

# Legal Protection for Intellectual Property Holders in Business Activities in The Era of The Industrial Revolution 4.0

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**Abstract:** The Industrial Revolution 4.0 brings new challenges in the protection of intellectual property rights (IPR) for business activities, such as the increased potential for IPR violations through massive digital dissemination, cross-border infringements, and the need for regulatory adjustments to accommodate the latest technological developments. Efforts to protect IPR in the digital era require more effective law enforcement, strong international cooperation, increased public awareness, and the availability of competent human resources in the field of IPR. The aim of this study is to analyze the legal protection for intellectual property rights holders in business activities during the Industrial Revolution 4.0 and to identify the challenges faced in these legal protection efforts. This research is normative legal research using a statute approach and a conceptual approach to examine primary, secondary, and tertiary legal materials related to the protection of intellectual property rights in business activities during the Industrial Revolution 4.0. Data collection techniques are carried out through literature studies and qualitative data analysis to understand legal concepts, identify problems, and find solutions in the legal protection of intellectual property rights holders. The results of the study show that the legal protection for intellectual property rights (IPR) holders in business activities during the Industrial Revolution 4.0 is regulated by various laws in Indonesia, such as the Copyright Law, Trademark Law, Patent Law, and Trade Secrets Law. Although there is already a legal framework, IPR protection in the digital era faces new challenges such as digital infringement, trade secret theft through illegal access, and online trademark and patent violations. The government has taken steps such as the enactment of the Information and Electronic Transactions Law (ITE Law), the establishment of the Directorate General of Intellectual Property (DJKI), and the signing of international agreements related to IPR. However, comprehensive efforts are needed from the government, businesses, and the public through regulatory improvements, law enforcement, socialization, IPR registration, information system security, monitoring, and international cooperation to effectively protect IPR. The main challenges include rapid technological development, cross-border violations, lack of public understanding, limited competent human resources, and still less effective law enforcement.

**Keywords:** Legal Protection, Intellectual Property Rights, Industrial Revolution 4.0, Law Enforcement, Challenges.

## 1. Introduction

The Fourth Industrial Revolution has brought significant changes to various aspects of life, including business activities. This era is characterized by massive digitalization and automation, as well as the use of advanced technologies such as artificial intelligence, the internet of things, and big data. These technological advancements create new opportunities and challenges for business practitioners, particularly in terms of intellectual property rights (IPR) protection. On one hand, technology enables greater efficiency and innovation, but on the other hand, it also increases the risk of intellectual property rights (IPR) violations. (Purba et al., 2021)

Intellectual Property Rights (IPR) are exclusive rights granted to creators or inventors for their works in the fields of technology, art, literature, or other intellectual works. IPR includes various types, such as patents, trademarks, copyrights, industrial designs, trade secrets, and geographical indications. The protection of IPR is crucial in business activities because it can provide significant economic benefits to the owners, maintain competitive advantages, and encourage innovation and creativity. Intellectual works are valuable assets for companies and serve as competitive resources that can provide an edge in business competition. (Rizkia & Fardiansyah, 2022)

In the era of the Fourth Industrial Revolution, the protection of intellectual property rights (IPR) has become increasingly important and complex. Digital technology enables the rapid and widespread dissemination of information and intellectual works, thus increasing the risk of IPR violations. Additionally, the emergence of technology-based businesses and new business models also presents challenges in IPR protection, such as issues of data ownership, software patents, and trademark protection in the virtual world. (Haryati & Ginanjar, 2022) However, the development of digital technology also brings new challenges in IPR enforcement. The ease of access to information and the ability to disseminate works digitally make IPR violations more likely to occur. Piracy, counterfeiting, and illegal exploitation of works pose real threats to IPR holders.

Although legal frameworks are in place, IPR enforcement in the digital era remains a distinct challenge. Technological advancements enable more complex and cross-border IPR violations. This demands more effective protection efforts and strong international cooperation in IPR enforcement. Furthermore, the rapid business development in the era of the Industrial Revolution 4.0 also requires adjustments and updates to IPR regulations. Existing regulations must be able to accommodate the latest technological developments and provide legal certainty for IPR holders in conducting their business activities. (Thamrin, 2022)

In this context, an in-depth study on the legal protection for intellectual property rights (IPR) holders in business activities during the Industrial Revolution 4.0 era is necessary. This study is expected to provide appropriate recommendations and solutions to ensure adequate protection for intellectual works, as well as to create a conducive environment for business growth and innovation in Indonesia. Based on the background explanation above, the formulation of the problem in this research is as follows:

1. How is legal protection for intellectual property rights holders in business activities in the era of the Fourth Industrial Revolution?
2. What are the challenges in the effort to provide legal protection for intellectual property rights holders in business activities in the era of the Fourth Industrial Revolution?

