

Layout Design for Building Creative Industries in Digitalization Industries 5.0 in Indonesia

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ABSTRACT

DTLST (Integrated Circuits Layout Design) is an open-potential electro-semiconductor technology product developed to build creative industries by effectively protecting IPR as registration. Registration is presently not effectively used, with DTLST violations observed. This study examines the protective patterns of DTLST IPR in building creative industries in the 5.0 digitization industries in Indonesia. A normative juridical method was analytically used, with data collection techniques the literature study primary, secondary, and tertiary legal materials. The results showed that Law no. 32 of 2000 concerning DTLST provided advantages for designers because registration was conducted without a market potential test and affected the legal certainty guarantee of the registrant. However, the arrangement did not accommodate substantive examination, priority rights, and protection of the privilege of owners in good faith. This indicated the necessity for improvement by considering the philosophical factors of justice, balance, and democratic-juridical values regarding the binding power of the regulatory and sociological substance via the living law of the designer. Based on the results, collaboration was needed with the DTLST Office, government, private sector, and universities concerning the use and management of DTLST to build creative industries in the Industries 5.0 era in Indonesia.

Keywords: creative industries; digitization 5.0; integrated circuits layout design; intellectual property rights.

INTRODUCTION

IPR (Intellectual Property Rights) is expected to obtain protection after the party initially registers with the Director General of IPR for acceptance or approval. Based on the principle of first-to-file rights, applicants need to register their intellectual works immediately.¹ This showed that registering creative and innovative industries is the main requirement for legal rights holders and guarantees lawful certainty of privilege and obligations.

This is to encourage and motivate inventors and creators to continuously find new ideas of higher value as a form of freedom to innovate and create by the demands of increasingly dynamic consumer preferences with full responsibility. This is in line with "Sustainability" as the second pillar of the IR 5.0 Pillar which states that "Additive manufacturing, is one of the most notable elements of IR 5.0, and it is used to make manufacturing items more sustainable. In IR 5.0, additive manufacturing aimed to improve customer happiness by incorporating benefits into goods and services. In line with the twelfth pillar, "Creative freedom," from the Pillars of IR 5.0, which states that "Creative freedom: It enables more custom-made and personalized items, as well as creative freedom."

These situations emphasize protecting industries' activities from elements harmful to rights owners, such as plagiarism, imitation, piracy, and other lethal actions. By registering industries' work on the product of innovation and creativity, people without entitlements are not allowed to develop similar products.

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¹ Abduh, R., & Fajaruddin, F., Intellectual Property Rights Protection Function in Resolving Copyright Disputes, *International Journal Reglement & Society (Ijrs)*, Vol.2, No. 3, 2021, pp. 170-178.

DTLST (Integrated Circuits Layout Design) is the development of a three-dimensional layout comprising various elements, including at least one active component. This connects to integrated circuits, such as oscillators used in radios, telephones, and computers, where a chip/circuit is housed within a program (CHIP). Based on the unique challenges of the semiconductor industries, special arrangements are required for DTLST, addressing issues related to topography and layout design of integrated circuits. These arrangements will likely involve self-execution or granting permission to other parties to exercise protected DTLST rights.² Similar to the exclusive nature, the arguments of Hilary Pearson and Clifford³:

Property refers to something capable of ownership, emphasizing the rights to possess, use, and dispose of belongings to exclude others. When land is owned, the exclusive legal rights to restrict everyone except those invited for visitation are possessed. Moreover, the exclusive legal right to stop someone else from driving it without permission is included when a car is held. This is similar to the ownership of a copyrighted work, where the owner possesses several legal rights, including the exclusive privilege to prevent anyone from copying the work.

This condition is expected to protect electronics technology designers from solving typical problems associated with integrated circuits. From this context, the United States was the first country to initiate the Semiconductor Chip Protection Act of 1984 (SCPA), accompanied by Japan, which enacted the policy. During this period, the European Union (EU) also issued Council Directive 87/ 54/EEC, which required EU Member States to adopt legislative provisions to protect integrated circuit design. However, the emergence and implementation of the DTLST Act in India were observed in 2000.⁴ This shows that the needs in various countries, especially Indonesia, are increasingly crucial to sustainable creative industries' economic development growth.

According to Nasiem Khalid Alshawawreh, DTLST was an electronic industries design product used in manufacturing electronic commodities to perform precise technical functions as one of the IPR regimes with sustainable development. In the digital era of 5.0, there are opportunities to increase IPR protection. The results of the research show that digital transformation has had a significant impact on the protection of IPR in Indonesia⁵. Successful initiatives, such as implementing a digital trademark registration system, using artificial intelligence technology for content filtering, and collaborations between the government and industry, have contributed to IPR protection.

