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Challenges of Patent Protection in the Digital Era: Analysis of Indonesian Law and Comparison with the Patent Protection Model in China

Vivian[1], Aliyyah Aprilia[2], Geizka Orillia Fiqih[3], Hari Sutra Disemadi[4]
hari@uib.ac.id
[1,2,3,4]Faculty of Law, Universitas Internasional Batam, Batam, Indonesia

Abstract

The development of digital technology has increased the number of patent infringements globally, while the patent protection system in Indonesia is still unable to accommodate digital dynamics. Regulatory backwardness, slow bureaucracy, and low public awareness are the main obstacles in patent protection. This study aims to analyze and compare the patent protection systems of Indonesia and China in facing the challenges of the digital era. This study uses a normative legal method with a comparative law approach based on Schlesinger's theory, with descriptive-qualitative analysis through a study of regulatory literature and related legal documents. The study shows that Indonesia faces serious challenges such as the length of the patent registration process, weak law enforcement, and the non-recognition of patents for software and algorithms. On the other hand, China has established a progressive digital patent protection system, including a special IPR court, an integrated digital evidence system, and a blueprint for an IP protection strategy until 2035. China's system also adopts an efficient approach to patent examination, with a duration of only 15 months compared to Indonesia's 3-5 years. Both countries refer to the TRIPS standard, but their implementation is very different due to varying institutional capacities and country strategies. Indonesia is advised to carry out legal reforms and strengthen public education to support patent protection that is adaptive to the digital era.

Keywords:

Patent Protection, Digital Era, Indonesia, China

Introduction

Patent protection has an important role in encouraging innovation and technology-based economic growth. In the digital era, technology is easy to develop rapidly, creating various innovations that require legal protection so as not to be misused by other parties(Lazuardi & Gunawan, 2024). The phenomenon of the increasing number of patent infringements in the digital world shows that the existing protection system still has many weaknesses in the face of technological developments. According to data from the Directorate General of Intellectual Property (DJKI) of the Ministry of Law and Human Rights of the Republic of Indonesia, the number of patent applications has reached 4,511 consisting of 3,723 patent applications and 785 simple patents as well as 3 applications from Patent Cooperaton Traty (PCT) However, from the number of patent applications there is still a lack of human resources in the patent examination section because there are several employees who are entering retirement so that the patent application process has not been optimally carried out. Therefore, the challenges in patent protection are increasingly complicated due to technological developments and globalization. This can be seen from the increasing violations of intellectual property rights, where increasing cases of patent infringement on digital platforms such as the use of technology without the permission of the patent holder or the illegal distribution of innovative product (Sidiprasetija et al., 2024). In Indonesia, this problem is even more complex because the patent legal framework still

refers to Law Number 13 of 2016 concerning patents which is considered less adaptive to the development of digital technology, so that it is often unable to provide adequate protection for innovators.

In Indonesia, the patent protection system still faces various challenges ranging from the long registration process to weak law enforcement against patent infringement. According to (Ritonga et al., 2024). many innovations do not get optimal protection due to the limitations of the recording system and low public awareness of the importance of patents. In contrast to Indonesia, China has adopted a more progressive approach in its patent protection system. The Chinese government has implemented digital technology in the patent recording process including the use of blockchan to improve transparency and data security (Disemadi et al., 2023). In addition, the country has specialized intellectual property rights (IPR) courts that expedite the resolution of patent disputes. Such measures make China one of the countries with the highest number of patents in the world and provide stronger protection for innovators.

The protection of patent rights has faced significant challenges, especially in the legal aspect in Indonesia. Indonesia has made many revisions to the law governing patent rights, namely Law No. 13 of 2016 regarding the accommodation of technological developments, but in reality, Indonesia is still very far behind regarding the speed of digital technology compared to other countries (Santosa et al., 2024). This research will compare patent rights in Indonesia and China. As written in the patent law of the people's republic of china under administration (CNIPA), where China has formed a Re-examination panel that makes it possible to resolve issues regarding patent rights more easily and efficiently (Iain A. McGeoch, 2021). With this, there is a need for a more in-depth analysis of the application of technology such as blockchain in patent registration in Indonesia, which until now has not been thoroughly implemented.

