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UNIVERSITY OF TECHNOLOGY

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**EDITORIAL NOTE ON THE VOLUME 10, NUMBER 1, 2021**

**Editorial Note**

Dr. Kuang-Cheng Chen

Professor,

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Being the Executive Editor of this issue, we would like to express our appreciation to all the authors, reviewers, editors, and advisors who have helped to maintain the academic quality of this journal.

The selected articles in this journal cover all kinds of IP issues, including AI technology, copyright, and patent. This indicates that submissions from legal, managerial, or interdisciplinary areas related to IP issues from all over the world are welcome. We hope that our readers will be pleased and benefit from the publication of this issue.

Executive Editor

Dr. Kuang-Cheng Chen

Professor

Graduate Institute of Intellectual Property

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## **CALL FOR PAPERS**

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## **Analysing the “Education Exception” clause in Copyright law with special reference to Delhi University Photocopy Case**

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### **Abstract**

The article focuses on education exception clause in the Copyright law in India and compares it with those of the United States (US) and the United Kingdom (UK). The article also evaluates the doctrine of “Fair dealing” in the UK and “fair use” in the US. US has non statutory guidelines for application of doctrine of “fair use” and the UK has some statutory limitations, however, India does not have similar provisions contemplated in the Indian Copyright Act 1957, which leads to ambiguity. This article analyses the judgement of a High Court in India regarding applicability of “fair dealing” and “fair use” doctrine in the context of education exception clause in India and aims to address the ambiguity in the Indian Copyright Act 1957 due to the education exception clause so that both the interests of students and authors can be protected.

**Keywords:** Education Exception, fair dealing, fair use, statutory limitations, Indian Copyright Act

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## 1. Introduction and Background

Copyright is the exclusive right to do or permit others to do some acts with respect to literary, dramatic or musical works. The nature of the act differs in accordance with the subject matter. In simple terms, copyright means the “right to copy or reproduce the work in which copyright subsists.”<sup>1</sup>:

India enacted the Copyright Act 1957, which has been amended several times and most recent amendment was made in the year 2012 whereby the act was made compliant with WIPO Copyrights Treaty and WIPO Performances and Phonograms Treaty.<sup>2</sup> Over a period of time it has been observed that while incorporating provisions of International conventions and agreements in domestic laws, countries like India did not absorb such International agreements and treaties in their copyright law in the spirit intended by the International community.

As per section 2(d)(i) of the Indian Copyright Act 1957, the one who writes a literary or dramatic work is the “*author*” of that work. Though there are various international copyright treaties and conventions for protecting the interest of author of a work, however, certain exceptions in domestic copyright laws of some countries and their interpretation by the courts have severely affected the interests of authors of the copyrighted works. A person puts in lot of efforts, time and hard work to create literary, dramatic or a musical work, and his interest is affected when some other person or establishment uses his literary work, dramatic work or any musical composition without his authorisation for commercial or any other purpose.

In August 2012, Oxford University Press, Cambridge University Press and Taylor & Francis filed a lawsuit for copyright infringement against Rameshwari photocopy service and University of Delhi on the ground that they were photocopying “course pack” bound volumes, which were containing excerpts from different textbooks in which publishers had copyright. A temporary injunction was issued by the Court in October 2012 that restrained the photocopy shop from selling the infringing course packs till the case was decided.<sup>3</sup> On 16 September 2016, Single Judge bench of the High Court of Delhi headed by Justice Rajiv Sahai Endlaw held that the actions of the defendants did not amount to copyright infringement and accordingly dismissed the suit.<sup>4</sup> An appeal was then made to the Division Bench of

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<sup>1</sup> MELVILLE B. NIMMER AND DAVID NIMMER, NIMMER ON COPYRIGHT 2 (Indian Reprint Vol.1).

<sup>2</sup> Zakir Thomas, *Overview of Changes to the Indian Copyright Law*, 17(4) JIPR 324, 324 (2012).

<sup>3</sup> Namit Saxena, *DU Photocopy Case: Delhi HC Disposes The Appeal Saying No Triable Issue, Restores Suit But Refuses Interim Injunction*, <https://www.livelaw.in/delhi-hc-disposes-appeal-saying-no-triable-issue-restores-suit-refuses-interim-injunction/> > (last visited Nov. 29, 2019).

<sup>4</sup> 2016 SCC OnLine Del 5128.

the same High Court, which vide judgment dated 9 December, 2016 in *The Chancellor, Masters & Scholars of University of Oxford & Ors v Rameshwari Photocopy Services & Ors.* (hereinafter Delhi University Photocopy case) set aside the impugned judgment and decree and refused to grant interim injunction, however, it directed Rameshwari photocopy service to maintain a record of the course packs photocopied and supplied to students.<sup>5</sup> The court finally remanded the issue to the single judge for trial on the issue of fact.

In March 2017, the publishers filed an application before the High Court of Delhi to “withdraw as plaintiffs” and also made a joint statement “We have taken a considered decision not to pursue the Delhi University Photocopy shop case further in the courts.”<sup>6</sup> In April 2017, Indian Reprographic Rights Organization (IRRO) filed an appeal before the Supreme Court of India challenging the judgment of the High Court of Delhi and it was dismissed vide order dated 9 May 2017 by the Supreme Court.

This paper attempts to study the impact of the Delhi University photocopy case and make comparison with copyright laws in the US and the UK. The present paper can be divided into four chapters. The First chapter discusses International treaties and conventions on copyright and second chapter compares ‘fair use’ doctrine applicable in the US and ‘fair dealing’ doctrine in the UK with the doctrine applicable in India. Third chapter studies the impact of “Course packs” prepared from excerpts of different books on the authors, the argument of ‘access to education’ versus ‘author’s interest’ and reproduction of a copyrighted work in view of the Delhi University photocopy case. Fourth chapter focuses on the responsibility of universities and fifth chapter concludes the entire discussion on the paper, recollects the critical issues discussed in the preceding chapters and provides conclusions based on the deliberations.

## 2. International treaties and Convention

Under the Berne Convention, an original work automatically becomes eligible for protection without requirement of any formality.<sup>7</sup> The premise for copyright exists in the personal nature of the subject matter in issue. It is not the idea behind the work but the specific expression which is secured.<sup>8</sup> Under various international copyright laws and conventions such as the Berne Convention, Rome Convention and TRIPS

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<sup>5</sup> 2016 SCC OnLine Del 6229 [80].

<sup>6</sup> Prashant K. Nanda & Priyanka Mittal, *DU photocopy case: Oxford, Cambridge to withdraw lawsuit against Rameshwari* (Mar. 9, 2017), <https://www.livemint.com/Education/z0Jr4NgE0NldWQYtfDh6xL/DU-photocopy-case-Oxford-Cambridge-to-withdraw-lawsuit-aga.html> (last visited Nov. 28, 2019)

<sup>7</sup> Berne Convention 1886, art. 5 (2).

<sup>8</sup> WILLIAM CORNISH, DAVID LWEWLYN & TANYA APLIN, *INTELLECTUAL PROPERTY: PATENTS, COPYRIGHT, TRADE MARKS AND ALLIED RIGHTS* 9 (7th ed. 2010)

agreement ...etc., some exceptions have been laid down for using the copyrighted work for the purpose of quotation, education...etc.

International treaties and agreements provide a background for the countries to formulate ‘exceptions’ and ‘limitations’, for the use of work that has copyrights, while framing domestic copyright laws. Exceptions were first time set out in article 9 (2) of the Berne Convention 1886 and then later incorporated in article IVbis of the Universal Copyright Convention 1952, Article 13 of the TRIPS agreement 1995, Article 10 of the WIPO Copyright treaty 1996 and Article 16 of the WIPO Performances and Phonograms Treaty 1996.<sup>9</sup> Participating countries are at liberty under the above-mentioned provisions to formulate exceptions against infringement of copyright in a work that are appropriate and in their national interest provided they satisfy some stipulations.<sup>10</sup>

At the national level, the “three step test” can be embodied exactly or it may be allowed to act as an assistance for the interpretation of the national law.<sup>11</sup> The three-step test was first introduced in the Berne Convention in 1967. *Berne Convention Centenary (1886-1986)* report stated that while framing of article 9(2), the committee had accepted the proposal of the Drafting committee of placing second condition before the first condition and considered it more reasoned.<sup>12</sup> The report further clarified the intent behind such provision:

If it is considered that reproduction conflicts with the normal exploitation of the work, reproduction is not permitted at all. If it is considered that reproduction does not conflict with the normal exploitation of the work, the next step would be to consider whether it does not unreasonably prejudice the legitimate interests of the author.<sup>13</sup>

As per article 9(2) of the Berne Convention 1886, the three-step test allows the countries to permit reproduction of copyrighted works under their domestic law subject to three conditions; special circumstances, does not clash with ordinary utilization of work and does not irrationally harm the rightful interests of the author. Only after these three conditions are satisfied, a copyrighted work may be allowed to be reproduced.

A condition referred to as “the three-step test” then becomes the controlling tool at

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<sup>9</sup> Ratnaria Wahid and Khadijah Mohamed, *Cobweb of Exception to Copyright Law for Research Purposes*, 9(4) J. Int. Commer. Law Technol. 258, 260 (2014).

<sup>10</sup> *Id.* at 260.

<sup>11</sup> Christophe Geiger, Jonathan Griffiths and Reto M. Hilty, *Declaration on a Balanced Interpretation of the “Three-Step Test” in Copyright Law*, 39(6) IIC 707, 710 (2008).

<sup>12</sup> International Bureau of Intellectual Property, *Berne Convention Centenary (1886-1986)* 196 [85].

<sup>13</sup> *Id.*

the International stage.<sup>14</sup> The “three step test” allows copying to be done in different forms and includes technological means of copying. This provision was deliberately designed in a notional form so that countries could use it in their domestic/ national laws to serve their own interests.<sup>15</sup> Evaluation of three step test reveals that such a concept gives rise to different interpretation owing to ambiguity and vagueness of the provision.<sup>16</sup> However, the three-step test should never be exercised in a way that either defends anti-competitive practices or hinders the creation of a cordial balance between the right holders interests and competition in the secondary market.<sup>17</sup>

In Delhi University photocopy case, when an argument was advanced before the High Court of Delhi to consider article 13 of the TRIPS agreement and article 9 of the Berne Convention, the court while rejecting arguments observed that these are only directory and gives liberty to the member countries to enact their national copyright laws with regard to use of copyrighted work for the object of circulation of knowledge.<sup>18</sup> Though countries agree to comply with the international conventions on copyright but some generally tweak these provisions while framing their domestic copyright laws to achieve their purpose.

While framing domestic laws, local factors also need to be considered, for example, the resources available to a developed country like Sweden might not be available to an under developed country like Bangladesh. Some flexibility must be given to such deprived nations in framing their domestic copyright laws but at the same time essence of the copyright law must not be completely diluted.

### **3. Assessing the scope of judicial doctrine of “Fair Use” in the US and “Fair Dealing” in the UK and comparison with India**

As per the United Kingdom’s Copyright, Designs and Patents Act 1988 (UKCDPA), “author” of a work means a person who creates the work.<sup>19</sup> Usually, first owner of copyright in any work is the author.<sup>20</sup> UKCDPA grants copyright in the ‘original’ literary, dramatic, musical or artistic works.<sup>21</sup> The UKCDPA also distinguishes copyright as a property right.<sup>22</sup> The innovative intellectual activity must not only create “right kind” of work but it must also fulfil the minimum requirement of effort in a work

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<sup>14</sup> Ratnaria Wahid & Khadijah Mohamed, *supra* note 9, at 260.

<sup>15</sup> Ratnaria Wahid & Khadijah Mohamed, *supra* note 9, at 261.

<sup>16</sup> Ratnaria Wahid & Khadijah Mohamed, *supra* note 9, at 262.

<sup>17</sup> Christophe Geiger, Jonathan Griffiths & Reto M. Hilty, *supra* note 11, at 709.

<sup>18</sup> 2016 SCC OnLine Del 6229 [63].

<sup>19</sup> s 9 (1).

<sup>20</sup> Copyright, Designs and Patents Act 1988, s 11 (1).

<sup>21</sup> Copyright, Designs and Patents Act 1988, s 1.

<sup>22</sup> PAUL TORREMAN, HOLYOAK & TORREMAN INTELLECTUAL PROPERTY LAW 196 (7th ed. 2010).

or else such a work would not be considered original.<sup>23</sup> Under the Copyright Act 1976 of the United States, the copyright is accorded for original literary, musical, dramatic, pictorial, sound recording and architectural works and the copyright protection is specifically not applicable for any idea, procedure or process irrespective of the form.<sup>24</sup>

### 3.1 United States and United Kingdom

The doctrine of 'Fair dealing' was aptly explained by Lord Denning in the landmark English case *Hubbard v Vosper*:

It is impossible to define what is 'fair dealing.' It must be a question of degree. You must consider first the number and extent of the quotations and extracts. Are they altogether too many and too long to be fair? Then you must consider the use made of them. If they are used as a basis for comment, criticism or review, that may be fair dealing. If they are used to convey the same information as the author, for a rival purpose, that may be unfair. Next, you must consider the proportions. To take long extracts and attach short comments may be unfair. But, short extracts and long comments may be fair.<sup>25</sup>

As per Lord Denning, in determining whether there has been a "fair dealing" of a work or not, firstly, it must be seen that the work is used as a basis and not as an alternative to the original work. If there is a probability that the use of work will substitute the original work, then, it cannot be said to be a "fair dealing". Secondly, if the proportion of extracts used from a copyrighted work are long then it may not be considered "fair dealing" because then it consists less of original work and more borrowed/ copied work.<sup>26</sup>

Various factors have to be kept in mind while considering whether there is fair dealing or not. These factors include – quantity copied, whether work was published or not, the motive of the user, acknowledgement, nature of use, consequences and whether objective could be achieved by the user of the work or not.<sup>27</sup> There is neither a strait jacket formula to define "Fair dealing" nor it must be determined in isolation. Only after evaluating various factors (as mentioned above), a conclusion can be reached whether there was a "fair dealing" or not. The concept of "fair dealing" as incorporated in the UKCDPA also clarifies that use of a work for the purpose of research, criticism,

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<sup>23</sup> William Cornish, David Lwewlyn & Tanya Aplin, *supra* note 8, at 441.

<sup>24</sup> Copyright Act 1976, s 102.

<sup>25</sup> [1972] 1 All ER 1023 (CA).

<sup>26</sup> *Hubbard v Vosper* [1972] 1 All ER 1023 (CA).

<sup>27</sup> Antony W. Dnes, 'Should the UK Move to a Fair-Use Copyright Exception?' [2013] 44(4) IIC 418, 424.

review, quotation or reporting, if acknowledged, does not amount to infringement of a copyrighted work.<sup>28</sup>

17 U.S. Code § 107 discusses the doctrine of “fair use”, which imposes limitations on the exclusive rights of a copyright holder and allows the exploitation of a copyrighted work without the consent of the author if the work is exploited for ‘criticism, comment, news reporting, teaching (including multiple copies for classroom use), scholarship, or research’. However, to determine “fair use”, some factors need to be considered such as purpose and nature of the use (whether commercial or educational purpose), attributes of the protected work, amount of protected work used, impact of use on the prospective market or value of the protected work.

The US also has non- statutory general scope for application of the doctrine of “fair use” and contemplates the importance of evolving technologies by giving the US courts liberty to adjust the “fair use” doctrine on a case by case basis. It further clarifies that section 107 is aimed at reiterating the existing judicial doctrine of “fair use” and does not propose to change it.<sup>29</sup>

Unlike the concept of “fair dealing” in the UKCDPA, the US copyright law incorporates “fair use” principle in the exceptions to copyright infringement.<sup>30</sup> The concept of “fair use” is an adjustable concept that does not require accessory laws to accommodate copyright exceptions to the evolving changes.<sup>31</sup> “Fair dealing” doctrine applicable in the UK is limited than the American concept of “fair use”.<sup>32</sup> Rule of reason is to be applied by the English courts for the “fair dealing” doctrine because the “fair dealing” exception under the UK law has statutory limitations.<sup>33</sup> While, the US courts are not bound by the words used in section 107<sup>34</sup> and have a wider scope for determining whether an act amounts to “fair use” or not. With the emergence of modern scientific knowledge, the copyright law has undergone many changes.<sup>35</sup>

Perusal of the working of doctrine of “fair dealing” and “fair use” demonstrates potential of courts to employ an alignment between case holdings and legislative

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<sup>28</sup> s 29 to 30.

<sup>29</sup> General Intention Behind the Provision, 17 U.S. Code Section 107, <http://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title17-section107&num=0&edition=prelim> (last visited Nov. 27, 2019)

<sup>30</sup> 17 U.S.C. § 107.

<sup>31</sup> Antony W. Dnes, *supra* note 27, at 419.

<sup>32</sup> Ratnaria Wahid, *supra* note 9, at 87.

<sup>33</sup> Antony W. Dnes, *supra* note 27, at 425.

<sup>34</sup> 17 U.S.C. § 107.

<sup>35</sup> Jie Hua, *Rethinking Copyright Reform: Should China Imitate or Innovate?*, 9(2) JICLT 94, 95 (2014)

purpose elevates with “fair use”.<sup>36</sup> Overall, it can be stated that the concept of “fair use” is not only different from “fair dealing” doctrine of the UK but also has a wider scope than the latter. While, at the same time there are also certain resemblances between the UK and US law for determining whether the dealing or use is fair or not. Section 107 of the US Code mentions four elements that have an impression of the factors evolved over a period of time by the UK courts.<sup>37</sup> The US courts are free to depend on the factors that are non-statutory while English courts can assess distinctive factors relying on the facts and circumstances of the case involved.<sup>38</sup>

### 3.2 India

Every child in India irrespective of his/ her caste, creed, religion or ethnicity between the age group of 6 to 14 years has a fundamental right to free and compulsory education.<sup>39</sup> Robust mechanisms that are put in place for copyright protection act as an impediment for the public in less developed countries in gaining access to knowledge and information.<sup>40</sup> Developing countries, for the purpose of educational and research activities, are heavily reliant on the free movement of knowledge and information from other nations.<sup>41</sup> These countries also draw support from International declarations like “Universal Declaration of Human Rights 1948” (UDHR), which provides a right for everyone to receive the benefits of “scientific advancement.”<sup>42</sup> However, at the same time UDHR also gives a right to the author of any scientific, literary or artistic production to secure his “moral and material interests.”<sup>43</sup>

The Copyright Act 1957 incorporates the doctrine of “fair dealing” in section 52(1)(a) and section 39, however, it does not have statutory limitations as provided under the UKCDPA. When arguments were advanced before the High Court of Delhi for application of the doctrine of “fair dealing” as applied under the UK Copyright legislation in the present case, the court pointed out that “fair dealing” is integral to the UK law regarding photocopying for the research, criticism and educational purpose whereas in India the subject is split under various clauses of section 52(1).<sup>44</sup>

While assessing whether the use was fair or not in the Delhi University photocopy

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<sup>36</sup> Antony W. Dnes, *supra note 27*, at 419.