The development of digitalization in the economy, as discussed by Rizka, implies the need for robust IPR protection mechanisms to foster innovation and support digital transformation. Protecting digital innovations and ensuring a favorable legal environment for businesses engaging in digital

² Sefat, N., Abir, M., & Ahamed, Md. A., *Intellectual Property Laws provide exclusive rights to creators or inventors: Bangladesh Perspective*, 2021.

³ Pearson, H. E., & Miller, C. G., *Commercial exploitation of intellectual property*, Blackstone Press, 1990.

⁴ Sreeragi. Intellectual property rights (IPR): An overview. *Emperor International Journal of Library and Information Technology Research*. 2021.

⁵ Hermansyah, Herry Sujaini, "Digital Transformation in Protecting Intellectual Property Rights in Indonesia". *Russian Law Journal*, Vol. XI, Issue 4, 2023, <https://www.russianlawjournal.org/index.php/journal/article/view/2364>

transformation can be challenging in the face of rapid technological advancements. As discussed by Wilford et al., implementing emerging technologies in developing digital solutions introduces techno-ethical issues and the need for robust IPR protection mechanisms. Balancing the benefits of advanced technologies with intellectual property protection can be challenging in the digital 5.0 transformation journey.⁶

These challenges may involve protecting IPR associated with digital media and addressing copyright infringement or unauthorized use.⁷ The concept of digital sovereignty, as examined by Gavrilov, raises challenges in safeguarding national interests, including IPR, in the global digital landscape. Developing effective legal frameworks and approaches to addressing IPR protection within digital sovereignty can be complex and require cooperation between various stakeholders.⁸

In addition to these challenges, implementing digital transformation can enhance IPR protection in Indonesia by automating and improving business processes related to IPR management.⁹ This approach emphasizes appropriate governance and hybrid workforce management to sustain the results. DTLST was an electronic industry design product used to manufacture electronic commodities that can benefit from digital transformation initiatives and improve IPR protection.¹⁰ The electronic industry's key aspects, challenges, and success factors should be considered in implementing digital transformation.

Comparative analysis of different countries' digital economies, as described by Ignatova et al., can provide insights into best practices and strategies that Indonesia can apply to strengthen IPR protection within the digital economy.¹¹ The same is true for DTLST, one of the IPR regimes. Developing models and managing large amounts of data can improve IPR protection in the electronic industry. A multi-stakeholder collaborative approach is proposed as a policy for preparing for Industry 5.0 and optimizing limited resources. This approach can facilitate developing and gathering digital transformation initiatives, including those focused on IPR protection.¹²

This was a definite indicator of a country's technological progress, which reflected positively on the national economy. However, its use and exploitation required a legal framework guaranteeing fair abuse protection and preventing unauthorized reproduction since great efforts and significant

⁶ Wilford, S.H., McBride, N., Brooks, L., Eke, D.O., Akintoye, S., Owoseni, A., Leach, T., Flick, C., Malcolm, F. and Stacey, M. 2021. The digital network of networks: regulatory risk and policy challenges of vaccine passports. *European Journal of Risk Regulation*. Vol. 12, No. 2, 2021, pp. 393-403.

⁷ Do Nascimento, M.G., Iorio, G., Thomé, T.G., Medeiros, A.A.M., Mendonça, F.M., Campos, F.A., David, J.M., Ströele, V. and Dantas, M.A.R. Covid-19: A digital transformation approach to a public primary healthcare environment. 2020 *IEEE Symposium on Computers and Communications (ISCC)*, 2020, pp. 1–6.

⁸ Paschek, D., A. Mocan, and A. Draghici. Industry 5.0-The expected impact of next Industrial Revolution. in *Thriving on Future Education*, 13. Industry, Business, and Society, *Proceedings of the MakeLearn and TIIM International Conference*, Piran, Slovenia. 2019.

⁹ Santoso, B., Intellectual Property Rights (Ipr) Aspect in the Franchise Business Format, *Jurnal Hukum dan Peradilan*. Vol. 8, No. 1, 2019, pp. 106-122.

¹⁰ Sukmono, F.G. and Junaedi, F., 2020, Manajemen Konten dan Adaptasi Suara Muhammadiyah di Era Digital, *Jurnal Komunikasi Global*. Vol. 9, No. 2, 2020, pp. 248-265.