Law enforcement in Indonesia at this time regarding patent rights still uses a previous or conventional system that is difficult to handle to handle violations of patent rights in the digital world. Meanwhile, China has 18 specialized courts for Intellectual Property Rights (IPR) with a migrated digital evidence system (Iain A. McGeoch, 2021). Meanwhile, Indonesia still has difficulties in handling dispute resolution related to patent rights related to and involving digitalization technology (Hermansyah, 2023) . In the settlement and examination of patent rights, the examination period is much different in China, the examination related to patent rights only takes 15 months, while Indonesia takes 3 - 5 years. With this we need to know how China can implement a patent examination period of only 15 months, which can be a practical solution related to existing patent regulations in Indonesia. In addition, it is very important for us as citizens or communities to raise public awareness about the protection of patent rights, especially in the era of digitalization as it is today. In Indonesia itself, although there are already some people who care and understand about patent rights, the number is still very low, especially among small communities. Whereas in China itself it is difficult to have a broad understanding education related to patent protection which aims to increase public understanding, especially the community of industry players regarding the importance of Intellectual Property Rights. With this, it is very necessary to socialize and educate more widely on what Intellectual Property Rights, especially on Patent rights in Indonesia and their benefits. To increase public understanding in the hope that Indonesia can protect all innovations or ideas generated by its people.

Identifying the legal vacuum (regulatory gap) related to law enforcement mechanisms against copyright infringement on digital platforms that are not explicitly regulated in the law provides a normative contribution in the form of recommendations for the need for legal literacy for social media users and strengthening the role of the state in enforcing copyright law in the digital era. Thus, this research enriches the discourse of intellectual property law in Indonesia with an approach that is relevant to the development of information technology.

Several previous studies have discussed important aspects related to the patent system and intellectual property protection in Indonesia and China, which can be used as the basis for novelty in this study (Ribowo & Roisah, 2019). examines a comparison of simple patent protection mechanisms, finding significant differences in the approaches of the two countries even though both refer to WTO/TRIPs standards. However, this study has not specifically highlighted adaptation to digital innovation. (Ruhtiani, 2022). in "Comparison of Legal Protection of Communal Intellectual Property Rights Between Indonesia and China" examines the protection of communal

intellectual property, especially on traditional knowledge, with the result that regulations in both countries are not optimal in implementation, without discussing the issue of modern technology-based patents (Djuliana & Gultom, 2023). examines the legal system related to the Protection of Famous Unregistered Trademarks between the two countries, highlighting differences in legal approaches but not discussing digital patent protection. (Rahmatillah & Sanusi, 2024). in a study entitled "Patent Protection for Artificial Intelligence: A Comparative Study of Indonesia and the United States," identifies the challenges of AI patent regulation in Indonesia and compares it to the more advanced system in the US, providing a relevant framework but not directly comparing Indonesia to China. From the study, there is still a void of in-depth research on the similarities and differences between Indonesia and China's patent systems specifically in dealing with digital challenges, especially regarding software and algorithm-based patents and digital intellectual property law enforcement.

The results of this research make significant contributions from both theoretical and practical perspectives. Theoretically, this research enriches the study of legal protection of patents in Indonesia and China in the digitalization era by highlighting the importance of patent protection in the two countries . This research shows the importance of regulatory updates to respond to the dynamics of rapidly evolving technology and discusses the fundamental differences between the patent protection systems in Indonesia and China which are more adaptive to digital innovation. From a practical perspective, the results of this study can provide guidance for policy makers and legal practitioners in Indonesia to adapt patent regulations to better suit current digital developments, as well as provide an understanding of the importance of effective patent protection. However, this research also has limitations, especially in the scope of analysis, which is limited to the comparison between the two countries without further exploring patent models in other countries that also have similar challenges, so that the understanding of patent protection in the digitalization era can still be expanded.

Research Methods

This research uses normative juridical research methods, namely research using research objects which are legislative documents. This method will compare regulations regarding patents in Indonesia and China and the challenges that occur in the digitalization era. This research examines that there is a need for clear regulations and fixed sanctions for patent violators because it is very detrimental to the patent owner itself. This method aims to evaluate, identify problems and relevant research questions. The approach used in this research is a comparative legal approach to compare patent protection laws in Indonesia and China. This research also examines related regulations and laws. The data in this research is obtained through literature study technique, which involves collecting and analyzing various relevant literature sources, such as books, scientific journals, policy reports, regulations, as well as other official documents related to the topic of patent protection. This research uses a descriptive - qualitative - method of analysis, which involves systematically describing and interpreting the data. This technique is carried out by describing the legal materials that have been collected into structured and coherent sentences in accordance with the rules of legal analysis. The data sources analyzed come from various legal documents and relevant scientific literature, then interpreted to provide a clear picture of patent rights in Indonesia and China. This method allows the researcher to present a logical and in-depth argument based on the available legal materials. The stages of analysis begin with the collection of relevant legal materials.