<sup>37</sup> Martin Brenneke, Is “fair use” an option for U.K. copyright legislation?, 8 (2008) (ebook)

<sup>38</sup> *Id.*

<sup>39</sup> Constitution of India 1950, art 21-A.

<sup>40</sup> Haochen Sun, *Copyright Law Under Siege: An Inquiry into the Legitimacy of Copyright Protection in the Context of the Global Digital Divide*, 36(2) IIC 192, 195 (2005).

<sup>41</sup> *Id.* at 202.

<sup>42</sup> art 27(1).

<sup>43</sup> art 27(2).

<sup>44</sup> 2016 SCC OnLine Del 6229 [68].



case,<sup>45</sup> the High Court of Delhi observed that “fair use” is not a ‘limiting factor’ as far as it is “during the course of instruction.”<sup>46</sup> Furthermore, the court opened the doors for unrestrained use of the copyrighted work for educational purpose as it implicitly removed “qualitative and quantitative” limits for use of copyrighted work. High Court of Delhi stated that using a copyrighted work for a justified purpose of education would be a “fair use” and shall not have any concern with the extent of information used whether ‘qualitative or quantitative.’<sup>47</sup>

Here it can be suggested that High Court of Delhi should have taken into consideration the grounds which were laid down in English case *Hubbard v Vosper*<sup>48</sup> where Lord Denning mentioned that for determining “fair dealing”, the extent of extracts used must be considered.<sup>49</sup> Though stated in context of “fair dealing” by Lord Denning, the same principle imposing limitation on use of extracts may also be applied in context of “fair use” doctrine, which High Court of Delhi did not take it consideration as discussed above. The stand taken by the High Court of Delhi may affect the interest of the authors as their copyrighted work could now be used widely for educational purpose with no concern for “extent” of the material used.

Instead of interpreting “fair deal” constructively in order to protect the rights of the copyright holders, the High Court of Delhi shifted the responsibility on the legislature and held that it was a matter of policy and it was for the government to decide the policy underlying the statute and the court would interpret the statute using the instruments of grammar and shall accord words the meaning as per “ordinary English parlance and defining concepts with common sense.”<sup>50</sup>

Regarding the doctrine of “fair use”, the court held that the “fair use” concept acts as a restriction to the rights of a copyright holder and permits some acts to be done with respect to the copyrighted material without causing infringement.<sup>51</sup> The High Court of Delhi rejected the application of the decisions by the American courts on “fair use” in India and held that with respect to teaching and multiple copies for classroom purpose under section 107 of the U.S Code, the American law is circumscribed by “fair use” and the US statute lays down an expansive definition with respect to what shall amount to “fair use”.<sup>52</sup> The American law clearly sets out what would amount to “fair use” and

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<sup>45</sup> 2016 SCC OnLine Del 6229.

<sup>46</sup> 2016 SCC OnLine Del 6229 [31].

<sup>47</sup> 2016 SCC OnLine Del 6229 [33].

<sup>48</sup> [1972] 1 All ER 1023 (CA).

<sup>49</sup> 1 All ER 1023 (CA).

<sup>50</sup> 2016 SCC OnLine Del 6229 [62].

<sup>51</sup> 2016 SCC OnLine Del 6229 [74].

<sup>52</sup> 2016 SCC OnLine Del 6229 [66].

what would not, while no such clarification for “exceptions” exists in the Indian Copyright law. This has restricted Courts in India in interpreting Section 52 and preferably due to this reason High Court of Delhi invoked Sec 52(1)(i) and not Section 52(1)(a) in the present case.<sup>53</sup>

By way of General intentions behind section 107 of the US Copyright Law 1976<sup>54</sup>, the US provides non-statutory guidelines for deciding whether there is “fair use” or not. While the UKCDPA helps by providing statutory limitations. The concept of “fair use” and “fair deal” as mentioned in the Copyright laws of the US and the UK assists the courts while dealing with matters concerning educational exception under copyright law but the Indian copyright law remains ambiguous on that issue. The Indian legislature should take initiative to define what exactly must be permitted and what should be restricted for the application of the “fair deal” doctrine for the purpose of education. The Indian legislature, unlike their US and UK counterparts, neither imposed any limitations nor laid down any guidelines for the interpretation of Section 52(1)(a) or Section 52(1)(i). More clarity can be brought in the Indian Copyright act, if the legislature frames some guidelines or explanation in respect to section 52(1)(a) and 52(1)(i) of the Indian Copyright Act (1957).

#### **4. Impact of “Course Packs” on Authors**

High Court of Delhi then defined “course pack.” It held that teachers act in a group for a specific degree course and prescribe appropriate reading material for students by keeping in mind the aims of the course as per the syllabus stated by the University. The next step for them then is to select the reading material and it would be the copyrighted works. It shall comprise of reading material for the students, which the teacher shall use in the course of instruction in the classroom. Spiral binding of such reading material shall be called a “course pack.”<sup>55</sup>

The US has *Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions with Respect to Books and Periodicals*,<sup>56</sup> which lays down some standards to be followed for applying the doctrine of “fair use” for the purpose of education exception. This further clarifies the position of the US with respect to the exception lying under section 107.<sup>57</sup> The US also has prohibitions (non-statutory),

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<sup>53</sup> 2016 SCC OnLine Del 6229 [75].

<sup>54</sup> General Intention Behind the Provision, *supra* note 29.

<sup>55</sup> 2016 SCC OnLine Del 6229 [ 61].

<sup>56</sup> Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions with respect to books and periodicals, <http://uscode.house.gov/view.xhtml?req=granuleid:USC-prelim-title17-section107&num=0&edition=prelim> (last visited Nov. 29, 2019).

<sup>57</sup> 17 U.S. Code.

which categorically state that copying shall not be done to substitute purchase of books and should not be directed by a higher authority. It states that the interests of the publishers must be secured and no material should be copied for educational purpose, which eventually tries substituting books, periodicals...etc.<sup>58</sup> However, in Delhi University photocopy case, the publishers had rather alleged that the course packs provided to students contained no additional material other than the photocopies of their copyrighted publications and were used like textbooks and thus, competed with their publications.<sup>59</sup>

The guidelines in the US also prohibit copying to be directed from higher authorities to protect interest of the copyright holder,<sup>60</sup> whereas in Delhi University photocopy case, it was alleged by the publishers that preparation of course packs had been authorized by the professors in Delhi School of Economics (University of Delhi) and the task of photocopying pages from the books of the publishers and supplying them to students was assigned to Rameshwari photocopy service.<sup>61</sup> This reflects that such copying was directed by a higher authority. This leaves the author of a copyrighted work at a losing end because University of Delhi itself allowed copying of relevant pages from books of publishers making it pointless for the students to buy such books.

In English case *Universities U.K. Ltd v Copyright Licensing Agency Ltd*, it was stated that it would not be a fair dealing when a lecturer instructs a class to make copies of the alike material, but if a reading list is given with no instructions to copy from it, then that would not amount to infringement of copyrighted work.<sup>62</sup> The UKCDPA also mention some limits to be followed by an educational institution for using extracts from a copyrighted work.<sup>63</sup> Section 52(1)(i) specifically states that there would be no infringement if a work is reproduced by a teacher in the “course of instruction.”<sup>64</sup> The High Court of Delhi also said that perusal of section 52(1)(i) would show that the legislature expressly did not make “fair use” a restricting factor while allowing reproduction “during course of instruction.”<sup>65</sup> The Indian copyright act, unlike the UKCDPA did not make any clarification regarding the proportions that may be allowed for using a copyrighted work.

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<sup>58</sup> Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions with respect to books and periodicals, *supra* note 56.

<sup>59</sup> 2016 SCC OnLine Del 6229 [3].

<sup>60</sup> Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions with respect to books and periodicals, *supra* note 56.

<sup>61</sup> SCC OnLine Del 6229 [1].

<sup>62</sup> *Universities UK Ltd v Copyright Licensing Agency Ltd*, [2002] E.M.L.R. 35

<sup>63</sup> s 36(5).

<sup>64</sup> Indian Copyright Act 1957

<sup>65</sup> SCC OnLine Del 6229 [31]

The High Court of Delhi also stated that a student is not a potential buyer of all books mentioned for his course. The court while discussing this issue made an analogy that the way a copyrighted material is used for literacy programme does not have a negative effect on the copyrighted work as the person who benefits from such a programme is not a “potential customer” of such material, in the same manner, a student is not a “potential customer” of thirty or forty reference books.<sup>66</sup>

The course pack provided by Rameshwari photocopy services to the students included materials from 23 books.<sup>67</sup> It is significant to state that the curriculum in University of Delhi never demanded complete books to be reproduced, thus, the course packs only consisted of the selected portions of copyrighted books and journals.<sup>68</sup> The High Court of Delhi division bench erred by not taking into consideration the fact that the use of copyrighted material for educational purpose is just an exception. The court should not have interpreted “course packs” too widely to fall as an exception under the category “in the course of instruction” mentioned in section 52(1)(i) of Indian Copyright Act 1957.

UKCDPA provides that copying of extracts by educational establishments would not amount to infringement of copyrighted work if it was communicated for non – commercial instruction purpose to pupil or staff with sufficient acknowledgement.<sup>69</sup> The Act further clarifies that not more than 5% of work may be copied by an educational establishment in any period of 12 months.<sup>70</sup> In Delhi University photocopy case, average percentage of entire book copied was 8.81% with the minimum percentage of pages copied from one entire book being 0.05% and maximum percentage of pages copied from another entire book being 33.8%.<sup>71</sup>

Compilation of the “course packs” with relevant course materials from different books affects the interests of the publishers as such course packs are sold at a very lower price than the book. While a book published is sold after keeping in mind various factors including the remuneration to be paid to the author for the original work created. The author receives no remuneration from such course packs. If this trend continues then many foreign publishers shall be reluctant in coming to India as they have no protection for their work which is being used by educational institutions without

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<sup>66</sup> SCC OnLine Del 6229 [36]

<sup>67</sup> Amlan Mohanty, *Analysing the Delhi University v. Publishers Photocopying Case*, (Sept. 4, 2012), <https://spicyip.com/2012/09/analysing-delhi-university-v-publishers.html>.

<sup>68</sup> Lawrence Liang, *Paternal and defiant access: copyright and the politics of access to knowledge in the Delhi University photocopy case*, 1(1) Indian Law Review, 36, 39 (2017).

<sup>69</sup> s 36(2).

<sup>70</sup> s 36(5).

<sup>71</sup> SCC OnLine Del 6229 [1].

compensating them. This trend may even prove detrimental for research and development in the country.

In such a scenario, it can be suggested that the Indian legislature may learn from their UK counterparts and embody such specific provision in the Indian copyright law to preserve interest of the copyright holders in India. This would provide some certainty with regard to the percentage of materials that may be used for educational purpose in India. The legislature after taking into consideration the relevant factors and discussing with all stakeholders including student bodies may arrive at a specific percentage that may be fixed in the case of India for the purpose of education exception. This will safeguard both the interest of the authors and the students.

#### **4.1 The argument of access to education versus author's interest**

The High Court in Delhi University photocopy case observed, 'The importance of education lies in the fact that education alone is the foundation on which a progressive and prosperous society can be built'.<sup>72</sup>

In *Gramophone Co. of India Ltd v Birendra Bahadur Pandey*, Justice Chinnappa Reddy observed that an artistic, literary or musical work is considered "property" of the author of the work because it is the creation of the author and is a reward of his labour. It is valued highly by all civilised nations that it is considered suitable of being protected by the domestic laws and international conventions.<sup>73</sup> When one talks about protecting the interests of students, then there is also a need to safeguard interests of authors. An author of a work is affected, who puts in lot of efforts to create a work and when in guise of "education exception" his work is reproduced by others without allowing him to make revenues from it (as was seen in the Delhi University photocopy case).

To sum up access to education versus author's interest argument, an attempt can be made to fulfil the purpose of education and by safeguarding the interests of authors at the same time. Taking the present case, "Course packs" may be distributed not by the photocopy shop but by the University of Delhi itself in a standard manner and some fee may be charged from the students which can be paid eventually to different authors/publishers whose works have been used and compiled in the course pack. The basis for this suggestion of paying remuneration to the author of a work can be derived from the remuneration clause mentioned in Article 15(2) of the WIPO Performances and Phonograms Treaty 1996 (WPPT), which gives liberty to contracting parties to enact

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<sup>72</sup> SCC OnLine Del 6229 [30].

<sup>73</sup> [1984] 2 SCC 534 [21].

national legislation and place the terms for sharing single equitable remuneration.

In past, such conditions have not been used for the purpose of “education exception”, but a developing country like India may take steps and incorporate similar provision in its domestic copyright law (India is also a member of WPPT). The benefit of applying such provision shall be, firstly, the interest of the authors/ publishers will be safeguarded and secondly, they will not suffer losses that they are currently suffering owing to the photocopied extracts of their books being distributed to the students. Also, the students would be at the advantageous position as the University could now freely add/ omit new/old books as per the evolving syllabus and provide quality and standard education material to students at a nominal rate.

#### **4.2 Reproduction of a Copyrighted work**

The High Court observed that a publication need not be for the advantage of or accessible to or intended for reading by all people. An earmarked or selected audience would also be considered public. Though, a publication would have a facet of profit but that element would not be available in the case where a teacher reproduces a work to use it in the course of instruction for imparting education to students. The court further held that if reproduction comprises the plural, then making numerous copies shall not be regarded “impermissible.”<sup>74</sup> The court further stated it occurs in law that the ‘footprints of one concept fall in the territory of other but that does not mean that the former should be restricted.’<sup>75</sup>

Under section 107 of the US code, there are non-statutory guidelines that provide conditions for multiple copies for the purpose of classroom use. It states that for the purpose of discussion or classroom use, a teacher may make multiple copies subject to certain conditions like copying must satisfy the test of “brevity and spontaneity”, satisfy “cumulative effect test” and that each copy of the work must consist a “notice of copyright.”<sup>76</sup>

To further provide clarity, these concepts are well defined. The term “Brevity” is defined as the limits in percentage and words which are to be followed while using a copyrighted “poem” or a “prose”, “spontaneity” refers to a situation where an individual teacher encourages copying of a work for teaching efficaciously in the class when there is not enough time to receive permission and “cumulative effect” refers to the restriction on the quantity of extracts that can be used and also mentions how many

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<sup>74</sup> SCC OnLine Del 6229 [57]

<sup>75</sup> SCC OnLine Del 6229 [57].

<sup>76</sup> Agreement on Guidelines for Classroom Copying in Not-For-Profit Educational Institutions with respect to books and periodicals, *supra* note 56.

times multiple copying during one class term and for a course can be used.<sup>77</sup>

UKCDPA allows copying and use of extracts from the copyrighted works by educational establishments and specifies some limitations such as percentage of the works that can be used.<sup>78</sup> Section 52(i)(i) of the Indian Copyright Act 1957 allows reproduction of a copyrighted work “in the course of instruction” by a teacher or a pupil. The High Court of Delhi held the expression “in the course of instruction” to mean class room discussion where teachers do not adopt boring mechanism of imparting knowledge where lectures are given and the students make notes of it but an interactive mechanism where photocopied material is made available to the students, which is then discussed and debated in the class in an interactive way with the teacher supervising such discourse. The court held this approach similar to a group discourse where the anchor makes sure that those engaging stay with the theme and do not go off track.<sup>79</sup> Absence of any guidelines or limitations in India (as seen in the case of US and UK) leads to ambiguity in interpreting the phrase “in the course of instruction.” Its scope remains wide and allows the teachers to use the copyrighted material in an unrestricted manner. To restrict such expansive scope, the Government must consider providing some limitations or restrictions on the extent of use of copyrighted material by educational establishments “in the course of instruction.”

## 5. Responsibility of Universities

In *Campbell v Acuff-Rose Music, Inc.*, the United States Supreme Court held that ‘...the mere fact that a use is educational and not for profit does not insulate it from a finding of infringement, any more than the commercial character of a use bars a finding of fairness’.<sup>80</sup>

The expenditure on education varies from country to country. A developed country would spend more on education as compared to a developing or an under developed country. This makes a difference in the quality of education available to students in these countries. As per 2016-17 budget estimates, the UK spent 13.21% of the total allocated budget on education.<sup>81</sup> Whereas, in the financial year 2016-17 the Indian government allocated only 3.65% of its total budget for education.<sup>82</sup>

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<sup>77</sup> *Id.*

<sup>78</sup> s 36 (5).

<sup>79</sup> SCC OnLine Del 6229 [39].

<sup>80</sup> (510 US 569 (1994)) 584.

<sup>81</sup> Budget 2016, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/508193/HMT\\_Budget\\_2016\\_Web\\_Accessible.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/508193/HMT_Budget_2016_Web_Accessible.pdf) (last visited Dec. 14, 2019).

<sup>82</sup> Subodh Varma, Share of spend in government expenditure, GDP on education falling for 3 years’ 6 Feb 2017, <https://timesofindia.indiatimes.com/india/share-of-spend-in-government-expendit>

India only spends 0.85% of its GDP on research while the USA spends 2.74%, China 2.1%, Japan, 3.58% and South Korea, 4.29%.<sup>83</sup> Such low expenditure ends up in providing sub-standard education to students and research is often of low-quality. Poverty in developing countries forces the government to spend less on research, education overall and specifically the higher education in these countries suffers the most. The Universities lack basic infrastructure and do not have enough resources to upgrade their libraries with latest books of foreign publications.

The Bodleian Libraries at the University of Oxford is the largest university library system in the United Kingdom which has been a legal deposit library for 400 years; as well as 30 libraries across Oxford including major research libraries and faculty, department and institute libraries. Together, the Libraries hold more than 12 million printed items, over 80,000 e-journals and outstanding special collections including rare books and manuscripts, classical papyri, maps, music, art and printed ephemera. Such a vast collection of books is available to 22,000 students of University of Oxford. On the other hand, University of Delhi has 132,435 regular students who have access to a meagre 1,450,000 volumes of books and 1290 journals. A large number of students studying in University of Delhi come from a humble background and are unable to afford education at private institutions which have exorbitant fees.<sup>84</sup>

Keeping the background of most students studying in Delhi University in mind, it would not be justified to expect such students to buy books of foreign publishers that sometimes cost their annual fees. The need then arises to ensure that such books are made available to the students for their education as the University of Delhi library fails to fulfil their requirement.

In 1983, Copyright Licensing Authority (CLA) was established in the UK under which businesses, charities, educational institutions, and public-sector organisations are given licenses (for a fee) for copying content from copyrighted prints and digital books, magazines and journals.<sup>85</sup> However, if a work is used by an educational establishment and falls under the exception of “fair dealing”, then no such license is required but if there is no “fair dealing”, then educational establishments such as schools, colleges and Universities have to pay for “third party teaching materials”

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ure-gdp-on-education-falling-for-3-years/articleshow/56991039.cms (last visited Dec. 21, 2019).