¹¹ Utomo, S. and Harjono, A.N., Pentingnya Membangun Platform Kolaborasi Multi- Stakeholder sebagai Key Enabling Factor dalam Membangun Ekosistem Inovasi Industri 4.0 di Era New Normal. *Jurnal Informatika Universitas Pamulang*. Vol. 6, No. 1, 2021, pp. 67-76.

¹² Wilford, S.H., McBride, N., Brooks, L., Eke, D.O., Akintoye, S., Owoseni, A., Leach, T., Flick, C., Malcolm, F. and Stacey, M. 2021. The Digital Network of Networks: Regulatory Risk and Policy Challenges of Vaccine Passports. *European Journal of Risk Regulation*, Vol. 12, No. 2, 2021, pp. 393-403.

investments were needed.¹³ In this case, several countries are effortlessly working to develop laws to ensure DTLST protection. This was in line with the efforts of the United States and Japan, among the first countries to initiate the Semiconductor Chip Protection Act of 1984 (SCPA). During this period, the European Union (EU) issued Council Directive 87/54/EEC, which required EU Member States to adopt legislative provisions to protect integrated circuit design.

In June 2008, the Minister of Commerce of the Republic of Indonesia introduced a blueprint for developing innovative Indonesian industries from 2009 to 2025, including the sub-sectors of the Creative Economy. These industries explored and exploited intellectual resources to increase the value-added outcomes derived from individual and collective skills and talents. From the development and implementation of individual or group innovations, happiness was also achieved, ultimately impacting the well-being and safety of the people through IPR. Creative industries were also built upon intellectual capital, encompassing technology, arts, culture, and copyright business, which were integral to the development of the innovative economy sector and positively influential on the nation and the lives of its people. This aligned with Sreeragi, where the importance of providing adequate IPR protection to DTLST was considered a product of creative industries. In this context, protection was crucial due to the rapid and sustainable growth of the organization, which served as a significant driver for the national economy and the development of the Indonesian creative sector.

Based on various statistical data, the contribution of the creative Economy to the National GDP was predicted from the growth of the innovative industries in 2019-2020 to increase from 0.16-7.35% and be able to absorb labor by 15.2%. Besides this, creative economy workers also recorded 19.24 million people, an increase of 4.0%. This growth could absorb the labor of up to 16.70 million people.¹⁴ From this context, the awareness rights registration of Indonesian creative economy actors was still minimal to have IPR. Although the number of IPR registrants had increased, namely the continuous and periodic development of patent and trademark applications, most applicants were not Indonesian residents.¹⁵

According to Ari Giuliano Gema, only 11.05% of economic operators had IPR. This indicated that approximately 88.95% of creative industry players had not registered their products. From this description, most IPR holders were industry actors in the film, information, and video sub-sector, accounting for 21.08%. This was accompanied by the culinary, television and radio, publishing, and fashion sub-sectors at 19.75%, 16.59%, 15.86%, and 14.14%, respectively.¹⁶ Sudjana also stated that no DTLST registrant was presently observed.¹⁷ In this case, the enforcement of IPR, including DTLST,

¹³Alshawawreh, N. K. The Scope of Legal Protection for Designs of Integrated Circuits in Bahraini and Comparative Legislation. *Journal of Intellectual Property Law and Practice*, Vol. 16, No.9, 2021, pp. 1006-1012.

¹⁴Tourism and Creative Economy Statistics 2020, 2021, p. 43

¹⁵Statistical Country Profiles: Indonesia, in Quoc, 2020

¹⁶Reily, M. *Bekraf Usul Sertifikat Hak Kekayaan Intelektual Jadi Aguna Pembiayaan - Katadata.co.id*. Katadata.co.id. (2019, April 8).

¹⁷Sudjana, S., Pendaftaran Desain Tata Letak Sirkuit Terpadu Terhadap Pengembangan Industri Teknologi Elektronika Indonesia. *Jurnal Siosioteknologi*, 2020.

in Indonesia was problematic because many people were unaware of their rights, leading to the failure of self-defense against violators.¹⁸ During 2016-2021, 958 intellectual property violations were resolved by law enforcement officers from the Indonesian National Police. This proved that the police averagely solved 160 relevant cases each year. These conditions comprised 658 trademarks, 242 copyrights, 27 industry designs, 18 patents, 8 trade secrets, 2 DTLST, and 2 plant variety protection cases.¹⁹

