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RESEARCH ARTICLE

Empowerment of Patent Law and Policy on Research and Innovation Environment: Vietnam, Malaysia and Indonesia Perspective

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ABSTRACT

The essence of patent law and policy enactment lies in offering inventors and R&D investors exclusive rights. This serves as a protective umbrella over their innovations through a granted monopoly period. This principle not only incentivises the commitment of resources to R&D but also underpins broader economic advancement and paves the way for a resilient knowledge-based economy. Vietnam, Malaysia and Indonesia, as rising Asian powerhouses, have prioritised robust intellectual property rights protection and enforcement within their jurisdictions. This proactive approach is not merely a legal safeguard but integral in nurturing an ecosystem conducive to innovation. With patent law and policy playing pivotal roles at the forefront of R&D innovation, such a phenomenon shall significantly contribute to GDP growth. Drawing from the experiences of these three nations, this paper delves into the interplay between patent legal frameworks and subsequent economic and innovative upswings, shedding light on the relationship and its implications for emerging economies.

1.1 INTRODUCTION

The Southeast Asia or ASEAN region is a dynamic and developing part of the world. With its stability and competitiveness, countries in the ASEAN region have been growing economically. Singapore has always been ahead of many ASEAN countries, followed by Indonesia and Thailand. In terms of GDP, Malaysia and Vietnam have been competing with each other. In 2021, Malaysia ranked fifth place, followed by Vietnam in the sixth place. However, in 2023, Vietnam surpassed Malaysia in third place (USD 469.620), followed by Malaysia in fourth place (USD 467,459). It is interesting to compare these two closely ranked countries in terms of their respective GDP.

For a country to grow economically, it relies on innovation or knowledge economy. Based on the WIPO's Global Innovation Index (GII) 2022, in the ASEAN region, Malaysia ranked second place while Vietnam ranked fourth place. However, Vietnam is reported to perform above the level of development. This may be due to the intellectual property law that has been supporting innovation in Vietnam. Malaysia is also able to maintain its ranking in the GII, while Vietnam slipped 4 places in 2022 compared to 2021. Therefore, it is pertinent to compare the intellectual property laws of these two countries and propose recommendations to enhance their respective innovation ecosystem.

Along with the development of the knowledge economy, intellectual property or inventions have become a new resource for the sustainable development of a country. Intellectual property or an invention can only reach its best value when effectively and sustainably exploited. With this importance, many domestic laws have provisions to encourage patent owners to commercialise their inventions in legal documents on intellectual property, technology transfer, trade, and business investment. However, these regulations only stop at the protection of industrial property rights for inventions without really going into the regulations on the commercialisation of inventions, thereby creating many shortcomings in law enforcement. This article analyses the provisions of intellectual property law and several related legal regulations on the commercialisation of inventions, thereby pointing out the main shortcomings and proposing some recommendations to improve these regulations.

According to WIPO's assessment in the Global Innovation Index (GII) 2023 report, Indonesia is ranked 61st despite having a lower-middle economy. This represents a significant development for a new entrant from a lower-middle economic level.

ACCESSION TO INTERNATIONAL TREATIES ON INTELLECTUAL PROPERTY

1. Malaysia's Accession to International Treaties on Intellectual Property

Malaysia works closely with the World Intellectual Property Organization (WIPO) at the international level to enforce and uphold intellectual property rights from any infringement according to domestic law. Malaysia is a member country of various international treaties in relation to intellectual property rights. The most prominent treaties on intellectual property rights are the Paris Convention for the Protection of Industrial Property (1883) (Paris Convention), the Berne Convention for the Protection of Literary and Artistic Works (1886) (Berne Convention), and the Agreement on Trade-Related Aspects of Intellectual Property Rights including Trade in Counterfeit Goods (TRIPS) (TRIPS Agreement).

Malaysia became signatories to the Paris Convention on June 23, 1988, and the Berne Convention on June 28, 1990 (WIPO, 2022). The adoption of the TRIPS Agreement was in Marrakesh, Morocco, on April 15, 1994 (Tay, 2020). Commitment at the international level has influenced this country's intellectual property law, though these treaties do not spell out in detail how each signatory country should protect intellectual property rights. The signing of international treaties affirms the country's commitment to enforcing the minimum standard laid down by the treaties to protect intellectual property rights. Malaysia's latest accession to international treaties on intellectual property was signed on March 31, 2022, which was the Budapest Treaty and Marrakesh Treaty, which entered into force on June 30, 2022.

2. Vietnam's Accession to International Treaties on Intellectual Property

Vietnam has been accelerating the innovation and technology development of the country. Vietnam has recently authorised the National Digital Transformation Programme by 2025, with a focus on 2030. Changes in awareness, enterprise strategies, and incentives for the digitalisation of businesses, administration, and production activities will assist in accelerating digital transformation (Vietnam Briefing, 2021). Vietnam is a signatory to numerous international intellectual property rights treaties. Since March 8, 1949, Vietnam has acceded to the Paris Convention for the Protection of Industrial Property in 1883. Vietnam also joined the Patent Cooperation Treaty (PCT) on March 10, 1993. Since becoming a World Trade Organization (WTO) member in 2007, Vietnam has officially joined the TRIPS AGREEMENT. In addition, Vietnam is also a member of a number of bilateral international treaties such as the Trade Agreement between Vietnam and the United States (effective from December 11, 2001), the ASEAN Framework Agreement on Intellectual Property Cooperation (joined from December 15, 1995, in Bangkok, Thailand), the ASEAN-Australia-New Zealand Free Trade Area (intellectual property part) (FTA) (effective from January 1, 2010).

3. Indonesia's Accession to International Treaties on Intellectual Property

Indonesia marked its commitment to intellectual property rights with the ratification of the Paris Convention on February 24 1950. Subsequently, Indonesia ratified the TRIPS Agreement on January 1 1995. The TRIPS Agreement has significantly benefited Indonesia by enforcing laws related to the protection of intellectual property rights and motivates creators, innovators, designers, or producers

of intellectual works to innovate and create. In addition, the TRIPS agreement helps reduce barriers in international trade related to intellectual property rights.

Indonesia's accession to the Patent Cooperation Treaty (PCT) is an important step in integrating Indonesia's intellectual property system with international standards. This move provides a great opportunity for Indonesian innovators to protect their inventions in the global market in a more efficient and affordable way. However, continued efforts are needed to ensure that all stakeholders in Indonesia can fully benefit from the PCT system.

