

## **The 4<sup>th</sup> Industrial Revolution Requires Strong Intellectual Property Laws: Where does Thailand Stand?**

**Nucharee Nuchkoom SMITH**

*School of Political Science and Law, Walailak University, Nakhon Si Thammarat 80160, Thailand*

**(Corresponding author's e-mail: nucharee.sm@wu.ac.th)**

*Received: 4 March 2019, Revised: 28 November 2019, Accepted: 3 December 2019*

### **Abstract**

Strong and fair intellectual property rights legislation is an essential foundation for the 4<sup>th</sup> industrial revolution. It is required to protect the increasingly rapid advances in all areas of technology and science as well as the pursuits of human endeavor. At the same time, countries must be allowed to adopt measures necessary to protect public health and nutrition and the public interest in sectors of vital importance to the socio-economic and technological development. Thailand is covered with the intellectual property treaties under both the World Intellectual Property Organization and the World Trade Organization. This paper describes the protections afforded under Thailand's intellectual property laws. The analysis shows that the coverage of the Thai legislation is extensive and fairly robust-protecting the intellectual property rights of Thailand as well as those of the wider world community. However, there are some shortcomings. Copyright protections still do not fully protect performer's rights. It has been argued also that the protection of the rights of breeders of new plant varieties should be enhanced and fashion designs specifically protected. Copyright violations are by far the major infringement of intellectual property right laws. This requires a rigorous and consistent enforcement regime. It must be acknowledged that the enforcement has improved over the last few years. This has been recognized by the United States Trade representatives who, in December 2017, moved Thailand from the priority Watchlist to its Watchlist because the country is able to resolve issues in and engage on intellectual property issues with the United States.

**Keywords:** *TRIPS* agreement, Intellectual property rights, WIPO, Thailand legislation

### **Introduction**

The 4<sup>th</sup> Industrial Revolution (4IR) is the confluence of new technologies and their cumulative impact [1]. Information technology proliferates in all industries, making a connection between technology and the market [2]. Further details of the 4IR and four ASEAN economies including Thailand are described by Smith [3]. Thailand 4.0 - the Thai version of the 4<sup>th</sup> industrial revolution seeks to provide economic prosperity, improve social well-being, raise human values, and ensure environmental protection [4]. Thailand has identified four key priorities for development: Traditional farming must become smart farming; conventional small to medium enterprises (SMEs) must become smart SMEs and start-ups; the services sector must move from providing low value-added services to providing high value-added services [5].

To achieve these goals, Thailand will have to increase its research and development output. This requires Thailand to have strong and fair intellectual property rights legislation to protect its intellectual property going forward. It is required to protect the increasingly rapid advances in all areas of technology and science as well as the pursuits of human endeavor.

In 2016 the government announced 5 core strategies to enhance IP protection, namely: Creation, commercialization, and protection of IP; prevention and suppression of IP rights violations; and the

protection of geographical indications [6]. At the time of the announcement in June 2016, there was a backlog of approximately 38,500 patent applications and 34,300 trademark applications.

Thailand is a signatory to the treaty on intellectual property rights, the *Berne Convention* [7]. Thailand acceded to the convention in 1931 and accepted articles 22 - 38 (administrative procedures) under the Paris (1971) amendments of the Convention on 29 December 1980 [8]. It is also a member of the World Intellectual Property Organization (WIPO), a specialized agency of the United Nations Organization [9]. By signing the *Marrakesh Protocol* [10] Thailand committed to the agreement on *Trade-Related Aspects of Intellectual Property Rights (TRIPS)* [11].

Members of the WTO must have in place a suitable legislative framework so that they are able to institute criminal procedures which are to apply in the case of willful breaches of intellectual property laws (*TRIPS* art 61). At the same time, members are allowed to 'adopt measures necessary to protect public health and nutrition and to promote the public interest in sectors of vital importance to the socio-economic and technological development' (*TRIPS* art 8(1)). Accordingly, Thailand has introduced a comprehensive package of legislation as it sought to meet its obligations under *TRIPS*.

This paper analyses Thailand's legislative response and assesses whether its current intellectual property (IP) laws are consistent with international best practice as the country enters the 4<sup>th</sup> industrial revolution. It discusses the available legal literature and assesses whether amendments to the law are aimed at going forward.

## Materials and methods

The paper is based on the documentary research concept. Thai IP law was compared to the obligations under *TRIPS* and the various WIPO treaties to identify any areas where Thai law does not meet the international standards. The source materials were the international treaties themselves and the official English translations of the Thai laws as lodged with WIPO. It also reviewed the literature and assessed enhancements that might be made to the collection of Thai IP laws.

One of the issues faced in this research was that "Court decisions are often brief and there is no guarantee they will be publicly available. Courts maintain basic records of previous cases on file at the courthouse" [12].