Regarding numerous unregistered IPR infringements, the registration of DTLST IPR became a critical issue as IPR ownership held significant importance for actors in the creative economy. This served to safeguard their products from various intellectual property violations. In Indonesia, creative industries also required robust and enhanced IPR protection, as a solid legal framework often provided definitive safety through rewards and recognition. This aligned with the reward theory, which emphasized the need to offer benefits to IPR owners by encouraging innovation and developing new ideas. Therefore, innovators and creators should be incentivized as a juridical consequence of IPR ownership, leading to the implementation of the Incentive Theory, which was in line with the Recovery Principle.²⁰ Adequate protection of IPR was also expected to support the growth of creative industries by fostering the development of new, innovative, and original sustainable products, playing a crucial role in job creation efforts.

These situations are more important when associated with the present conditions in the digitalization .0 era in Indonesia, which has fundamentally changed human life and work (Schwab, 2017). According to McKinsey Global Institute, around 30% of tasks from two-thirds of jobs were replaced by technological innovations, such as robots or artificial intelligence. This predicted that automation will cause a loss of 3-14% of professions in 2030. From this context, approximately 75 to 375 million workers in the world need to change their fields of livelihood. Furthermore, the technological leap "threatening" job availability was not a new problem, as the discovery of steam engine technology, mass manufacturing, and digitalization triggered industries revolution 1.0, 2.0, and 3.0 in the 18th, 19th, and 20th centuries, respectively. This indicated that the periodic and elevated technology occurrences often led to the shrinkage of manual labor demand.²¹

Digitalization 5.0 motivates and profoundly affects the economy and creative industries. This innovation presents vast and dynamic opportunities for parties with a deep understanding and mastery of information communication technology. However, creativity remains the pivotal element in resource development. Technology can empower people to drive sustainable changes and foster a workforce with valuable resources. According to Drucker, human resources, known as knowledge workers, served as the driving force behind various organizations, continuously generating new opportunities. In knowledge-based organizations, individual productivity also plays a pivotal role in the system's overall success, ensuring the critical protection of IPR for productivity. This posed a

¹⁸Barthos, M., & Sara, R. Dysfunctional IP Infringements and Ineffectiveness of Enforcement Mechanisms Under Indonesian Law, *Journal of Legal, Ethical and Regulatory Issues*, Vol. 22, No. 1, 2019, pp. 1–10.

¹⁹Akbar, J. *Ada Ratusan Kasus Kekayaan Intelektual Per Tahun, Terbanyak Soal Merek*. Viva.co.id. (2021, October 6).

²⁰Sherwood, R. M, *Intellectual Property and Economic Development*, Routledge, 2019.

²¹Siantoro, A *Revolusi Industri 4.0: Peluang Munculnya Profesi-Profesi Baru - Analisis Data Katadata*. Katadata.Co.Id, (2020, February 15).

challenge to developing IPR law in Indonesia, similar to the case in developed countries, where rapid progress was observed due to the advancements in information technology and the digital economy.²² As a developing country, Indonesia still encountered limitations in fully embracing its natural role in the digitalization era 5.0, especially concerning the quantity of IPR ownership. This was found explicitly in DTLST cases, which were relatively new compared to other forms of IPR.²³

Similar to other properties, DTLST also has economic value. Attributed to the support of digital transformation 5.0, DTLST will bring economic changes. Digital transformation 5.0 has brought about structural changes in the economy. New business models, such as the sharing economy and e-commerce, have emerged. Large technology companies also play an essential role in the global economy and form complex digital ecosystems²⁴.

DTLST was an electronic industries design product used in manufacturing electronic commodities²⁵ that will change. These changes continue as technology evolves and its wider adoption within various sectors. Organizations and individuals must adapt to these changes to achieve competitive advantages and new opportunities²⁶.

This indicates that industries' return contains the main benefit of motivating subsequent analysis to develop sustainable DTLSTs. This economic value is a reward for the achievements of designers to obtain royalties, profit sharing, and other compensation. It is also in line with the Recovery theory Robert M. Sherwood in several reports,²⁷ contributing to the development of creative industries. Furthermore, DTLST is essential in conducting various reports on protection patterns of IPR in the field of DTLST to build Creative Industries in the digitalization 5.0 era in Indonesia. This emphasizes the protection patterns of DTLST IPR according to Law No. 32 of 2020, which is to build creative industries in the 5.0 digitalization era in Indonesia. This study aims to examine the protection patterns of DTLST IPR according to Law No. 32 of 2020 to build creative industries in the 5.0 digitalization era in Indonesia.

