Radjawane & Mardikaningsih, 2022). This model transfers part of the enforcement burden from the state to the private sector, namely electronic system operators or platforms. In theory, this model is efficient because platforms have direct control over content on their infrastructure. However, its structural weaknesses are striking. First, this model is reactive rather than preventive. A pirated digital product can be traded, downloaded, and cause real economic losses for days or weeks before the rights holder becomes aware and files a notice. In the fast-moving digital economy, losses during this time window can be permanent and irrecoverable, even if the content is eventually removed. The reactive nature of this mechanism underscores the need for more proactive

preventive instruments in digital protection.

The notice and takedown mechanism create an information asymmetry that burdens rights holders more heavily than platforms. Second, the notice and takedown mechanism create information asymmetry and an unbalanced burden. Rights holders are required to actively and continuously monitor dozens or even hundreds of global marketplaces to detect infringements. This situation shows that not all businesses have the same technological capabilities to access and optimally utilize digital services (Ramle & Mardikaningsih, 2022). For large companies, this can be done with special crawling software, but for individual creators or SMEs, this is an impossible task. Conversely, platforms often only act as passive recipients of notifications. Article 55 of the Copyright Law does not require platforms to have a proactive filtering system or to conduct preliminary verification of uploaded products. As a result, this model perpetuates an endless cycle of infringement: remove one listing, and several new listings with minor variations will reappear. These dynamic turns intellectual property protection into a digital whack-a-mole game that is exhausting and costly for rights holders. Without proactive obligations for platforms, the cycle of digital infringement continues to repeat itself and undermines the effectiveness of protection.

The intermediary liability model is also susceptible to abuse as a tool for unfair competition. The third weakness of the intermediary liability model is its vulnerability to abuse. In digital business relationships, the principles of ethics and fairness should remain the basis for healthy business competition that does not harm other parties (Putra et al., 2022). Because platforms generally want to avoid legal liability, they tend to be overly cautious (over-compliant) by removing content based on notifications without in-depth analysis of the claims. This situation opens the door to unhealthy business tactics, where competitors can send false or erroneous notifications to remove legitimate digital products from the marketplace, thereby harming sellers who have not actually violated any laws. Although the Copyright Law provides a counter-notice mechanism for parties whose content has been removed, this process is time-consuming and, while it is ongoing, sellers lose sales momentum, reputation and revenue. This imbalance harms small innovators and can stifle healthy competition. Vulnerability to abuse underscores the need for procedural balance so that takedown mechanisms do not harm legitimate innovators.

The lack of harmonization in global intermediary liability standards exacerbates the uncertainty of cross-jurisdictional digital rights protection. At the global level, the absence of uniform intermediary liability standards exacerbates this weakness. Indonesia has adopted a model inspired by the United States' Digital Millennium Copyright Act (DMCA), but many other jurisdictions have different approaches. The European Union, through its new Digital Services Act (DSA), imposes stricter due diligence obligations and external audits on large platforms. The draft Digital Services Act (DSA) aims to balance the responsibility of online platforms with their role as intermediaries and important sources of information (Buiten, 2021). China has its own regulations that emphasize the responsibility of platforms to monitor content. These differences in legal regimes create complexity for global platforms such as Amazon or Alibaba, which must adapt their operations to each national law. For Indonesian rights holders, this lack of harmonization means that the effectiveness of their enforcement efforts is highly dependent on the country where the platform is legally domiciled or where the hosting server is located, adding a layer of uncertainty to their protection strategies. Global regulatory fragmentation requires adaptive strategies to ensure that rights holders remain protected across jurisdictions.

The normative ambiguity in the ITE Law weakens the certainty of platform liability for intellectual property violations. Even within the framework of Indonesian law itself, there is normative ambiguity regarding the limits of platform liability. Article 26 of the ITE Law focuses more on the protection of personal data and the obligation to operate a reliable electronic system. This provision does not explicitly and operationally define the extent to which a marketplace platform is obliged to take preventive measures (duty to prevent) against intellectual property violations. The status of platforms as neutral "electronic system operators" is often used as a shield to avoid substantive responsibility. As a result, rights holders find it difficult to sue platforms for negligence in managing systems that should be able to prevent repeated violations by the same users. This ambiguity results in a legal environment that provides minimal incentive for platforms to invest in more sophisticated infringement detection and prevention technologies. Without a clear operational definition, platforms tend to be passive and the protection of digital rights remains fragile.