<sup>83</sup> Higher Education Investment: India's Latest Budget, <http://www.qs.com/indian-budget/> (last visited Dec. 15, 2019).

<sup>84</sup> This argument was raised by Diwakar Kishore in his blog ‘Oxford University Press vs a photocopy shop in Delhi: The difficulty in arguing fairness’ (Sept. 19, 2016), <https://blogs.bsg.ox.ac.uk/2016/09/19/oxford-university-press-vs-a-photocopy-shop-in-delhi-the-difficulty-in-arguing-fairness/>.

<sup>85</sup> Do you need a CLA licence?, <https://www.cla.co.uk/do-you-need-a-licence> (last visited Dec. 16, 2019).



which are granted under the license.<sup>86</sup>

In India there are provisions for copyright societies under Section 33, 34 and 35 of the Indian Copyright Act, which ensure protection of copyrighted work as well as secure economic interests of the author but they do not deal specifically with the license for copying from copyrighted material by educational establishments.<sup>87</sup> A breakthrough in this case scenario, in India, can be achieved if Universities start compensating such authors/ publishers through agencies such as CLA, which exist in the UK. Universities like University of Delhi should start compensating such authors/ publishers for their copyrighted work by paying agencies along the lines of CLA in India. Such an initiative would then certainly help in solving the problem of both the students who find difficulty in purchasing expensive books and the publishers who feel their interests are undermined.

In the year 2000, Indian Reprographic Rights Organisation (IRRO) was founded under section 33 of the Indian Copyright Act 1957 and is the sole licensing authority to “issue licenses to users of copyrighted works of its members, collect royalties on the behalf of rights owners and distribute them.”<sup>88</sup> University of Delhi may take an initiative and involve agencies such as IRRO to compensate the authors and use copyrighted work for students.

## 6. Conclusion

To conclude, every student must have access to quality education irrespective of his/ her economic status or the country he is born in. Students must be given equal opportunity and exposure to quality education. At the same time, there must be strict compliances to prevent copyright infringement, however, some flexibility or relaxation must be given to students in under-developed and developing countries so that strict copyright laws do not become impediment in the resolve of governments to provide quality education to such students.

In India, there is no specific limit in terms of percentage of work or word limit of the copyrighted work that may be used for educational purpose. The limit on extract of copyrighted works that can be used by educational establishments needs to be embodied in Indian copyright law. Such a move by the government would definitely

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<sup>86</sup> Intellectual Property Office, *Exceptions to copyright: Education and Teaching*, [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/375951/Education\\_and\\_Teaching.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/375951/Education_and_Teaching.pdf) (last visited Dec. 16, 2019).

<sup>87</sup> Copyright Societies, <http://copyright.gov.in/documents/copyright%20societies.pdf> (last visited Dec. 16, 2019).

<sup>88</sup> Indian Reprographic Rights Organisation: Overview, <http://www.irro.org.in/about-us/overview/> (last visited Dec. 19, 2019)

give assistance to the courts in deciding infringement of copyrighted work, if any, by educational establishments. The US has provided non-statutory prohibitions and guidelines for Section 107 of their copyright law, which are very helpful while applying “fair use” doctrine and the UKCDPA also states some statutory limitations.

In the Delhi University photocopy case, it was seen that the judiciary could not safeguard the interests of the authors due to ambiguity in the “fair deal” doctrine as laid down in Indian Copyright act 1957. Several amendments have been made in this act over a period of 60 years and also India has ratified various international conventions and treaties during this period but they remain unfruitful. This situation demands from the Indian legislature to take measures to make unambiguous provisions in respect of “education exception” as seen in the case of the US and the UK. Steps should be taken to define as to what would precisely amount to a “fair deal” under the Indian Copyright act and what shall be covered under education exception.

If Indian government is actually concerned about interests of students then it should also promote agencies like CLA, which are well established in the UK. If educational establishments including government universities pay fees for copying work from the copyrighted material to agencies like CLA in India, then it would help the students in gaining access to work of authors of International repute as well as secure the work of authors from unauthorised use.

India has taken a long step in safeguarding interests of authors but it needs to go further and make “fair deal” principle more explicit and well defined so that it does not act as an impediment in the creation of more literary, artistic or musical works in the country. It would also assist in securing the moral and material interests of the authors who have been given protection under article 27 (2) of the UDHR.

## **Application of Neural Network Models for Analysis of Factors Influencing Patent Activity**

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### **Abstract**

The purpose of this article is to present an idea for the application of Neural Network models (NNM) in the analysis of the relationship between certain types of resources allocated to innovation and patent activity. The European Union (EU) and Member States, as well as most countries around the world, are interested in investing in R&D to create and maintain competitive advantages. The question arises about the effectiveness of every euro spent on innovation.

The article introduces a NNM that aims to determine the sensitivity of patent activity in certain EU countries to the dynamics of some input variables. Input variables reflect the resource spending for R&D – intramural R&D expenditure, total R&D personnel and researchers, number of scientists and engineers. Patent activity in countries is evaluated on the Number of patent applications to the European Patent Office (EPO) per year variable.

As a result of model application, it is found that the sensitivity analyzed varies from country to country, but in any case, the higher the resource spending for R&D, the higher the patent activity is. The article draws a series of conclusions, the main one being that patent activity is most sensitive to changes in the variable R&D expenditure

**Keywords:** neural networks, resources for R&D, sensitivity analysis, patent activity

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## 1. Introduction

The intensive innovation process is becoming an increasingly important factor in ensuring the competitiveness of companies and the well-being of nations. Policymakers around the world declare that innovation is one of their top priority. Indeed, the governments' spending on innovation globally are increasing. For example, Figure 1 shows the dynamics of Gross domestic spending on R&D for the G7, EU (28) and OESC countries for the period 2000 – 2018.

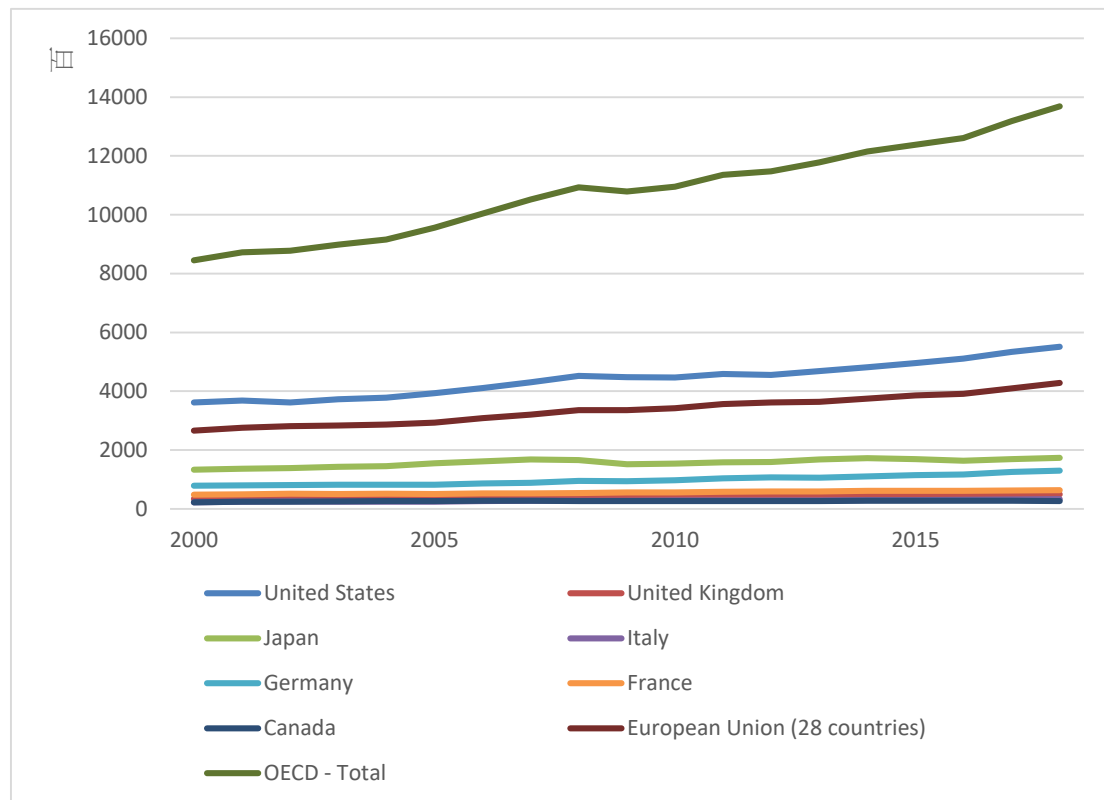


Figure 1: Gross domestic spending on R&D, USD, for G7 countries, EU(28) and OESC countries for the period of 2000 – 2018

Source: OECD Data, <https://data.oecd.org/rd/gross-domestic-spending-on-r-d.htm>

The European Union has set itself ambitious objective to intensify the innovation process in the Member States to make Europe a world-class science performer. The idea arises to build a so-called The Innovation Union, which has the following tasks<sup>1</sup>:

- Make Europe a world-class science performer.

<sup>1</sup> European Parliament, Fact Sheets on the European Union, Innovation policy, <https://www.euro-parl.europa.eu/factsheets/en/sheet/67/innovation-policy>

- Remove obstacles to innovation — like expensive patenting, market fragmentation, slow standard-setting and skills shortages — which currently prevent ideas getting quickly to market.
- Revolutionise the way the public and private sectors work together, notably through the implementation of Innovation Partnerships between the EU institutions, national and regional authorities and business.

The EU and the Member States, as well as most countries around the world, are interested in investing in R&D so as to enable companies to create and maintain competitive advantages based on sufficiently good technological positions. The question arises how to ensure the efficient use of resources allocated to innovation. Countries and businesses are keen to get the most out of every euro spent on innovation. In this sense, the question of how the consumption of additional innovation resources would affect the innovation process could be of interest.

## 2. Problem identification

Numerous studies have focused on establishing links between government and business resources spent on innovation and innovation outcomes. Indeed, such links are very important to both the political elite, business, and researchers. The political elite must have a basis on which to build its policy on stimulating innovations. Businesses need to have guidance on how to invest in innovation. Researchers are interested in how, with what tools, to increase the likelihood of success of their research and innovation projects. Graphically, the connection seems simple (Figure 2.).

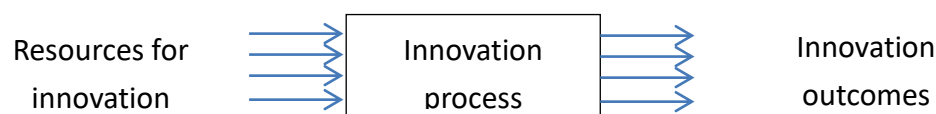


Figure 2: Links between resources spent on innovation and innovation outcomes

In practice, however, things are much more complicated. The links studied are neither functional nor linear. Multiple variables can be identified as inputs for innovation, some of which are: the national innovation system, the existing research base, the innovation infrastructure (business incubators, technology parks, business parks, innovation networks, innovation clusters, innovation centers, etc.), financial resources that government and business devote to innovation, and more. As outcomes of the innovation process, those variables that are widely used in the practice of

measuring innovation activity can be considered.

The arguments for the need to evaluate innovation can be sought at company, national and international levels. Companies are interested in analyzing and evaluating their innovation activity for at least the following reasons. First and foremost, it is a commonly accepted fact that innovation provides sustainable competitive advantages. One of the means to achieve the company's strategic objectives is to develop and maintain a capacity for innovations creation and adoption.

In other words, the company is interested in finding out what position it holds in terms of its innovation activity vis-à-vis competitors and other market players. Secondly, maintaining a system for evaluating innovation activity enables the identification of good practices and their exchange between companies. World experience has proven that the implementation of good practices is one of the most effective tools for knowledge management, and in particular for acquiring new, useful knowledge for the company.

Collecting and summarizing information on the innovation activity of companies is also essential at national level. Numerous statistical surveys and econometric models have been developed to demonstrate a clear positive correlation between innovation activity in a country and its economic development rate. Governments are aware that pursuing sound scientific, R&D and innovation policy and strategy is a significant prerequisite for maintaining sustainable economic development. To be able to develop such policies and strategies, reliable information is needed about the innovation activity of economic entities, its dynamics over time and the existing differences in the regional context.

Many international organizations have established systems for collecting, summarizing, and analyzing information on the innovation activity of certain countries and groups of countries. These systems make periodic comparisons across countries, their positioning on specific indicators and groups of indicators. In this way, national governments can be assisted in managing scientific and technological development and innovation. Examples of such organizations are the EU, the Organization for Economic Co-operation and Development (OECD), the Organization of American States (OAS), and many others.

The evaluation of innovation activity encounters a number of difficulties that can be grouped into several groups:

(1) Difficulties in gathering the necessary information.

The evaluation requires a diverse and extensive body of information that must be collected systematically and over specified periods. This information should be summarized within the company and at higher levels – region, industry, country, international organization. These processes have various organizational, financial, technological, and other difficulties.

(2) Quality of the information collected.

Insufficient quality of the information collected can lead to serious deviations in the results of the study and hence – to wrong conclusions and managerial actions. Therefore, the European and global scientific community focuses on defining clear and accurate procedures for collecting information, specifying indicators and on the methodology for calculating and processing them.

(3) Comparability of information.

The information collected at different levels needs to be comparable – across companies, regions, industries, and countries. This is one of the most significant issue in evaluating innovation. Very often, the same terms mean different things. This has necessitated the development of various reference books, manuals and other methodological materials that enable a sufficient degree of comparability.

(4) The innovation process is heterogeneous and of many dimensions.

The innovation process consists of various structural elements. Its results depend on how each of them is implemented. A variety of actors are involved in the process with different contributions to success. It requires a variety of resources, and the presence or absence of each can lead to different negative effects. The outcome of the innovation process is also ambiguous and may consist of different tangible or intangible elements. This heterogeneity, both at the 'input', in the process itself, and at the 'output', as well as its multidimensionality, create additional difficulties in measuring its intensity, efficiency and effectiveness.

(5) The participants in the innovation process are not linearly connected to each other but build a kind of network.

The implementation of innovative activities requires the involvement of different partners, which are often not organizationally linked, such as universities, scientific laboratories, individual researchers, companies, banks, government institutions and others.

### 3. Methodology

Many authors consider that an important outcome of innovation are intellectual property rights, such as patents, utility models, industrial design, topology of integrated circuits and more. This study is based on the idea that the intensity of the innovation process in a country can be assessed in particular through the intellectual property rights indicators. I will try to establish a link between some 'input' factors for the innovation process and their impact on the patent activity indicators of countries. The patent activity is measured by the number of patent applications for a certain period.

Scientists use a number of approaches and specific tools to evaluate the strength of the relationship between different variables. Here we can indicate correlation and regression analysis, expert assessments, simulation models. These tools are well-developed and repeatedly tested in practice. However, when we examine the relationship between the 'input' and 'output' of the innovation process, we have to bear in mind that the outcome of the innovation process is influenced by many factors, of which only one group is the allocated input resources. These factors are often random and have a probabilistic impact on the innovation outcome. Identifying them and the power with which they influence innovation activity are very difficult, and perhaps impossible.

For many years, researchers have been working on different ideas for creating artificial intelligence. Of particular interest initially are manifested in the so-called expert systems – software products that are based on the expertise of professionals and that are able to offer recommendations for managerial decisions. In the 1950s of the last century, the idea of building artificial intelligence began to evolve, replicating the way the human brain functions<sup>2</sup>. The functioning of models called neural networks is similar to the way people think. They consist of several elements called neurons. The neurons resemble the neurons that make up the human brain. They receive input signals and as a result generate an output signal. There are different connections between individual neurons, and they can be grouped together in layers. Neural networks can be represented as oriented graphs or tables.

With the creation of neural network models, the idea of creating artificial intelligence takes on a real dimension<sup>3</sup>. Present-day hardware and software

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<sup>2</sup> See for example Rashid, T., “Make Your Own Neural Network”, 2016.

<sup>3</sup> See for example Vasilev, I., Slater, D., Spacagna, G., Roelants, P., Zocca, V., “Python Deep Learning”, Second Edition, Packt, 2019, p. 34-67.



capabilities enable neural networks to be used in various fields of human activity<sup>4</sup>.

In this article, I will try to prove that NNM can be successfully used in establishing connections between the "inputs" and "outputs" of the innovation process. Models based on neural networks can be useful when it is necessary to evaluate the relationship between a series of independent variables and one or more dependent variables. Moreover, they can be applied exactly in such a situation in which there is no clear functional relationship between the variables and there is a strong random influence of different side factors.

NNMs have many useful properties that make them particularly suitable for the case under consideration. First of all, they are non-linear. The very nature of the interconnections between the input and output of the innovation process implies non-linearity. Second, neural networks can be trained. Based on multiple training samples, they can alter the synaptic weight of individual neurons. In fact, synaptic weight reflects the strength of the connection between two neurons. Each training example consists of one or more input signals and the desired response corresponding to them. Third, neural networks are fault tolerant. In adverse conditions, their performance decreases slightly. There are some other advantages to the NNMs offered. They can be used in the analysis of extremely complex relationships between input and output variables. They can work in the presence of missing data without significantly impairing the quality of the results.

At the same time, the researcher who decides to use NNMs must consider some of their disadvantages and limitations. The speed of the training and calculations strongly depends on the technical characteristics of the hardware used. In more complex models, the data processing time can be quite long. On the other hand, the models are not able to logically explain the results obtained. This can be a serious issue if the results of the study are /intended to serve as arguments in managerial decision-making. The selection of the most appropriate type of neural network for a given situation can be done using trial and error approach – by applying different types of networks and comparing the results. Sometimes this might take a long time. Finally, a large amount of information is needed to obtain quality results. The more

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<sup>4</sup> See for example: Fensterstock, A., "The Application of Neural Networks to Credit Scoring", *Business Credit*, Mar 2001, Vol. 103 Issue 3, p 58. , Gori M., "Diffusion Learning and Regularization", *New Directions in Neural Networks*", 18th Italian Workshop on Neural Networks: WIRN 2008, Edited by Bruno Apolloni, Simone Bassis, and Maria Marinaro, IOS Press, 2009, p. 127-137., Schumacher, P., Olinsky, A., Quinn, J., and Smith, R., "A Comparison of Logistic Regression, Neural Networks, and Classification Trees Predicting Success of Actuarial Students", *Journal of Education for Business*, May/Jun 2010, Vol. 85 Issue 5, p 258-263., Fallah, N., Mitnitski, A., Rockwood, K., "Applying neural network Poisson regression to predict cognitive score changes", *Journal of Applied Statistics*. Sep 2011, Vol. 38 Issue 9, p 2051-2062.

are the cases used in network training, the better the results will be.

A neural network can be represented as a set of neurons that form layers. Figure 3 presents a typical network consisting of one input layer, one hidden intermediate layer and an output.