METHODS

This study adopted a normative juridical approach as a legal method, primarily using the following: (1) library materials (secondary sources), (2) Regulation No. 32 of 2000 concerning Layout Design of Integrated Circuits, and (3) tertiary legal data, including documents and relevant policies

²² Rahmah, M.). The Protection of Agricultural Products Under Geographical Indication: an Alternative Tool for Agricultural Development Indonesia. *Journal of Intellectual Property Rights*, Vol. 22, No.2, 2017, pp. 90–103.

²³ Bintang, S., Desain Tata Letak Sirkuit Terpadu sebagai Hak Kekayaan Intelektual dalam Hukum Indonesia. *Kanun Jurnal Ilmu Hukum*, Vol. 20, No 1, 2018, pp. 23–38.

²⁴ Hermansyah, Herry Sujaini, Digital Transformation in Protecting Intellectual Property Rights in Indonesia, *Russian Law Journal*, Vol. XI, Issue 4. 2023, <https://www.russianlawjournal.org/index.php/journal/article/view/2364/1329>.

²⁵ Alshawawreh, N. K. The Scope of Legal Protection for Designs of Integrated Circuits in Bahraini and Comparative Legislation. *Journal of Intellectual Property Law and Practice*, Vol. 16, No. 9, 2021, pp. 1006–1012.

²⁶ *Loc.Cit* Hermansyah, Herry Sujaini

²⁷ Nurani, N. IPR Protection Over the Merchandise Works of Creative Industry to Improve Indonesia Economic Development. *International Journal of Research in Management*, Vol. 2, 2021, pp. 4–5.

about Layout Design of Integrated Circuits and creative industries in the 5.0 industries era. The data analysis method also involved collecting information from library sources, encompassing primary, secondary, and tertiary legal materials. In addition, the data obtained were analyzed and synthesized to address the problems and determine direct information about the study objectives.

The normative juridical approach was presented descriptively to analyze the legal material obtained through a qualitative data analysis method, analyzing legislation connecting creative industries in Industries Era 5.0 and its implementation in Indonesia. For example, the data obtained were analyzed through reasoning based on the ability to draw logical conclusions. Moreover, descriptive emphasizes the presentation of results to get a comprehensive and systematic picture regarding the facts related to the analyzed problem. Analytical also indicated an obtained picture prioritizing a careful analysis toward identifying protection patterns of IPR in the Layout Design of Integrated Circuits, according to Regulation No. 32 of 2020 in Indonesia. This condition focused on developing creative industries in the digitalization 5.0 era to prove the challenges emphasizing problem formulation in the study background.

DISCUSSION

Protection of IPR in DTLST According to Law No. 32, 2020 in Indonesia

Based on the results, DTLST was a product related to electrical technology in a semiconductor material. This product had development potential through adequate IPR protection regarding the work registration emphasizing the issuance of moral and economic exclusive rights.²⁸ These results aligned with Grotius's Teaching of Natural Law, where individual property should be protected. In this case, economic rights were transferred, namely the privilege to enjoy or obtain industry benefits from the DTLST owner.

From these descriptions, no designer of electrical technology creators had submitted DTLST registration to the Directorate General of IP until the present²⁹, where 2 cases of DTLST completed by the Indonesian police were observed. According to the constitutive system adopted in the Act, No. 32 of 2000, registration was an absolute requirement for obtaining protection from imitation, piracy, and other infringement. This was in line with Jeremi Philips and Allison Firth in "The Absolute Monopoly of The Market Theory," where IPR should protect privileged owners to prevent everyone from using their business property regulated by the relevant protective law.³⁰

Another party often requested these rights through a transfer agreement as a license. This was in line with the purpose of law stated by Aristotle, where justice (cumulative) was provided based on the services obtained. It also aligned with the Recovery Theory, where the design of electrical

²⁸Cho, D., & Moon, H. *From Adam Smith to Michael Porter: Evolution of competitiveness theory (extended edition)*, Vol. 7, 2013. World Scientific.

²⁹Sudjana, S. DESAIN TATA LETAK SIRKUIT TERPADU DALAM PERSPEKTIF PERBANDINGAN HUKUM INTEREN. *Veritas et Justitia*, Vol. 3, No.1 .2017, pp. 218–243.