Jurisdiction and enforcement aspects are fundamental obstacles to the cross-border enforcement of intellectual property judgments. Another fundamental limitation lies in the aspects of jurisdiction and enforcement. Suppose an Indonesian software developer successfully obtains a ruling from the Commercial Court in Jakarta against a foreign national

who is selling pirated goods. The enforcement of this ruling will face a real legal barrier. The assets of the perpetrator in Indonesia may not exist, and the recognition and enforcement of Indonesian rulings in the country where the perpetrator resides or has assets requires a bilateral or multilateral agreement on the recognition and enforcement of foreign civil rulings. Indonesia does not have such agreements with many countries. The ratification of the TRIPS Agreement through Law No. 7 of 1994 does require cooperation between member countries, but the provisions are general in nature and their implementation in the form of mutual legal assistance is a slow, costly bureaucratic process that is not designed to handle the massive volume of small to medium-scale digital infringements. Without an effective cross-border enforcement mechanism, Indonesian court rulings often lose their practical effectiveness.

Administrative blocking as an instrument for enforcing digital copyright is often only superficial. From an enforcement policy perspective, institutions such as the Directorate General of Intellectual Property and the Ministry of Communication and Information Technology have administrative authority, including blocking access to sites or content that violate copyright. However, these measures are superficial solutions that are easily circumvented. Perpetrators can quickly migrate their content to new domains or IP addresses, or use Virtual Private Network (VPN) technology to maintain accessibility. Such strategies, often referred to as "whack-a-mole" in digital copyright enforcement, have been widely documented as a response to authoritative blocking (Seng, 2013). The use of VPNs and encrypted networks allows infringers to hide their geographical location and circumvent geo-blocking technology, thereby severely limiting the effectiveness of jurisdiction-based restrictions (Mendel, 2009). Enforcement through blocking also raises legal and ethical issues, as it has the potential to restrict access to legitimate information and lead to broader censorship practices. Several analysts suggest that notice and takedown and administrative blocking mechanisms, if implemented without adequate oversight and transparency, can inadvertently wrap the right to information and freedom of expression under the guise of intellectual property protection (Deibert & Rohozinski, 2010; Suzor, 2010). This approach does not address the root of the problem, namely the existence and economic motivations of violators, and only shifts the locus of violations from one corner of the internet to another. Focusing on reactive technical measures without addressing the market incentives that drive infringement such as the demand for cheap content and affordable access ultimately only results in a cycle of continuous infringement without any fundamental resolution (Bridy, 2019). Without addressing the economic incentives for infringement, administrative blocking only gives rise to a cycle of repeated digital infringement.

The analysis concludes that neither traditional mechanisms nor intermediary liability have been able to address the challenges of digital protection. Overall, the analysis shows that traditional enforcement mechanisms and the intermediary liability model both contain structural weaknesses that make them less effective in protecting digital products in the global marketplace. Traditional mechanisms fail due to their attachment to territoriality, the difficulty of digital evidence, and their dependence on slow litigation processes. The intermediary liability model, while faster, is reactive, places an unfair burden on rights holders, is prone to abuse, and is not supported by a clear and globally harmonized framework of platform responsibility. Both systems operate within a 20th-century legal logic that struggles to address the realities of the 21st-century digital economy. This gap not only harms rights holders, but also erodes trust in the digital marketplace ecosystem as a whole. To close this gap, a breakthrough in legal thinking is needed that may go beyond mere reform of the Copyright Law or ITE Law, and move towards more integrated global regulation and the utilization of technology by platforms as part of their legal obligation to create a safer and fairer trading environment. Global legal breakthroughs and platform technology obligations are the strategic direction for the protection of digital products going forward.

Disruption of Innovative Digital Products on Conventional Intellectual Property Law Categorization and Principles

The SaaS model shifts the paradigm of software protection from product ownership to access-based services. The emergence of the software-as-a-service (SaaS) model fundamentally changes the economic character of software from an owned good (product) to an accessed service (service). Indonesian Copyright Law protects computer programs as copyrighted works, a category assumed to be attached to a medium or file that can be copied (Permana et al., 2018). In the SaaS model, source code remains copyrighted, but the primary economic value is no longer in the sale of copies but in the provision of continuous access, maintenance, and updates through cloud computing. This shift blurs the traditional boundaries between copyright and contract/consumer protection law. End User License Agreements (EULAs) for SaaS are often

more restrictive and contain clauses regarding ownership of user-generated data, something that is not regulated in the Copyright Law. Changes in digital business models often require adjustments in how the law views the relationship between service providers and users so that protection for both parties remains balanced (Supriyanto et al., 2023). As a result, legal protection for service users and the obligations of service providers are largely determined by unbalanced private contract terms, while the Copyright Law only tacitly protects the code behind the service without directly addressing the service aspect. This creates a legal loophole where infringement can occur not through the duplication of code, but through the imitation of service functionality or misuse of access, which is more difficult to attribute as pure copyright infringement. This legal loophole emphasis's the need for more explicit regulations to protect the service aspect in the SaaS model.