Indonesia is one of two countries in the Association of Southeast Asian Nations (ASEAN) that signed the Marrakesh Treaty in 2013. Furthermore, Indonesia ratified the Budapest Treaty on the International Recognition of the Deposit of Microorganisms for the Purposes of Patent Procedure in June 2022. These ratifications of international agreements underscore a concrete manifestation of the Indonesian Government's commitment to providing legal protection and guaranteed utilisation for people with visual impairments, visual impairments and disabilities. Indonesia's accession to various international agreements on intellectual property shows the country's commitment to protecting and advancing intellectual property rights in accordance with global standards.

Participation in international treaties on the protection of industrial property rights demonstrates the national orientation for compliance with international commitments and, at the same time, actively demonstrates the factor of transforming positive and modern provisions in international treaties into domestic legal documents regulating industrial property rights.

PATENT LAW AND POLICY ON INNOVATION AND COMMERCIALISATION

Patent is a form of intellectual property right granted by the government to an inventor for his new invention. The patent owner can control the commercial exploitation of the invention for a period of time (Tay, 2020). According to Yoo (2015), the patent framework of the country will influence the investment and technology growth and development in the country. Philip W. Grubb explained the concept of patent as follows:

> *"The consideration for the granting of patents, in general, is the benefit which results to the state by technological progress as represented by the commercialization of inventions. The connection between the granting of patents and the commercialization of inventions is simply that the existence of patents rights removes part of the risk involved in investment in a new development. Who, after all, would be willing to invest large sums of money in a new project if he knew that an imitator could copy his product as soon as it was marketed, without incurring any research costs? The justification for the patent system is that it provides an incentive for investment in new ideas, without which technological development would be much slower and more difficult."*

In Malaysia, patent is governed under the Patents Act 1983 and the Patents Regulations 1986. The Patents Act 1983 covers, among others: the interpretation of patents, setting criteria for patentable inventions, registration of patents, explaining the rights of patent owner, duration of patent protection and acts amounting to infringement of patent. According to Section 12, invention is defined as 'an idea of an inventor which permits in practice the solution to a specific problem in the field of technology'. Section 11 states that there are three elements to be fulfilled before any invention can be registered under a patent.

Firstly, the invention is new. The novelty of an invention can be proven if it is not anticipated by prior art. The second element is that the invention must involve an inventive step which 'shall consist of everything disclosed to the public, anywhere in the world, by written publication, by oral disclosure, by use or in any other way, prior to the priority date of the patent application claiming the invention' and such inventive step would not have been obvious to a person having ordinary skill in the art. The court must apply the 4-step test to assess obviousness. The steps include: 1) identify the inventive concept embodied in the patent, 2) assume the mantle of a normally skilled but unimaginative addressee in the art at the priority date and to what was common general knowledge, 3) identify what, if any, differences exist between the matter cited as being "known or used" i.e. the state of art and the alleged invention; and 4) decide, without any knowledge of the alleged invention, whether these differences constitute steps that would have been obvious to the skilled man or whether they required any degree of invention. Additionally, the third element to prove before an invention can be

patented is that the invention is industrially applicable. Section 16 states that an invention shall be considered industrially applicable if it can be made or used in any kind of industry.

Patent protection may be in the form of a product or process. Product patent refers to 'anything that is in tangible form and includes any apparatus, article, device, equipment, handicraft, implement, the machine, substance and composition' while a process patent refers to an invention that relates to a process, includes art and or a method. The patentability of the invention also depends on certain categories. However, not all inventions which fall within the definition of 'invention' are patentable. Section 13(1) of the Patents Act 1983 lists matters which are excluded from patentability including:

> *"(a) discoveries, scientific theories, and mathematical methods;*
>
> *(b) plant or animal varieties or essentially biological processes for the production of plants or animals, other than man-made living micro-organisms, micro-biological processes and the products of such micro-organism processes;*
>
> *(c) schemes, rules or methods for doing business, performing purely mental acts or playing games;*
>
> *(d) methods for the treatment of human or animal body by surgery or therapy, and diagnostic methods practiced on the human or animal body."*

Any person may protect their invention under a patent by making a patent application at the Registrar's Office. The application can be made individually or jointly. The invention that is successfully registered for a patent will be protected for 20 years from the date of filing of the patent application. The rights given to the owner of the patent are in the form of the right to exploit the patented invention, the right to assign or transmit the patent and the right to conclude license contracts. No other person shall do the following acts without the consent of the owner of the patent. Exploitation of a patented product is in the form of making, importing, offering for sale, selling or using the product and stocking such product for the purpose of offering for sale, selling or using. While exploitation of a patented process is in the form of using the process and doing any of the acts, such as in a patented product, in respect of a product obtained directly by means of the process (Section 36). Infringement of patents occurs if any action under Section 36 is done by a person other than the patent owner and without the agreement of the patent owner in relation to an invention falling within the scope of protection of the patent.

Legal document on protection and commercialisation of inventions in Vietnam

The legal document regulating intellectual property rights in general, industrial property rights and invention protection in particular in Vietnam is the Law on intellectual property, promulgated in 2005, amended in 2009, 2019 and recently 2022. According to Article 4 (12) of the Law on intellectual property, "invention means a technical solution in the form of a product or process which is intended to solve a problem by application of natural laws". Industrial property rights of inventions shall be established on the basis of decisions on grant of invention protection title by a competent state (Intellectual Property Office) under registration procedures in accordance with the Law on Intellectual Property or recognition of international registration under international treaties to which Vietnam is a contracting party. Accordingly, inventions are protected in two forms: Grant of an invention patent and Grant of a utility solution patent. The Invention patent is valid from the date of issue and lasts for twenty years from the date of application. The utility solution patent is valid from the date of issue and lasts until the end of ten years from the date of application. The law of Vietnam not only protects an "invention" when it has been granted invention protection title by a competent state or is in the process of carrying out the procedures for granting protection title but also has regulations to protect the legitimate rights and interests of individuals and organisations in the process of applying for protection of inventions (Nguyen, 2018).

According to the provisions of the Law on Intellectual Property of Vietnam, the owner of the invention is the author who creates the invention by his effort and expense. In case organisations and individuals invest funds and material facilities for the author in the form of job assignment, employment, organisation or individual assigned to manage genetic resources, traditional knowledge of genetic resources under the contract to access genetic resources and share benefits will be the owner of the invention, unless otherwise agreed by the parties. If there are many organisations and

individuals jointly creating or investing to create an invention, such organisations and individuals have the right to register and such registration is only done with the consent of all such organisations and individuals. In addition, ownership of an invention may also be transferred through a written contract or by inheritance.

Currently, according to the provisions of law, the commercialisation of inventions in Vietnam can be carried out through the following methods: 1) the owners themselves make commercial exploitation of inventions; 2) the owners transfer the right to science and technology for inventions; 3) the owners use their industrial property rights associated with inventions as collateral for mortgage owners, capital contributions, or engage in business cooperation.