³⁰Nurani, N. Intellectual Property Rights (IPR) Protection of Creative and Innovative Creative Industry Works through the Role of West Java Government in Improving the Growth of Creative Economics in Indonesia. *International Journal of Innovation, Creativity and Change. Www.Ijicc.Net*, Vol. 6, No. 6, 2019. www.ijicc.net

technology creators needs to be protected through awards and recognition. Based on the results, the Reward Theory was subsequently supported, where incentives must be provided as royalties for licensing to encourage the design of recent ideas. This condition was considered an implementation of the Incentive Theory.

Several challenges were observed in the work registration of electrical technology designers, including the incomplete Regulation of Law No. 32 of 2020 regarding the Layout Design of Integrated Circuits. The DTLST registration procedure was also considered complex, time-consuming, and expensive, leading some creators to render the process unnecessary. Another challenge indicated that relevant designers required specialized skills due to high technology involvement. From this context, the registration process, as the basis for providing protection, was contained in Article 4 of Law no. 32/2020 concerning the Layout Design of Integrated Circuits, where the following statements were stipulated: (a) Protection of Layout Design of Integrated Circuits was granted to Rightsholders from the time the product was commercially exploited anywhere, or from the Filing Date, and (b) When Layout Design of the Integrated Circuits was exploited commercially, the application was submitted no later than 2 years from the date of initial exploitation.

Based on the results, the regulation in Section 4 of the DTLST Act provided a significant advantage by allowing registration even when design work had been commercially pre-exploited for a maximum of two years. This enabled creators to assess the market response to their design before registering. However, various drawbacks were observed, such as inadequate comprehensiveness and potential for inequality, leading to weaknesses in the certainty of protection rights. For instance, when two designers independently develop similar works without knowledge of their separate designs, an entitlement problem is often observed. This was due to the first designer exploiting the work before registration, with the second creator conducting registration before exploitation. In this case, the first designer could apply for registration, raising uncertainties about the juridical impact of "law information" on the ownership of the product design.³¹

Another regulation related to the registration process in DTLST Law was the absence of a substantive examination, leading to the difficulty in proving the originality of design work (Nugrahani, 2006). This was not in line with the efforts of other countries, where protection arrangements were established to ensure legal certainty. According to Sreeragi, Indian law stated that non-original, non-distinctive, or identical commercially exploited layout designs were not considered for registration.⁴ However, Articles 29 to 36 of DTLST Law did not address the regulations prioritizing the protection of registered rights holders seeking compensation regarding the registration cancellation by the Commercial Court. DTLST Law did not establish strict provisions regarding priority rights, which are significantly relevant to the international protection of DTLSTs registered abroad. In this case,

³¹Nugrahani, R. A. G., Kelemahan Hukum dalam Undang-undang No. 32 Tahun 2000 tentang Desain Tata Letak Sirkuit Terpadu. *Jurnal Hukum PRIORIS*, Vol. 1, No. 1, 2006, pp. 37-46.

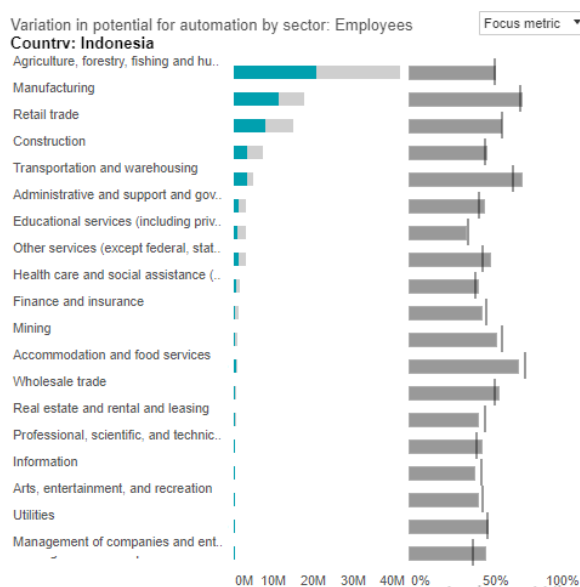
protection was provided when a violation of DTLST rights was observed, such as registering unowned privilege in Indonesia. Protection provisions were still in place despite registration by legitimate rights holders in one of the member countries of the Paris Convention.

Another crucial challenge emphasized the absence of the Implementing Regulations of Law no. 32 of 2000, which enabled the problematic procedure of applying for DTLST registration in Articles 9 to 10 of Law no. 32 of 2000. Furthermore, the provisions of Articles 22 and 28 were regulated regarding the terms/procedures for granting DTLST Certificates and license agreements, respectively. Article 37 was also held concerning the requirements, period, and methods for payment of application fees, requests for General Register quotations and copies of Certificates, and recordings of the transfer of DTLST Rights and license agreements. From this context, the incompleteness of the Implementing Regulations, as mandated by the Law for subsequent control, posed registration difficulties for designers of electrical technology creators.