Works produced by generative AI challenge the anthropocentric foundations of copyright law. Content generated by generative artificial intelligence poses an existential challenge to the anthropocentric foundations of copyright law. Article 1(1) of the Copyright Act defines copyright as "the exclusive right of the creator that arises automatically based on the declaratory principle after a creation is realized in tangible form". The word "creator" implicitly and explicitly refers to humans or legal entities in the explanation of the law. The development of digital technology shows that innovation often moves faster than the development of existing regulations, so the law needs to continue to adapt in order to remain relevant to new social and economic realities (Wibowo et al., 2023a). When a poem, musical image, or program code is generated by an AI system such as GPT or DALL-E based on instructions (prompts) from users, the fundamental question is who should be considered the creator. Is it the user who gives the commands, the developer who trains the AI model, or the owner of the data used for training? Existing laws do not provide an answer. AI-generated works risk falling into the public domain from birth because there is no recognized legal "creator", thereby removing the economic incentive for innovators.

AI presents a new dilemma for the concept of inventive steps in patent law. In the realm of patents, the disruption brought about by AI is even more profound. Patent law requires that inventions contain an "inventive step", meaning that the invention cannot be predicted in advance by someone with specific expertise in the field of technology. This phenomenon shows that technological developments not only bring economic benefits, but also pose new challenges to a legal system that was previously designed for simpler technological conditions (Zulkarnain et al., 2024). When new and unexpected technical solutions are generated by AI algorithms exploring parameter spaces beyond human capacity, the question is whether the inventive step can be attributed to humans (programmers or users) or to machines.

Truly sentient AI is still fiction, and courts in several major countries are cautious about claims that AI can be considered an inventor because current systems are not yet fully autonomous (Lim & Li, 2022). Patent authorities in various countries are still grappling with this issue. AI models used to design new integrated circuits, pharmaceutical formulas, or aerodynamic designs clearly produce outputs that have industrial value and novelty. However, Indonesian Patent Law, like many other systems, does not yet have provisions governing inventions by non-human entities. This has the potential to hinder innovation because large investments in the development of generative AI for invention may not receive adequate patent protection, or conversely, trigger a wave of speculative patent applications for AI-generated inventions that clog the patent examination system. Without a new normative framework, AI-based inventions risk being caught between protection barriers and a flood of speculative applications.

NFTs present a new legal dilemma due to their status as digital ownership certificates that are not identical to the underlying artwork. The emergence of new asset forms such as NFTs is also linked to the growing prevalence of electronic transactions in modern trading systems (Wibowo et al., 2023b). Non-Fungible Tokens (NFTs) introduce a new paradigm in the concept of digital asset ownership and transfer. Technically, NFTs are verified certificates of ownership on the blockchain for a digital item, often associated with a digital artwork, collection, or asset in the virtual world. Copyright law protects the underlying digital artwork, but the NFT itself is not the artwork; it is metadata that proves ownership of a particular copy or version. The purchase of an NFT does not usually transfer the copyright of the original work to the buyer, but rather provides a kind of digital "collector's certificate". Legal issues arise when NFTs are created for digital works without the permission of the copyright holder, or when the smart contract mechanism attached to the NFT automatically pays royalties to the creator each time the NFT is resold. Indonesian Copyright Law regulates the rights to publish and reproduce, but does not specifically regulate automatic royalty mechanisms across secondary sales through

computer code. Legal recognition of smart contracts as instruments for implementing valid licenses remains unclear, even though the Electronic Information and Transactions Law recognize electronic contracts. The lack of clarity in regulations on NFTs and smart contracts calls for legal reforms to ensure more comprehensive digital protection.