The owner of an invention carries out commercialisation of the invention, arising from the owner's use of the invention without depending on the will of another subject. According to Clause 1, Article 123 of the Law on intellectual property, "1. Owners of industrial property objects shall have the following economic rights:(a) To use or authorise others to use industrial property objects according to the provisions of article 124 and Chapter X of this Law; (b) To prevent others from using industrial property objects according to the provisions of article 125 of this Law; (c) To dispose of industrial property objects according to the provisions of Chapter X of this Law". Article 124 of the Law on intellectual property also clarifies the use of an invention means the performance of the following acts:

> *"(a) Manufacturing the protected product; (b) Applying the protected process; (c) Exploiting utilities of the protected product or the product manufactured under the protected process; (d) Circulating, advertising, offering or stocking for circulation the products stipulated in sub-clause (c) of this clause; (dd) Importing the products stipulated in sub-clause (c) of this clause".*

Hence, direct exploitation and commercialisation of inventions is an obvious and perfectly legal right of the patent owner. This legal right enables the owner of the invention to directly use and bring the invention into the process of business, trade, and generating profits, regardless of the behaviour or without the participation of other subjects. The direct exploitation and commercialisation of inventions can be shown through activities such as product production, application of processes, exploitation of uses, circulation, advertising, import, etc.

Patent owners can commercialise inventions through the assignment of ownership of inventions to other organisations and individuals. According to Clause 1, Article 139 of the Law on Intellectual Property 2005, industrial property rights owners may only assign their rights within the scope of protection. This scope of protection may be temporal or territorial. Therefore, patent owners can only transfer their ownership rights within the territory, and for the remaining time, the invention is protected. If the invention is not protected in a certain country, the use of the invention in this country does not require permission from the owner. If the patent protection period expires, anyone can use the invention without the permission of the owner of the invention.

Regarding the contract of assigning of patent rights: According to Clause 2, Article 138 of the Law on Intellectual Property 2005, *"An assignment of an industrial property right must be established in the form of a written contract (hereinafter referred to as an industrial property right assignment contract)"*. Thus, the industrial property right assignment contract must have all the contents as prescribed by law. According to Article 140 of the Law on Intellectual Property 2005, it stated that:

> *"An industrial property right assignment contract must contain the following principal contents: 1. Full names and addresses of the assignor and of the assignee; 2. Grounds for the assignment; 3. Assignment price; 4. Rights and obligations of the assignor and the assignee"*.

In addition to the form and content, one of the conditions for the contract of transfer of ownership of inventions to take effect is the registration at the competent state. According to Clause 1, Article 148 of the Law on intellectual property:

> *"1. For the industrial property rights which established on the basis of registration according to the provisions of Clause 3(a) of Article 6 of this Law, an industrial property right assignment contract shall be valid upon its registration with the State administrative office for industrial property rights".*

Transferring the right to use an industrial property right, also known as industrial property licensing, is the most common method of commercialising intellectual property today. According to Clause 1, Article 141 of the Law on intellectual property, it stated that:

> *"Licensing of an industrial property object means permission by the owner of such industrial property object for another organization or individual to use the industrial property object within the scope of the owner's right"*.

Accordingly, the transfer of the right to use the invention is only through the owner's permission or authorisation for others to use his invention in a certain scope.

According to Clause 2, Article 141 of the Law on Intellectual Property 2005, the transfer of the right to use industrial property objects must be established in the form of a written contract and is referred to collectively as a patent contract. According to Article 143 of the Law on Intellectual Property 2005, patent contracts or licensing contracts, in particular, are divided into three categories, including exclusive contracts, non-exclusive contracts and industrial property object sub-license contracts.

Regarding the patent right transfer contract, according to Article 144 of the Law on Intellectual Property 2005, an industrial property object license contract must contain the following principal contents: (i) must have the following main contents (including Full names and addresses of the licensor and of the licensee; Grounds for licensing; Contract type; Licensing scope including limitations on use right and territorial limitations; Contract term; Licensing price; rights and obligations of the licensor and of the licensee); (ii) must not have provisions which unreasonably restrict the right of the licensee and in particular the following provisions which do not derive from the rights. In case the parties include in the Contract the use of the above terms, these terms are automatically null and void. It can be seen that the law very closely limits the contents that the parties agreed upon and recorded in the patent use contract. The above provisions are intended to protect the legitimate rights and interests of the assignee – the weaker party in the patent right transfer transaction, thereby ensuring a balance of interests for the parties in the contract. The development of this regulation is also based on the fact that currently, the transferees are mainly organisations and individuals in Vietnam who are usually the transferees. The contract for the use of inventions is effective as agreed between the parties but only has legal value for third parties when it is registered with the state management agency of scientific and technological rights – Intellectual Property Office of Vietnam. And in case the patent ownership of the transferor terminates, the patent use contract also terminates.

A mortgage is a security measure recorded in the Civil Code 2015, specifically in Article 317, which states that:

> *"Collateral of property is the use by one party (hereinafter referred to as the mortgagor) of property owned by it to secure the performance of obligations and not to hand over the property to the other party (hereinafter referred to as the mortgagee)".*

According to the provisions of Article 17 of Decree 21/2021/ND-CP of the Government dated March 19, 2021, providing for the implementation of the Civil Code on security for the performance of obligations ("Decree No. 21/2021/ND-CP"), the property rights arising from IP rights can fully be identified as collateral to participate in mortgage transactions in particular and security transactions in general. Thus, in terms of legal provisions, organisations and individuals can use the right to science and technology for inventions to make mortgages at banks to raise capital.

According to the provisions of the Law on Enterprises 2020, the contribution of capital by intellectual property in general and inventions, in particular, to establish a company or contribute more charter capital to a company that has been established is completely legal and allowed. Accordingly, after completing the procedure of contributing capital by industrial property rights to the invention, the enterprise receiving the capital contribution will become the patent owner and have full commercialisation rights to the invention in accordance with the law. In essence, a capital contribution is essentially the transfer of industrial property rights to the invention from the company's members/shareholders to the company, thereby bearing some characteristics of the transfer of ownership. However, unlike the transfer of industrial property rights to ordinary inventions, the transferor does not receive a transferable amount from the transferee but instead will

have ownership rights to capital contributions/shares with a value corresponding to the value of the SHCN rights to the invention that the two parties have assigned.