The comparative law theory of Rudolf B. Schlesinger is used in this research because this comparative law theory is a scientific approach to analyzing the legal systems of several countries with the aim of more easily understanding the differences and similarities that exist. Rudolf B. Schlesinger himself has been recognized as a pioneer of comparative legal studies since the 20th century. Where according to him, comparative law should not only be limited to editorial or dogmatic differences but should also focus on how each legal system resolves its legal problems (Vol & The, 2022).

In the era of globalization and digitalization, comparative law is increasingly the solution to the emergence of transnational legal issues that require cross-border solutions. Issues such as intellectual property protection, data privacy, and cybercrime require a comparative understanding of how different legal systems respond to such

challenges. In this context, comparative law serves not only as an academic tool, but also as a practical instrument to develop legal frameworks that are adaptive to technological developments and globalization (Safriani, 2018) . Therefore, Schlesinger's theory of comparative law is appropriately used as a method of inquiry that explores the ease of gaining a deeper understanding of certain legal materials, rather than sets of regulations or legal principles.

Schlesinger's theory of comparative law is particularly relevant to understanding the challenges and opportunities arising from the development of digital technology. Comparative law can assist countries in crafting regulations and policies that are appropriate to the development of digital technology, as well as in ensuring that their legal systems can handle the new challenges that arise. Through the use of this theory, we can also find solutions to the new challenges arising from digital technology between countries and how legal systems can adapt to the continuous changes in policies between countries. In this research, we will specifically analyze the comparison of patent protection between Indonesia and China. Schlesinger's theory of comparative law will be utilized in terms of highlighting how the two countries face similar challenges in the digital age albeit with different laws. This means observing, analyzing, and comparing the legal systems in the two countries to uncover similarities and differences in patent law implications, explain functions, and identify the background and reasons behind the differences (Lukito, 2022).

In the context of patent rights, the object of comparison can include various aspects, such as patent eligibility criteria, filing and examination processes, rights and obligations of patent owners, as well as infringement actions and sanctions applied in the two countries in the form of patent protection (Buana, 2024). So the use of Schlesinger's comparative law theory offers a comprehensive framework to analyze patent rights in Indonesia and China by considering various aspects of patent rights and using explorative-contextual and normative-textual methods of comparison to be able to gain a deeper understanding of the two legal systems and which aspects can be improved for better policies.

Results and Discussion

Patent Protection System in Indonesia in Facing the Challenges of the Digital Era

The legal protection of patents in Indonesia is regulated through Law Number 13 Year 2016 on Patents. In this provision, patents are explained as exclusive rights granted by the state to inventors for their creations in the field of technology that are valid for a certain period of time and allow inventors to use their inventions independently or give permission to other parties to use them (Ritonga et al., 2024). There are two types of patents, namely ordinary patents and simple patents. Ordinary patents are granted for inventions that are new, contain inventive steps and have the possibility of application in the industrial field. Meanwhile, simple patents are granted for inventions that are also new but, are the development of existing products or processes and can still be applied in the industry (Rizqita et al., 2022). Therefore, simple patents do not require complicated inventive steps as in ordinary patents.

The patent protection system in Indonesia adheres to the first to file principle, namely that patent rights are granted to the party who first submits an application for a new invention that meets the predetermined requirements. For simple patents, legal protection is granted if the invention has an element of novelty that develops from existing products or processes and can be applied in the industrial world, as stipulated in article 3 paragraph (2) of Law Number 13 of 2016 concerning Patents (Martinelli et al, 2024). However, there are some new inventions that cannot be patented such as processes or products that conflict with laws and regulations, religion, public order, or decency, methods of examination, treatment, medication, and/or surgery on humans or animals, as well as theories and methods in science and mathematics. Moreover, natural phenomena, laws of nature, abstract ideas or concepts, literary works, musical compositions, and artistic creations are also not patentable, although they may be protected by copyright.

The patent eligibility criteria in Indonesia in the digital age are not fundamentally different from the general criteria. However, it is important to consider the technical and commercial aspects that are specific to digital innovations, as well as ensuring that the invention has the potential for wide application in various industries. In the aspect of novelty, the invention must be completely new and has never been disclosed to the public before. A check

of the DJKI patent database and overseas patent offices to ensure there are no similar inventions such as software, algorithms, or similar digital systems that have already existed and been disclosed before. Furthermore, the inventive step offers a significant new solution or approach in an algorithm method or a new way to use digital technology. As a result, the invention should have practical applications, whether in the production of software, hardware, or in various digital services such as e-commerce, social media, financial technology, and other digital aspects. The invention must also have the potential to be commercially applied and provide economic benefits (Hawin & Riswandi, 2020) .