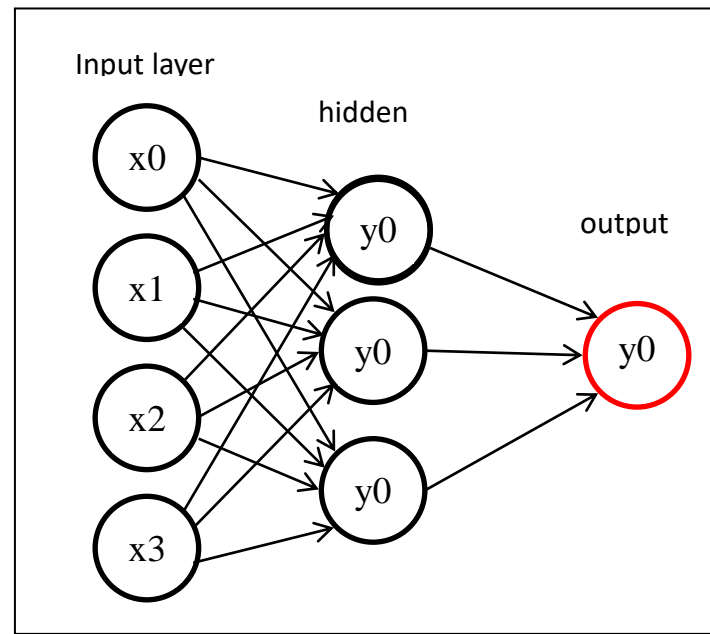


Figure 3: Neural network with one hidden layer

Source: Ivan Vasilev, Daniel Slater, Gianmario Spacagna, Peter Roelants, Valentino Zocca, Python Deep Learning, Second Edition, Packt Publishing, 2019, p. 28.

Neurons are developed as mathematical functions that bind one or more independent variables and one dependent variable. The neurons are grouped into layers. Each neuron can associate with neurons from other layers, but not with neurons from its own layer. The clustering of neurons into layers allows them to integrate their 'outputs' as vectors and thus to process the available information in parallel.

Once the network has been built, it can be trained using available case studies. One of the classics of machine learning theory Thomas Mitchell defines that a computer program is said to learn from experience E with respect to some class of tasks T and performance measure P, if its performance at tasks in T, as measured by P, improves with experience E<sup>5</sup>. The neural network is able to model inputs impact to specific outputs through fixed weights. After all, the neural network reflects a function by approximation, but differs from it by a certain value – an error.

<sup>5</sup> TOM. M. MITCHELL, MACHINE LEARNING 2 (1997).

The error magnitude depends on the weight of the individual neurons. For each training case, the weights of the neurons are adjusted to minimize the total error. Most commonly, the gradient descent and backpropagation algorithms are used.<sup>6</sup> A critical point in an NNMs is the amount of information available. The more cases are included in the model, the less the error is. For this reason, I decided to use the information from the EPO databases, where can be found sufficient volume and comparable information for the needs of the model.

#### **4. Opportunities of neural network models for innovation activity research**

There are various definitions for the term innovation. The analysis of the opinion of several authors regarding the essence of the concept of innovation leads to the conclusion that there are no significant differences and contradictory opinions, the main differences are reduced to scope and accent. Some authors view innovation in the narrower sense as the end result of the innovation process, while others consider it more broadly, incorporating the invention and its development to achieve a change in public practice aimed at achieving certain goals.

It will be important for us to establish a relatively common concept so that we can analyze innovation activity based on it. According to one of the world-renowned sources – Oslo Manual, an innovation is a new or improved product or process (or combination belonging) that differs significantly from the unit's previous products or processes and that has been made available to potential users (product) or brought into use by the unit (process)<sup>7</sup>. The same source identifies those business activities in pursuit of innovation – R&D activities, engineering, design and other creative work activities, marketing and brand equity activities, IP related activities, employee training activities, software development and database activities, activities related to the acquisition or lease of tangible assets, innovation management activities.<sup>8</sup>

This report supports the idea that patent activity has a strong relationship with the innovation process and can serve as a sufficiently reliable measure of its intensity. Oslo Manual assumes that: intellectual property activities for ideas, inventions and new or improved products or business processes developed during the observation period are innovation activities. Examples include activities to apply for IP rights for innovation or for invention, licensing-in the right to use an invention or for innovation,

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<sup>6</sup> IVAN VASILEV, DANIEL SLATER, GIANMARIO SPACAGNA, PETER ROELANTS & VALENTINO ZOCCA, PYTHON DEEP LEARNING 48-49 (2nd ed. 2019).

<sup>7</sup> Oslo Manual 2018. Guidelines for Collecting, Reporting and Using Data on Innovation. 4th edition, The Measurement of Scientific, Technological and Innovation Activities, OECD Publishing, Paris/Eurostat, Luxembourg, 2018, p 32.

<sup>8</sup> *Id.* at 34-35.

or licensing-out IP for inventions and innovations.<sup>9</sup> The intensity of all these activities can, in principle, be quantified and give a sufficiently clear idea of the innovation activity.

The manual recognizes that there are certain external factors that influence innovation activity, namely: spatial and locational factors, markets, knowledge flows and networks, public policy, and society and the natural environment. In turn, public policy includes: Regulation and tax system, Government support, Public infrastructure, Macroeconomic policies.<sup>10</sup>

In this report, I support the idea that public policies pursued by governments exert their influence on innovation activity. For its part, the nature of public policies largely determines what government support is and what public spending is allocated to R&D. Public policies can also influence a business's tendency to invest in R&D.

Numerous publications on the application of neural networks can be found in the literature in the study of the dynamics of the innovation process. Perova and Zaitseva present a study on the dynamics of innovation activity of regions in Russia based on data from the Federal State Statistics Office.<sup>11</sup> They examine indicators such as: the number of advanced manufacturing technologies used, the growth of high-performance jobs, the costs of technological innovation in organizations, the quantity of innovative goods, jobs, and services. The study was performed by applying neural networks that are trained without a teacher.

Trappey, Trappey, Chiang and Huang describe a back-propagation artificial neural network that is used to systematically and automatically classify a large number of patent documents into patent knowledge bases. The system enables readers to retrieve interconnected patents.<sup>12</sup>

Papadas and Hutchinson present a study using a Backpropagation Neural Network to predict input-output technology coefficients and multipliers. They prove that the Neural Network models are a valid alternative to Input-Output technology forecasting and in some cases can provide more accurate results.<sup>13</sup>

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<sup>9</sup> *Id.* at 89.

<sup>10</sup> *Id.* at 146-47.

<sup>11</sup> V.I. Perova & K. V. Zaitseva, *Research of the Dynamics of Innovative Activity of the Regions of Russia Using Neural Network Modeling* (in Russian), 16(5) *Economic Analysis: Theory and Practice* 887, 887-901 (2017).

<sup>12</sup> Amy J. C. Trappey, Charles V. Trappey, Tzu-An Chiang and Yi-Hsuan Huang, *Ontology-based neural network for patent knowledge management in design collaboration*, 51(7) *INT. J. PROD. RES.*, 2013, Vol. 51, No. 7, 1992–2005, <http://dx.doi.org/10.1080/00207543.2012.701775>.

<sup>13</sup> Christos T. Papadas, W. George Hutchinson, *Neural network forecasts of input-output technology*,

Green and Choi have focused their efforts in another direction. They present a study aimed at developing a Neural Network fraud classification model that uses endogenous financial data. Samples of financial statements based on fraudulent and non-fraudulent practices are used in model training. The trained model is applied to test data. The authors support the future use of neural networks as a reliable fraud-risk assessment tool.<sup>14</sup>

## **5. Content of the study**

The logic underlying this study includes the following steps:

- (1) Identification of factors – the 'inputs' and 'outputs' of the innovation process.
- (2) Identification of the factors for which sufficient information can be provided.
- (3) Identification of appropriate sources of necessary statistical information.
- (4) Choosing the right software.
- (5) Build a preliminary Neural Network model and determine its applicability.
- (6) Collection of up-to-date data from the selected source and pre-processing of the data.
- (7) Development of final models in selected areas of analysis. Model training and testing.
- (8) Playing the models and analyzing the results of the play.
- (9) Formulation of comments and conclusions.

Initially, a list was made of those factors that could be reasonably placed as the 'inputs' and 'outputs' of the innovation process. Typical inputs are: R&D expenditures, science and technology personnel, capital. Patents, number of publications, products and more were placed as typical outputs.

Secondly, those variables were identified for which it is possible to provide sufficiently objective and sufficient information. In this sense, I have drawn my attention to generally accepted and accessible databases whose information, in the opinion of those working in the field, contains reliable and complete information.

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Applied Economics, 2002, 34, p. 1607-1615.

<sup>14</sup> Brian Patrick Green and Jae Hwa Choi, Assessing the Risk of Management Fraud Through Neural Network Technology, Auditing: A Journal of Practice & Theory, Vol. 16, No. 1, Spring 1997.

It is also necessary that these bases contain lines of sufficient length over time, so that it is possible to provide sufficient number of cases necessary for the training of the created neural model. The databases of the Organization for Economic Co-operation and Development, Eurostat, Joint Research Center (JRC) to the European Commission, UNESCO Institute for Statistics (UIS), World Bank Open Data, as well as World Intellectual Property Organization (WIPO) were examined. The idea is to provide data that is both reliable and comparable.

The variables that characterize the input of the innovation process were selected: R&D expenditure, R&D personnel, and researchers. A number of patent applications was selected as the variable characterizing the output of the innovation process.

When choosing the right software to build the model from, many options were compared. Some of them are based on universal products, such as Matlab and MathWorks, Python, R, and others that have the ability to build Neural Network models. There are also several specialized products that are mainly aimed at this purpose. Examples of such products are: Top Artificial Neural Network Software: Neural Designer, Neuroph, Keras, NeuroSolutions, Tflern, ConvNetJS, Torch, NVIDIA DIGITS, Stuttgart Neural Network Simulator, DeepPy, MLPNeuralNet, DNNGraph, AForge.Neuro, NeuraIN, NeuralTalk2, cuda-convnet2, DN2A, Mocha, HNN, Lasagne, neon, LambdaNet, gobrain, RustNN.<sup>15</sup> NeuralTools 7.6 software was selected for the purposes of this study. from the Palisade DecisionTools Suite software group.<sup>16</sup> The arguments for choosing this software are that it is relatively easy to use, does not require specialized knowledge of writing complicated codes, some of the actions for configuring the model are automated. Other advantages of the selected software are that it allows work in a well-known environment – Excel software and it permits parallel data processing if an appropriate hardware is used. My experience in working with it gives grounds for the conclusion that it provides reliable enough results. At the same time, the software allows work in the presence of partially missing data.

Based on the information gathered, a preliminary Neural Network model was built. As independent numerical variables I selected: Number of scientists and engineers for the period 2014 – 2018, Intramural R&D expenditure by performance sectors and NUTS 2 regions for the period 2012 – 2016, as well as the same data for business enterprise sector, government sector, higher education sector, private non-profit sector. Also, the number of patent applications to the EPO by priority year

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<sup>15</sup> Top 27 Artificial Neural Network Software, <https://www.predictiveanalyticstoday.com/top-artificial-neural-network-software/> accessed 3.04.2020.

<sup>16</sup> [https://www.palisade.com/decisiontools\\_suite/default.asp](https://www.palisade.com/decisiontools_suite/default.asp), accessed 3.04.2020.

for the period 2008 – 2011 was included as independent variables. A total of 35 variables were included in the model, with 389 values entered for each of them. These are country-specific variables and NUTS2 regions values.

The purpose of the preliminary model was to train the model using the available information and, on this basis, to make an estimate of the expected values of the dependent variable. Once these values are known, one can evaluate how effective the model is in making predictions. A train was made on the model so constructed. A summary of the results is presented in the following table (Table 1):

Table 1: Results of Preliminary model training and testing

<i>Training</i>	
% Bad Predictions (30% Tolerance)	24.14%
Root Mean Square Error	12.87
Mean Absolute Error	7.95
Std. Deviation of Abs. Error	10.12
<i>Testing</i>	
Number of Cases	22
% Bad Predictions (30% Tolerance)	27.273%
Root Mean Square Error	113.06
Mean Absolute Error	43.80
Std. Deviation of Abs. Error	104.23

It is evident that 24% of the train cases were found to be error-prone, and 27% of the test cases. In both cases, the error is within the acceptable 30% recommended by the software provider. A comparative analysis of the actual and predicted values of the dependent variable shows a very high degree of dependence. The correlation coefficient between these two sets is 0.99637 (the calculations are via the built-in Excel function). The connection between the two sets is graphically depicted in Figure 4. It can be seen that it practically approaches the linear one.

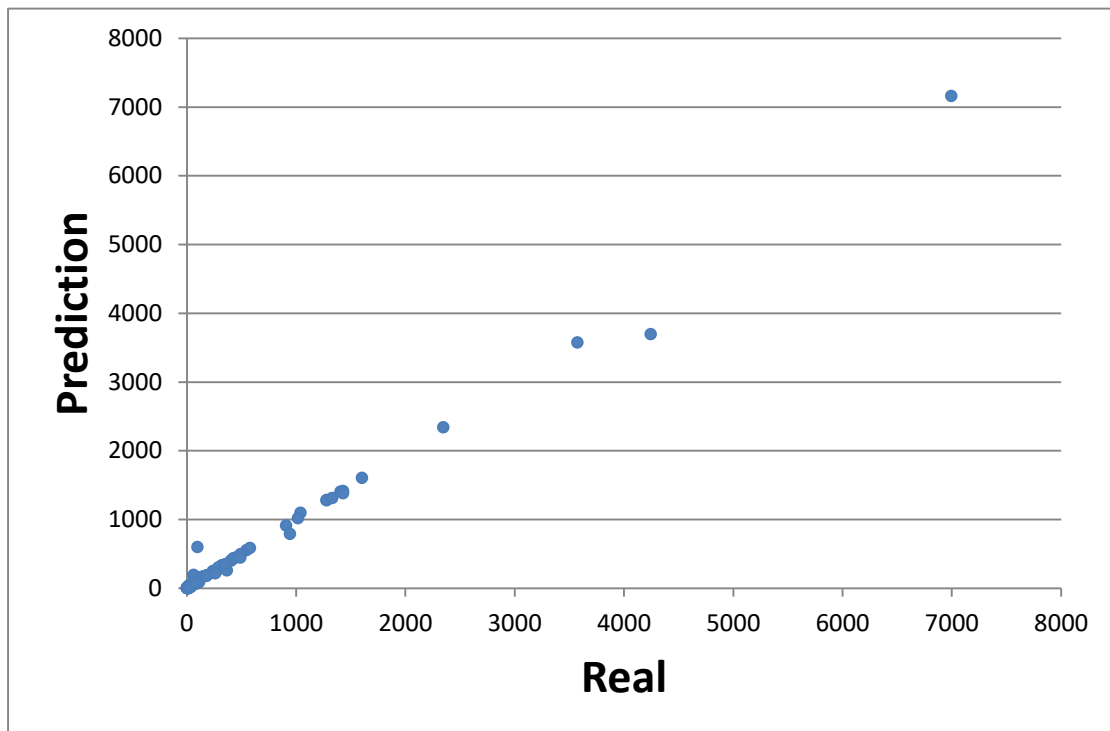


Figure 4: A X – Y chart of real and predicted values of variable Number of Patent applications to the EPO by priority year 2012.

The software used gives some opportunity to determine the power with which individual independent variables influence the dependent variable. However, this functionality must be used with caution as the software does not claim accuracy in these results.

The conclusions from the tests of the preliminary model is that the construction of neural models using the software NeuralTools 7.6 provides reliable enough results and can be used in analysis of factors influencing patent activity.

The next phase of the survey in April 2020 collected the most up-to-date Eurostat database data on the following variables: Intramural R&D Expenditure (GERD) education sector, Private non-profit sector), Total R&D personnel and researchers by performance sector, sex and NUTS 2 regions (also in Business enterprise sector, Government sector, Higher education sector, Private non-profit sector), human resources in science and technology by category and NUTS 2 regions (persons with tertiary education (ISCED) and / or employed in science and technology), number of patent applications to the EPO by priority year by NUTS 3 regions, European Union trade mark number (EUTM) applications by NUTS 3 regions, number of Community design (CD) applications by NUTS 3 regions.

According to the Frascati Manual, “Intramural R&D expenditures” are all



current expenditures plus gross fixed expenditures for R&D performed within a statistical unit during a specific period, whatever the source of funds<sup>17</sup>. “R&D personnel” in a statistical unit include all persons engaged directly in R&D, whether employed by the statistical unit or external contributors fully integrated into the statistical unit’s R&D activities, as well as those providing direct services for the R&D activities (such as R&D managers, administrators, technicians and clerical staff<sup>18</sup>.

The total European patent applications refer to applications for protection of an invention directed either directly to the EPO or filed under the Patent Cooperation Treaty and designing the EPO (Euro-PCT), regardless of whether they are granted or not. The data shows the total number of applications per country. If one application has more than one inventory, the application is divided equally among all of them and particularly among their countries of residence, thus avoiding double counting<sup>19</sup>.

The information collected was organized into Excel spreadsheets. The following models have been developed using NeuralTools 7.6 (Table 2):

Table 2: Neural Networks models developed

Model Name	Independent variables	Dependent variable
Model 1	Intramural R&D expenditure for a period of 2002 – 2017.  Number of patent applications to the EPO for a period of 2008 – 2011.	Number of patent applications to the EPO for 2012.
Model 2	Total R&D personnel and researchers for a period of 2002 – 2017.  Number of patent applications to the EPO for a period of 2008 – 2011.	Number of patent applications to the EPO for 2012.

<sup>17</sup> Frascati Manual, 2015. Guidelines for Collecting and Reporting Data on Research and Experimental Development OECD, 2015, p.112.

<sup>18</sup> *Id.* at 151.

<sup>19</sup> EU Open Data Portal, <https://data.europa.eu/euodp/en/data/dataset/mPbwH057pGT6w3j9yMtFIg>

Model 3	<p>Number of scientists and engineers for a period of 1999 – 2018.</p> <p>Number of patent applications to the EPO for a period of 2008 – 2011.</p>	Number of patent applications to the EPO for 2012.
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An initial data set was initially prepared for each model, which included a number of variables and cases. Table 2 shows the variables list. NUTS 2 regions from the EU countries were selected for the cases. The data collected initially was reduced in order to decrease the number of missing values and thus facilitate the operation of the software. The models were then trained and tested in order to produce the actual usable NNMs. Finally, the models were used to calculate predictions about values of dependent variables.

The selected software enables the processing of information even in the presence of significant defects of it – lack of values for some of the observed cases. However, as a result of the processing, not all values of the output variables for all cases can be obtained. That is why I decided to do my analysis only for some EU countries, for which almost all the information is available. These are: Belgium, Denmark, Ireland, Spain, Italy, Hungary, Netherlands, Portugal, and Finland.