## Analysis of Thailand's intellectual property legislative regime

### International obligations

Full details of Thailand's treaty obligations can be found in **Table 1** which has been collated from information provided by WIPO [9].

**Table 1** Thailand's Membership of Treaties on Intellectual Property Rights under WIPO.

Acts	Article(s)	Entry into Force	Accession	Exclusion(s)
<b>Berne Convention</b> [7]		17 July 1931	17 June 1931	
Paris (1971) [8]	1 - 21	2 September 1995		Article 33(2) re dispute resolution in the International Court of Justice (ICJ)
Paris (1971) [8]	22 - 38	29 December 1980		
<b>Paris Convention</b> [13]		2 August 2008	2 May 2008	
Stockholm Act (1967) [14]		2 August 2008		Article 28(2) re ICJ dispute resolution
<b>Patent Cooperation Treaty</b> [15]		24 December 2009	24 September 2009	Article 64(5) re ICJ dispute resolution
<b>WIPO Convention</b> [16]		25 December 1989	25 September 1989	

Source: WIPO [9].

Thailand has enacted a significant tranche of legislation to ensure compliance with *TRIPS* and WIPO. Details of the legislation is discussed below.

### Copyright

Thailand had a fairly robust *Copyright Act B.E. 2537* [17] with copyright protections in place and fairly severe penalties for violations [18]. The Act was developed as a requirement of Thailand's accession to the WTO. The coverage of the legislation is provided in **Table 2**.

If a person reproduces or modifies and publishes a work without permission, the *Copyright Act* states that such a person infringes the copyright of the creator. The intent of the law is to protect the basic copyright works such as literary works, theatre art, music works and art objects but excludes computer programs. Reproduction of copyright works is prohibited without permission from the copyright owner (s 27(3)). To reproduce means: Copying or undertaking any other action that uses an important key concept or figure in part or in whole of the copyright works. The penalties under the act include imprisonment and/or a fine (ch 8).

Under the law, it is irrelevant whether the copy is a copy from an original work or from advertising. A reproduction is any work that reproduces the key essential concept of that copyright work. In other words, the quantity of the reproduced work is not important, but the key is whether or not the copy reproduces the essential concept of copyright work. The law also prohibits a person from 'modifying' copyright works (s 27(4)). To change the form, adjust, correct or model the concept or figure of a copyright work partly or indirect copying is included under the description of modify. According to the law, publishing is taking copyright works to show in public (s 4(15)).

However, the copyright owner is not the only person who has rights to distribute the copyright works. If another person is lawfully allowed to reproduce the copyright work, the copyright owner has no rights to control the copyright protection. In this case, the other person is protected under the 'proprietor rights principle' (s 15 - 16).

**Table 2** Copyright Legislation.

Coverage	Legislation
Copyright of audio, visual, film and sound recording	<i>Copyright Act</i> s 28
Copyright works in audio and visual publishing	<i>Copyright Act</i> s 29
Computer programs	<i>Copyright Act</i> s 30
Copyright infringement exemption	There are standard exemptions for particular uses of copyright. The principal exemptions are: Research or study; personal and private use. This exemption is widely accepted. Members of Tunis model law on copyright [19] organized by WIPO and UNESCO provided this exemption too; criticizing or analyzing the work of a creator. For example, if a copy or reproduction is used to criticize or analyze the works of the copyright owner and the source of the work is acknowledged the law does not consider this to be an infringement of copyright; news reports on media providing the source of the information is disclosed.
Copyright period	<i>Copyright Act</i> s 30
Copyright protection in the digital environment in relation to rights management information (RMI) and technological protection measures (TPMs) in addition to new provisions on the liability limitation of Internet Service Providers (ISPs).	<i>Copyright Act (No. 2) B.E. 2558</i> [20]
Criminalization of unauthorized cam-cording in cinemas; and provided a specific exception to facilitate access to copyright works for disabled persons.	<i>Copyright Act (No. 3) B.E. 2558</i> [21]

Source: author

### **Trademarks and related legislation**

An overview of Thailand's trademarks and related legislation is provided in **Table 3** with detailed discussion following.

**Table 3** Trademarks and related legislation.

Coverage	Legislation
Trademarks	<i>Trademark Act B.E. 2534 (1991)</i> (consolidated as of 2000) [22] <i>Trademark Act (No. 3) B.E. 2559 (2016)</i> [23]
Geographical indications	<i>Protection of Geographical Indications Act B.E. 2546 (2003)</i> [24]
Production of optical disks	<i>Optical Disc Production Act</i> [25] This act was enacted to protect the production of optical disks for which Thailand is the major supplier worldwide.

Source: author

The amended *Trademark Act* [22] included an amendment on equal treatment for nationals who reside outside of their home countries which are signatories to the Berne convention, have a protection of the use of a registered trademark by the proprietor in a differing form; and have a protection of concurrent use of the same mark by co-proprietors. The *Trademark Act (No.2)* amended the earlier Act and a consolidated version has been prepared [22].