To promote innovation, the Law on Intellectual Property, modified in 2022, has some following new points:

i. Supplementing regulations on the right to file a patent using the state budget

The Law amending and supplementing a number of articles of the Intellectual Property Law of Vietnam in 2022 has made a drastic change. That is, the additional regulation on the right to register patents is the result of scientific and technological tasks using the state budget. The corresponding amended and supplemented legal provisions include: amending Article 86, supplementing Article 86a, Article 133a, Article 136a, Clause 6 Article 139. Accordingly, the right to file a patent is funded with the budget. The state is transferred automatically, without reimbursement, in proportion to the percentage of the investment budget to the organisation leading the research task. In addition, the rights of the state are still reserved in some cases, and the obligations of the organisation presiding over the research task are also regulated.

Thus, in principle, if the invention or patent is the result of a scientific and technological task using the entire state budget, the right of registration is automatically assigned to the presiding organisation and without compensation. In case the investment source is from many different capital sources and the state budget is only part of it, the part of the right to register the invention corresponding to the proportion of the state budget is assigned to the presiding organisation automatically and has no reimbursement. The amendment and supplementation of this content aims to encourage research, training and leading units in the performance of scientific and technological tasks to establish industrial property rights to research results which has high applicability, increases the bridge between research and commercialisation, changes in reality are still modest in this rate, as well as the current rate of patent applications in Vietnam.

ii. The right to file a patent as a result of scientific and technological tasks in the field of national defence and security still belongs to the State.

In case scientific and technological tasks use the entire state budget, the right to file a patent belongs to the state. If the task is invested from many sources of capital, the part of the right to file a patent corresponds to the proportion of the state budget that belongs to the state. The representative of the state owner has the right and responsibility to exercise this right of registration.

It can be seen that the expansion of rights, encouragement of exploitation and commercialisation of patents under the newly supplemented and revised regulations in the Law on Intellectual Property of Vietnam focuses on patents that serve life, and bring benefits to the community. In order to ensure the balance of interests, the provisions of the Law have reserved the State's right to file patents of importance and directly affect national security and national defence. This is in line with the general development orientation in Vietnam.

iii. Obligations of the lead organisation granted the right to file a patent created from the state budget

After an invention as a result of a state budget-funded scientific and technological task is created, the lead organisation must perform the following obligations:

First, the obligation to notify: within 30 days from the date the invention is created, the lead organisation must notify the state owner's representative of this result.

Second, the obligation to register for the establishment of industrial property rights: within six (6) months from the date of sending a notice to the state owner's representative, the presiding organisation must submit an application for registration of the establishment of industrial property rights in accordance with the law.

Third, the obligation to pay the author's remuneration: the lead organisation is obliged to pay the author of the invention. Remuneration is made as follows: (i) a minimum of 10% and a maximum of 15% of the profit before tax that the organisation earns from the use of the invention; (ii) a minimum of 15% and a maximum of 20% of the total amount received by the organisation in each payment due to the licensing of the patent before paying the prescribed tax. In the case of co-authors, this is the

level for co-authors. The co-authors themselves agree on the distribution of the remuneration to be paid. The obligation to compensate the inventor of the invention exists throughout the life of the invention.

After paying the author's remuneration, the host organisation has the right to distribute profits in accordance with the provisions of the law. For scientific and technological tasks that the state supports up to 30% of the total capital, the after-tax profit is obtained from the use, transfer of the right to use, transfer of rights, and capital contribution of the respective patents are based on the state's capital contribution rate. This allocation occurs after paying the author's remuneration, which is used in accordance with the financial management regulations of the host organisation. In case the support level is over 30%, the distribution of after-tax profits (after paying the author's remuneration) is made as follows: (i) payment to the broker (if any) according to the contract brokerage but not more than 10%; (ii) if science and technology tasks use the entire state budget, at least 50% of the remaining profits shall be used to invest in science and technology activities; the remaining profits shall be used according to the financial management regulations of the host organisation; (iii) if the science and technology task is invested with many capital sources, the remaining profit shall be divided among the parties in proportion to the proportion of capital contributed to that science and technology task. The portion of profits corresponding to the state's capital contribution ratio shall be used by the lead organisation according to the chairing organisation's financial management regulations.

Fourth, there is an obligation to fully comply with the provisions of the right holder and to report to the state management agency. Such an obligation occurs when a protection title is granted for an invention and the presiding organisation is obliged to exercise the rights of industrial property in accordance with the law, implement protection measures, submit annual reports to the agency managing scientific and technological tasks on the exercise of rights, protection measures and distribution of profit.

Thus, in addition to a number of administrative obligations, the host organisation is fully capable of commercially exploiting the patents generated from its research results. However, for effective commercial exploitation, the lead organisation needs to be equipped with the same skills, knowledge, operation, and management as an enterprise for the use of registered patents.

From a positive perspective, this development is a highly favourable and positive signal from the legal framework as it expands and empowers leading organisations. However, from the perspective of the host organisations themselves, these obligations, as well as the new regulation of empowerment, can induce significant anxiety. This is primarily due to organisations in charge of science and technology tasks being mostly research and training organisations, with their main professional activity focusing on research and training. These units do not have much experience in business operation in commercial business. Therefore, the effective commercial exploitation of scientific and technological products may not be implemented immediately, or the host organisations need more time to prepare. This also explains why, despite the legal regulations granting these rights, leading organisations may not proceed with patent registration. They may not accept this right enthusiastically and even refuse to use the right to report in writing to the state management agency.

iv. Rights of the state when the lead organisations fail to file a patent

Although lead organisations responsible for science and technology tasks have been granted the right to register patents, there may be instances where these organisations do not register or do not want to register due to many reasons. In order to ensure the effectiveness of patents, as well as to meet the purpose of connecting research and practice, application and commercialisation of research results, the Law on Intellectual Property stipulates the rights of the state in these cases. Additionally, the Law expands the accessibility of other actors in society to these patents.

Thus, in the following cases: (i) Organisations in charge of scientific and technological tasks fail to fulfil the obligation to notify within the prescribed time limit about the results of invention formation; (ii) The organisation in charge of the science and technology task shall report in writing to the representative of the state owner that there is no need for registration; (iii) If the organisation in charge of the science and technology task fails to file an invention registration application within the prescribed time limit, the representative of the state owner shall make a public announcement

(within ninety days) to assign the right to file the patent. Patent filing is the result of scientific and technological tasks using the state budget for organisations and individuals in need.

This provision of the Intellectual Property Law aims to ensure the effective use of research brainpower, preventing the wastage of state capital invested in research and the creation of patents. At the same time, with this content, the state has the right to actively manage and regulate when the organisation in charge of science and technology tasks fails to fulfil its obligations or is unable to commercialise the invention in practice.