In Indonesia, in the process of examining exclusive rights, the HAKI office is under pressure due to the surge in the number of applications from various countries in the world. This condition causes a number of problems such as the accumulation of applications, the length of time for granting rights, and the decline in quality in the examination process However, as the digital era develops, patent applicants can directly submit patent applications online through the patent.dgip.go.id system, and examination also utilizes technology to speed up the process (Martinelli et al , 2024). The Directorate General of Intellectual Property (DJKI) will conduct administrative and substantive examinations of the completeness of documents and application formats. AI selection is also used to assist the novelty examination and find existing patents. To speed up the patent search and examination process, DJKI cooperates with other countries' intellectual property offices such as Singapore through the Tracing and Examination Cooperation Program (Direktorat Jenderal Kekayaan Intelektual, 2024) .

Owners of patents in Indonesia that have been registered have the exclusive right to implement the invention, including producing, using, selling, and/or importing the patent results. The patent holder may prohibit other parties from performing the same acts without his permission, such as producing, using, selling, or importing the product or process protected by the patent in accordance with article 19 of Law No. 13/2016 on Patents. However, the patent holder has the right to grant a license to other parties to use his patent, under certain conditions and agreed rewards (Pamolango et al., 2023). The main obligation of the patent holder is to pay an annual fee during the term of patent protection. The term of patent protection in Indonesia is granted for 20 years from the date of receipt of the patent application, while a simple patent is granted for 10 years. Patent holders are obliged to implement their patents in the territory of Indonesia, which means that the protected product or process must be manufactured or used in Indonesia. This regulation was made by the Indonesian government to support technology transfer, investment absorption, and increase the provision of employment for the domestic community (Rizkiawan, 2025).

In today's rapidly developing and interconnected digital era, the patent protection system is faced with increasingly complex and diverse challenges. The availability of technology that allows the widespread and instant dissemination of innovations actually opens up opportunities for digital piracy, where copyright infringement becomes increasingly difficult to identify and enforce legally (Suhaeruddin, 2024). In addition, the ease of duplicating works also increases the potential losses experienced by patent holders. Borderless global distribution also creates obstacles in law enforcement due to differences in Intellectual Property Rights (IPR) rules between countries. The rapid advancement of technologies such as artificial intelligence (AI), blockchain, and the Internet of Things (IoT) adds to these challenges, as legal regulations are often unable to keep up with the pace of innovation. Furthermore, the presence of works produced by algorithms and AI systems raises new issues regarding who deserves to have rights to the results of these innovations (Hutasoit et al., 2023). Therefore, it is necessary to update the paradigm in patent protection in order to adjust to the dynamics of the current digital era.

In the digital era, there are special challenges related to patent enforcement in Indonesia due to the global nature of the internet and digital technology that enables the rapid and widespread dissemination of information and products. Therefore, patent holders need to strive to effectively protect their rights in the digital era, including through legal remedies and other preventive measures for patent infringement that they may experience (Tambunan, 2025). Patent infringement in Indonesia includes illegal acts such as making, using, selling, or importing patented products without authorization. Criminal sanctions for patent infringement can include fines of up to IDR 1 billion and imprisonment of up to 4 years, depending on the type of infringement. Violations can also result in civil sanctions in the form of compensation for economic losses suffered by the patent holder (Syahputra & Silalahi, 2025).

Patent enforcement in Indonesia in this digital era faces challenges such as the difficulty of proving infringement. In some cases, it is difficult to prove that a product or action constitutes patentinfringement (Arnanda et al., 2024). Acts of software or digital content piracy are very easy to occur and difficult to track effectively. The rapid development of technology makes patents may become obsolete or difficult to maintain even though patents play an important role in driving innovation and economic growth in the digital era. The Indonesian government's policy to continue protecting patents by providing incentives for companies and individuals to continue developing new ideas and creating better products and services. In addition, patents also facilitate collaboration and technology transfer through licensing, thus accelerating industrial growth in various sectors (Tambunan, 2025).

Although the ease of patent protection in Indonesia has provided an online system, there is still a bureaucracy that needs to be overcome to ensure the patent registration process runs smoothly, namely the need to increase public understanding of the patent system and the importance of protecting intellectual property (Hawin & Riswandi, 2020). DJKI conducts various socialization activities, trainings, and seminars to increase public understanding of patent protection. These efforts aim to encourage more people to file patent applications and increase commercialization of inventions. Training and socialization also help the public to understand the importance of patents in supporting innovation and economic growth (Rizkiawan, 2025) .