The Personal Data Protection Law introduces a new dimension that has the potential to conflict with the intellectual property regime. The enactment of Law No. 27 of 2022 on Personal Data Protection adds a new dimension that has the potential to conflict with intellectual property interests in the new digital ecosystem. The development and operationalization of SaaS and generative AI are highly dependent on the collection and processing of data on a large scale, which often includes personal data. The principle of purpose and necessity limitation in the PDP Law may restrict how data is used to train AI models or improve SaaS services. This shows that data management in the digital economy is not only related to technological innovation, but also concerns the protection of individual rights and equitable economic governance (Wiyandarini et al., 2021).

On the other hand, databases generated from the use of a SaaS service can be considered a compilation of data which, if it meets the criteria of originality in its selection and arrangement, can be protected as a separate copyright. The tension between intellectual property rights over databases or AI models and data subjects' rights over their personal data requires adjustment and clarification in legal interpretation. Conventional regulations on copyright and patents were not developed with data privacy rights as a significant limiting factor in mind. The integration of privacy principles with intellectual property protection is an urgent need in the modern digital ecosystem.

The application of the exhaustion principle in the digital context raises significant normative uncertainty. The exhaustion principle or first sale doctrine, which in some legal systems limits the rights of copyright holders after a legitimate physical item is sold, becomes unclear in its application to digital products. For SaaS, this principle does not apply because there is no "sale" of the product. For NFTs, the question becomes complicated: is the sale of an NFT associated with a digital work an exhaustion of distribution rights after the first sale, allowing the NFT owner to freely resell it? Or is each transfer of an NFT a new act of communication to the public that requires permission? Indonesian copyright law does not explicitly regulate the principle of exhaustion of rights for the digital environment.

In digital economy practice, legal certainty is crucial so that businesses and users can understand the limits of their rights and obligations when conducting transactions or utilizing new technologies (Wibowo et al., 2023a). This uncertainty impacts the value and liquidity of NFTs and digital art business models, and demands legal certainty on whether the regime for tangible goods can be analogized to the digital world or whether a special regime needs to be created. Legal certainty regarding digital exhaustion is an important prerequisite for the sustainability of the NFT market and access-based services.

Decentralized digital production challenges the traditional definition of collaborative works in copyright law. The category of "collaborative works" in copyright law is also being tested by new digital production models. A generative AI model may be trained by one company, fine-tuned by an open-source community, and used by millions of users to generate content. The resulting output is difficult to categories as a joint work because there is no specific collaborative intent between the AI owner, code contributors, and end users. Similarly, the development of open-source software for SaaS often involves contributions from various parties around the world with different licenses, creating challenges in determining the ultimate rights and obligations of commercial SaaS providers built on that code. This cross-border collaboration also illustrates how digital economic activities are increasingly connected globally and no longer limited to a single jurisdiction (Zulkarnain et al., 2024). Territorial national laws struggle to accommodate this decentralized and global reality of production. The limitations of the definition of collaborative works underscore the need for legal adaptation to the global digital production ecosystem.

AI, blockchain, and NFT-based digital products challenge the effectiveness of traditional law enforcement mechanisms. From a law enforcement perspective, the nature of these new digital products makes notice and takedown mechanisms increasingly inadequate. How do you take down an AI model that has been trained and distributed? How do you prosecute copyright infringements committed by the AI itself? How can one seize or block an NFT recorded on a decentralized public blockchain? The perpetrator's digital address (wallet address) may be known, but linking it to a physical identity in the real world and bringing cross-border violations to national courts is an almost insurmountable obstacle. Conventional law enforcement regulations are completely unprepared to deal with violations that are algorithmic, decentralized, and encrypted in nature. The limitations of conventional regulations underscore the need for a new enforcement paradigm

that aligns with the nature of digital technology. This situation highlights that the legal system must consider new approaches that are not only repressive but also capable of anticipating rapid technological changes (Supriyanto et al., 2023).

Digital regulatory challenges require a more radical legal approach than mere patchwork solutions. The implication of these challenges is that a patchwork approach to legal reform may no longer suffice. A more radical rethink is needed. One emerging discourse is to move towards a regime based more on access rights and behavioral regulation than simply exclusive rights to an object. For SaaS, the focus may shift to protecting the integrity of services and user data. For AI, a model registration and audit system may be needed, as well as benefit-sharing instead of full monopoly rights. For NFTs, legal recognition of smart contracts and token ownership as proof of collector ownership needs to be regulated separately, apart from copyright over the original work. Access rights and behavioral regulation-based reforms could form the new legal foundation for the digital ecosystem.