I asked the question what the value of the output variables would be if the values of the input variables increase by a certain percentage. For the interval of the input variables changes I chose 1 - 20%, making the changes in 1% increments. In my opinion, it is not realistic to expect that the observed variables may change by more than 20% over the observable period of 5-10 years. The 1% step is sufficient to determine the behavior of the output variables with sufficient accuracy. At the same time, once created, the model can also be used to investigate changes at other intervals and other steps. The answer to this question can determine how sensitive the values of the "output" variables are when the values of the "input" variables are changed. Testing Model 1 to Model 3 after they were trained gave the following accuracy results (Table 3):

Table 3: Accuracy results of predictions after training models 1 to 3

Model Name	Bad Predictions, %
Model 1	23.07
Model 2	27.27

Model 3	25.00
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The share of poor predictions is less than 30%, which according to the software provider is acceptable accuracy and the models can be used.

Model 1 is designed to assess the sensitivity of patent activity to changes in R&D expenditure for a country or region. The dependent variable is Patent applications to the EPO by priority year 2017. The values of the Intramural R&D expenditure variables for the years 2002 – 2017 are incrementally increased by 1% each consecutively and the change in the predicted values of the dependent variable is observed. This is done individually for each of the countries selected above. The results are presented in Table 4:

Table 4. Sensitivity of the Patent applications to the EPO by 2017 variable to changes in R&D expenditure

Growth of R&D expenditure, %	Growth of Patent applications to the EPO by 2017, %								
	Belgium	Denmark	Spain	Italy	Ireland	Hungary	Netherlands	Portugal	Finland
1%	0.168	0.263	0.167	0.005	0.321	0.065	0.006	0.126	0.190
2%	0.167	0.258	0.157	0.004	0.324	0.065	0.006	0.127	0.187
3%	0.166	0.254	0.148	0.003	0.328	0.066	0.007	0.128	0.184
4%	0.165	0.250	0.139	0.003	0.331	0.066	0.007	0.129	0.182
5%	0.163	0.245	0.131	0.002	0.334	0.066	0.008	0.130	0.180
6%	0.162	0.241	0.123	0.002	0.337	0.067	0.009	0.131	0.178
7%	0.161	0.238	0.115	0.002	0.341	0.067	0.010	0.132	0.175
8%	0.160	0.234	0.107	0.001	0.344	0.067	0.011	0.133	0.173
9%	0.159	0.231	0.100	0.001	0.347	0.067	0.012	0.135	0.172
10%	0.158	0.227	0.093	0.001	0.351	0.068	0.013	0.136	0.170
11%	0.157	0.224	0.087	0.001	0.354	0.068	0.015	0.137	0.168
12%	0.156	0.221	0.081	0.001	0.357	0.068	0.016	0.138	0.167
13%	0.155	0.219	0.075	0.0005	0.361	0.069	0.018	0.139	0.165
14%	0.154	0.216	0.070	0.0004	0.364	0.069	0.020	0.140	0.164
15%	0.153	0.214	0.065	0.0003	0.368	0.069	0.022	0.141	0.162
16%	0.152	0.211	0.060	0.0003	0.371	0.069	0.025	0.142	0.161
17%	0.151	0.209	0.055	0.0002	0.375	0.070	0.028	0.143	0.160
18%	0.149	0.207	0.051	0.0002	0.378	0.070	0.031	0.144	0.159
19%	0.148	0.205	0.047	0.0001	0.382	0.070	0.035	0.146	0.158
20%	0.147	0.203	0.044	0.0001	0.385	0.071	0.039	0.147	0.157

An analyst may find that the countries surveyed differ significantly in this indicator. Ranking their average growth rate for a one percent increase in R&D expenditure is as follows: Ireland, Denmark, Finland, Belgium, Portugal, Spain, Hungary, Netherlands, and Italy (see Figure 5).

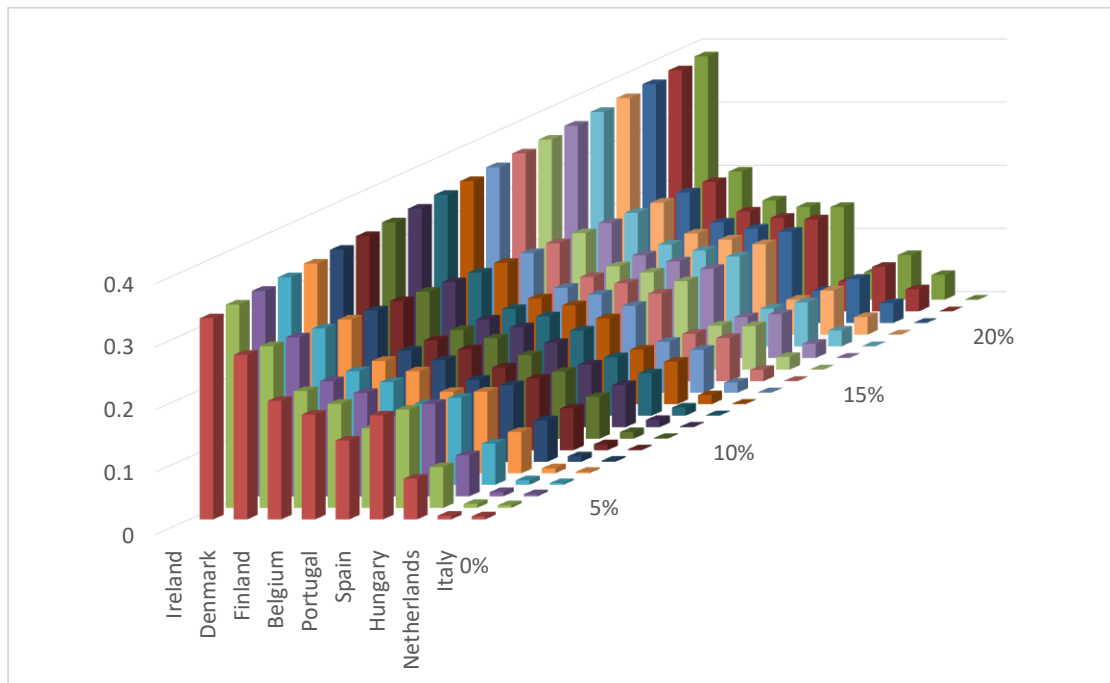


Figure 5: Expected Growth of Patent applications to the EPO by 2017, as a result of growth of R&D expenditure

Model 2 is intended to assess the sensitivity of patent activity to changes in Total R&D personnel and researchers for a given country or region. The variable Patent applications to the EPO by priority year 2017 is selected as the dependent variable. The values of the Total R&D personnel and researchers variable for the years 2002 – 2017 are increased by 1% consecutively and the change in the predicted values of the dependent variable is observed. This is done individually for each of the countries selected above. The results are presented in Table 5:

Table 5: Sensitivity of the Patent applications to the EPO by 2017 variable to changes in R&D personnel and researchers

Growth of R&D personnel and researchers, %	Patent applications to the EPO by 2017, %								
	Spain	Portugal	Hungary	Denmark	Ireland	Belgium	Finland	Italy	Netherlands
1%	0.1312	0.0541	0.0447	0.0345	0.0338	0.0189	0.0181	0.0154	0.0094
2%	0.1311	0.0541	0.0447	0.0345	0.0338	0.0189	0.0181	0.0153	0.0095
3%	0.1311	0.0541	0.0447	0.0346	0.0338	0.0190	0.0182	0.0151	0.0095
4%	0.1311	0.0542	0.0447	0.0346	0.0338	0.0190	0.0182	0.0149	0.0096
5%	0.1310	0.0542	0.0447	0.0346	0.0338	0.0190	0.0182	0.0147	0.0097
6%	0.1309	0.0542	0.0448	0.0346	0.0339	0.0190	0.0182	0.0145	0.0097
7%	0.1309	0.0543	0.0448	0.0347	0.0339	0.0191	0.0182	0.0143	0.0098
8%	0.1308	0.0543	0.0448	0.0347	0.0339	0.0191	0.0183	0.0142	0.0098
9%	0.1307	0.0543	0.0448	0.0347	0.0339	0.0191	0.0183	0.0140	0.0099
10%	0.1306	0.0544	0.0449	0.0347	0.0339	0.0192	0.0183	0.0138	0.0099
11%	0.1305	0.0544	0.0449	0.0348	0.0339	0.0192	0.0183	0.0136	0.0100
12%	0.1304	0.0544	0.0449	0.0348	0.0339	0.0192	0.0183	0.0135	0.0101
13%	0.1302	0.0545	0.0449	0.0348	0.0340	0.0192	0.0184	0.0133	0.0101
14%	0.1301	0.0545	0.0450	0.0348	0.0340	0.0193	0.0184	0.0131	0.0102
15%	0.1300	0.0545	0.0450	0.0348	0.0340	0.0193	0.0184	0.0130	0.0102
16%	0.1298	0.0546	0.0450	0.0349	0.0340	0.0193	0.0184	0.0128	0.0103
17%	0.1296	0.0546	0.0450	0.0349	0.0340	0.0194	0.0184	0.0126	0.0103
18%	0.1295	0.0546	0.0451	0.0349	0.0340	0.0194	0.0185	0.0125	0.0104
19%	0.1293	0.0547	0.0451	0.0349	0.0340	0.0194	0.0185	0.0123	0.0105
20%	0.1291	0.0547	0.0451	0.0350	0.0341	0.0194	0.0185	0.0122	0.0105

It can be concluded that the countries surveyed also differ significantly in this indicator. Ranking their average growth rate for a one percent increase in Total R&D personnel and researchers is as follows: Spain, Portugal, Hungary, Denmark, Ireland, Belgium, Finland, Italy, and Netherlands (see Figure 6.).

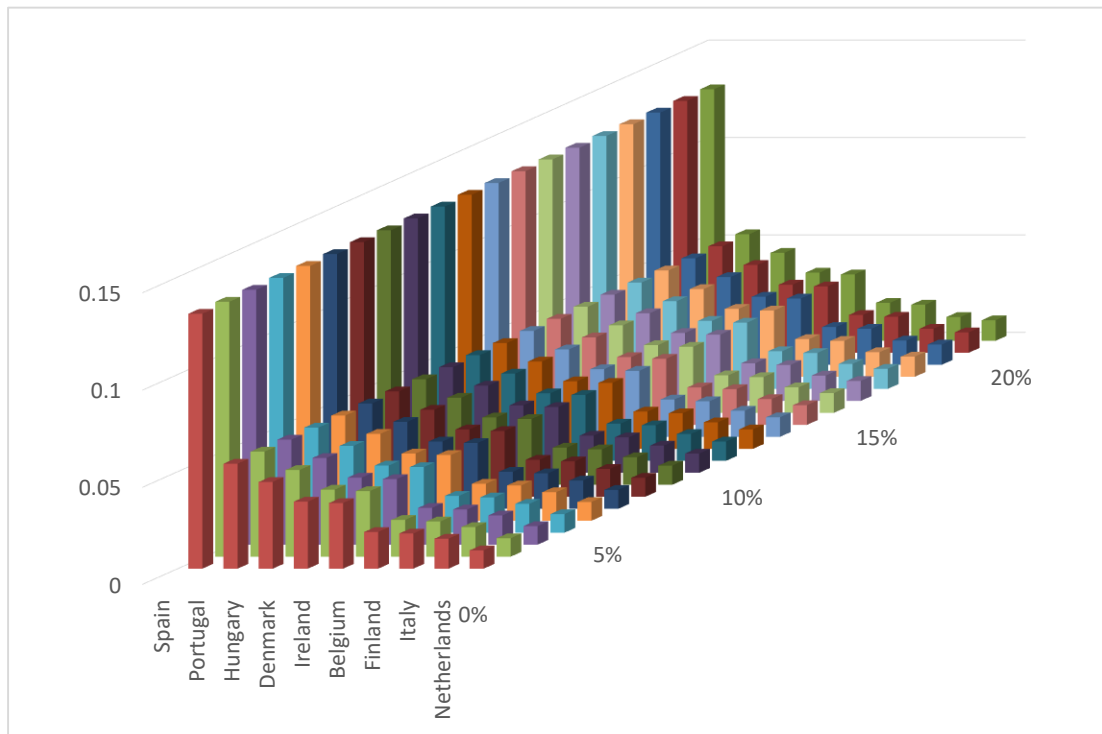


Figure 6: Expected Growth of Patent applications to the EPO by 2017, % as a result of growth of R&D personnel and researchers

Model 3 is intended to assess the sensitivity of patent activity to changes in the number of Persons with tertiary education and / or employed in science and technology for a given country or region. The dependent variable is again Patent applications to the EPO by priority year 2017. The values of Number of Persons with tertiary education and/or employed in science and technology variables for the years 1999 – 2018 are increased by 1% consecutively and the change in the predicted values of the dependent variable is observed. This is done individually for each of the countries selected above. The results are presented in Table 6:

Table 6. Sensitivity of the Patent applications to the EPO by 2017 variable to changes in Number of Persons with tertiary education

Growth of Number of Persons with tertiary education	Patent applications to the EPO by 2017, %								
	Belgium	Denmark	Ireland	Spain	Italy	Hungary	Netherlands	Portugal	Finland
1%	0.00088	0.00116	0.00295	0.00381	0.00439	0.00360	0.00240	0.00209	0.00089

2%	0.00088	0.00116	0.00295	0.00381	0.00439	0.00360	0.00241	0.00209	0.00089
3%	0.00088	0.00116	0.00295	0.00381	0.00439	0.00360	0.00241	0.00209	0.00089
4%	0.00088	0.00116	0.00295	0.00381	0.00439	0.00360	0.00241	0.00209	0.00089
5%	0.00088	0.00116	0.00296	0.00381	0.00439	0.00360	0.00241	0.00209	0.00089
6%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00360	0.00241	0.00209	0.00089
7%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00360	0.00241	0.00209	0.00089
8%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00360	0.00241	0.00209	0.00089
9%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00360	0.00241	0.00209	0.00089
10%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00361	0.00241	0.00209	0.00089
11%	0.00088	0.00116	0.00296	0.00382	0.00439	0.00361	0.00241	0.00209	0.00089
12%	0.00088	0.00116	0.00296	0.00383	0.00439	0.00361	0.00241	0.00210	0.00089
13%	0.00088	0.00116	0.00296	0.00383	0.00439	0.00361	0.00241	0.00210	0.00089
14%	0.00088	0.00116	0.00296	0.00383	0.00439	0.00361	0.00241	0.00210	0.00089
15%	0.00088	0.00117	0.00296	0.00383	0.00439	0.00361	0.00241	0.00210	0.00089
16%	0.00088	0.00117	0.00296	0.00383	0.00439	0.00361	0.00241	0.00210	0.00089
17%	0.00088	0.00117	0.00296	0.00384	0.00439	0.00361	0.00242	0.00210	0.00089
18%	0.00088	0.00117	0.00296	0.00384	0.00439	0.00361	0.00242	0.00210	0.00089
19%	0.00088	0.00117	0.00296	0.00384	0.00439	0.00361	0.00242	0.00210	0.00089
20%	0.00088	0.00117	0.00296	0.00384	0.00439	0.00362	0.00242	0.00210	0.00089

It can be concluded that the countries surveyed also differ significantly in this indicator. Ranking their average growth rate by one percent increase in Number of Persons with tertiary education and / or employed in science and technology is as follows: Italy, Spain, Hungary, Ireland, Netherlands, Portugal, Denmark, Finland, and Belgium (see Figure 7.).

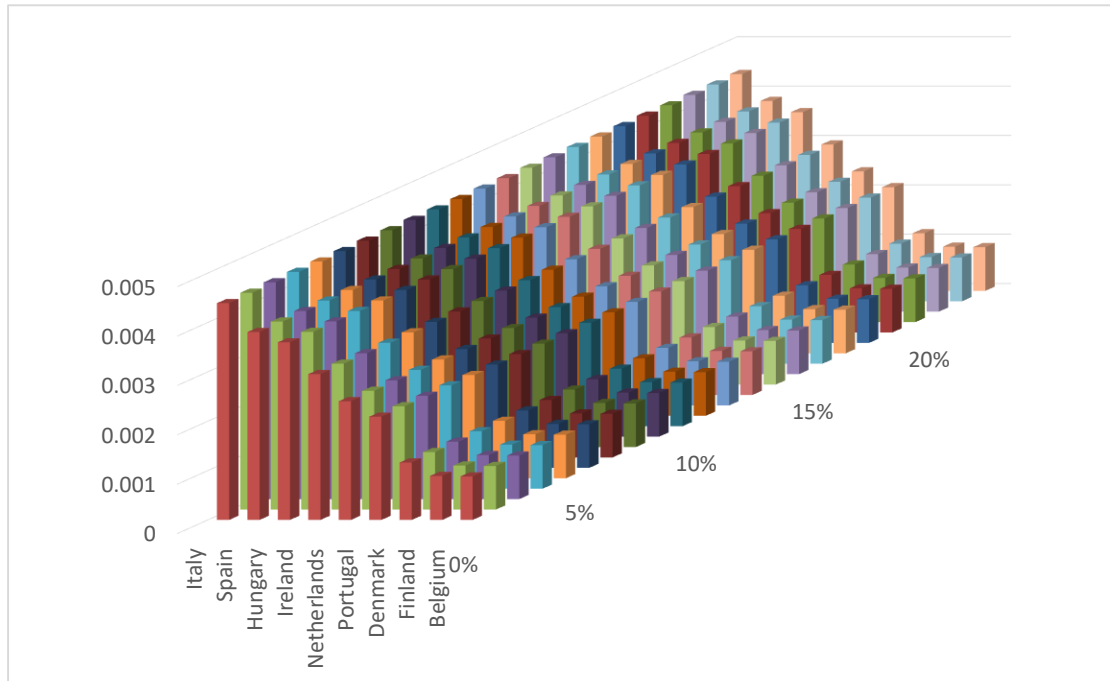


Figure 7: Expected Growth of Patent applications to the EPO by 2017, % as a result of growth of Number of Persons with tertiary education

## 6. COMMENTS AND CONCLUSION

NNM is a modern, powerful, and flexible tool that is gaining worldwide popularity. There are several software products that enable the creation of sufficiently precise models, which reduce and facilitate the work of the researcher. There are many databases around the world with information on inventing and registering intellectual property. Some of them are free of charge and can be used by researchers with less financial resources. At the same time, some of the existing databases do not contain sufficiently complete data. Even Eurostat falls into this category.

Neural networks can be successfully used in evaluating the degree of influence of various variables on patent activity. The more data there is – for longer periods of time and pertaining to more sites (regions, countries, areas such as NUTS2 and NUTS3) – the more accurate and reliable will be the results of the survey.

However, Eurostat contains sufficient information that, after some processing and summarization, can be used to build neural network models that can be used to estimate the impact of the variables Intramural R&D expenditure, Total R&D personnel and researchers and Number of scientists and engineers on patent activity in EU countries.