Thus, patent protection in the digital era requires major changes to legal policies. This is because digital technologies such as software, algorithms, and artificial intelligence are developing very fast, so the old legal rules become inappropriate and can actually hinder innovation. Therefore, we need a legal system that is flexible and can always keep up with the increasingly complex digital innovations. In addition, patent enforcement must also be strengthened, given the increasing ease of infringement in the digital world that is difficult to control. Patent protection must also be expanded, not only for physical products, but also for various forms of digital innovation. To achieve this, global cooperation is essential so that there are the same patent protection standards in various countries, so that cross-border infringement can be minimized.

In 2024, DJKI organized socialization activities of Law Number 65 of 2024 concerning the third amendment to Law Number 13 of 2016 concerning Patents. This regulatory change is a response to the rapid development of technology, global dynamics, and the increasingly complex needs of society. One of the crucial aspects of this change is the more comprehensive regulation of inventions in the realm of technology. This includes restrictions on inventions related to computer programs and inventions, as well as setting a deadline for filing applications for inventions that have been published in scientific forums. This policy is expected to accelerate the patent registration process while providing higher legal certainty for businesses, academics, and inventors (Direktorat Jenderal Kekayaan Intelektual, 2024).

Furthermore, the latest law in 2024 emphasizes collaboration between the government, industry, and academia. This collaborative synergy aims to ensure that the new patent policy can be implemented effectively and provide optimal benefits for all parties. Socialization conducted by DJKI on an ongoing basis to reduce errors in patent filing(Vol & The, 2022) . The public who have participated in the socialization are expected to deeply understand their rights and obligations related to patent protection. This is in line with the DJKI's mission to improve the quality of public services and infrastructure in the field of intellectual property as well as to promote a better understanding for the public of the latest rules to create an innovation ecosystem that supports Indonesia's economic growth.

China's Patent Protection System in the Face of Digital Technology Development

The legal protection of patents in China is regulated through the Patent Law of the People's Republic of China. This law was first enacted in 1984 and has been amended several times, in particular to ensure compliance with China's obligations under the TRIPS Agreement (Ruhtiani, 2022).. China operates on a first to file system that grants patent rights to the first individual or entity to file an application. The 2008 amendment to the law added provisions on the protection of genetic resources. The law also provides for the extension of the patent term for new drugs and related inventions, as compensation for the time taken for the review and approval of new products. In addition to the Patent Law, there are also implementing rules and examination guidelines issued by the China National

Intellectual Property Rights Administration (CNIPA) (Faustine et al., 2024). The CNIPA is tasked with supervising and implementing the Patent Law, as well as processing patent applications. Thus, the Patent Law of the People's Republic of China and its implementing regulations form a comprehensive legal framework to protect patent rights and encourage innovation in China.

There are three types of patents in China: invention patents, utility model patents, and design patents. First, invention patents act as the gold standard for breakthrough innovation, providing the highest level of protection for significant technical advancements. These patents are ideal for inventions with a protection period of 20 years from the date of filing. The patent examination process is substantive to ensure the invention meets strict criteria for novelty, inventiveness, and industrial applicability. Invention patents cover new or improved technical solutions related to products, processes, or uses. Examples include pharmaceutical innovations, medical treatments, advanced manufacturing processes that increase efficiency or reduce waste, and disruptive technologies in fields such as artificial intelligence or renewable energy. The process of claiming an invention patent can take 3-5 years or more to complete. Annual maintenance fees must be provided to keep the patent active. Although complicated, invention patents remain the gold standard for protecting high-value innovations (Ribowo & Roisah, 2019).

Second, utility model patents are quick and affordable patent protection. This type of patent is often called a mini-patent because it offers a faster and cheaper way to protect technical innovations. These patents are perfect for practical improvements or incremental innovations with a protection period of 10 years from the date of filing. The examination process for these patents only includes the necessary formal examination, resulting in a faster registration process with lower copyrightability requirements than invention patents. The utility patent model is best suited for technical improvements related to the shape, structure, or combination of features of a product. Examples are modifications to motors or gears that are more efficient, and the launch of practical gadgets with unique configurations. These patent claims are granted within 6-12 months, this timeframe is much faster than invention patents. The filing and maintenance costs are much lower and can provide temporary protection pending the approval of an invention patent. Utility model patents do not undergo substantive examination as they are more prone to exceptions during legal protection. However, such patents remain an excellent option to quickly protect practical innovations (Ribowo & Roisah, 2019).