In this study, various aspects of intellectual property protection in the context of the Fourth Industrial Revolution will be discussed in depth, such as the development of digital technology and its impact on intellectual property, the issues faced in intellectual property enforcement, as well as strategies and efforts that can be undertaken to strengthen intellectual property protection in Indonesia. This study will also examine best practices from other countries in dealing with similar challenges, providing valuable insights for stakeholders in Indonesia.

### **3. Method**

The type of research that will be used in this study is normative legal research. Normative legal research is conducted by examining legal materials consisting of primary legal materials, secondary legal materials, and tertiary legal materials. The approaches used in this

research are the statutory approach and the conceptual approach. The statutory approach involves reviewing all laws and regulations related to the protection of intellectual property rights in business activities during the Industrial Revolution 4.0 era. Meanwhile, the conceptual approach involves studying the concepts and viewpoints of legal experts related to this research topic. (Marzuki, 2021)

The legal sources used in this research consist of primary legal materials, secondary legal materials, and tertiary legal materials. Primary legal materials include legislative regulations related to the protection of intellectual property rights, such as Copyright Law, Patent Law, Trademark and Geographical Indications Law, Trade Secret Law, and Industrial Design Law. Secondary legal materials include textbooks, legal journals, research findings, and other literature discussing related topics. Tertiary legal materials include legal dictionaries and encyclopedias that can provide explanations and definitions of legal concepts used in this research.

Data collection techniques were conducted through library research by collecting, reading, and examining relevant legal materials related to the topic of this research. (Sugiyono, 2019) The legal materials were obtained from libraries, documentation centers, and trustworthy online sources. The data analysis technique used is qualitative analysis. The collected data will be analyzed descriptively, systematically, and comprehensively using legal logic and relevant legal interpretations. The analysis will be conducted to understand legal concepts, identify issues, and find solutions related to legal protection for intellectual property rights holders in business activities in the era of the Fourth Industrial Revolution. The results of the data analysis will be presented in a systematic and comprehensive description, accompanied by strong legal arguments and appropriate recommendations to enhance legal protection for intellectual property rights holders in business activities in the digital era.

## 4. Results and Discussion

### a. Legal Protection for Intellectual Property Rights Holders in Business Activities in the Era of the Fourth Industrial Revolution

Legal protection for intellectual property rights (IPR) holders in business activities in the era of the Fourth Industrial Revolution has become increasingly crucial. The Fourth Industrial Revolution, characterized by digitization, automation, and data exchange, brings new challenges in terms of IPR protection. (Guswandi et al., 2021) Intellectual Property Rights (IPR) are exclusive rights granted by the state to individuals or legal entities over the intellectual creations they produce. IPR includes various types, such as copyright, patents, trademarks, industrial designs, trade secrets, and geographical indications. In the context of the Fourth Industrial Revolution, the protection of IPR becomes crucial as innovation and creativity emerge as primary keys in business competition. (Ramadhan et al., 2023)

In Indonesia, intellectual property rights protection is regulated by several laws and regulations, including:

1. Law Number 28 of 2014 concerning Copyright This law regulates legal protection for creations in the fields of science, art, and literature, including computer programs, which are important intellectual assets in the digital era.
2. Law Number 20 of 2016 concerning Trademarks and Geographical Indications This law regulates legal protection for trademarks, which are important assets for business entities in marketing their products or services, including in digital platforms.

3. Law Number 13 of 2016 concerning Patents This law regulates legal protection for inventions in the field of technology, which is highly relevant to the development of technology in the era of the Fourth Industrial Revolution.
4. Law Number 30 of 2000 concerning Trade Secrets This law regulates legal protection for trade secrets, which are crucial intellectual assets for business entities, especially in the digital era characterized by intense business competition.