Protection of IPR in DTLSTs as an Effort to Build Creative Industries in the Industrialization Era of Digitalization 5.0 in Indonesia

In the era of digitalization industries 5.0, creative industries provided optimized opportunities for developing innovation and creativity with intellectual property values. According to Dwikorita, this era was expected to eliminate 35% of jobs in the next five years.³²

Figure 1. Types of Jobs that are Potentially Automated



(Source: <https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/InternationalAutomation/WhereMachinesCanReplaceHumans>)

In Figure 2, several potential job sectors, such as manufacturing, retail trade, transportation and warehousing, administrative roles, construction personnel, food and accommodation services,

³²<https://public.tableau.com/profile/mckinsey.analytics#!/vizhome/InternationalAutomation/WhereMachinesCanReplaceHumans>

agriculture, fisheries, forestry, and health and financial/insurance assistance, were susceptible to automation. Based on the role of IPR in the Layout Design of Integrated Circuits, this automation presented opportunities for specific jobs. This indicated that the significant loss of employment had implications for developing a more robust IPR, especially in fostering collaboration among the business world, government, science, and society. The opportunity also served as a legal framework and an instrument for nurturing creative industries by fostering the creativity and productivity linked to intellectual property values. According to SM Nikitenko, this concept was explored as the Penta helix relationship in IPR, involving four key participants, namely "science," "business," "government," and "society," within the framework of the Quadruple-Helix Model.³³ This demonstrated that establishing adequate regulations governing IPR was essential, including those prioritizing designers of DTLST electronics technology. The significance and juridical consequences of DTLST IPR regulation also extended beyond mere law enforcement and were crucial for developing creative industry players. However, the implementation of DTLST regulations in Indonesia was highly ineffective. In this case, a challenge depended on the incomplete nature of DTLST registration regulation within the country, hampering the development of creative industries.

As mentioned earlier, Article 4 of Law no. 32 of 2000 regarding DTLST provided designers benefits by allowing the registration of their exploited works. This enabled the assessment of market response and informed decision-making processes when applying for registration. However, Article 4 possessed specific weaknesses, such as the lack of legal certainty regarding ownership rights, where two designers had similar works and were unaware of the similarity. This showed that the first designer exploited the work for 2 (two) years before registering, while the second creator emphasized registration before exploitation. In the existing norms and their implementation, these flaws had juridical impacts on "law information," hindering the development of creative industries in Industries Era 5.0. A strategic step was then required as a legal reform related to Article 4 of DTLST registration through lawful development to address this issue. According to Mochtar Kusumaatmadja, as the Legal Development Theory explains, changes often occur systematically, with "law serving as a means of community renewal." This implied that legal rules and regulations could function as regulatory means of development, directing the activities of designers toward desired renewal and building the creative sector in the Industry 5.0 era.

As a means of renewal, the law could direct and foster designers due to its impassive nature and ability to change specific circumstances and conditions in Saiful Anam's intended direction. From this context, design works developed by proficient electronics technology experts and provided with sufficient DTLST legal protection served as a guide and promotion in fostering sustainable innovation. This endeavor aimed to cultivate and develop creative industries effectively.

³³Nikitenko, S. M., Mesyats, M. A., & Rozhkova, O. V. Intellectual Property as an Instrument of Interaction Between Government, Business, Science and Society. *IOP Conference Series: Earth and Environmental Science*, Vol. 84, No. 1, 2017.

According to Sunaryati Hartono, legal development was interpreted as the following: (a) perfect, (b) changing to be better and modern, (c) upholding a non-existing phenomenon, and (d) elimination in the old system (Nurani, 2012). As a responsive policy, DTLST Law should consider the creative economy design community having electrical technology products throughout Indonesia. These improvements must accommodate several indicators, primarily the philosophical, juridical, and sociological factors. This was because the intellectual factors were the fundamental ideals expected by designers of electrical technology works, as stated in Pancasila regarding balance values, emphasizing fair democratic character for creative innovators. Juridical factors were also noted for the legal development of UUDTLS, necessitating improvements to ensure rights certainty for registrants. Firstly, Article 4 of the UUDTLS concerning registration lacked guarantees for rights certainty due to not requiring a market potential evaluation to assess design success before documentation. Secondly, the absence of substantive examination for registrations made it difficult to establish the originality of the design work.³⁴ Thirdly, Articles 29 to 36 of DTLST Law failed to address protection arrangements for the registered rights holders seeking compensation in registration cancellation by the Commercial Court. Fourthly, the absence of explicit provisions on priority rights added to the existing challenges.