Third, design patents are patents that maintain aesthetic appeal. This type of patent is focused on protecting the visual aspects of a product. This patent is very important for industries that consider aesthetics as a key factor for market success with a protection period of 15 years from the filing date and extended to 10 years in 2021(Ruhtiani, 2022). The examination process for these patents is only through a formal examination conducted to confirm compliance with the design criteria. The inventiveness requirement for this patent is only that the design must be completely different from previous designs, where the patent design protects the shape, pattern, color, or combination of elements in a product. Examples include unique smartphone designs with innovative aesthetics, furniture designs and fashionable fabric patterns for clothing or home decor. The design patent claim process is granted within 6-8 months. The cost of filing a design patent is relatively affordable to store and maintain with physical protection of the product which helps maintain its competitive edge.

China is exclusive in offering a grace period of 6 months for inventors to file patent applications under all the available patent types. This grace period allows inventors to file patent applications from the time of disclosing their invention to the public, without losing its novelty (Nathaniel et al., 2024) . This provision provides a valuable, especially for inventors who may need to disclose their ideas at exhibitions, conferences, or public forums before applying for a patent. In addition to understanding patent types, navigating the Chinese patent system requires attention to legal and procedural nuances. The Chinese state implements a double-filing strategy on licensing applicants to file invention patents and utility model patents for the same technical solution simultaneously. This strategy offers quick protection through utility model patents and long-term security through invention patents (Faustine et al., 2024) .

In addition, China's patent protection system operates on the first to file principle, so whoever is the first to file a patent is the first to apply for a patent and will obtain patent rights on his or her invention. Prompt filing is

essential to avoid losing protection to competitors. China is a member of the Patent Cooperation Treaty (PCT) which allows inventors to file one international patent application for protection in multiple countries. However, if an invention belongs to a foreign national who resides in China and develops the invention in China, a Foreign Filing License is required before filing a patent application abroad in the inventor's home country, and this provision is in accordance with Article 18 A of China's Patent Law. All patent applications must be submitted in Chinese so accuracy of translation and local legal expertise are essential (Ruhtiani, 2022).

The challenges of patent protection in China include the risk of infringement of unauthorized production of patented products by local companies may occur such as piracy and counterfeiting online. Moreover, technology transfer requirements and invalidation of patents by competitors are also an issue in Chinese patent infringement. The first to file system also plays a role in causing loss of patent rights due to the lengthy process of filing for patent rights in China. Then foreign companies often face deliberate trademark registration to hinder the patentability of their inventions as trade secret theft by local companies is still a serious problem in China (Putri, 2023). The punitive damages system can be misused to exploit green patent holders, as in the case of "patent trolling". Patent trolling is a term for companies or individuals who hoard patents with the primary purpose of threatening or suing patent infringers, often seeking financial settlements instead of using the patents to develop products. These entities are criticized for using patents as legal weapons to extort money potentially stifling innovation and creating adverse effects on the technology sector (Magdariza, 2023).

Frequent advancements of civilization, the enforcement of patent law in China has improved significantly, yet challenges remain so collaboration between experienced local legal counsel is essential to resolve preservation and protect patent rights. In the digital age, China is leading the world in patent filings by taking steps to become an intellectual property (IP) powerhouse, and the recently launched blueprint for 2024 serves to build a digital patent protection system. The blueprint was formulated by the CNIPA with China's highest IP regulator holding the reins. The blueprint serves as a roadmap for IP development until 2035, with the target of modernizing and strengthening the IP protection system (Devi & Sulistyo, 2024).

In enhancing judicial protection of IP rights, the plan proposes to strengthen the construction of IP specialized courts and tribunals by implementing a punitive damages system for IP infringement, as well as improving the rules of evidence and calculation of damages resulting from infringement. Compensatory punishment is compensation awarded in addition to actual damages with the aim to increase the cost of IP infringement (Najmi & Daulay, 2023) . The compensatory punishment system in the IP field has attracted much attention where in 2023, Chinese courts imposed punitive damages in 319 IP infringement cases, marking a remarkable increase of 117 percent on an annualized basis. The courts awarded 3.5 times more damages compared to the previous year, with the amount reaching 1.16 billion yuan. Judicial bodies have also cracked down on illegal trademark registration, as well as trademark infringement and counterfeiting, and have exerted efforts to optimize the protection of new types of IP rights and interests, including those involving artificial intelligence (AI) and data ownership rights (Kartikawati, 2025).