In the era of the Fourth Industrial Revolution, intellectual property protection faces new challenges, especially concerning the utilization of digital technology and global data exchange. Some of the issues that arise include:(Sutra Disemadi & Kang, 2021)

1. Copyright infringement in the form of pirating digital works, such as music, movies, and software.
2. Theft of trade secrets through unauthorized access to corporate information systems.
3. Trademark infringement in the form of selling counterfeit products online.
4. Patent infringement in the form of manufacturing and selling products that illegally violate patent rights.

To face such challenges, the Indonesian government has taken several important steps, such as:(Santoso et al., 2024)

1. Ratification of Law Number 11 of 2008 concerning Electronic Information and Transactions (ITE), which regulates criminal acts related to violations of intellectual property rights in the digital environment.
2. Establishment of the Directorate General of Intellectual Property (DJKI) under the Ministry of Law and Human Rights, tasked with regulating and overseeing the implementation of intellectual property protection in Indonesia.
3. Signing of several international agreements related to intellectual property rights, such as the TRIPs Agreement (Trade-Related Aspects of Intellectual Property Rights) and the Madrid Protocol Agreement for trademarks.

In the era of the Fourth Industrial Revolution, legal protection for intellectual property rights holders becomes increasingly important for several reasons: Firstly, there is a growing number of activities and business transactions conducted digitally and online, thereby increasing the risk of intellectual property rights infringement. For example, illegal distribution of digital content, software piracy, or copying of product designs.(Arlan, 2023) Secondly, with the advancement of technologies such as artificial intelligence, the Internet of Things, and big data, new potential infringements of intellectual property rights may arise, such as unauthorized use of data or algorithms.(Hamza & Pradana, 2022) The third point is the increasing global business competition, where every business actor needs to protect their intellectual property in order to compete fairly and effectively.(Sinaga, 2020)

To face this challenge, comprehensive efforts from various parties such as the government, businesses, and society are required. The government needs to continually improve regulations and law enforcement in the field of intellectual property rights (IPR), as well as increase socialization and education to the public. Businesses also need to be proactive in protecting their intellectual property, for example, by registering IPR, monitoring potential infringements, and taking legal action when necessary.(Andrias et al., 2024) In addition, international cooperation is also very important given the cross-border nature of digital and online activities. Indonesia has become a member of several international agreements in the field of intellectual property rights, such as the Paris Convention, the Patent Cooperation

Treaty (PCT), and the Agreement Establishing the World Intellectual Property Organization (WIPO). (Rizkia & Fardiansyah, 2022)

In addition, intellectual property rights holders can take several steps to protect their rights in business activities in the era of the Fourth Industrial Revolution, including: (Waisnawa & Laksana, 2023)

1. Registering their intellectual property rights officially with the authorized agencies, such as the Directorate General of Intellectual Property for copyright, patents, trademarks, and industrial designs.
2. Implementing adequate security systems to protect trade secrets and other confidential information from unauthorized access.
3. Conducting regular monitoring of intellectual property rights infringements, both in the physical world and online.
4. Collaborating with law enforcement and relevant organizations to take legal action against intellectual property rights infringements.
5. Providing education to employees and business partners about the importance of intellectual property protection and the consequences of intellectual property rights violations.

With adequate legal protection and preventive efforts from intellectual property rights holders, it is hoped that innovation and creativity in business activities in the era of the Fourth Industrial Revolution can continue to develop safely and protected.

#### **b. The Challenges in Legal Protection Efforts for Intellectual Property Rights Holders in Business Activities in the Era of the Fourth Industrial Revolution**

Efforts to provide legal protection for intellectual property rights (IPR) holders in business activities in the era of the Fourth Industrial Revolution face various challenges that need to be comprehensively addressed. Here are some key challenges faced, accompanied by explanations and relevant regulations.

First Challenge: Rapid Technological Development

The Fourth Industrial Revolution era is characterized by rapid technological advancements, such as artificial intelligence, the Internet of Things, big data, and blockchain technology. These developments bring both opportunities and new challenges in IPR protection. For example, the emergence of new technologies may give rise to potential IPR infringements that are not yet regulated in existing legislation. (K. & Maharani, 2024)

To face this challenge, efforts are needed to continuously review and adjust legislation to accommodate the latest technological developments. One of the efforts that can be made is by amending laws related to intellectual property rights (IPR), such as Law Number 28 of 2014 concerning Copyright and Law Number 13 of 2016 concerning Patents. (Hendri et al., 2022)