Art 11 states: In cases where Thailand acceded to an international convention or agreement concerning trademark protection, the trademark application which is in compliance with the requirement of such international convention or agreement shall be deemed to be a trademark application under this Act (art 11).

The amended *Trademark Act* requires a trademark to be distinctive (art 6(1)) and not similar to another trademark (art 6(3)). The Act then describes the characteristics that meet the requirements of a distinctive trademark (art 7). Protection of concurrent use is covered by art 70 which states that the use of the trademark by the licensee of a trademark 'shall be deemed as the use by the trademark owner'.

The *Trademark Act* was again amended to support the accession of Thailand to the *Madrid Protocol* [26] (on registration of marks), and to address the issue of illegal refilling practices where a person reuses or refills packaging or containers bearing another's registered trademarks to mislead the public. Trademark refilling is now a criminal offence. The *Trademark Act (No. 3)* was effective from 28 July 2016 [23]. The revised Act includes sound definition of a 'mark'. The definitions of a distinctive mark include shapes, three dimensional objects and sounds. It is now possible to make a trademark application across multiple classes and partially assign the trademark. It is not necessary to register associated marks. The Act provides a grace period of 6 months after its expiration for renewing the trademark registration.

In November 2017, Thailand finalized its accession to the *Madrid Protocol* which allows trademark owners to file and protect their marks in multiple countries that belong to the Madrid Protocol by filing a single application [27].

The protection of geographical indications act [24] protects [a] name, symbol or any other thing which is used for calling or representing a geographical origin and can identify the goods originating from such geographical origin where the quality, reputation or other characteristic of the goods is attributable to the geographical origin (s 3).

The goods for which protection can be provided include 'articles which can be traded, exchanged or transferred, whether they are natural or are agricultural products, including handicraft and industrial products' (s 3). Wines and spirits are covered by the definition of goods. Geographical indications protected under the laws of another country enjoy protection under the Act (s 8). Reciprocity between member countries also applies (s 8). The penalty for violating the law is a fine (s 39). The Act also established a Geographical Indication Board (s 30).

Thailand also enacted a law to protect the manufacture of optical discs. The *optical disc production act* [25] defines optical disks as disks for the recording of data through any means so that the data can be presented visually, aurally or both (s 3). It provides government oversight of the place of manufacture (s 5) and for the issue of a 'manufacturing mark for the manufacturer and a mastering mark for the copyright owner' (s 8). Penalties for violation of the act consist of fines and/or imprisonment (ch IV).

#### Patent Act and related legislation

As shown in **Table 4** and further discussed below Thailand has a number of Acts which cover patentable products and one which protects trade secrets.

**Table 4** Patent Act and Related Legislation.

Coverage	Legislation
New inventions involving an inventive step and capable of industrial application	<i>Patent Act B.E. 2522 (1979)</i> [28] <i>Patent Act (No 2) B.E. 2535 (1992)</i> [29] <i>Patent Act (No 3) B.E. 2542 (1999)</i> [30]
Integrated circuits	<i>Protection of Layout-Designs of Integrated Circuits Act B.E. 2543 (2000)</i> [31]
Plant varieties	<i>Plant Varieties Protection Act B.E. 2542 (1999)</i> [32]
Traditional Thai medicinal intelligence	<i>Protection and Promotion of Traditional Thai Medicinal Intelligence Act, B.E. 2542 (1999)</i> [33]
Trade secrets	<i>Trade Secrets Act B.E. 2545 (2002)</i> [34] <i>Trade Secrets Act (No. 2) B.E. 2558 (2015)</i> [35]

Source: author

In relation to patents, the enforcement of any system of international patent regulations has 2 main functions i.e. prevention of infringement of rights and prevention of attempts by right holders to abuse those rights. The Thai patent act was introduced to the parliament on 23 June 1978. It came into force on 12 September 1979 and has been operational since that date. The patent act has been amended twice. The 1<sup>st</sup> time was in 1992. The 1<sup>st</sup> amendment was enacted to expand protection over medicinal products and agricultural machinery including extending the period of patent protection. The 2<sup>nd</sup> time was in 1999 in an attempt to harmonize the law to be consistent with international regulations, especially with the requirements of *TRIPS*. It is the *Patent Act B.E. 2522* as amended by the *Patent Act (No. 2)* and the *Patent Act B.E. 2542* which will be the subject of this analysis.

Under the Thai law, a patent may be granted provided the invention is new, involves an inventive step and is capable of industrial application (s 5). A patent is not new if it does nor form part of the state of the art (s 6). A patent may be granted for a new design for industry, including handicrafts (s 56). The Act does not protect naturally occurring microorganisms and their components, animals, plants or extracts from animals or plants; scientific or mathematical rules or theories; computer programs; methods of diagnosis, treatment or cure of human and animal diseases; inventions contrary to public order, morality, health or welfare (s 9). The Act includes reciprocity with members of other treaties (s 14(4)). The term of the patent is 20 years from the filing date (s 35) and the penalty is a fine and/or imprisonment (ch VI). The act also established a board of patents (ch IV).