China is committed to IP protection by improving review efficiency, strengthening legal protection, and focusing on emerging industries. According to data released by CNIPA, the review time in 2023 was cut to only 16 months, shorter than the United States, Europe, Japan, and South Korea. In 2025, the duration will again be cut to 15 months. The policy emphasizes the establishment of centers that offer efficient services for companies, such as patent review, verification, and protection. These centers are built in cooperation with local governments to overcome challenges in obtaining evidence and cut the time and cost required for IP protection. (Kartikawati, 2025)

Similarities and Differences Between the Patent Systems in Indonesia and China in Facing Digital Challenges

In the rapidly evolving digital era, the patent protection system is vital as one of the key drivers of innovation and knowledge-based economic growth. Patents grant exclusive rights to inventors to utilize their inventions, while encouraging the dissemination of technology through publications. In globalization and digital transformation, countries around the world are building patent systems that are not only legally robust, but also responsive to the dynamics of cutting-edge technologies such as artificial intelligence, blockchain, and the Internet of Things (IoT)

(Martinelli et al, 2024) . Indonesia and China are two countries with different legal system characteristics, but both are facing the same challenge of how to protect exclusive rights to inventions in a rapidly changing digital ecosystem. Indonesia, as a developing country, seeks to strengthen its regulatory and institutional capacity in the field of intellectual property, while China, as a major economic power, has positioned its patent system as a strategic instrument in technology diplomacy and industrial competitiveness.

Both Indonesia and China base their patent systems on the principles of international law set out in the Paris Convention for the Protection of Industrial Property and the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement. Both countries are members of the World Trade Organization (WTO) and are obliged to implement minimum standards of intellectual property rights protection(Ritonga et al., 2024) . In Indonesia, regulations regarding patents are outlined in Law Number 13 of 2016 concerning Patents (Patent Law) which replaces the previous law to adjust to global dynamics(Nathaniel et al., 2024) . Meanwhile, China regulates patent rights through the Patent Law of the People's Republic of China, which has undergone several major revisions, most recently in 2020, to respond to technological advancements and a drastic increase in the number of patent applications. In terms of substantive protection, both recognize the principles of novelties, inventive step, and industrial applicability as key requirements in granting patents. In addition, both Indonesia and China provide protection for simple patents (utility models) as a form of recognition for smaller-scale technical innovations (Sugito & Syahruddin, 2021).

Although both countries have similar legal foundations internationally, significant differences emerge in their response to the challenges of digital innovation, particularly regarding the protection of software and algorithms (Arnanda et al., 2024). China's patent system has shown great adaptability through regulatory updates that allow patent protection of software-based inventions, provided that the algorithm is applied in a real technical context. The revised Patent Examination Guidelines issued by the China National Intellectual Property Administration (CNIPA) states that an algorithm can be considered a patentable invention if it is integrated in a technical process, such as in hardware or automatic control systems. In contrast, Indonesia still applies a more restrictive approach, the Patent Law does not explicitly recognize software as an object of patent, but rather categorizes it as part of copyright, which causes limitations in the protection of digital innovations that are based on technical functions. This mismatch can hinder the growth of the domestic technology sector, especially for startups that rely on invention based on applications and information systems (Taqiya & Bustani, 2025).

One important key to the effectiveness of the patent system is the strength of the institution that carries out the function of administration and evaluation of the substance of the application. In Indonesia, this function is carried out by the Directorate General of Intellectual Property (DJKI) under the Ministry of Law and Human Rights (Kemenkumham). However, the DJKI still faces limitations in the number and capacity of patent examiners, as well as a lack of specialization in fast-growing areas of digital technology (Ruhtiani, 2022). As a result, the examination process often suffers from delays, and the evaluation results do not always reflect the technical complexity of the invention filed. On the other hand, China through CNIPA has developed a more structured and integrated examination system, including the use of digital technology to efficiently screen and assess inventions. The CNIPA also actively cooperates with the private and academic sectors to improve the quality of examination and adapt to new technological dynamics. The Chinese government has strategically positioned CNIPA as a key institution in its national innovation strategy, with substantial resources and strong political support. This distinction shows that institutional effectiveness is a key determinant in the success of the patent system in addressing the needs of the digital era.