If, after 90 days of public announcement, there is no organisation or individual that has the need or is not given the right to register, the representative of the state owner shall publicly announce it on the portal or electronic information page. The death of the agency managing the science and technology task of the invention is the result of the scientific and technological task using the state budget. This is a regulation that clearly shows the purpose of developing creativity and national science in Vietnam. As shown in the element of patents created, especially from the state budget, the highest goal is to serve the community and bring benefits to society.

v. Transfer of state-funded patents

Rights to patents resulting from scientific and technological tasks funded by the state budget may only be transferred to organisations established under Vietnamese law, individuals being Vietnamese citizens and permanently residing in Vietnam. Organisations and individuals receiving ownership transfers must perform the respective obligations of the lead organisation.

This provision of the Vietnam Intellectual Property Law is consistent with the goal of using state budget capital to promote and encourage creativity, increase patents, bring creative benefits, and improve science and technology and promote innovation for society. At the same time, this provision of the law also prevents acts of abusing state budget capital for personal gain or loss of state property through the use, exploitation and transfer of patents resulting from of science and technology missions beyond national borders by different practical paths. Besides, even after the patent has been transferred from the host organisation, the regulation and monitoring of the state management agency are still closely related to the life and operation of the invention. This is also the guarantee of the highest interests of the people and society when the capital from the budget is invested and empowered to different organisations and individuals.

The amended and supplemented provisions in the Law amending and supplementing a number of articles of Vietnam's Intellectual Property Law 2022 show the spirit of learning from international experiences and internalising it, in accordance with the social, and economic conditions of the country.

In fact, in the 1970s, the USA was concerned about the failure to use patents which were owned by the Federal Government to encourage product development stemming from federally funded research and development. The Congress concluded that the barriers were too great while the incentives were too small for universities or the private sector to develop technology from the patents which were created from Federal funds. The Bayh-Dole Act (officially Amendments to the Patent and Trademark Act, P.L. 96-517) and Stevenson-Wydler Technology Innovation Act (P.L. 96-480) were issued to overcome the situation by creating a uniform licensing system for all federal agencies, reducing the necessary steps to grant licenses. Similar to Vietnam, prior to 1980, the title (ownership) to any patent which was created by using federal funding was owned by the Federal Government. There was no uniform policy among federal agencies for the transfer of the invention into the private sector for commercialisation. The Government controlled the patents, did not grant exclusive licenses and separated inventors from their inventions, the American Government held titles to federally funded inventions, and only a small percentage were actually commercialised. The Bayh-Dole Act provided the option of ownership of inventions to the universities that received money from the Government in exchange for efforts toward commercialising federally funded research. Section 202 (a) of the Bayh-Dole Act stipulates that “Each nonprofit organization or small business firm may, within a reasonable time after disclosure as required by paragraph (c)(1) of this section, elect to retain title to any subject invention...” The situation changed beyond 1980. The Act is good for the American economy—helping the USA maintain its competitive edge—and it spurs job

creation. The rapid development of technology transfer activities at American universities has contributed significantly to the American economy.

In brief, these new Vietnamese regulations promise to be an important foundation, marking a period of explosion in the number of patents created, registered patents, and effective commercial exploitation of patents in society. This mark narrows the long distance between research and the application of research, scientific and technological products. This was also the situation that created a gap between Vietnam and other developed countries. However, there are still some concerns when receiving new regulations from research and training organisations. The problem is simply that these organisations and units need more time to connect practice and research while upgrading their ability to manage and commercially exploit patents. Hence, this perspective presents an opportunity and a driving force for the development of these organisations as well as of the society in Vietnam.

1. Indonesian patent law and commercial patent

Law Number 13 of 2016 concerning patents (Indonesia Patent Law) in Indonesia provides a clear legal framework for patent commercialisation. This law includes various provisions that regulate the rights and obligations of patent holders in utilising and exploiting their inventions commercially. Article 16 confirms that the patent holder has the exclusive right to enforce the patent. This exclusive right includes the manufacturing rights, use, sale, import, rental, delivery, or provision of the patented product.

Exclusive rights give patent holders complete control over how their inventions are commercialised, as regulated in Article 19 of the Indonesian Patent Law, granting patent holders the right to prohibit other parties from carrying out activities that fall within the scope of exclusive rights without their consent. Patent holders have an obligation to implement a patent, which is confirmed in Article 20 of the Indonesian Patent Law, that patent holders are required to implement their patents in the territory of Indonesia within a period of three years from the date the patent was granted or from the date they were first obliged to implement the patent. This implementation means that the patented invention must be produced or used in Indonesia. This obligation aims to ensure that patents are not only registered but also actively used to support the development of national industry. One of the main ways to commercialise patents is through granting licenses to companies or third parties interested in developing and marketing products based on the patented invention. This license can be exclusive or non-exclusive and usually includes payment of royalties or other forms of compensation to the patent holder.

In Indonesia, there are various policies and programme modules that support the commercialisation of innovation and technology. This policy is designed to create a conducive ecosystem for research, development and commercialisation of innovation, as well as to support innovators and companies in bringing new products and technologies to market. Policies regarding the commercialisation of research and innovation, namely: (i) National Research Master Plan 2017-2045 through strategies that direct the national research and innovation agenda, including research and development priorities, to support knowledge-based economic development; (ii) Tax Incentive Policy for companies carrying out research and development (R&D) activities. Companies can deduct up to 300% of qualified R&D expenses from their taxable income.

In carrying out the commercialisation of research and innovation, Indonesia has revised Article 20 of the Indonesian Patent Law with Law Number 11 of 2020 concerning job creation. This revision aims to simplify regulations and licensing to facilitate investment and innovation, as well as to support the formation of new businesses. To apply research and innovation, Indonesia has regulated research and innovation planning in Law Number 25 of 2004 concerning the National Development Planning System. This research and innovation mechanism forms a planning model that encourages the use of technology. Additionally, Presidential Regulation Number 38 of 2018, concerning the National Research Master Plan for 2017-2045, provides a guideline for ministries/institutions/regional governments and stakeholders to prepare action plans for implementing National Research.

Technology transfer

Patent licensing agreements can support technology transfer in Indonesia based on Article 74 of Law Number 13 of 2016 concerning Patents. However, there are still juridical obstacles as the Patent Law

does not state how the technology is transferred, leading to a lack of clarity regarding technology transfer through licensing agreements.

Technology transfer through patent licensing provides benefits for technology in a corporation or company. It enables business products to become marketable so that they can support national technology development. Despite these benefits, criticisms remain particularly related to legal aspects and the consequences of cultural changes from technology transfer from one country to another. The Patent Law only states that the law on technology transfer is carried out by means of a license agreement and does not regulate in detail how the license agreement is carried out. With the widespread use of technology and the constant creation of innovations, competition in the industrial sector drives the adoption of the latest technology practices.