The act provides a number of exemptions (s 36). Any action that is not intended to have commercial benefit is not an infringement. Nor is the use of a patent process and technology before the patent is

registered. The law also exempts the preparation of a medicine prescribed by a pharmacist or medical practitioner. The law also allows a party to register a medicine even though the patent of the original right holder has not expired as it will benefit the people and the new supplier can bring the product to market as soon as the patent expires, thus engendering competition and limiting monopoly power in the market. Finally, an exemption is provided for the use of patented ship/marine and aircraft parts to carry out repairs when the vessel or aircraft temporarily or accidentally enters Thailand.

It appears that most of the exemptions meet the limited exemption criteria of *TRIPS* art 30 in that they 'do not unreasonably conflict with a normal exploitation of the patent and do not unreasonably prejudice the legitimate interests of the patent owner, taking account of the legitimate interests of 3<sup>rd</sup> parties.' Registration of a patent for a medicine even though the original patent has not expired would appear to be in direct conflict with *TRIPS* art 31. It could be argued that this action is in compliance with *TRIPS* art 8 in that it may be a measure necessary to protect public health and nutrition (art 8.1). It could also be argued that it may be needed to prevent the abuse of intellectual property rights by right holders which unreasonably restrain trade or adversely affect the international transfer of technology (art 8.2).

As with copyright law, the major concern is not so much the coverage under the law but rather the enforcement regime.

Thailand enacted the *Protection of Layout-Designs of Integrated Circuits Act* in 2000 [30]. Protection is provided for a lay-out which the designer has created and is not common-place in the integrated circuit industry or is a combination of elements which is not common-place in the industry (s 2). The period of protection of ten (or fifteen) years (s 19). Reciprocity between member countries applies (s 13(3)). Penalties include a fine and/or imprisonment (ch 7). A layout-design board was also established (ch 6).

Thailand chose to use the patent process to protect plant varieties and enacted the *Plant Varieties Protection Act* [31].

New plant variety capable of registration are plant varieties which have not been exploited for propagation (s 12(1)) and are distinct from other plant varieties 'provided that such distinctness is related to the feature beneficial to the cultivation, consumption, pharmacy, production or transformation' of the plant variety (s 12(2)). Plant varieties are protected for 12 years in the case of plants that bear fruit within 2 years of the propagation period; 17 years in the case of plants that bear fruit more than 2 years of the propagation period; and 27 years in the case of tree-based varieties that bear fruit more than 2 years of the propagation period (s 31). The act also established a Plant Variety Protection Commission (ch 1); protected local domestic plant varieties (ch IV); protects general domestic plant varieties and wild plant varieties (ch V); established a Plant Varieties Protection Fund (ch VI); provides for confiscation and compensation (ch VII) as well as criminal penalties (ch VIII).

Aside from protecting new plant varieties, Thailand also enacted a law to protect and promote traditional Thai medicinal knowledge: *Protection and Promotion of Traditional Thai Medicinal Intelligence Act* [32]. The Act established a Committee on the Protection and Promotion Medicinal Intelligence (ch 1). IP property rights can cover both the formula for traditional Thai drugs and texts on traditional Thai medicine (s 14) and can cover the national formula, the general formula and the personal formula (s 16). Persons with the right to register the IP may be the inventor of the formula; the improver or developer of the formula or the inheritor of the formula (s 21). The term of protection is the life of the bearer plus 50 years (s 33) and the rights can only be transferred by inheritance (s 35). Reciprocity as required by art 1(3) of *TRIPS* is also provided. The Act also provides for protection (ch 3) and conservation of herbs (ch 4); established a Fund for Traditional Thai Medicine Intelligence (ch 6); and provides for criminal penalties in the event of violation (ch 7).

This is one area where Thailand's response has been a proactive use of intellectual property laws to protect an indigenous industry.

Under the *Trade Secrets Act* [33]: 'Trade secrets' means trade information not yet publicly known or not yet accessible by persons who are normally connected with the information. The commercial values of which derive from its secrecy and that the controller of the trade secrets has taken appropriate measures to maintain the secrecy. (s 3)

An infringement under the act is the 'act of disclosure, deprivation or usage of trade secrets without the consent of the owner in a manner contrary to honest trade practices' (s 6). The act allows for compensation and ancillary orders (s11), punitive damages (s 13(3)), and a penalty of a fine and/or imprisonment (ch VI). It also established a trade secrets board (ch IV). The act was amended in 2015 by the *Trade Secrets Act (No. 2)* [35] to clarify the role of the board and to revise the penalties.