The digital challenge lies not only in protecting rights through registration, but also in efficient and credible enforcement. In this regard, the difference between Indonesia and China is quite significant. Indonesia does not yet have a specialized intellectual property court that is institutionally and procedurally separate from the general judicial system (Ruhtiani, 2022). The handling of patent disputes in Indonesia is still conducted by commercial courts, which often face constraints in the technical capacity of judges and complicated procedures. This causes the litigation process to be slow and does not provide a deterrent effect against infringers (Sugito & Syahruddin, 2021).

Meanwhile, China has established a specialized intellectual property court system in several major cities such as Beijing, Guangzhou, and Shanghai, with judges who have both technical and legal backgrounds. The existence of these specialized courts allows patent disputes to be resolved more quickly, professionally, and efficiently. Moreover, the CNIPA has an active role in overseeing the implementation of court decisions, creating a more integrated enforcement ecosystem.

To clarify and systematize the differences as well as similarities between the Indonesian and Chinese patent systems, it can be seen in the following table. This table presents seven key aspects that form the foundation of a modern patent system, namely the legal foundation, compliance with international treaties, recognition of software and algorithms, examining institutions, enforcement mechanisms, and the existence of intellectual property courts.

Table 1. Comparison of Indonesia and China's Patent System

Aspects	Indonesia	China	Similarities	Differences
Legal Basis	Law No. 13 of 2016 and Law No. 65 of 2024	Patent Law of PRC & CNIPA regulations	Both adhere to the first to file principle	Indonesia based on national law, China based on national law + international policy
Types of Patents	Regular patent and simple patent	Invention patent, utility model, design patent	Both recognize technical and innovative patents	Indonesia only 2 types of patents, China 3 types of patents
Principle of Protection	First to file	First to file	Both seek to speed up the application process	Same
Use of Technology	Online system patent.dgip.go.id; AI for examination	Blockchain, efficient service center, AI	Both are adapting to digital technology	China is more sophisticated and integrative in digital technology
Examination Time	3-5 years	15 months (2025)	Both are facing rights violations in the digital age	China is much faster and integrated (target 15 months)
IPR Specialized Court	No specialized courts yet	18 specialized IPR courts	Have a national legal basis for reference	China has specialized courts, Indonesia does not
Public Education & Awareness	Still low among the general public	High, there is a national education program	Requires capacity building of law enforcement	Public awareness is higher in China
Digital Law Enforcement	Conventional, difficult to digital evidence	Digital evidence, large damages sanction	Putting patents as a national innovation strategy	China has recognized digital evidence, Indonesia is not yet optimal
Digital Innovation (Blockchain, AI, etc.)	Not yet comprehensive	Advanced and systematic (IP 2035 roadmap)	Encourage cross-sector cooperation (government, industry, academia)	China has a digital innovation roadmap, Indonesia is not yet comprehensive

From the table, it appears that China displays a more progressive system in terms of patent protection on digital inventions and strengthening of law enforcement agencies. CNIPA as a central institution not only performs administrative functions, but also spearheads legal innovation in the field of intellectual property. In contrast, Indonesia still requires institutional strengthening, improving the quality of examiners, as well as the establishment of specialized courts for optimal patent protection. This table illustrates that although Indonesia and China both

follow the international framework, implementation at the national level is greatly influenced by the country's institutional capacity and strategy in addressing the digital era.

Conclusions

Patent protection has become a crucial aspect and a challenge in the face of the ever-evolving digital innovation. In Indonesia, the patent protection system still experiences many challenges, limitations, and lack of public literacy about the importance of intellectual property rights. Although there are regulations that have been updated such as Law No. 65 of 2024, in reality, its implementation in society is still not responsive enough to modern technology-based inventions. In addition, the enforcement is still conventional and not optimal in dealing with violations in the complex digital world.

In contrast, China has taken progressive steps in strengthening its patent protection system by taking a digital technology-based approach. CNIPA has built a modern intellectual property protection ecosystem through the use of AI, blockhain, and the establishment of special IPR courts that accelerate the settlement process and provide a deterrent effect. In addition, the IP 2035 blueprint is a strategic guide in integrating legal protection with the development of innovation-based industries. China also provides a much shorter examination time and comprehensive protection of technological inventions, which makes China one of the countries with the most adaptive patent systems.

Based on this comparison, this study asserts that Indonesia needs to conduct a comprehensive reform of the patent protection system by strengthening regulations, settlement institutions, and cross-sector synergies to catch up in facing digital challenges. Indonesia also needs to adopt some of the best practices that exist in China, including the digital transformation of the patent application and examination system, and the need for education to the public at large. So that the patent system in Indonesia becomes more responsive, fair and supports the national innovation ecosystem in the digitalization era.

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