The globalization of digital products demands more structured and rapid international legal harmonization. International harmonization has become much more difficult but also more crucial. Due to the highly global nature of new digital products, legal reform efforts in one country without coordination with other countries will only shift activities and legal disputes to more lenient jurisdictions. Forums such as WIPO need to be accelerated to discuss a new normative framework for AI and digital assets. Indonesia must be active in these negotiations, as falling behind in the formation of norms will impact the nation's ability to protect its digital economic interests in the future. Relying on judicial interpretations of existing copyright, patent, and ITE laws to resolve these new disputes is not an optimal solution and will result in prolonged legal uncertainty.

Digital transformation through SaaS, AI, and NFTs challenges the foundations of intellectual property law built in the analogue era. The analytical conclusion of this discussion is that the development of SaaS, Generative AI, and NFTs does not merely create borderline cases for existing intellectual property law. These developments attack the basic premises of the law: that creators are human beings, that creations can be separated and controlled, and that territorial exclusive rights are an effective tool for providing incentives. They call into question the entire legal architecture built in the analogue era. Without a bold vision for reform, the law risks becoming increasingly irrelevant, and effective protection will depend entirely on technological mechanisms and private contracts, which could widen inequalities and reduce public access. A comprehensive vision for reform is essential for the law to remain relevant and fair in the digital ecosystem.

CONCLUSION

This literature review concludes that existing national and international intellectual property legal frameworks, despite efforts to accommodate digital products through the ratification of agreements such as TRIPS and harmonization in the Copyright Act and Patent Act, face three main structural pressures. First, the territorial nature of the law clashes directly with the borderless character of the global marketplace and digital products, creating jurisdictional gaps that are exploited by infringers. Second, traditional law enforcement mechanisms that rely on litigation and intermediary liability models (notice and takedown) have proven ineffective because they are reactive, place an unbalanced monitoring burden on rights holders, and are prone to abuse. Third, the emergence of innovative digital products such as software-as-a-service, AI-generated content, and NFTs fundamentally challenges conventional legal categories that rely on the concepts of human creators, separate creations, and territorial exclusive rights. These tensions demonstrate that the law is lagging behind the pace of technological innovation, resulting in a legal environment that is uncertain and unable to provide adequate protection and incentives in the digital economy era.

The findings of this study have broad implications for various stakeholders. For policymakers and legislators in Indonesia, the main implication is the need for a progressive and visionary legal reform agenda. Reform should not be limited to technical amendments to existing laws, but should consider new approaches, such as the possibility of regulating a special regime for machine-generated works or legally recognizing smart contracts. The implication for rights holders and digital businesses is the need to adopt a hybrid protection strategy that combines formal legal registration, the use of digital protection technologies (digital rights management, blockchain), and careful contract negotiation when using global platforms. For marketplace operators, these findings imply that the passive intermediary liability model will come under increasing social and regulatory pressure; investment in proactive detection technologies and fair dispute resolution systems will become a necessity. At the global level, this study implies that international cooperation must be enhanced from mere harmonization of minimum

standards towards the establishment of collaborative enforcement mechanisms and faster mutual recognition for digital products.

Based on the above conclusions and implications, several strategic recommendations are proposed. First, it is recommended that the Government of the Republic of Indonesia establish a special task force consisting of experts in law, technology, and the digital economy to draft comprehensive legislation on digital intellectual property, integrating aspects of copyright, patents, data, and electronic transactions. This draft should explicitly regulate the legal status of software-as-a-service, AI-generated content, NFTs, and smart contracts. Second, the Directorate General of Intellectual Property needs to develop a national platform for the registration and verification of digital works based on distributed technology (blockchain) that can be integrated with marketplace systems to facilitate verification and monitoring. Third, there is a need for massive capacity building for law enforcement officials and judges through specific training on digital forensics and the dynamics of online business. Fourth, Indonesia must actively influence the formation of norms in international forums such as WIPO, by proposing new protection models that are fairer and more balanced for developing countries in the face of global digital platform dominance. Without these structured and bold steps, legal protection for Indonesian digital products in the global market will remain weak and lag behind.

REFERENCES

Ali, E. M., Dirgantara, F., & Darmawan, D. (2024). Legal Protection of Consumers in Online Transactions: A Case Study of Online Fraud in Indonesia. *International Journal of Service Science, Management, Engineering, and Technology*, 6(3), 27-38.

Ali, R., & Darmawan, D. (2023). Big Data Management Optimization for Managerial Decision Making and Business Strategy. *Journal of Social Science Studies*, 3(2), 139-144.