Another crucial point in line with Sudjana was the necessity of issuing an Implementing Regulation for Law No. 32 of 2000. This regulation should cover various aspects, including (1) the procedures for applying for DTLST registration, (2) the terms and procedures for appointing DTLST consultants, and (3) granting DTLST Certificates, license agreements, the requirements, period, and procedures for payment of application fees, requests for General Register quotations and certificate copies, as well as recordings of DTLST rights and contract transfers. In this case, the issuance of this Implementing Regulation can significantly facilitate the effective implementation of Law No. 32 of 2000, supporting creative industries development in the Industries 5.0 era.

These improvements subsequently required government initiatives according to the "modern welfare state" concept. This aligned with the statement that it functioned as a guarantor of security and order for electronic technology designers. It also guaranteed social, economic, & human rights and obligations of design community culture. From this context, the government needs to be active in community activities regarding the welfare of all people.¹⁶ This was in line with Adam D. More, where effective enforcement or protection was the government's responsibility.³⁵ Therefore, those electrical technology designers were guaranteed to support the development of Indonesian creative industries in the Industry 5.0 era.

Based on the results, the sociological factors emphasizing DTLST regulatory devices need to accommodate the values adopted by the Indonesians capable of producing electronic technology works. This prioritized the living law in the technological design and legislation regulations (law in the

³⁴Sudjana, S., Penerapan Sistem Hukum Menurut Lawrence W Friedman Terhadap Efektivitas Perlindungan Desain Tata Letak Sirkuit Terpadu Berdasarkan Undang-Undang Nomor 32 Tahun 2000. *Al Amwal (Hukum Ekonomi Syariah)*, Vol. 2, No. 2, 2019, pp. 78–94.

³⁵Moore, A. D. A Lockean, Theory of Intellectual Property Revisited. *San Diego L. Rev.*, Vol. 49, 2012.

book). A gap was also observed between "the laws in action and books" (Nikitenko et al., 2017), affecting the inhibition of creative industries development in the Industries 5.0 era. Therefore, according to the "Social Engineering and Legal Culture Theories" from Roscoe Pound and Lawrence M. Friedman, the arrangement can accommodate the socio-legal context. This emphasized the law's role in changing society (social engineering by law), indicating that legalization was a process, not a static condition. According to the social facts, the DTLST Law was also formulated, including its meaning, interpretation, and application.³⁶ This law enabled the participation of expert designers in electronic technology as DTLST developers, providing a new alternative to enhance the development of creative industries in Industries Era 5.0.

These results need to be supported by the government through disseminating Law No. 32 of 2000 to electronic technology experts and law enforcement agencies. This was to raise awareness about the significance of protecting DTLST IPR. Establishing IP centers with universities, study & development agencies, and non-governmental organizations was crucial. This indicated that the centers would facilitate the establishment of DTLST facilities and disseminating information on product registration and usage. It will also manage registrations and draft ownership agreements, providing legal protection and contributing to developing Indonesian creative industries in the digitization industries 5.0 era.

CLOSING

As an electronic technology product, DTLST has the potential to be developed and needs IPR protection. Until presently, Law. No. 32 of 2000 concerning DTLST was not effectively used, indicating that registration was unused during a violation. From this context, various registration challenges were observed, including (1) unguaranteed certainty of rights, (2) non-accommodation of substantive examination arrangements and protection of registered rights holders in good faith, (3) lack of designer competence, (4) assumption of complicated, time-consuming, and costly registration procedures, and (5) inadequate awareness of registration importance.

An opportunity to optimize DTLST was observed, enabling the potential to develop creative industries in the Industry 5.0 era. This emphasized the necessity to improve the regulation of Law No. 32 of 2000 concerning DTLST by considering philosophical, juridical, and sociological factors as balance values and democratic character of justice, binding regulatory substances, and living law, respectively. In this case, the government needs to facilitate the dissemination of information regarding the significance of registration. This effort required collaboration among the DTLST Office, government entities, the private sector, and universities to use and manage DTLST registration.

³⁶Seidman, A. W., Seidman, R. B., & Abeysekere, N. *Assessing Legislation: A Manual for Legislators*. National Institute for Legislative Studies. 2012.

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