2. Malaysia Commercialization of Intellectual Property Policy

Intellectual Property (IP) rights play a pivotal role in incentivising research, fostering innovation, and facilitating technology transfer. Malaysia's endeavour to streamline its IP commercialisation, particularly for government-funded research, is embodied in its Intellectual Property Commercialisation Policy. The commercialisation of Intellectual Property for Research & Development (R&D) Projects funded by the Malaysian Government (June 2009), provides that fund recipients may apply to the government to obtain intellectual property rights generated from research funded by the Malaysian Government. The policy, in many respects, mirrors the provisions of the US Bayh-Dole Act. Section 4.1 stipulates that if the Malaysian government grants the beneficiary research funds and the recipient creates intellectual property, then the recipient is the owner of the intellectual property. The first scenario, section 4.1 provides:

> *"Where the funding comes from the Government of Malaysia disbursing the fund to a recipient, and the recipient creates Intellectual Property, the ownership of the Intellectual Property shall vest in the recipient."*

Section 4.1 mirrors the Bayh-Dole Act in that it assigns IP ownership to the recipient of the government funds. Additionally, section 4.2 delves into the ownership rights concerning IP created by employees, closely aligning with global IP norms. While such provisions stimulate innovation by ensuring rightful ownership, there's an inherent risk that has the potential to stifle collaborations given the absence of statutory enforcement. The policy's mere guidance status might lead to inconsistent IP practices across institutions, marring the research landscape's coherence.

There are seven different types of intellectual property ownership outlined in the Malaysian government's Intellectual Property Commercialisation Policy for R&D projects. In addition, the employer will be the exclusive owner of any and all intellectual property developed by the employee during the employment time or using company resources, as provided for in Section 4.2 which states:

> *"Where an employee of a relevant body creates Intellectual Property, the ownership shall vest as follows:*
>
> *4.2.1. Where an Employee of a Relevant Body creates Intellectual Property in the course of his employment, the ownership of the Intellectual Property shall vest in the Relevant Body;*
>
> *4.2.2. Where an Employee of a Relevant Body, whose contract of employment does not require him to engage in any inventive activity, makes, in the field of activities of his employer, an Invention using data or means placed at his disposal by his employer, the ownership of the Invention shall vest in the employer; and*
>
> *4.2.3. The Relevant Body will not assert any rights or claim of ownership of any Intellectual Property in relation to scholarly books, articles, audiovisual lectures or other such scholarly work or subject matter generated by researchers or academic staff except where such Works have been specifically commissioned by the Relevant Body."*

This provision is in line with the intellectual property law, where the recognition of intellectual property rights to creators is provided under Section 18 (2) of the Patent Act 1983, Section 26 (1) of

the Copyright Act 1987 and Section 11(1) of the Industrial Design Act 1996. Although the law allocates the ownership of intellectual property originally to the creator, there are circumstances that cause the ownership of intellectual property to transfer from the creator to another party such as an employer or a person who pays a wage to produce an intellectual property. For example, Section 20 of the Patent Act 1983 provides:

> *"In the absence of any provisions to the contrary in any contract of employment or for the execution of work, the rights to a patent for an invention made in the performance of such contract of employment or in the execution of such work shall be deemed to accrue to the employer, or the person who commissioned the work..."*

Based on this provision, inventor and patent owners are two different categories because an inventor is not necessarily the owner of the intellectual property they create. The circumstances stated under this provision are where a work is commissioned or created while the creator is in employment. Thus, in this situation, the ownership of the patent produced is owned by the individual who orders the work or belongs to the employer if the employee creates the invention during the period of employment and within the job scope of the employee.

Besides that, the policy also provides for the right of the government in the state of national security, and the 'march-in rights' are similar to the provision under the Bayh-Dole Act. This policy also provides for the government's right to use intellectual property for free in the context of national security as well as the government's right to 'march-in' if the recipient of the funds fails to comply with the established rules. Section 5.6 provides for the government's right to use intellectual property royalty-free in this state of emergency and states that:

> *"Notwithstanding anything contained in this Policy, where there is a national emergency or where there is a public interest, in particular, national security, nutrition, health or the development of other vital sectors of the national economy as determined by the Government of Malaysia so requires; or where a judicial or relevant authority has determined that the manner of the exploitation by the owner of the Intellectual Property or his licensee is anti-competitive, the Government of Malaysia may decide that, even without the agreement of the owner of the Intellectual Property, the Government of Malaysia may exploit the Intellectual Property royalty free."*

Section 14 of the Policy provides for 'march-in right' by the government. Based on this provision, the government has the right to direct the fund recipient to grant an exclusive or royalty-free license to third parties who are responsible for some reasonable circumstances, such as the failure of the fund recipient to commercialise the invention within a reasonable period and the need to address national health and safety issues.

The Malaysian policy's stipulation, allowing the government to exploit IP royalty-free in cases of national emergencies or public interest under section 5.6, is reminiscent of the Bayh-Dole Act's safeguards. While this serves the nation's interest in exigencies, it might deter private enterprises from engaging in certain research domains, fearing uncompensated government expropriation.

Furthermore, the policy's 'march-in rights' stipulated under section 14 of the policy empower the government to intervene should the fund recipient falter in IP commercialisation. However, the ambiguity surrounding "reasonable period" and "national health and safety issues" could potentially deter inventors, fearing unforeseen governmental intervention.

This policy also provides that inventors are allowed to own intellectual property produced from government-funded research if the Innovation and Commercialization Center is not interested in applying for patent protection and commercialising it. Section 8.5 of the Intellectual Property Commercialisation Policy states:

> *"...the Innovation and Commercialisation Center not be interested in seeking Patent protection or to commercialise the Intellectual Property, it shall inform the Inventor in writing. The Inventor may then make a written request to the Innovation and Commercialisation Center for the Intellectual Property to be assigned to him. The Innovation and Commercialisation Center shall write to the funding Agency to obtain leave. If leave is granted, the Innovation and Commercialisation Center will retain a non-exclusive, non-transferable, irrevocable, royalty-*

> *free, worldwide Licence on the Intellectual Property for research and educational purposes. In the event the Inventor does not commercialise the Intellectual Property within five years without any reasonable grounds, the Innovation and Commercialisation Center may exercise any Commercialisation rights in relation to the Intellectual Property."*

Section 8.5 appears favourable to inventors, allowing them to seize ownership if the Innovation and Commercialisation Center abstains from patenting or commercialising. Such a provision might inspire individual creativity, but the attached stipulation—potential reclamation of IP rights by the Center after five years—could deter inventors from longer-term projects, given the looming uncertainty.