The trade secrets act is an important addition to Thai law as it protects the intellectual property (trade secrets) of other parties whilst allowing Thai authorities to assess and approve products for sale in Thailand.

To further support its initiatives, Thailand established the central intellectual property and international trade court on the 1 December 1997 [36]. The court has exclusive civil and criminal jurisdiction in matters related to enforcement of copyright and exclusive jurisdiction in matters concerning international trade. Its exclusive jurisdiction covers areas such as anti-dumping, subsidies and enforcement of arbitral awards in both intellectual and international trade matters. A panel consists of 2 career judges and an associate judge who is a lay person; all must have expertise in intellectual property or international trade matters.

## Results and discussion

### Copyright

In compliance with the requirements, *WIPO Copyright Treaty* (WCT) [37] is considered as a possible precondition for accession with free trade agreements that Thailand is negotiating with the United States, and the European Union [38]. Supasiripongchai analyzed the *Copyright Act 1994* [17] and identified significant deficiencies in relation to the protection of performers' rights [38]. Soon after the paper was published, the Act was amended with the proclamation of *Copyright Act (No. 2)* [20] and *Copyright Act (No. 3)* [21] which apparently addressed most of the deficiencies. Nevertheless, a *WTO Trade Policy Review* [39] was of the opinion that the proposed protections under the new acts failed to adequately address trafficking in circumvention technologies and included over-broad exemptions. The Review also considered that there should have been a landlord liability provision and harsher penalties. As a result of these deficiencies the report considered that Thailand would be unable to accede to and ratify the *WIPO Copyright Treaty* [37] and the *WIPO Performances and Phonograms Treaty* (WPPT) [40].

Saardchom argues that the fashion industry requires IP protection for its designs and that copyright is the most appropriate approach as no registration is required [41]. In light of copyright decisions of the Supreme Court related to designs, it is argued that the copyright act should be amended to explicitly cover fashion designs.

Clearly the government needs to address the deficiencies in *Copyright Act (No 2)* and *Copyright Act (No 3)* to better protect performance rights and allow Thailand to accede to the *WIPO Copyright Treaty*. In addition, the government should seek advice as how the Copyright Law can be strengthened to cover fashion designs.

As it was observed, the major deficiency is in the enforcement regime [18].

### Trademarks and related legislation

Lertdhamtewe notes that most Geographical Indications (GI) for specific goods in Thailand are for rice but they are also protecting cultural expressions such as specific silk fabrics [42]. As such, the act seeks to protect community interests. He argues that GI protection discriminates against other quality products as they are treated differently under the law. Allowing a 3<sup>rd</sup> party to register a product may leave it unregistered with products not marketed well remaining unregistered. He concludes that the system requires further development to protect the interests of local communities.

The Thai law provides equality treatment and reciprocity to foreign GI products thus complying with article 3 of *TRIPS* [42]. It does, however, provide an exemption to protect public order and public morality which are wider than the exemptions provided under *TRIPS*. Finally, he argues that the



protections are “exemplary” but coherent assistance is required so that local communities can benefit from GI registration and marketing of their products.

In recognition of such concerns, in 2016, the government announced that it plans to assist in promoting the marketing of Thailand's agricultural, handicraft, and artisan products and help companies overcome marketing challenges such as obtaining consumer recognition and loyalty [6].

It has been argued that Thailand's tobacco plain packaging legislation [43] which entered into force on 10 September 2019, if ‘applied to any industry would significantly restrict the use of brand, trademark [and] trade dress on retail packaging’ [44]. Thailand has followed the lead of Australia in introducing this health measure [45]. The World Trade Organization Dispute Settlement Body established a panel to investigate claims by Cuba, Dominican Republic, Honduras, Indonesia and Uruguay which subsequently withdrew [45,46]. The Panel found that Australia's measure were not inconsistent with WTO rules as the complainants claimed and confirmed that Australia's tobacco plain packaging measure is making a meaningful contribution to improving public health. The Dominican Republic and Honduras have appealed the findings. As Cuba and Indonesia did not appeal the dispute settlement body adopted the report in relation to these 2 complainants. The appeal has not commenced as at 1 September 2019.

#### **Patent Act and related legislation**

In 2018, it was reported that Thailand had a long backlog for patents to be granted of 5 to 9 years (44). This would be addressed if a proposed patent amendment is passed to replace the current pre-grant opposition system with a time-limited post-grant system.

Thailand's *Plant Variety Protection Act* [31] is reportedly under threat [47] with potential free trade partners pressuring Thailand to become a party to the International Convention for the Protection of New Varieties of Plants (“1991 UPOV Convention”) [48]. Accession would leave Thailand the least discretion in choosing how to protect plant varieties [47]. Specifically, it would require Thailand to delete the requirement that applicants must prove plant variety is safe and will not harm the environment.