Anugroh, Y. G., Hardyansah, R., Darmawan, D., Khayru, R. K., & Putra, A. R. (2023). Consumer Protection and Responsibilities of E-commerce Platforms in Ensuring the Smooth Process of Returning Goods in COD Transactions. *Journal of Social Science Studies*, 3(2), 89-94.

ASEAN. (1995). *ASEAN Framework Agreement on Intellectual Property Cooperation*. Bangkok.

Bridy, A. (2019). The Price of Closing the Value Gap: How the Music Industry Hacked EU Copyright Reform. *Vand. J. Ent. & Tech. L.*, 22(2), 323-357.

Buiten, M. C. (2021). The Digital Services Act from Intermediary Liability to Platform Regulation. *JIPITEC*, 12(5), 361-380.

Cennamo, C., Dagnino, G. B., Di Minin, A., & Lanzolla, G. (2020). Managing Digital Transformation: Scope of Transformation and Modalities of Value Co-Generation and Delivery. *California Management Review*, 62(4), 5-16.

Darmawan, D. (2015). *Metodologi Penelitian*. Metromedia, Surabaya.

Darmawan, D. (2022). Environmental Accountability through Business Ethics, Responsibility, Morals and Legal Obligations. *Bulletin of Science, Technology and Society*, 1(2), 1-6.

Darmawan, D., Gardi, B., & Da Silva, E. B. (2023). Exploration of Changes in Management and Employee Work Relations in Multinational Companies in the Era of Literacy-Based Digitalization. *Journal of Science, Technology and Society (SICO),* 4(2), 43–54.

Deibert, R., & Rohozinski, R. (2010). Liberation vs. Control: The Future of Cyberspace. *Journal of Democracy*, 21(4), 43-57.

European Parliament & Council of the European Union. (2022). Regulation (EU) 2022/2065 on a Single Market for Digital Services and amending Directive 2000/31/EC (Digital Services Act). *Official Journal of the European Union*, 65, 1-102.

Fared, M. A., Darmawan, D., & Khairi, M. (2021). Contribution of E-Service Quality to Repurchase Intention with Mediation of Customer Satisfaction: Study of Online Shopping Through Marketplace. *Journal of Marketing and Business Research (MARK),* 1(2), 93-106.

George, A. (2018). Transcending Territoriality: International cooperation and harmonization in intellectual Property Enforcement and Dispute Resolution. *Tsinghua China Law Review*, 10(2), 225-273.

Hardyansah, R., & Putra, A. R. (2023). Building Regional Economic Stability Through Effective Legal Protection for Micro, Small, and Medium Enterprises in Indonesia. *Journal of Social Science Studies*, 3(1), 15-22.

Indarto, T., Negara, D. S., & Darmawan, D. (2023). Legal Frameworks for Mitigating Monopoly Practices Adverse to MSMEs in Indonesia. *Journal of Social Science Studies*, 3(1), 1-8.

Infante, A., & Mardikaningsih, R. (2022). The Potential of Social Media as a Means of Online Business Promotion. *Journal of Social Science Studies,* 2(2), 45-49.

Irfansyah, M. F., Darmawan, D., & Hardyansah, R. (2024). Implementation of the Principle of Good Faith in Contract Performance. *Bulletin of Science, Technology and Society*, 3(2), 51-56.

Karagiannis, C., & Vergidis, K. (2021). Digital Evidence and Cloud Forensics: Contemporary Legal Challenges and the Power of Disposal. *Information*, 12(5), 181-196.

Krippendorff, K. (2004). *Content Analysis: An Introduction to Its Methodology* (2nd ed.). Sage Publications, Thousand Oaks.

Lim, P. H., & Li, P. (2022). Artificial Intelligence and Inventorship: Patently Much Ado in the Computer Program. *Journal of Intellectual Property Law & Practice*, 17(4), 376-386.

Mardikaningsih, R., Azizah, E. I., Putri, N. N., Alfan, M. N., & Rudiansyah, M. M. D. H. (2022). Business Survival: Competence of Micro, Small and Medium Enterprises. *Journal of Social Science Studies (JOS3),* 2(1), 1-4.

Matveev, A., & Martyanova, E. (2022). Patentability of Computer Program Algorithms in the G20 States. *BRICS Law Journal*, 9(3), 144-173.

Mendel, T. (2009). *The Right to Information in Latin America. In Free Speech and Censorship around the Globe*. Central European University Press, London.