If it is accepted that:

(1) The Patent applications to the EPO variable can be used to provide a



sufficiently reliable estimation of the patent activity of countries and regions, and

(2) NNM can provide sufficiently reliable data to evaluate the sensitivity of the Patent applications to the EPO variable to changes in the R&D expenditure variables, R&D personnel and researchers and Number of scientists and engineers, the following conclusions can be drawn:

- Patent activity is most sensitive to changes in the variable R&D expenditure. On average in the EU countries surveyed, if the Intramural R&D expenditure variable increases by 1%, patent activity is expected to increase by 0.136%. Patent activity is the least sensitive to the Number of scientists and engineers variable. If this variable is increased by 1%, patent activity is expected to increase by 0.00247%.
- In different EU countries, this sensitivity is different and can vary widely. For example, the first indicator may range between 0.385 for Ireland to 0.00012 for Italy. The second indicator may range between 0.004 for Italy and 0.00088 for Belgium. These differences can be explained by the differences in the structure and nature of the innovation systems established in different countries.

Further studies of the already established model and the construction of additional models with more data may provide additional information in the following areas:

- What is the impact of each of the values of the selected variables on individual years on patent activity?
- What is the sensitivity of patent activity to changes in input variables for other EU countries, for the EU as a whole, for other countries in the world, and for other unions of countries?
- It is possible to predict the dynamics of patent activity for future periods if forecast information is provided about the expected dynamics of input variables in the future.

I believe that the presented in this article approach can be successfully applied to analyze the sensitivity of patent activity to resource spending for R&D for other countries and regions around the world. For this purpose, it is necessary to provide sufficient volume and comparable information about the analyzed indicators. For example, the rapid technological development of the countries of the Asian region in the recent decades can provide a good information base for such research in the region.

The databases of WIPO, OECD, UIS, World Bank and others can be successfully used as information sources. Moreover, the flexibility of the applied model allows it to be used for analysis of the sensitivity of other innovation process output indicators, associated with intellectual property rights like trademarks, registered designs and others.

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## **Digital Trade and Artificial Intelligence: Role of Intellectual Property**

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### **Abstract**

In the era of globalization, the Artificial Intelligence has emerged as the most accepted technology with its application in various fields throughout the globe. The companies developing these Programmes endeavour to make their presence more known by carrying out more innovation and automation in technological and digital business. The present research proposal is aimed to study the intellectual property (IP) issues in relation to AI in digital medium. As an incentive to technological innovation and to reap the benefits of investment, it is essential to own and protect the Intellectual Property in all innovations. The ownership of intangible aspects of software innovation and protection of the data that forms part thereof, is a difficult question, the answer to which still remains behind a smokescreen. Different IP protection mechanisms recognized under various international documents are examined in this research for exploring the better and effective protection for AI and AI-based inventions. Protection of data is an important aspect and critical component of AI as its functioning mechanism is based upon machine learning techniques that use data for training and validation. With this research the authors paint a picture of the various difficulties encountered while looking for effective data protection measures. This research is an attempt to assess the efficiency of IP laws for protection of the data which forms part of AI technology, when the same is made the 'subject' of digital trade. It also aims to check whether any new policy measures are required under existing IP system for effective protection, due to revolution in digital world. The present study focuses on the aspect that any new or existing policy in IP should encourage the free flow of data for uninterrupted functioning of AI without affecting the right to privacy or security.

**Keywords:** Artificial Intelligence, Digital Trade, Intellectual Property, Technological Innovation

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## 1. Introduction

In the Digital world, the transmission of information has been increasingly facilitated with the birth of new forms of technologies every now and then. But, the demerits of such technologies may sometimes outweigh the numerous benefits they accrue to the world. It is quite evident that the greater the extent of reliance the nations place upon the digital means of transferring and disseminating information across their national borders, the greater risks they welcome into the digital realm by allowing the leakage of their confidential data, which forms integral part of the said technologies. Most of these technologies are operated through the system of Artificial Intelligence. Therefore, this paper is an attempt to discuss the meaning, nature and scope of Artificial Intelligence and the role which is played by Intellectual Property in promoting a safe and trustworthy trading environment for transactions relating to AI-Technologies.

### 1.1. What is Artificial Intelligence?

The Artificial Intelligence (AI) is a unique and extremely powerful creation of man. It has changed the course of development by easing the efforts required for intellectual labour in performing complex tasks. It is a complex reanimation of the enormous amounts of data, computing power and algorithms, made possible by the advancement of technology<sup>1</sup>. AI refers to “the ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings”<sup>2</sup>. This term was coined in a proposal by John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon, for a study, the workshop for which took place in 1956. Later, in 1958, McCarthy developed Lisp, a programming language, which became the most popular language to be used in AI research.

AI is often associated with a term called ‘machine-learning’. This term was first used by Arthur Samuel<sup>3</sup>. It is “the concept that a computer program can learn and adapt to new data without human intervention”<sup>4</sup>.

Since Intelligence is a trait mainly found in humans, ‘Artificial’ Intelligence can be interpreted to be the simulation of human intelligence in technology or machines which are so programmed that they think and act in ways exhibiting this human-trait of

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<sup>1</sup> Han-Wei Liu and Ching-Fu Lin, *Artificial Intelligence and Global Trade Governance: A Pluralist Agenda*, 61 HARVARD INTERNATIONAL LAW JOURNAL 407 (2020).

<sup>2</sup> *Id.*

<sup>3</sup> Gil Press, *A very short history of Artificial Intelligence (AI)* (Dec.30, 2016), available at <https://www.forbes.com/sites/gilpress/2016/12/30/a-very-short-history-of-artificial-intelligence-ai/?sh=17a9f4fb6fba> (last visited on Dec. 17, 2020)

<sup>4</sup> Jake Frankenfield, *Machine Learning* (Aug.31, 2020), available at <https://www.investopedia.com/terms/m/machine-learning.asp> (last visited on Dec. 17, 2020).

‘intelligence’. The development of AI has proved a great deal of relevance in the modern era, when countries are racing with each other in capturing more power for themselves over other nations. This is a trend which seems pretty much like the exercise of ‘Soft Power’ by the United States in the Cold War era, the only difference between that era and present one being that the former was a bipolar world, whereas the latter has transformed into a multipolar world. It seems that the more technological developments a nation makes, the more it becomes capable of attracting or appealing people from in and around its territories.

In the words of Marvin Minsky, AI is “the science of making machines do things that would require intelligence, if done by men”<sup>5</sup>. Today, AI has achieved more respect than it ever received before, due to the various benefits it has accrued to the mankind. The main interaction that takes place between AI and the cyberspace implies the intricate connection and similarities the former shares with Internet<sup>6</sup>. These unique features have often exposed AI to two different viewpoints posed by the common man on one hand, and the AI software programmers on the other.

For a common man, AI is an extraordinary tool to perform mechanical tasks with greater ease and less effort. For instance, Apple has programmed a Voice Control tool in its Mac, which enables the users to directly navigate and interact with the system using the user’s voice, instead of merely allowing for a few traditional input methods. Our lives depend upon computers and other forms of machines & gadgets, which have made everyday tasks extremely simple and quick. The numerous advantages that come along with AI-powered machines have contributed to provide greater acceptance to the same, though it is still not completely devoid of being roped in controversies from time to time<sup>7</sup>.

For programmers of AI-operated gadgets & machines, Artificial Intelligence shall not merely operate in the domain of performing mechanical tasks; rather, it should be built-up in such manner as would enable it to perform tasks which otherwise require skilled-human faculties<sup>8</sup>. With the gradual expansion in the scope of knowledge due to the ever-increasing momentum towards a technologically advanced world, the AI-operated systems have been seen to have marked a shift in their potential to perform all kinds of tasks, ranging from simple to extremely complex ones<sup>9</sup>.

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<sup>5</sup> Michael Aaron Dennis, “Marvin Minsky” (Encyclopedia Britannica, 2020), *available at* <https://www.britannica.com/biography/Marvin-Lee-Minsky> (last visited Dec. 24, 2020).

<sup>6</sup> *Supra* note 1.

<sup>7</sup> J. David Bolter, “Artificial Intelligence” 113 *Daedalus* 1 (1984).

<sup>8</sup> *Id.* at 2.

<sup>9</sup> Swapnil Tripathi and Chandni Ghatak, *Artificial Intelligence and Intellectual Property Law*, 7

The large-scale diffusion and dissemination of knowledge, made possible by the advent of digitalization has immensely contributed to the technological development and progress of the countries around the world. AI and the AI-related inventions are no strangers to this wonderful creation of man. With this revolution in the digital world, the need to introduce more reforms in the Intellectual Property regime has become all the more important for effectively maintaining the balance between the increasing use of AI and uninterrupted free flow of data, without affecting the right to privacy and security<sup>10</sup>.

Before proceeding with the understanding of the impact that AI has over trade, it is pertinent to understand the intricacies of the concept of AI first. For this, a clarification is required with regard to the types of AI which exist today, i.e., Narrow AI and General AI.

## 1.2. Types of AI

Pablo Picasso once stated: “Computers are useless. They can only give you answers”<sup>11</sup>. Had Picasso foreseen the future of technological innovation and gradual evolution of AI, he would have immediately retracted from his claims<sup>12</sup>. The shift in the scope of functionality for computers has been so drastic that there was a time when the capability of computers in performing the mere function of calculations and solving simple problems was seen as a matter of great surprise to people; today those computers have been transformed to perform such complex tasks that they have even outdone the capabilities of human mind to do those tasks. Based on their scope of functionality, AI may be divided into two categories: (i) Narrow AI and (ii) General AI.

### 1.2.1. Narrow AI

This type of AI is the one that is designed and programmed to perform functions of limited scope. One of the examples for this is ‘AlphaGo’, which was a successful technological innovation by Deep-Mind, a company owned by Google, specifically working in the field of Artificial Intelligence. This system had the ability to autonomously grasp information and learn skills equivalent to the human capability to learn. It was the first machine to defeat world champions back to back in the years 2015 and 2016. This invention works through a process called ‘reinforcement

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CHRIST UNIVERSITY LAW JOURNAL 83 (2018).

<sup>10</sup> Andrea Scripa Els, *Artificial Intelligence as A Digital Privacy Protector*, 31 HARVARD JOURNAL OF LAW & TECHNOLOGY 218 (2017).

<sup>11</sup> Art News, *Picasso Denounced Computers in 1968* (Feb. 25, 2011), available at <https://www.artlyst.com/news/picasso-denounced-computers-in-1968/> (last visited Dec. 26, 2020)

<sup>12</sup> *Id.*



learning'<sup>13</sup>. This type of AI is capable of carrying out activities it is programmed to do, but it is incapable of adapting to changes in the circumstances and environment, thus it finds it challenging to perform tasks it is not directly programmed to perform<sup>14</sup>. Since it operates on 'machine learning', it requires great amount of data and algorithms to enable the AI to make robust predictions of the future<sup>15</sup>.

### 1.2.2. General AI

Artificial General Intelligence is the type of AI that can move beyond its programmed instructions to widen its areas of reach, and learn to perform tasks of quality, even greater than that of an intelligent human's potential to perform the same. One of the examples of General AI is an extremely successful AI-operated invention called 'Sophia', a social-humanoid robot, created by a company called Hanson Robotics. It became the first robot to have received the citizenship of a country, i.e. Saudi Arabia in 2017.<sup>16</sup> This invention is so unique that in its interactions with humans, it not only provides automated responses to them, but also some autonomous responses, which consequently ensure a more human touch in its interactions with the people<sup>17</sup>.

Another such famous example is New York's 'Next-Generation Traffic Control System'. This is a system which manages and controls traffic by keeping a check on around 12,400 traffic signals, thereby carrying out the most-widespread and large-scale implementation of an extremely effective traffic control system<sup>18</sup>.

AGI requires more proficiency and skills in creation of AI, by anticipating and covering all forms of possibilities for its extensive learning<sup>19</sup>. This often is seen as the most challenging of all stages in the creation of AGI systems. Therefore, it is more difficult to bring into existence, than Narrow AI.

With the attainment of an in-depth understanding of the concept, types, scope and contours of application of AI, we shall now proceed further to look at the gradual development & evolution of the same.

## 2. A Brief Account of the Evolution of Artificial Intelligence

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<sup>13</sup> DeepMind, *AlphaGo*, available at <https://deepmind.com/research/case-studies/alphago-the-story-so-far> (last visited Dec. 19, 2020).

<sup>14</sup> Matthew R. Voke, *Artificial Intelligence for Command and Control of Air Power* 9 (Air University Press., 2019), available at <https://www.jstor.org/stable/resrep24886.5> (last visited Dec. 27, 2020).

<sup>15</sup> Joshua P. Meltzer, "A Blueprint of the Future AI" (Brookings, 2018), available at <https://www.brookings.edu/series/a-blueprint-for-the-future-of-ai/> (last visited Jan. 6, 2021).

<sup>16</sup> Hanson Robotics, *Sophia*, available at <https://www.hansonrobotics.com/sophia/> (last visited Dec. 19, 2020).

<sup>17</sup> *Id.*

<sup>18</sup> *Supra* note 14 at 5.

<sup>19</sup> *Id.*, at 11.

The origin of AI can be traced back to mid-twentieth century, when a British logician *Alan Mathison Turing* described an “abstract computing machine”, which contained infinite memory and a combination of symbols stored in its memory, thereby allowing it to operate and modify/improve its own programming. Today, this program is widely known as the ‘Turing Machine’. This happened to be the base model for all the computers in the modern world. Turing, in a public lecture, delivered by him in London (1947) mentioned that the machines operate and function according to their programming, but they also learn from experience, whereby they then become capable of altering their own instructions<sup>20</sup>. He called this “Intelligent Machinery”, giving the first glimpse of what we today know as ‘Artificial Intelligence’<sup>21</sup>.

The term ‘AI’ came to light only in 1950s, when it was first used in a proposal, coined by John McCarthy, Marvin Minsky, Nathaniel Rochester and Claude Shannon, for their study<sup>22</sup>. The kind of technological advancement it has provided to the masses is of such nature that the tasks which took long hours of effort for a man can now be easily performed in a short while, and that too with much more accuracy. Some of the examples of AI that we can see in our lives include several Gaming Applications, Google Home, Natural Language Processing Systems, Autonomous Vehicles, Siri, Alexa, Speech Recognition Applications, etc.

With this, it is amply clear that AI is no longer a mere expression of a scientific fiction, rather, what it conveys to man is a reformed, improved and better version of the world we live in, i.e., the world of auto-pilot, self-driving cars<sup>23</sup>, automated legal practices, etc.<sup>24</sup>

### 3. The Age of Digitalization

Since 1950s, the global trade has witnessed rapid growth, that is, twice the growth of the rate of output<sup>25</sup>. The global economic interdependence between the countries has been witnessed due to the rapid growth in international trade. The most probable reason for this seems to be that trade makes it possible for the trading parties to do away with

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<sup>20</sup> B.J. COPELAND, ARTIFICIAL INTELLIGENCE (2020), *available at* <https://www.britannica.com/technology/artificial-intelligence>, (last visited Dec. 15, 2020).

<sup>21</sup> *Id.*

<sup>22</sup> Gil Press, *A very short history of Artificial Intelligence (AI)* (Dec. 30, 2016), *available at* <https://www.forbes.com/sites/gilpress/2016/12/30/a-very-short-history-of-artificial-intelligence-ai/?sh=17a9f4fb6fba> (last visited Dec. 17, 2020).

<sup>23</sup> Stephen McBride, *The Driverless Car Revolution Has Begun- Here's How to Profit*, (Sept. 6, 2018), *available at* <https://www.forbes.com/sites/stephenmcbride1/2018/09/06/the-driverless-car-revolution-has-begun-heres-how-to-profit/?sh=148b9ae961cf> (last visited Jan. 3, 2021).

<sup>24</sup> *Supra* note 1.

<sup>25</sup> Shiro Armstrong, *Background Paper: Economic Cooperation in the Asia-Pacific and Sustaining rules-based order in International Trade* 22 (Australian Strategic Policy Institute, 2014), *available at* <http://www.jstor.org/stable/resrep04211.7> (last visited Jan. 9, 2021).

any existing or prospective political conflictual relations they may be having with each other<sup>26</sup>. Technology has transformed the world we live in, at such a pace that sometimes it becomes hard to catch up and cope with the ‘brutally disruptive evolution’ it brings about<sup>27</sup>. Before delving into further details, it is pertinent to first understand the meaning and scope of ‘Digital Trade’.

### 3.1. Digital Trade: Defined

There is no specific definition which is attributable to Digital Trade, but this term has often been used in a sense to refer to the differing elements used as tools to change the trading environment, through the cross-border exchange of goods via the online platforms or the delivery of the digital services across the borders<sup>28</sup>. Many attempts have been made at understanding the meaning of this term ‘Digital Trade’; one such attempt at defining it states it as under:

“Digital Trade is the production, distribution, marketing, sale or delivery of goods & services by electronic means, the sale and/or shipment by traditional means of digital goods (products and services), the transmission or storage of information as a service in its own right, as well as the cross-border transfer of information whether for remuneration or not”.<sup>29</sup>

Digitalization changes the ways of ‘What’ the parties trade, of course in addition to the transformation it brings about in the ‘mode’ of exchange<sup>30</sup>. With this, there have been calls for some new negotiations with regard to Digital Trade<sup>31</sup>. The pace at which the society is moving towards digitalization is so rapid, that the world is struggling to match its velocity with the same. The transformation brought about in the newly evolved Digital World, presents more challenges every now and then. In fact, this area is still so under-researched that the trade practitioners are, even today, working to tap

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<sup>26</sup> *Id.*

<sup>27</sup> Rudy Guyonneau and Arnaud Le Dez, *Artificial Intelligence in Digital Warfare: Introducing the Concept of the Cyberteammate*, 4 THE CYBER DEFENSE REVIEW 103 (2019), available at <https://www.jstor.org/stable/10.2307/26843895> (last visited Jan. 5, 2021)

<sup>28</sup> Javier López González and Marie-Agnès Jouanjean, *Digital Trade- Developing a Framework for Analysis*, OECD Trade Policy Papers No. 205, (OECD Publishing, Paris) DOI: 10.1787/524c8c83-en (July, 2017) p.no. 6, para. 3, available at [https://www.researchgate.net/publication/319667734\\_Digital\\_Trade\\_Developing\\_a\\_Framework\\_for\\_Analysis](https://www.researchgate.net/publication/319667734_Digital_Trade_Developing_a_Framework_for_Analysis) (last visited Jan. 9, 2021)

<sup>29</sup> Georgios Petropoulos & Andre Sapir, “Socio-economic effects of digital trade and artificial intelligence on EU industries including their value chains and EU imports and exports with major trade partners”, Policy Department for External Relations (Nov. 2019) [PE 653.617]

<sup>30</sup> Organization for Economic Co-operation and Development, *Current Trade Challenges and Opportunities* (OECD, France), available at <https://www.oecd.org/trade/understanding-the-global-trading-system/trade-challenges-and-opportunities/> (last visited on Jan. 6, 2021)

<sup>31</sup> *Id.*

the ways in which Digitalization is giving shape to international trade<sup>32</sup>.