Lertdhamtewe points out that most technical assistance and advice to developing countries is focused on encouraging the adoption of a UPOV-type system [49]. This “is in spite of the fact that UPOV is designed for industrial-type agricultures, and not the diversity of agricultures that co-exist in developing countries”. In the latter case a *sui generis* system which is TRIPS compliant and developed to suit the needs and priority of the country is the preferred option. Nevertheless, he has identified the lack of appreciation of the role of breeders in the Thai Act [50]. The Act provides breeders with low standards of protection’ insufficient term of protection for breeder's varieties and lack of guaranteed rights for plant breeders. He suggests that Thailand should conform to some of the key elements of the 1991 UPOV Convention in relation to plant breeder's rights without being a party to the Convention. This would mean that breeder's rights would become close to international norms and Thailand would be able to maintain the flexibility of its own plant protection regime.

Robinson argues the customary laws and norms of indigenous groups in Thailand are impacted by patent laws as their traditional knowledge of the uses of local plants tend to be ignored [51]. There are potential conflicts between international, national and customary laws.

#### **Enforcement**

The major weakness in Thailand's Intellectual Property Protection regime is its enforcement.

A 2013 study of 5 countries including Thailand found that most intellectual property rights violations were related to copyright, trademarks and piracy whilst instances of patent violation were limited [52]. Although the countries were TRIPS compliant, they are criticized for not meeting the patent regimes promoted by western countries but not yet accepted by developing countries.

In 2016 the government announced plans to introduce initiatives such as the promotion of IP rights among the general public and incorporation of IP subjects into the curricula of primary, secondary, and vocational schools [6]. This strategy aligns with the view of Parker that Thailand is “a fertile ground” for researching the effectiveness on culture-based enforcement schemes [53]. This is based on the premise that Thailand combines Asian cultural assumptions together with a desire to be a player in the Western

world. Such an approach is suggested as the current punitive approach is not effective in controlling intellectual property theft.

On the other hand, Robinson and McDui-Ra argue that violation of intellectual property in markets such as that at Pratunam in Bangkok will continue until “extreme pressure makes the practices of counterfeiting and imitation too risky” [54]. They further argue that resistance is due to the “historic contexts and socio-cultural norms of such places”.

In 2018, Thailand was ranked 99 out of 140 countries on intellectual property protection by the World Economic Forum as a component of its Global Competitiveness Index [55] which is an improvement on 113 in 2015 [56].

This improvement was also identified in December 2017 when the United States concluded an out-of-cycle review of Thailand's intellectual property regime and moved Thailand from its Priority Watch List to its Watch List [57]. This was considered to be the result of engagement on IP protections and enforcement as part of the bi-lateral *U.S.-Thailand Trade and Investment Framework Agreement* [58]. This engagement ‘yielded results on resolving U.S. IP concerns across a range of issues, including on enforcement, patents and pharmaceuticals, trademarks, and copyright’ (p. 10).

## Conclusions

The analysis has shown that Thailand has a comprehensive set of intellectual property laws that meet most of Thailand's obligations under TRIPS and the WIPO treaties as follows:

a) **Copyright** - the copyright acts are compliant except that there are deficiencies in relation to circumvention of technological protection measures meaning that Thailand would be unable to accede to the *WIPO Copyright Treaty, 1994* and the *WIPO Performances and Phonograms Treaty, 1996*;

b) **Trademarks** - the trademark acts are compliant, and Thailand has acceded to the Madrid Protocol by allowing owners to file and protect marks by filing a single application. There is also a compliant *Protection of Geographical Indications Act*. Finally, Thailand has enacted the *Optical Disc Production Act* to provide protection to purchasers of optical disks for which Thailand is the largest producer in the world;

c) **Patents** - the *patent acts* are also compliant except possibly for lodgment by another party of a patent for a medicine before the previous patent-holder's patent has expired. This covers the layout-designs of integrated circuits, protection and traditional Thai medicinal intelligence. It has been suggested that protection of breeders' rights should be improved. Trade secrets are also protected.

The regime is extensive and protects both Thai and international intellectual property. Thailand needs to continue to improve its enforcement regime. It is heading in the right direction but more needs to be done. To assist the process, the court system should provide full details of the reasoning behind their decisions on potential intellectual property rights violations so that the wider community is fully conversant with the protections provided under the law.

Finally, the government should provide more support to develop programs such as those required to promote the benefits of geographical indications and encourage communities to protect and promote are specific products.

## Acknowledgements

The paper has greatly benefited from the comments of the anonymous reviewers.