Muhammad, A. I., Saputra, R., Pakpahan, N. H., Darmawan, D., & Khayru, R. K. (2023). Ethics and Legality in the Dissemination of Information on Traffic Accident Victims Through Digital Media. *Journal of Social Science Studies*, 3(2), 235-244.

Mujisulistyo, Y. F., Darmawan, D., & Dirgantara, F. (2024). Reconstruction of the Legal Mechanism for Consumer Rights Recovery Regarding Personal Data Leaks in the Financial Technology and E-Commerce Sectors in Indonesia. *Journal of Social Science Studies*, 4(1), 75-84.

Mustafa, M. E., & SH, M. (2022). *Aneka Penegakan Hukum Hak Cipta, Paten, Merek dan Indikasi Geografis*. Penerbit Alumni, Bandung.

Negara, D. S., & Darmawan, D. (2023). Digital Empowerment: Ensuring Legal Protections for Online Arisan Engagements. *Bulletin of Science, Technology and Society*, 2(2), 13-19.

Negara, D. S., Darmawan, D., & Gardi, B. (2021). The Approach of Consumer Reviews to Product Competitiveness and Management Strategies. *Journal of Social Science Studies*, 1(2), 149-154.

Negara, D. S., Jauhari, M. A., & Darmawan, D. (2024). Responsibilities of Digital Marketplace Platforms and Anticompetitive Assessments in Business Law. *Journal of Social Science Studies*, 4(1), 407-422.

Noor, T., Putra, A. R., Suyuti, M., Khayru, R. K., Hariani, M., Issalillah, F., & Mardikaningsih, R. (2023). Implementation of Criminal Regulations on The Use of Hazardous Chemicals in Food Distribution. *International Journal of Service Science, Management, Engineering, and Technology*, 4(3), 13-17.

Oluwatosin, A. (2024). Privacy Rights, Inference, and User Trust in Digital Platform Services. *Journal of Social Science Studies,* 4(1), 381-390.

Patton, M. Q. (2002). *Qualitative Research & Evaluation Methods* (3rd ed.). Sage Publications, Thousand Oaks.

Permana, I. G. A. K., Windari, R. A., & Mangku, D. G. S. (2018). Implementasi Undang-Undang Nomor. 28 Tahun 2014 tentang Hak Cipta terhadap Perlindungan Karya Cipta Program Komputer (Software) di Pertokoan Rimo Denpasar. *Jurnal Komunitas Yustisia*, 1(1), 55-65.

Putra, A. R., & Wibowo, A. S. (2023). Royalty Fee Arrangement in Franchise Business and its Legal Implication in Indonesia. *Journal of Social Science Studies*, 3(1), 171-176.

Putra, A. R., Hardyansah, R., & Wibowo, A. S. (2022). Ethical Foundations of Franchisor-Franchisee Relationships and Their Influence on Business Performance Outcomes Across Franchise Systems. *Journal of Social Science Studies*, 2(2), 279-284.

Radjawane, L. E., & Mardikaningsih, R. (2022). Building Ethical and Fair Technology: Approaches to Responsible Technology Development and Application. *Journal of Social Science Studies*, *2*(1), 189-194.

Rahma, I. S., Hasiana, E. J., Cantika, S. L., & Octaviona, T. (2022). Indonesian Legal Protection for Consumers on the Validity of Electronic Contracts in the E-Commerce Transactions. *Yuridika*, 37(3), 697-714.

Rahman, A., Darmawan, D., & Saputra, R. (2024). Analysis of Cross-border Payment Regulation and its Impact on Consumers in Indonesia. *Bulletin of Science, Technology and Society*, 3(2), 23-28.

Ramle, N. L. B., & Mardikaningsih, R. (2022). Inclusivity in Technology-Based Services: Access and Skills Challenges. *Journal of Social Science Studies,* 2(2), 225-230.

Republik Indonesia. (1994). *Undang-Undang Nomor 7 Tahun 1994 tentang Pengesahan Agreement Establishing the World Trade Organization (WTO)*. Lembaran Negara Republik Indonesia Tahun 1994 Nomor 57, Tambahan Lembaran Negara Republik Indonesia Nomor 3564. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2008). *Undang-Undang Nomor 11*