The era of Digitalization has brought along with it the new and improved modes of reaping the optimal benefits from this Digital World; the most astonishing breakthrough being that of the introduction of 'Artificial Intelligence'. It would probably be an understatement to suggest that AI is a gift to mankind, keeping in view the enormous benefits it has accrued to it. The following section, thus, aims at providing a comprehensive understanding of the interrelation between AI & Digital Trade, to the readers.

#### **4. Artificial Intelligence and Digital Trade**

With the advancement in technological innovations, the relevance and scope of 'Digital Trade' seems to have widened at a mounting rate. Alongside this, Artificial Intelligence has proven to be a great tool for development and progress of nations around the world; but, this also means that it is capable of causing great impact over International Trade, both in positive and negative sense. Therefore, it can be said that AI is one of the tools of Digital Trade, which helps in fading away the geographical barriers and in connecting the nations around the world, also thereby enabling them to have access to information and resources of others<sup>33</sup>; but, there is also a high tendency of the leakage of that important information which forms part of the AI, during the course of trade. Thus, a new phase of globalization seems to have ushered-in with the increase in the number of forms which the Digital Trade is taking up from time to time. AI mainly possesses three pillars of strength: (i) Algorithms, (ii) Computing Power and (iii) Data, but the irony lies in the fact that these strengths often prove to be its major weaknesses as well. Algorithms of an AI are such that they enable the AI-system to learn, re-learn and apply new knowledge every time it is exposed to new information. Sometimes the output of the functioning of AI goes even beyond the inputs with which it is programmed to operate. This makes its working go even beyond the expertise, knowledge and control of its creator<sup>34</sup>. The rapid growth of Computing Power, resulting from the exponential technological innovations of AI-operating systems and other related technologies, has often been questioned to cause undue delay in taking tactical actions especially for AI-powered cyber-troops, which require simple, effective and easy-to-operate systems for the field personnel. With the greatly enhanced AI-powered technologies, the room for complexities has also opened, thereby causing more difficulties in making efficient use of the same<sup>35</sup>. The third pillar of strength, i.e., Data,

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<sup>32</sup> *Supra* note 28.

<sup>33</sup> *Id.*

<sup>34</sup> *Supra* note 25.

<sup>35</sup> *Id.*

is seen as a weakness due to the fact that it exposes the system to vulnerability, further making it prone to manipulation, thereby threatening to dismantle the integrity of the data contained therein. It is not easy to look for practical, rational and efficient strait-jacket formulae for protecting data from being tampered, leaked or manipulated. AI-based applications which operate through the process of machine-learning require access to a vast amount of data, and with this the scope of control over the use of data and how the same may be used, is rendered extremely narrow<sup>36</sup>.

Digitalization, by opening the doors for exchange of quality goods and services over the digital platform, has altogether changed the way we trade in goods. The modifications in the way goods are produced and transferred across borders has also been greatly influenced by the cosmic innovations in technology<sup>37</sup>. With the world ushering into the era of digitalization, several challenges have found apertures into the system. The free flow of data, no matter how necessary it seems to be, has often evidently posed grim repercussions for the parties exchanging the same.

International Trade is often characterised by ‘prisoner’s dilemma’, as, in the absence of any cooperation between the countries, it provides lower outputs for the countries who abstain from cooperating with their fellow trading parties<sup>38</sup>. So, the potential number of benefits that the free exchange of data is capable of accruing to trade between countries in the digital space, depend a great deal upon the maintenance of a trustworthy online ecosystem<sup>39</sup>.

Trade finds its basis in ‘Inter-dependence’, which promotes peace and stability between the nations. It is one of the most cardinal principles in the trading environment, to maintain trust and transparency with the party one is dealing with. To maintain this trust-worthy trading environment in the Digital Space, the only route that seems most appropriate is that of Intellectual Property Protection of the Data. But, the issue of the ‘ideal form of Intellectual Property protection’ is another matter which calls for a discussion. Therefore, in the next section we shall discuss the scope of all available candidates under the realm of IP for protecting Data in Digital Space.

## **5. Intellectual Property Protection for Data in the Digital Space**

Human creativity has no bounds, owing to the fact that all human beings possess

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<sup>36</sup> Eleanor Bird, Jasmin Fox-Skelly, *et al.*, “The Ethics of Artificial Intelligence: Issues and Initiatives”, 13 [European Parliamentary Research Service, European Parliament] (March, 2020) [PE 634.452], available at [https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS\\_STU\(2020\)634452\\_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/STUD/2020/634452/EPRS_STU(2020)634452_EN.pdf) (last visited Jan. 7, 2021).

<sup>37</sup> Organization for Economic Co-operation and Development, *Digital Trade* (OECD, France), available at <https://www.oecd.org/trade/topics/digital-trade/> (last visited Jan. 6, 2021).

<sup>38</sup> *Supra* note 25.

<sup>39</sup> *Supra* note 29.

unique personalities, depending upon their differing cultures, experiences and extent of intelligence. Intellectual property (IP), as the name suggests, is a property which originates from a person's intellect. All the advancements in science and technology, have undoubtedly been the results of the tireless efforts of the intellect of human beings, who have from time to time, combined their efforts with the research and findings of their predecessors and worked to further evolve the ever-evolving products of technological innovation. With the digital age heralding-in, the growth of AI-related inventions has been exponential. This development has not only eased out the efforts of humans, but has even been seen to have outgrown their own expected potential, i.e. the potential for which their human creators/inventors had perceived and programmed them to be capable of. The legal implications for AI are complex, so an important question which requires an answer to is: 'Which protection would serve best in providing protection to the IP rights in AI-invention?' From time to time, there have been discussions on this pressing issue. Therefore, some of the protection strategies are discussed herein below:

### **5.1. Trade Secret Protection**

In a case where an AI technology is the subject of trade, the usual protection provided for the data is in the form of imposition of such a requirement upon the parties, like- the obligation to secure 'Trade Secrets'. The decision of imposing this obligation of protecting the Trade Secrets pertaining to the data that constitutes the subject of trade is one of the most crucial decisions in any transaction relating to AI. For this, the parties must always specifically agree to be bound by this obligation, because otherwise there is no automatic protection available to the data from the very moment at which the AI-based system or technology is made; rather the same can be provided to it at the time of transaction only<sup>40</sup>. The term 'Trade Secret', does not have any unique and exhaustive definition as such, but to put it in simple words, it refers to "the information that is maintained in secrecy and has commercial value"<sup>41</sup>.

The data which the parties exchange with each other over the Digital Platform can only be guarded with the 'trust' with which they confide their secrets and extremely clandestine information with one another.

Unlike the case of Patents, for ensuring the protection of data as a 'Trade Secret', no specific application process is required to be carried out by the party seeking its

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<sup>40</sup> *Id.*

<sup>41</sup> D.S. Sengar, *Protection of Trade Secrets and Undisclosed Information: Law and Litigation*, 53 JOURNAL OF THE INDIAN LAW INSTITUTE 255 (2011), available at <https://www.jstor.org/stable/43953505> (last visited Jan. 9, 2021)

protection; rather, it is automatically protected when that party demonstrates the intention to keep the information protected<sup>42</sup>. It is sufficient if the information is shown to be of such importance and nature that it provides the party seeking its protection, with a competitive advantage, owing to the secrecy it is shielded with<sup>43</sup>. ‘Trade Secrets’ form the Intellectual Property of the party which shares the same with another trusted party. The main issue that is often seen in cases dealing with this type of IP is that - once the contents or the subject-matter of the same become publicly known through any third party’s independent inquiry by making use of fair means, then this IP protection is automatically rendered ineffective<sup>44</sup>. This often happens with the utilization of the technique of ‘Reverse Engineering’.

## 5.2. Patent Protection

For AI, Patent is often seen as the first option to be considered as it promises a guaranteed and powerful means of protecting the Intellectual Property in the invention, and also because patent infringement cases do not recognize ‘independent creation’ as a defence. Though, at the same time, there is no absence of drawbacks with this kind of IP protection for AI either. One of the major drawbacks being that patent protection lacks the means to secure the compilation of data, i.e. the training sets for the AI. So, it is an IP which independently cannot be the guarding shield for the AI, rather, the same can be a strong protection if substantiated with the protection under ‘Trade Secrets’. Apart from this, the IP protection for software has been a controversial issue from a long time, posed with strong arguments on both opposing stands, i.e. one for Copyright Protection and another stand in favour of Patent protection<sup>45</sup>.

Another dilemma in approaching the AI-powered invention with a shield of patent protection is that in a case where the patent protection is refused to the applicant or invalidated at a later stage, then the information would be threatened to fall in the public domain, thereby leaking the important information relating to the data and algorithms comprised therein. If such a situation arises, the invention would not only lose on the opportunity to be protected under the patent regime, but also under the realm of trade secret protection.

Another issue is with respect to the short duration of protection available for a patent under the law, i.e. 20 years from the date of filing. For an Invention like an AI,

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<sup>42</sup> Jones Day, *Protecting Artificial Intelligence IP: Patents, Trade Secrets or Copyrights?* Jan., 2018, available at [https://www.jonesday.com/en/insights/2018/01/protecting-artificial-intelligence-ip-patents-trad?\\_\\_prclt=0jNimTeB](https://www.jonesday.com/en/insights/2018/01/protecting-artificial-intelligence-ip-patents-trad?__prclt=0jNimTeB) (last visited Jan. 8, 2021).

<sup>43</sup> *Id.*

<sup>44</sup> PRABUDDHA GANGULI, *INTELLECTUAL PROPERTY RIGHTS- UNLEASHING THE KNOWLEDGE ECONOMY* (2001).

<sup>45</sup> *Supra* note 42.

this duration appears to be very short, considering the complexities involved in these type of inventions and the extensive research and efforts that go into their development<sup>46</sup>.

Even though there are several risks associated with patent as a protection for AI, there are many evidences of Patent applications made for obtaining IP protection for it. Data depicts that: Up till 2017, around 55,660 Patent Applications have been filed for Artificial Intelligence. The trends from 2011-2017 also present a picture that the applications filed yearly in the field of Artificial Intelligence have grown by the factor of 6.5 between these years<sup>47</sup>.

### 5.3. Copyright Protection

Copyright protects works like literary & artistic works, and the major areas where Artificial Intelligence comes into play is to create such works in more efficient and expeditious manner. The study of both these areas, in conjunction, becomes important. For a work to be copyrightable, it must be the original creation of the author and must be an expression of an idea, not the idea itself, i.e. it should be tangible. Copyright is an 'intellectual' property, meaning thereby, that it is a right granted to an individual who creates an original work using his own intellect. This particularly raises the question "Whether AI can possess an intellect, to qualify as a suitable candidate for claiming Copyright?"

A peek into three important judgements of the US Courts can clarify the positions and the issues faced in attributing Copyrightability to works created through AI. These judgements are as follows:

The case of *Burrow Gilles Lithographic Co. v. Sarony*<sup>48</sup> made it clear that a work that is the creation of mechanical labour, like a machine or an AI-system, is not copyrightable, due to the fact that mechanical labour lacks something that happens to be a 'pre-requisite' of Copyrightable matter, i.e. Creativity. Thus, the Court adopted a strict approach in applying Copyrightability requirements to works created by AI.

A few years later, another case came up before the U.S. Courts, with a similar question as in the above-mentioned case. This was the case of *Bleistein v. Donald Lithographing Co.*<sup>49</sup>, wherein, the Court, again inclined in favour of adopting a similar approach and highlighted the difference between a work of human creation and a work

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<sup>46</sup> *Id.*

<sup>47</sup> WIPO, WIPO TECHNOLOGY TRENDS 2019- ARTIFICIAL INTELLIGENCE (2019) *available at* [https://www.wipo.int/edocs/pubdocs/en/wipo\\_pub\\_1055.pdf](https://www.wipo.int/edocs/pubdocs/en/wipo_pub_1055.pdf) (last visited Dec. 19, 2020)

<sup>48</sup> 111 U.S. 239 (1903)..

<sup>49</sup> 188 U.S. 239 (1903).



that is the product of something artificial, and ruled that there is no Copyright protection for a work that falls under the latter category.

Finally, in the case of *Alfred Bell & Co. v. Catalda Fine Arts, Inc.*<sup>50</sup> the Court moulded its strict stance a bit and came to rule that the criterion of ‘originality’ for a work to be Copyrightable shall not be set really high. It stated that a work, even though created by an AI, is copyrightable, to the extent to which the same is not ‘copied’ from any other source.

These judgements in their order of chronology have made it quite clear that the process of recognizing AI and AI-generated works under the Copyright regime is slowly and gradually evolving, and building a space for itself in the legal sphere.

The key component which makes the AI what it is, is actually the software used to create it. So, the protection of IP shall, for obvious reasons, be attached to the software only. Technology has proven itself to be the ‘backbone’ of the digital economy and the major value of technology is attributable to ‘Software’<sup>51</sup>.

#### **5.4. Intellectual Property Protection for Artificial Intelligence: The Ideal Protection Mechanism**

In most cases, the perfect Intellectual Property protection tool can be traced in one of the few Intellectual Properties, available and known to us at the moment; for instance, Copyright protection for a literary work; Patent protection for a machine; Trademark protection for a logo, etc.

Till the late 20th century, most of the technological innovations, especially the ones relying on semi-conductors had their functionalities majorly embedded in their ‘hardware’, but today, there seems to be a shift from the hardware to software<sup>52</sup>. ‘Software Protection’ has remained a controversial issue from a long period of time, and no single IP is perfectly suited to protect it, at the moment.

‘Software’ has from time and again, been the ‘ball’ in the interminable match of ‘Tennis’ between Copyright and Patent, where on one hand, the Patent protects the ‘functional aspect’ of the computer programmes and not the computer programme itself, and Copyright, on the other hand, protects the ‘data structure’, i.e. the object code of the software.

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<sup>50</sup> 191 F.2d 99 (2d Cir. 1951).

<sup>51</sup> Ania Jedrusik and Phil Wadsworth, *Patent Protection for Software-Implemented Inventions*, *WIPO Magazine* (Feb. 2017), available at [https://www.wipo.int/wipo\\_magazine/en/2017/01/article\\_0002.htm](https://www.wipo.int/wipo_magazine/en/2017/01/article_0002.htm) 1 (last visited on Jan. 9, 2021)

<sup>52</sup> *Id.*

Data and Algorithms form the nucleus of a Software, which is the essential part of a system of Artificial Intelligence, and none amongst Copyright & Patent seems capable of being called the ‘most suitable candidate’ for protecting this nucleus. Trade Secret Protection, on the other tangent of discussion is actually the most suitable option, provided: the Invention is also guarded with Patent protection. A combination of both these IPs can prove to be the most efficient and best possible solution to this issue of IP protection to AI Technology.

## **6. Domestic Efforts at Data Protection**

This section of the paper deals with the various initiatives taken up by some countries around the world, for guarding the interests of their citizens and residents, with respect to their data. This list of countries dealt with below, is not exhaustive. For the sake of brevity, the section covers only a few of the widely known efforts of countries like the United States of America, China, India and the European union, in their move towards Data Protection in the Digital sphere.

### **6.1. Efforts to Impose Restrictions on Data Flow**

The Policymakers, at the most basic levels of discussions, need to pay attention to the circumscribing limits within which they believe the data should be allowed to flow. This is especially in the case where the dealings are taking place across the borders. In the instance of cross-border trade, the obstacles in free flow of data are often inevitable, as these obstacles which are the limitations upon one country, may actually be safeguarding mechanisms for the other country. Most often, these restrictions which are imposed on cross-border trade are motivated by several reasons like:

(i) To increase National Security; (ii) To secure control on communication that occurs online; (iii) To promote the domestic industries which operate digitally; (iv) To secure competitive advantage over others<sup>53</sup>. Some of the efforts/measures taken by countries around the world are:

#### *6.1.1. United States (US)*

The United States of America does not have a single legislation to protect the privacy of data; rather, a sectoral approach to protecting data is followed here<sup>54</sup>. There are several sector-specific legislations in this country. Some of these legislations are:

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<sup>53</sup> Samm Sacks and Justin Sherman, “Theme 1: Growing Restrictions on Free Data Flows”, *Global Data Governance: Concepts, Obstacles and Prospects* 12 (Dec. 2019) available at <https://www.jstor.org/stable/resrep19968.6> (last visited Jan. 9, 2021).

<sup>54</sup> I-Sight Software, *A Practical Guide to Data Privacy Laws by Country* (Nov. 5, 2019), available at <https://i-sight.com/resources/a-practical-guide-to-data-privacy-laws-by-country/U.S.> (last visited Jan. 9, 2021).

- 1) *The California Consumer Privacy Act (CCPA), 2018*
- 2) *The Privacy Act, 1974*
- 3) *The Privacy Protection Act, 1980*
- 4) *The Fair Credit Reporting Act, 2018*

The US is rolling out some regulatory measures to protect and limit the flow of data basing the justification for the same as ‘National Security’<sup>55</sup>. One of the measures for the same being- Allowing limited access to ‘Sensitive Data’ of US citizens, and subjecting the transactions involving such data to strict review by the Committee on Foreign Investment. Currently, the US government is also proposing to bring into effect a legislation that would enlist some countries in the ‘Blacklisted’ category, and prohibit Digital trade with them<sup>56</sup>.

#### 6.1.2. China

Like the US, China is also rolling out some measures to regulate the trade of data and free flow of information, owing to ‘Nation Security’ concerns. One such example is that of the Chinese Cyber-security Law, for installing mechanisms in its system to filter out the sensitive and personal data, and subjecting this filtered data to scrutiny before trading and sending it to other countries<sup>57</sup>.

#### 6.1.3. India

In India, there exists no specific legislation for privacy and data protection. Though the right to privacy has recently been recognized as one of the Fundamental Rights guaranteed under the Indian Constitution, by virtue of it being covered under the Article 21<sup>58</sup>.

Thus, right to privacy now finds a strong backing by the law of the land. Other than this, there are some legislations in existence, as are enlisted below:

- 1) “*The Information Technology Act*”<sup>59</sup>,
- 2) “*The Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011*”

These legislations deal with the issue of protection of sensitive or personal data/information. A reading of the provisions of both provide an understanding of the

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<sup>55</sup> *Id.*

<sup>56</sup> *Supra.* note 52, at 2.

<sup>57</sup> *Id.*

<sup>58</sup> *Justice K.S. Puttaswamy (Retd.) v. Union of India*, (2017) 10 SCC 1.

<sup>59</sup> The Information Technology Act, 2000 (Act 21 of 2000).

difference between public and private data<sup>60</sup>.

#### 6.1.4. European Union (EU)

The EU has contrived a legislation called ‘The General Data Protection Regulation’, also known as GDPR, with the objective to provide its residents with added control over their data. This regulation provides for the imposition of certain obligations upon the organizations and bodies which handle the data of the European Union residents, to follow the specific guidelines comprising of data and privacy rules<sup>61</sup>.