## References

- [1] R Harvey. The ‘fourth industrial revolution’: Potential and risks for Africa, Available at: <https://theconversation.com/the-fourth-industrial-revolution-potential-and-risks-for-africa-75313>, accessed July 2019.
- [2] MH Lee, JJ Yun, A Pyka, DK Won, F Kodama, G Schiuma, HS Park, J Jeon, KB Park, KH Jung, Min-Ren Yan, SY Lee and X Zhao. How to respond to the fourth industrial revolution, or the

- second information technology revolution? Dynamic new combinations between technology, market, and society through open innovation. *J. Open Innov. Tech. Mark. Complex.* 2018; **4**, 21.
- [3] RB Smith. How can least developed member countries of ASEAN benefit from the 4<sup>th</sup> industrial revolution? *Walailak J. Sci. & Tech.* 2020; **18** (in press).
- [4] C Jones and P Pimdee. Innovative ideas: Thailand 4.0 and the fourth industrial revolution. *Asian Int. J. Soc. Sci.* 2017; **17**, 4-32.
- [5] P Teanravisitsagool. Thailand 4.0: The Fourth Industrial revolution strategy from the national perspective. Special Session on the Fourth Industrial Revolution in ASEAN 14 January 2019, Bangkok, Available at: <https://drive.google.com/drive/u/0/folders/1y3Cxxh6pP2kpSFTR-3cmY9uWletQhe7r>, accessed July 2019.
- [6] J Kuanpoth. *The Department of Intellectual Property's IP Roadmap for Thailand*. Tilleke & Gibbins International, Bangkok, 2016.
- [7] *Berne Convention for the Protection of Literary and Artistic Works* (as amended to 28th September 1979), WIPO Database of Intellectual Property Legislative Texts.
- [8] *Paris Act 1971 adopted 24 July 1971 (entered into force 10 October 1974)*. [under *Berne Convention for the Protection of Literary and Artistic Works*].
- [9] World Intellectual Property Organization. Members: Thailand, Available at: [https://www.wipo.int/members/en/details.jsp?country\\_id=168](https://www.wipo.int/members/en/details.jsp?country_id=168), accessed February 2019.
- [10] *Agreement on Establishing the World Trade Organization* signed 15 April 1994 (entered into force 1 January 1995).
- [11] *Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS)*, signed 15 April 1994 (entered into force 1 January 1995).
- [12] N Indananda, S Taweepon and A Wheatley. Copyright litigation in Thailand: Overview, Available at: [https://uk.practicallaw.thomsonreuters.com/w-011-3581?transitionType=Default&contextData=\(sc.Default\)&firstPage=true&bhcp=1](https://uk.practicallaw.thomsonreuters.com/w-011-3581?transitionType=Default&contextData=(sc.Default)&firstPage=true&bhcp=1), accessed August 2019.
- [13] *Paris Convention for the Protection of Industrial Property. March 20, 1883, as revised at Brussels on December 14, 1900, at Washington on June 2, 1911*.
- [14] *Stockholm Act 1967*. Adopted 14 July 1967 (entered into force 26 April 1970). [under *Paris Convention for the Protection of Industrial Property*].
- [15] *Patent Cooperation Treaty*. Signed 19 June 1970 amended 28 September 1979, modified 3 February 1984 and 3 October 2001 (as in force from 1 April 2002).
- [16] *Convention Establishing the World Intellectual Property Organization (as amended 28 September 1979)*. Adopted 28 September 1979 (entered into force 1 June 1984).
- [17] *Copyright Act B.E. 2537 (1994)* (Thailand).
- [18] NN Smith. Thailand, free trade and its copyright obligations. *Int. J. Bus. Econ. Law* 2014; **5**, 42-6.
- [19] Berne Union. *Tunis Model Law on Copyright*, Unesco, WIPO, Paris, Geneva, 1976, 165-86.
- [20] *Copyright Act (No. 2) B.E. 2558 (2015)* (Thailand).
- [21] *Copyright Act (No. 3) B.E. 2558 (2015)* (Thailand).
- [22] *Trademark Act B.E. 2534 (1991) (consolidated as of 2000)* (Thailand).
- [23] *Trademark Act (No. 3) B.E. 2559 (2016)* (Thailand).
- [24] *Protection of Geographical Indications Act B.E. 2546 (2003)* (Thailand).
- [25] *Optical Disc Production Act B.E. 2548 (2005)* (Thailand).
- [26] *Madrid Protocol, relating to the Madrid Agreement Concerning the International Registration of Marks* (as amended on 12 November 2007).
- [27] D Vachanavuttivong. Trademark act amendments usher in Thailand's accession to the madrid protocol. *Lexology* (online 3 June 2016), Available at <http://www.lexology.com/library/detail.aspx?g=4abccb52-77f5-41d7-8fa5-19a48dc7f694>, accessed August 2019.
- [28] *Patent Act B.E. 2522 (1979)* (Thailand).
- [29] *Patent Act (No 2) B.E. 2535 (1992)* (Thailand).
- [30] *Patent Act (No 3) B.E. 2542 (1999)* (Thailand).
- [31] *Plant Varieties Protection Act B.E. 2542 (1999)* (Thailand).