Looking at each provision under the Intellectual Property Commercialisation Policy for Research & Development (R&D) Projects funded by the Malaysian Government, the regulations are almost identical to the Bayh-Dole Act of the United States. However, one weakness of this policy is that there is no enforcement from a legal point of view because it is only a ministerial policy that is a guideline with no statutory enforcement. Therefore, it is not an obligation for every institution that receives government research funds to implement every provision under this intellectual property commercialisation policy. It is also argued here that the implementation of laws such as the Bayh-Dole Act in Malaysia can provide clear intellectual property rights to the party that receives government-funded research funds and will be able to create uniformity among universities in Malaysia in ownership of intellectual property rights, commercialisation management, revenue distribution, and dispute resolution. However, emulation of the Bayh Dole Act into the provisions of respective national laws should be done with caution and full deliberation, taking into account the needs and background of the country (Singh and Ashraf, 2019). Criticism of previous studies also should be taken into consideration. For instance, the Bayh-Dole Act does not set a reasonable value for the products produced from the creation of research results using government funds (Kenney and Patton, 2009; Eisenberg and Deegan, 2018; Deegan et al., 2022). Some have also stated that this act has caused new problems, such as high licensing fees that affect the relationship between universities and industry (Kenney and Patton, 2019). In addition, this development also has restricted the spread of technology that is expected to be channelled through licensing, even though it has resulted in shelved patents at the university (Kenney and Patton, 2009). Therefore, with the rapid development of technology and artificial intelligence in recent years, a pragmatic approach is needed to ensure that the intellectual property law and policy do not hinder this development but instead work as a tool to boost this development as well as provide guidelines to ensure the sustainability of the development is achieved.

3. Vietnam's policy on the commercialization of inventions

In addition to the provisions of the Law on Intellectual Property, Vietnam also demonstrates its policy on the commercialisation of inventions through a number of other legal documents. The patent commercialisation policy is expressed through the following basic contents:

Develop and promote the development of invention centers, technology infrastructure, research institutes and specialised training on the invention. Eurasian Patent Center (AAG): This is one of the first patent centers in Vietnam, built to encourage the development of start-ups and promote patent activities. The center was established in 2009, built by the General Department of Information and Information Technology, the Ministry of Information and Communications and the Eurasian Vocational Joint Stock Company. Hoa Lac Hi-Tech Center: This is one of the largest high-tech centers in Vietnam, which was built and invested in by the government. The center has many modern technology facilities, providing services for businesses and organisations along with technology research and development activities. QUATEST 3 Patent Center: This is an invention center to encourage enterprises to conduct inventions in the field of inspection, provide quality inspection and measurement services, and build infrastructure for invention activities.

In addition, the government has invested in building and promoting a number of important technological infrastructure projects such as AAG and APG marine fibre optic cable systems, national data centers, high-tech parks in Ho Chi Minh City, new materials and renewable energy centers, urban railways, and many bridge and road projects in Vietnam. Also, the government strengthened professional cooperation with international organisations in the field of intellectual property and WTO, monitoring and determining the research and invention policies of other countries.

4. Malaysia's Achievements in Intellectual Property and Commercialisation

Malaysia's journey in fortifying its intellectual property (IP) and commercialisation framework has been emblematic of its aspirations to transition into a knowledge-driven economy. Over the years, Malaysia has strived to improve legal provisions and regulations governing intellectual property to ensure positive development for intellectual property innovation and commercialisation to foster a knowledge-based economy and digital frontier (Zico Law, 2022). Malaysia also intends to establish an ecosystem conducive to an innovation-based development model. According to the International IP Index 2023 published by the U.S. Chamber of Commerce International IP Index and Global Innovation Policy Center, Malaysia achieved a better score than the year before with stronger IP enforcement and IP law amendments placing Malaysia among the top emerging economies. Various initiatives and actions were taken by the Malaysia government to promote the innovation ecosystem and also to combat infringement of intellectual property rights. Notably, the government has taken against more than 500 cases of physical sales of set-top boxes and also disabled access to over 2000 infringed websites. At regional ranking, Malaysia ranks 8th after Japan, Singapore, South Korea, Australia, New Zealand, Taiwan, and China.

The government introduced generous R&D and IP-specific tax incentives in the tabled budget 2023 has also contributed towards IP commercialisation development in Malaysia. Besides that, the amendment to the Patent Act in 2022 has also created a pathway of post-grant opposition proceedings for patents which can be done through court proceedings prior to the amendment. This development has surely provided positive signals for the improvement of the country's patenting environment. Malaysia's strides in IP and commercialisation undeniably set a positive precedent. Yet, the path forward demands more than just regulatory reforms. A multi-faceted strategy encompassing education, infrastructure development, and digital vigilance is imperative.

5. Actual achievement of Vietnam

Currently, Vietnam is one of the countries with a rapidly growing patent registration rate in Southeast Asia: In the region as a whole, Vietnam (48th), the Philippines (59th), Indonesia (75th), Cambodia (97th) and Lao People's Democratic Republic (112th) have made the greatest progress over the past decade. These economies also lead in key innovation indicators. Vietnam leads the world in high-tech imports and the Philippines in high-tech exports.

Vietnam has strived to improve its legal system on intellectual property in order to meet adequate and effective standards that are compatible with international standards. The Law on Intellectual Property was first promulgated in 2005, amended and supplemented in 2009 and 2019, with substantial revisions in 2022 in order to meet the implementation of Vietnam's intellectual property commitments under key free trade agreements such as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), the Vietnam-European Union Free Trade Agreement (EVFTA), and the Regional Comprehensive Economic Partnership (RCEP). Besides, in recent years, Vietnam has also ratified the Protocol amending the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS Agreement) (2017), joined the La-or Agreement on International Registration of Industrial Designs (2019) and the Budapest Treaty on International Recognition of the Deposit of Microorganisms for Patent Registration (2021), bringing the total number of international treaties on protection and international registration of intellectual property rights administered by WIPO that Vietnam has acceded to 14.

Indonesia's existence in Intellectual Property

Indonesia faces a pattern of free trade within the framework of AFTA, APEC, and free trade within the framework of the WTO, necessitating a legal system to be able to accommodate developments as a result of the implementation of international agreements. This indirectly encourages the Indonesian industry to continue to innovate and create new technology. On the other hand, the government is also required to continue carrying out research and development to support industries based on science and technology.

In the Global Competitiveness Index (GII), innovation has been recognised as one of the factors driving a country's economy. In a global economic growth, there are trends that must be paid attention to, including: (1) The results of research and development products are directed at acquiring and encouraging technology to take part in economic development in a country based on

the growth of innovation value; (2) Increased protection in particular, which impacts technology-intensive sectors and knowledge flows poses risks to global innovation networks and the diffusion of innovation (WIPO, 2019:1-451).