Tahun 2008 tentang Informasi dan Transaksi Elektronik. Lembaran Negara Republik Indonesia Tahun 2008 Nomor 58, Tambahan Lembaran Negara Republik Indonesia Nomor 4843. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2014). *Undang-Undang Nomor 28 Tahun 2014 tentang Hak Cipta*. Lembaran Negara Republik Indonesia Tahun 2014 Nomor 266, Tambahan Lembaran Negara Republik Indonesia Nomor 5599. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2016). *Undang-Undang Nomor 13 Tahun 2016 tentang Paten*. Lembaran Negara Republik Indonesia Tahun 2016 Nomor 176, Tambahan Lembaran Negara Republik Indonesia Nomor 5922. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2016). *Undang-Undang Nomor 19 Tahun 2016 tentang Perubahan atas Undang-Undang Nomor 11 Tahun 2008 tentang Informasi dan Transaksi Elektronik*. Lembaran Negara Republik Indonesia Tahun 2016 Nomor 251, Tambahan Lembaran Negara Republik Indonesia Nomor 5952. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2016). *Undang-Undang Nomor 20 Tahun 2016 tentang Merek dan Indikasi Geografis*. Lembaran Negara Republik Indonesia Tahun 2016 Nomor 252, Tambahan Lembaran Negara Republik Indonesia Nomor 5953. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Republik Indonesia. (2022). *Undang-Undang Nomor 27 Tahun 2022 tentang Perlindungan Data Pribadi*. Lembaran Negara Republik Indonesia Tahun 2022 Nomor 196, Tambahan Lembaran Negara Republik Indonesia Nomor 6820. Dewan Perwakilan Rakyat dan Presiden Republik Indonesia. Jakarta.

Seng, D. (2013). The State of the Discordant Union: An Empirical Analysis of DMCA Takedown Notices. *Va. J. L. & Tech.*, 18, 1-59.

Simangunsong, H. L., Santoso, B., & Lumbanraja, A. D. (2020). Perlindungan Hak Cipta terhadap Pembajakan Karya Sastra Novel Versi E-Book di Tokopedia. *NOTARIUS*, 13(2), 442-454.

Sulaiman, M., Pakpahan, N. H., & Putra, A. R. (2023). Analysis of the Validity and Effectiveness of Electronic Contracts in Legal Protection of Digital Transactions in Indonesia. *Journal of Social Science Studies*, 3(1), 41-46.

Supriyanto, P., Hardyansah, R., Putra, A. R., Arifin, S., & Waskito, S. (2023). Implementation of Consumer Protection Law in Handling Lost Goods by Domestic Freight Forwarders. *Journal of Social Science Studies*, 3(1), 83-88.

Suzor, N. (2010). The Role of the Rule of Law in Virtual Communities. *Berkeley Technology Law Journal*, 25, 1817-1886.

United States Congress. (1998). The Digital Millennium Copyright Act of 1998: U.S. Copyright Office Summary. *Public Law* No. 105-304, 112 Stat. 2860-2918.

Wibowo, A. S., Darmawan, D., Halizah, S. N., & Mardikaningsih, R. (2023). Optimizing the Principles of Healthy Business Competition and the Role of KPPU for a Fair Economy in the Digital Era. *Journal of Social Science Studies*, 3(1), 95-100.

Wibowo, A. S., Darmawan, D., Negara, D. S., & Hardyansah, R. (2023). Analysis of Value Added Tax Application on Electronic Commerce Transaction in Digital Economy System in Indonesia. *Journal of Social Science Studies,* 3(2), 83-88.

Wiyandarini, G., Hariani, M., & Mardikaningsih, R. (2021). Community-based Institutional Financing Model through Cooperatives for Micro and Small Enterprises. *Journal of Social Science Studies*, *1*(1), 263-268.

World Intellectual Property Organization. (1886). *Berne Convention for the Protection of Literary and Artistic Works*. Swiss.

World Intellectual Property Organization. (1970). *Patent Cooperation Treaty*. Washington.

World Trade Organization. (1994). *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement).* Marrakesh.

Zhu, J. X., Sun, M., Wei, S. X., & Ye, F. Y. (2023). Characterizing Patent Big Data Upon IPC: a Survey of Triadic Patent Families and PCT Applications. *Journal of Big Data*, 10(85), 1-17.

Zulkarnain, A., Darmawan, D., & Hardyansah, R. (2024). Effectiveness of Law No. 5 of 1999 in Handling Cross-Border Business Competition. *SAPIENTIA ET VIRTUS*, 9(2), 461-475.

***Apriyanto, R. & R. Hardyansah. (2024). Legal Dynamics and Challenges in Protecting Intellectual Property Rights for Digital Products in the Global Marketplace, *Journal of Social Science Studies* 4(2), 261 – 276.**