- [32] *Protection of Layout-Designs of Integrated Circuits Act B.E. 2543 (2000)* (Thailand).
- [33] *Protection and Promotion of Traditional Thai Medicinal Intelligence Act, B.E. 2542* (Thailand).
- [34] *Trade Secrets Act B.E. 2545 (2002)* (Thailand).
- [35] *Trade Secrets Act (No. 2) B.E. 2558 (2015)* (Thailand).
- [36] V Ariyanuntaka. *Intellectual property and international trade court: A new dimension for IP rights enforcement in Thailand*, Available at: <https://www.wipo.int/edocs/lexdocs/laws/en/th/th027en.pdf>, accessed August 2019.
- [37] *WIPO Copyright Treaty*, signed 20 December 1996 (entered in to force 6 March 2002).
- [38] N Supasiripongchai. The protection of performer's rights under the copyright law in Thailand: The proposed reform in the light of the prospective free trade agreements with the United States and European Union. *Intel. Prop. Rights*. 2014; **2**, 1000127.
- [39] World Trade Organization. 2015, Trade policy review, report by the secretariat: Thailand. WTO Doc WT/TPR/S/376, Thailand.
- [40] *WIPO Performances and Phonograms Treaty*. signed 20 December 1996 (entered in to force 20 May 2002)
- [41] N Saardchom. Risk of intellectual property among fashion designs. *J. Legal Ethic. Regul.* 2017; **20**, 1-10.
- [42] P Lertdhamtewe. The protection of geographical indications in Thailand. *J. World. Intellect. Property* 2014; **17**, 61-128.
- [43] Notification of the Ministry of Public Health [Thailand] Criteria, methods and conditions on tobacco product and cigarette packaging B.E. 2561 (2018). *Government Gazette Book 135 Special Section 319 D*, 18 December 2018, Available at: [https://seatca.org/dmdocuments/Thailand%20Notification%20on%20standardized%20packaging\\_2018%20.pdf](https://seatca.org/dmdocuments/Thailand%20Notification%20on%20standardized%20packaging_2018%20.pdf), accessed August 2019.
- [44] M Setiati and A Darmawan. Intellectual property rights in ASEAN: Developments and challenges-case studies in Singapore, Malaysia, Indonesia, Thailand and the Philippines. *Policy Ideas* **49**; 2018, 1-27.
- [45] Department of Foreign Affairs and Trade. WTO disputes-tobacco plain packaging, Available at: <https://dfat.gov.au/trade/organisations/wto/wto-disputes/Pages/wto-disputes-tobacco-plain-packaging.aspx>, accessed August 2019.
- [46] World Trade Organization. DS441: Australia-certain measures concerning trademarks, geographical indications and other plain packaging requirements applicable to tobacco products and packaging, Available at: [https://www.wto.org/english/tratop\\_e/dispu\\_e/cases\\_e/ds441\\_e.htm](https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds441_e.htm), accessed August 2019.
- [47] J Kuanpoth. Intellectual property and transparency in trade negotiations: The experience of Thailand *J. Intellect. Prop. Rig.* 2015; **20**, 112-21.
- [48] International convention for the protection of new varieties of plants. *In: Proceeding of the Diplomatic Conference for the Revision of the International Convention for the Protection of New Varieties of Plants*, Geneva, 1991.
- [49] P Lertdhamtewe. Developing country *sui generis* options: Thailand's *sui generis* system of plant variety protection. Briefing Paper No 3: Food, biological diversity and intellectual property, Quaker United Nations Office, 2014.
- [50] P Lertdhamtewe. Reinventing Thailand's plant protection regime. *J. Intellect. Prop. Rig.* 2015; **20** 320-9.
- [51] DF Robinson. Legal geographies of intellectual property, 'traditional' knowledge and biodiversity: Experiencing conventions, laws, customary law, and karma in Thailand. *Geogr. Res.* 2013; **51**, 375-86.
- [52] I Barpujari and NN Weeks. IPRs as impediments to technology transfer-findings from select Asian countries. *J. Intellect. Prop. Rig.* 2013; **18**, 399-409.
- [53] MW Parker. Dying to spite the graveyard: Thailand and the necessity of creating a culture-based IP enforcement paradigm. *Asian. Pac. Law Pol. J.* 2016; **18**, 93-113.

- [54] DF Robinson and D McDuie-Ra. (En)countering counterfeits in Bangkok: The urban spatial interlegalities of intellectual property law, enforcement and tolerance. *Geogr. J.* 2018; **184**, 41-52.
- [55] W Schaub. *The global competitiveness report 2018*. World Economic Forum, Geneva, 2018.
- [56] K Schaub. *The global competitiveness report 2015-2016: Full data edition*. World Economic Forum, Geneva, 2015.
- [57] United States Trade Representative. *2018 Special 301 Report*, April 2018. Executive Office of the President of the United States, Office of the United States Trade Representative. Washington D.C.
- [58] *Trade and Investment Agreement between the United States of America and the Kingdom of Thailand*, signed 23 October 2002.