DISCUSSION

Based on the findings of comparison, Table 1 shows the summary of the result. Both Vietnam and Malaysia have seen significant benefits in areas like economic development, GDP growth, invention, and innovation, largely attributable to the advancements in intellectual property (IP) law and policy. In their quest to lure foreign investments, spur technological advancements, and stimulate local innovation, both countries have fortified their IP frameworks. While some argue that the vigour of IP enforcement is not the primary driver for a nation's innovation but rather its capacity to adapt, replicate, and disseminate throughout the production chain, there's no denying that there remain opportunities for enhancement in various sectors (Sweet et al., 2019; Sampat and Williams, 2019; Canh et al., 2019).

Table 1: Comparative Analysis of Innovation and Intellectual Property Development Between Malaysia and Vietnam

Aspect	Malaysia	Vietnam	Indonesia
Global Innovation Index (GII) 2023 Rank	36th	46th	61
Income Group Rank (GII 2023)	2nd among upper-middle-income economies	2nd among lower middle-income economies	among lower middle-income economies
Region Rank (GII 2023)	8th in South East Asia, East Asia, and Oceania	10th in South East Asia, East Asia, and Oceania	13th in South East Asia, East Asia, and Oceania
Performance in Innovation	Malaysia continues to show strong innovation capabilities, performing above many of its regional counterparts	Vietnam maintains a strong innovation output relative to its level of development, ranking high among lower-middle-income economies	Indonesia shows increased research and innovation, improving its world ranking even though it is a lower middle-income economy
Patent Applications and Grants (Malaysia)	Total applications: 200,964 with 11.82% by residents; Granted: 98,364 with 9.59% to residents	In 2022, Vietnam received 140,903 applications (up 7.1% from 2021) and granted 42,279 industrial property titles (up 8.3% from 2021)	In 2023, Patent acceptance in Indonesia reached 2453 applications.
Patent Classification Based on IPCR (Malaysia)	Most patents in fields: Chemistry; Metallurgy, Human Necessities, Performing Operations; Transport, Physics, and Electricity	N/A	
IP Law and Enforcement	Strong IP enforcement; amendments to IP laws have bolstered Malaysia's position	Comprehensive amendment to IP law in 2022 with 102 articles amended, aiming to align more closely with international practices	Strong IP enforcement in Indonesia, Strong intellectual property

			enforcement; revised patent law in 2022 through the Job Creation law
International Treaties	Participant in major IP treaties, with the recent accession to the Budapest Treaty (2022)	Active participation and implementation of international treaties; revised IP laws to reflect international standards and practices	Active participation and implementation of international agreements

In recent years, Vietnam's economy has grown rapidly, and IP protection has been crucial for attracting foreign direct investment (FDI) and fostering technology transfer. The IP framework has contributed to the creation of a favourable business environment and the encouragement of innovation and creativity, thereby fostering economic growth and GDP expansion (Sagiyeva et al., 2019; Hall, 2014; Thompson and Rushing, 1999; Yi, 2007). Greater economic openness and better institutional quality led to more patent production or better-quality patents (Yi, 2007; Canh, Schinckus, and Su Dinh Thanh, 2019). The Vietnamese government has also introduced policies to support research and development (R&D) activities in an effort to foster innovation. To cultivate a culture of innovation, however, additional investments in R&D infrastructure, education, and training programmes are required, particularly in strengthening collaborations between academia, industry, and research institutions, which would also boost invention and innovation development. While Vietnam has made progress in enforcing intellectual property rights, challenges remain, including counterfeit goods, piracy, and insufficient resources for effective enforcement. The enforcement landscape could be improved by bolstering the capacity of enforcement agencies, increasing public awareness of intellectual property rights, and instituting stricter penalties for infringement. Consequently, Vietnam should continue to improve its intellectual property laws and regulations to accord with international standards, addressing emerging issues such as digital piracy, online infringement, and protection for new technologies such as artificial intelligence and biotechnology. Regular updates and revisions to the legal framework will also contribute to ensuring its efficacy and continued relevance.

As for Malaysia, the Shared Prosperity Vision 2030 (SPV2030) and the National Key Economic Areas (NKEAs), which include the Knowledge-based Economy and Global Services through Key Economic Growth Activities (KEGA), which play crucial roles in promoting intellectual property (IP) development in Malaysia. SPV2030 and KEGA prioritise innovation-driven economic growth and the development of industries with high-added value. These initiatives recognise the importance of IP protection and commercialisation for fostering innovation, attracting investments, and creating high-skilled jobs.

SPV2030 aims to develop a robust and comprehensive IP ecosystem in Malaysia through the creation of a favourable environment for IP creation, protection, and commercialisation. This includes enhancing IP infrastructure, improving IP education and awareness, and strengthening IP enforcement mechanisms. Thus, Malaysia can nurture a culture of innovation and entrepreneurialism based on knowledge.

KEGA also identifies critical industries with substantial growth potential, such as information technology, biotechnology, and creative industries. These industries rely significantly on intellectual property rights and innovations. KEGA initiatives provide targeted support, such as funding, incentives, and opportunities for collaboration, to promote research, development, and commercialisation of IP assets in these sectors. SPV2030 and KEGA prioritise technology transfer and commercialisation with respect to the commercialisation of intellectual property, thereby encouraging collaboration between universities, research institutions, and industries. By facilitating the licensing, spin-off, and commercialisation of university research and inventions, these initiatives facilitate the transformation of knowledge and innovations into valuable intellectual property assets. In the pursuit of advancing knowledge, it is imperative to incorporate the quintuple helix model to emphasise a sustainability framework. This approach advocates for the concurrent consideration of

technological adaptation and climate change mitigation, underscoring their interdependence in fostering sustainable development (Ferreira et al., 2020).

CONCLUSION

Intellectual property law and policy play a vital role in fostering innovation and technological advancement in nations. To cultivate an environment conducive to creativity, innovation, and the knowledge economy in Vietnam and Malaysia, the protection of intellectual property rights is crucial. Strong intellectual property laws and policies can encourage investors to invest in R&D, which in turn fosters innovation, technology, and the knowledge economy. This attracts additional investment and contributes to the nation's economic development. Additionally, intellectual property protection can be advantageous for small and medium-sized enterprises (SMEs), which are frequently innovation generators. By safeguarding their inventions, trademarks, and copyrights, SMEs can obtain a competitive advantage, foster growth, and contribute to the nation's economy. In conclusion, intellectual property law and policy in Vietnam and Malaysia can have a significant impact on the innovation and technological advancement of a country. By promoting a strong framework for the preservation of intellectual property rights, these nations can attract investment and foster innovation, resulting in substantial economic growth.

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