Second Challenge: Cross-Border Violations

Digital and online activities in the era of the Fourth Industrial Revolution are cross-border in nature, thus intellectual property rights (IPR) violations can also occur across borders. For example, the illegal dissemination of digital content via the internet or software piracy conducted from abroad. This complicates the enforcement of laws and the effective protection of IPR. (Ferri, 2021)

To overcome this challenge, strong international cooperation in the field of intellectual property rights (IPR) is needed. Indonesia has become a member of

several international agreements related to IPR, such as the Paris Convention, the Patent Cooperation Treaty (PCT), and the Agreement Establishing the World Intellectual Property Organization (WIPO). However, efforts are still needed to enhance the harmonization of regulations and law enforcement at the international level. (Rizkia & Fardiansyah, 2022)

**The Third Challenge: Lack of Understanding and Awareness of the Society**

The lack of understanding and awareness of the society regarding the importance of intellectual property protection is also a challenge in itself. There are still many people who do not fully grasp the concept of intellectual property rights (IPR) and unintentionally or even intentionally commit infringements for various reasons. (Muehlfeld & Wang, 2022)

To overcome this challenge, it requires more extensive socialization and education efforts to the public, both through educational institutions, mass media, and government programs. One effort that can be made is by incorporating Intellectual Property Rights (IPR) material into the curriculum of schools and universities, in accordance with the mandate of Law Number 28 of 2014 concerning Copyrights. (Kusdiana et al., 2020)

**Fourth Challenge: Human Resource Limitations**

Enforcement of intellectual property rights (IPR) requires adequate human resources, both in terms of quality and quantity. However, there are still limitations in competent human resources in the field of IPR, such as judges, prosecutors, and specialized investigators in IPR. (Azharuddin et al., 2020)

To address this challenge, efforts to enhance human resource capacity in the field of Intellectual Property Rights (IPR) are needed, both through specialized education and training, as well as by involving more IPR experts in the law enforcement process. Law Number 28 of 2014 concerning Copyright and Law Number 13 of 2016 concerning Patents have mandated the establishment of Commercial Courts and Specialized IPR Courts, which require the availability of competent human resources. (Salma et al., 2024)

**The fifth challenge: Ineffective Law Enforcement**

Despite the adequate legislation in the field of intellectual property rights (IPR), its enforcement remains ineffective. This could be due to various factors, such as the lack of coordination among law enforcement agencies, minimal sanctions imposed, or the difficulty in proving IPR violations in certain cases. (Wardana et al., 2024)

To overcome this challenge, it requires an improvement in coordination and synergy among law enforcement agencies, such as the Police, Prosecutors, and Courts. Additionally, a review of the sanction provisions in legislation is also needed to make them more effective in deterring intellectual property rights violators. (Sriwidodo, 2020)

By comprehensively addressing these various challenges, it is hoped that legal protection efforts for intellectual property rights holders in business activities in the era of the Fourth Industrial Revolution can be continually enhanced. This will provide legal certainty and a conducive investment climate for entrepreneurs, as well as drive economic growth and innovation in Indonesia.

## 5. Conclusion

Legal protection for intellectual property rights (IPR) holders in business activities in the era of the Fourth Industrial Revolution is governed by various laws and regulations in Indonesia, such as the Copyright Law, Trademark and Geographical Indication Law, Patent Law, and Trade Secret Law. Despite the existence of legal frameworks, IPR protection in the digital age faces new challenges such as digital copyright infringement, trade secret theft through illegal access, online trademark and patent infringements. To address these challenges, the government has taken steps such as enacting the ITE Law, establishing the DJKI, and signing international agreements related to IPR. However, comprehensive efforts from the government, businesses, and society are needed through regulatory improvements, law enforcement, awareness campaigns, IPR registration, information system security, monitoring, and international cooperation to effectively protect IPR in the era of the Fourth Industrial Revolution.

The main challenges in legal protection efforts for intellectual property rights (IPR) holders in business activities in the era of the Fourth Industrial Revolution include rapid technological developments that bring about new potential IPR violations, cross-border violations that are difficult to enforce, lack of understanding and awareness among the public about the importance of IPR protection, limited competent human resources in the field of IPR, as well as ineffective law enforcement due to minimal coordination among law enforcement agencies, sanctions that fail to deter, and difficulty in proving IPR violations.

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