### 6.2. IP Protection of AI in Domestic Legislations

Other than the domestic legislations already discussed above, there are also certain laws in these countries which are capable of providing IP protection to the data which forms part of the AI-operated systems. They are:

<b>Jurisdiction</b>	<b>Patent Protection</b>	<b>Trade Secrets Protection</b>
<b>United States</b>	United States Code – Title 35 (Patents)	United States Code – Title 18 – Part I – Chapter 90 (Protection of Trade Secrets)
<b>European Union</b>	The Patents Act, 1977	Historically protected by “common law” with no formal statutory provision. <b>But in 2018</b> - European Union (Protection of Trade Secrets) Regulations, 2018
<b>China</b>	Patent Law of the People’s Republic of China, 1984	Law Against Unfair Competition of the People’s Republic of China, 1993 <b>Now replaced by:</b> Act of 2017
<b>India</b>	The Patents Act, 1970	No Specific Legislation. They may be

<sup>60</sup> Priyansh Jain, “The Information Technology (Reasonable Security Practices and Procedures and Sensitive Personal Data or Information) Rules, 2011”, *The Cyber Blog India*, Dec. 24, 2019, available at <https://cyberblogindia.in/the-information-technology-reasonable-security-practices-and-procedures-and-sensitive-personal-data-or-information-rules-2011/> (last visited on Jan. 9, 2021).

<sup>61</sup> ALAN CALDER, *EU GDPR- A POCKET GUIDE 21* (IT Governance Publishing, U.K. ed., 2d. ed., 2018), available at [www.jstor.org/stable/j.ctv6cfkkn](http://www.jstor.org/stable/j.ctv6cfkkn) (last visited Jan. 9, 2021).

		protected under Contract Law.
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Any discussion regarding the efforts made at promoting protection for AI-technology would be incomplete without the discussion stretching towards the efforts which have been taken at the Global level for the same. Therefore, the following section talks about the Global Efforts made at Data Protection in the Digital Space.

## **7. Global Efforts at Data Protection in Digital Sphere**

Since the parties to a trading arrangement, in cross-border transactions include more countries, an effort calling for international cooperation between the countries at the global level is deemed essential. This section discusses some of the efforts taken up at the global level for the protection of data.

### **7.1. Agreement on Trade-Related Aspects of Intellectual Property Rights**

#### **(TRIPS)**

The Members of the WTO Agreement automatically became the Members to the TRIPS Agreement<sup>62</sup>, by virtue of them being parties to the former. The TRIPS Agreement lays down the minimum standards relating to the protection of Intellectual Properties within the territories of the signatory Parties<sup>63</sup>. This International Agreement, provides for the Protection of ‘Trade Secrets and Undisclosed Information’, thereby recognizing the importance of the same at the International Platform. The provision states as under:

“1. In the course of ensuring effective protection against unfair competition as provided in Article 10bis of the Paris Convention (1967), Members shall protect undisclosed information in accordance with paragraph 2 and data submitted to governments or governmental agencies in accordance with paragraph 3.

2. Natural and legal persons shall have the possibility of preventing information lawfully within their control from being disclosed to, acquired by, or used by others without their consent in a manner contrary to honest commercial practices<sup>10</sup> so long as such information:

(a) is secret in the sense that it is not, as a body or in the precise configuration and assembly of its components, generally known among or readily accessible to persons

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<sup>62</sup> Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS), Annex. 1C of the Marrakesh Agreement Establishing the World Trade Organization, 1995 *available at* <https://www.wipo.int/export/sites/www/treaties/en/agreement/pdf/trips.pdf> (last visited Jan. 9, 2021).

<sup>63</sup> *Id.*, art. 1.

within the circles that normally deal with the kind of information in question;

(b) has commercial value because it is secret; and

(c) has been subject to reasonable steps under the circumstances, by the person lawfully in control of the information, to keep it secret.

3. Members, when requiring, as a condition of approving the marketing of pharmaceutical or of agricultural chemical products which utilize new chemical entities, the submission of undisclosed test or other data, the origination of which involves a considerable effort, shall protect such data against unfair commercial use. In addition, Members shall protect such data against disclosure, except where necessary to protect the public, or unless steps are taken to ensure that the data are protected against unfair commercial use”.<sup>64</sup>

The provision is binding upon the Members, but the modalities and the kind of protection which the Members shall deem suitable to provide and apply in taking domestic efforts is left to their discretion<sup>65</sup>.

## **7.2. United States-Mexico-Canada Agreement (USCMA)**

USMCA was signed on November 30, 2018 at the G-20 Summit, held at Buenos Aires. It is a product of the recently re-negotiated “North American Free Trade Agreement (NAFTA)”<sup>66</sup>. It is an Agreement which contains provisions governing Digital Trade. Following are some of its features which specifically deal with Digital Trade:

- It imposes a permanent prohibition over Digital Tariffs<sup>67</sup>. This provision is specifically beneficial for the U.S., which has faced discrimination with respect to its digital products in the past<sup>68</sup>.
- It contains a provision to ensure the maintenance of protection of the citizen privacy, by stressing upon the internationally recognized principle of Non-Discrimination<sup>69</sup>.
- It releases the companies from the obligation of sharing the ‘encryption keys, source codes or information about algorithms’, which is often imposed as a

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<sup>64</sup> *Supra* note 62, §39.

<sup>65</sup> *Supra* note 41, at 258.

<sup>66</sup> Marcus Noland, “Protectionist Trade Policy Dampens US Economy and Risks Conflict with Asia”, (East-West Center, 2019) *available at* [www.jstor.org/stable/resrep24989](http://www.jstor.org/stable/resrep24989) (last visited Jan. 9, 2021).

<sup>67</sup> The United States-Mexico-Canada Agreement, (USMCA), art. 19.3.

<sup>68</sup> Information Technology Industry Council, “The United States-Mexico-Canada Agreement (USMCA)”, *available at* <https://www.itic.org/dotAsset/c2dc91d7-84c9-4274-8f5c-be7415b63159.pdf> (last visited Jan. 9, 2021).

<sup>69</sup> *Supra* note 67, §19.8.

condition to grant market access<sup>70</sup>. This approach adopted in the Agreement is what makes it an efficient shield of protection against data-leakage.

With the various provisions which form part of this Agreement, this arrangement promises to facilitate a mutually beneficial trade for the parties. Though, the benefits seem to weigh more in favour of the U.S. rather than providing for equal amount of benefits to the other two parties in equal proportion.

## **8. Free flow of Data through Digital Trade & Protection of Confidentiality of**

### **Data: A Conundrum**

As discussed in the preceding sections, numerous efforts at extending protection to the aspects of privacy, confidential information and trade secrets in AI-Data have been made through both domestic and global efforts; this reflects the extent to which the nations around the world understand the need to protect such data, especially when the same is put in the course of trade across national borders. This issue has been very accurately dealt with, by the World Economic Forum (White Paper, 2020)<sup>71</sup>, which states as under:

*“Countries can attract inbound cross-border transfers of data and information technologies only if people, businesses and governments abroad trust them. To earn a reputation as a safe data transfer destination, countries must provide for secure telecommunications infrastructure, respect individual privacy and confidentiality, exercise self-restraint regarding forced data access, and enact laws that also benefit people and organizations outside their borders, including data privacy, security, contracts and trade secret protection laws.”*

## **CONCLUSION & SUGGESTIONS**

Technology plays a fundamental role in a nation's economy. Where on one hand, the developed countries, see it as a means to exercise 'hegemonic control' over the developing countries, by providing the latter with their technological innovations; the developing countries, on the other hand, stay on the receiving end, as for them, the access to technology plays an instrumental role in boosting their economy to a great extent. The flow of digital information across borders has contributed immensely to the economies of the nations. In fact, according to the report of McKinsey Global Institute

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<sup>70</sup> *Supra* note 67, §19.16.

<sup>71</sup> Anne Josephine Flanagan, *et.al.*, “A Roadmap for Cross-Border Data Flows: Future-Proofing Readiness and Cooperation in the New Data Economy”, 4 (World Economic Forum, 2020), *available at* [http://www3.weforum.org/docs/WEF\\_A\\_Roadmap\\_for\\_Cross\\_Border\\_Data\\_Flows\\_2020.pdf](http://www3.weforum.org/docs/WEF_A_Roadmap_for_Cross_Border_Data_Flows_2020.pdf) (last visited May 10, 2021).

in 2016, the global flows boosted the world's Global Development Index (GDP) by at least 10%, totalling up to \$7.8 trillion in the year 2014 alone<sup>72</sup>.

The idea of 'Artificial Intelligence' has been around us for decades now, and with the digital revolution, AI has also been witnessed to be the subject of trade between the countries around the world. From the moment the Digital revolution ushered in, it greatly reduced the costs which were usually incurred earlier by the countries who engaged in international trade. The main role it played was with respect to the extent to which it lessened our efforts to diffuse important information and technologies; and also to the extent to which it provided assistance in coordinating Global Value Chains (GVCs).

One of the most significant developments in the world as it exists today is the increasing dependence upon the data-reliant technological innovations and AI-systems. This is especially evident in the era of disruption caused due to the impact of Covid-19 crisis, that hit the world in the year 2019. The entire world came to a standstill for a while, but soon new means to keep the world going came into picture, the most prominent measure being the transformation of the real world into the digital world. This measure brought the world together again; it connected everyone & encouraged them to collectively work towards this fight against coronavirus. Therefore, with these changes in the dynamics of the world, the importance of data economy has increased manifold<sup>73</sup>.

The Global flow of data promotes and proliferates productivity by broadening the scope of participation of efficient market players, who come together to share the stage, in their move to participate, compete and cooperate with each other, all at once. In this backdrop, it is recommended that the governments involved in the exchange of data-sets and algorithms which form part of the AI technology should maintain the integrity of that data, by the use of an organized system of checks and balances.

As very rightly suggested by the World Economic Forum (White Paper, June, 2020)<sup>74</sup>: "The policy-makers should take a balanced approach to minimize the risk of data integrity concerns, without restricting the movement of data across borders. Meanwhile, companies can use reliability and/or validation studies when data is exchanged between entities".

There are several complexities and dilemmas posed in the global market, when the

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<sup>72</sup> JAMES MANYIKA, *ET.AL.*, DIGITAL GLOBALIZATION: THE NEW ERA OF GLOBAL FLOWS 10 (2016), available at <https://mck.co/3bnIS3z> (last visited Jan. 9, 2021).

<sup>73</sup> *Supra* note 71, at 7.

<sup>74</sup> *Id.*, at 36.



subject of the trade is a technology incorporating ‘Artificial Intelligence’. The various issues involved are of such nature that no hard-and-fast rule can operate to regulate the same. But there are certain suggestions which the researchers believe would work efficiently in ensuring a smooth trading of AI through the Digital-Trade channel:

- A cooperative and joint effort on the part of the parties to the trading arrangement is the most important approach to adopt. The roles, rights and functions of the parties shall be clearly concretized through written Trade Agreements.
- For the maintenance of a trustworthy online-ecosystem, the deals between the parties should be sealed with the obligations of securing the ‘Trade Secrets’ of the parties to the Agreement. This is an important clause for a Trading Arrangement between countries, as AI is all about the data, codes and algorithms, which go into its making, and the leakage of the same to a third party can bring huge losses to its stakeholder.
- A Trade Secret protection to data in AI, along with Patent protection for the AI technology of which that data forms part, can serve as a strong shield of protection for the same.
- A clause for ‘Penalties’ in the event of spillage of Trade Secrets, should be inserted in the Trade Agreement between the parties, as this would act as a deterrent to them, and would discourage either of them from indulging in practices hindering the other party to the arrangement.
- A limited Agreement like the USMCA, is a good initiative taken up in the international trading environment; but the need of the hour is that- A ‘binding’ International Agreement be brought into effect; opening the doors for all the nations around the world, who are willing to be parties to it. A binding Agreement at a Global Level would prove to be beneficial for all.

These suggestions, if implemented properly, would help in ensuring that in “Cross-Border Data Sharing” Agreements/Arrangements”, data is transmitted safely and serves to be of good use for both parties involved in the exchange, and for building an environment of trust across the borders, in trading transactions.

The observation of World Economic Forum (2020) that “the security of data when it moves across borders is of fundamental concern to both companies and governments, both in terms of risk mitigation and security of proprietary data and intellectual property (IP). The absence of, or the risk of the absence of, security measures further undermines trust and produces friction for cross-border data sharing”,

thus seems to be very appropriate. Therefore, it would not be wrong to state that any new or existing policy in IP should encourage the free flow of data for uninterrupted functioning of AI, without affecting the right to privacy or security pertaining to the data incorporated in the AI-system. This can be done by backing the same with protection through efficient mechanisms as suggested in this study.

## **The Needs for a Comprehensive Copyright Legislation on Over-The-Top Platform in Breaking COVID-19 Cycle**

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### **Abstract**

New advances in the era of digital disruption have brought changes from the conventional era to the digital era during the Covid-19 pandemic. The changes have impacted on the economic industry and government as well as the emergence of new businesses from innovators to make strategies through digital platforms. This study aims to evaluate the protection of Copyright Law through the Over-The-Top platform from the perspective of Indonesian positive law and how the regulations and practices of using copyright objects on the Over-The-Top digital platform in breaking the cycle of Covid-19 pandemic.

This study applies a normative juridical method, by providing explanations based on the provisions of the applicable law. Additionally, this study also utilizes a comparative juridical method by comparing several regulations.

The results of this study indicate that, firstly, in Indonesia until recently, there has been no adequate regulation on the Over-The-Top Digital Platforms as well as changes in Digital Transformation based on Cyber law in Indonesia. Secondly, during the Covid-19, there have been many benefits from the digital platforms since the Government implemented the Work From Home policy. These platforms can be used to continue carrying out activities from home. Further, these platforms are also useful in breaking the Covid-19 cycle in Indonesia.

**Keywords:** Digital, Platform, Over-The-Top, and Covid-19

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## 1. Introduction

Back in 2017, *The Economist* published a narration titled: “The world’s most valuable resource is no longer oil, but data” and since then, “Data is the new oil” has become a common refrain. In the current era of rapid changes, information is regarded to be valuable as any particular data can be made into information based on the intention and desire of the party.<sup>1</sup> During the Covid-19 Pandemic, the use of an Over-The-Top Platform is urgently needed to carry out various daily activities in Indonesia. As stated by several experts, the term "Cyberlaw" is a norm that has virtual rules concerning digital content utilization of Information and Communication Technology system by using media and telecommunications infrastructures. This is one of the factors for the massive growth of global economy. Currently, various types of Over-The-Top Platform are widely utilized to support the Government Work-from-Home policy and other socio economic activities during the Social Distancing and Physical Distancing policies as the effort in stopping the escalation of the Covid-19 Pandemic.

In the current disruptive era, information technology and science change very rapidly. These technological changes have an unprecedented monumental influence on the aspect of social life.<sup>2</sup> Developments in technology also experiencing rapid changes and these changes brought changes in many aspects including those described in the Indonesian Law on Copyright.<sup>3</sup>

With new advances in the era of Digital disruption that accelerate the change from conventional to the digital era during the Covid-19 Pandemic, it impacts on the government for the emergence of new businesses born from innovators to create strategies through Digital Platforms. In Indonesia, digital innovation is not only in one dimension, but the object of copyright are multidimensional in the fields of education, food, health, that are also used as new laws in government that support the Industrial Revolution 4.0 era. Changes in this era have created a lot of creativity in the field of Intellectual Property, even some Digital Platforms are now very popular with the wider community.

Digital Platform is a form of Internet of Things that is one of the successful products of the current Industrial Revolution 4.0. The use of internet media in Indonesia has now become a primary need, even what is called ‘social media’ is a common thing that has been seen widely available to large audiences in this country. On the other hand,

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<sup>1</sup> EDMON MAKARIM, KOMPILASI HUKUM TELEMATIKA 3 (2003).

<sup>2</sup> AHMAD M RAMLI, HAK CIPTA, DISRUPSI DIGITAL EKONOMI KREATIF 27 (2018).

<sup>3</sup> See. Article 1 Number 1 of Law Number 28 of 2014 on Copyright.

in addition to innovation that support the development of Intellectual Property in the era of digital disruption, some brings a positive influence during this pandemic, namely the Utilization of Copyright Objects on Digital Platforms During the Covid 19 Pandemic.

The utilization of Over the Top Platform as the information media brought the urgency of analysis and evaluation concerning the protection of copyright in Over the Top Platform. This includes the utilization of copyright object in preventing the escalation of Covid-19 Pandemic and breaking the Covid-19 cycle from the perspective of Indonesian positive law and how the regulations and protection practices of copyright objects on the Over the top digital platform.

Concerning those backgrounds, the research aims to analyze the two most important issues, as follows:

- (1) How are the legal protections of copyright on Over-The-Top Platform according to the positive law in Indonesia?
- (2) How the copyright objects on the Over the Top digital platform play the role in breaking the cycle of the Covid-19?

## **2. Research Method**

This study requires research methods to determine the direction and obtain results with regards to the aforementioned issues

### **(1) Approach**

This study applies juridical normative and comparative juridical approaches. A juridical normative approach provides explanations based on the provisions of the applicable law. Meanwhile, a comparative juridical approach is conducting research through a comparison of regulations.<sup>4</sup> The comparison of regulations is carried out by comparing legal provisions in other countries. This aims to produce comparisons between national and international laws in terms of the legal protection of information, documents, and electronic transactions.

### **(2) Specifications**

The specifications of this study are analytical descriptive and qualitative descriptive. In analytical descriptive, the analysis is based on an explanation of an event description; based on examination of facts and data obtained from the study as well as the theory of

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<sup>4</sup> SOERJONO SOEKANTO, PENGANTAR PENELITIAN HUKUM 32 (1986).

applicable provisions; and can provide an explanation in the field of copyright and technology. Meanwhile, descriptive qualitative is based on a method through case study analysis of an object from the parties involved and based on several sources incorporated in this study.<sup>5</sup>

### 3. Discussion

#### 3.1 History of Laws Regulating Over-The-Top Digital Platform based on the Principles of Cyberlaw in Indonesia

The Over-The-Top (OTT) media is currently used widely by the public in general as the Indonesians are accessing various digital platforms in their daily lives. OTT is growing in popularity in the world of telecommunications, government, and academia. OTT is the utilization of telecommunications services through operators that use the internet network.<sup>6</sup> Despite the widely used of OTT terminology, until now, the policymakers around the world have been unable to provide universally accepted definition of OTT.<sup>7</sup> Several attempts were made to provide a comprehensive definition of OTT Services, for example this following list summarizes the diverse definitions of OTT :

*“OTT services are the buzz-expression for services carried over the networks, delivering value to customers, but without any carrier service provider being involved in planning, selling, provisioning, or servicing them – and of course without any traditional Telco booking revenue directly from them.”*<sup>8</sup>

*“OTT Services are newcomers in the fields of broadcasting and content, OTT content means online delivery of video and audio without the Internet Service Provider (ISP) is involved in the control of distribution of the content itself.”*<sup>9</sup>

*“OTT services consist of a variety of services, including electronic communication and publishing, through which content is delivered to end users over the internet. Radio or other music content that can be listened to over the*

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<sup>5</sup> NAWAWI, H. HADARI, METODE PENELITIAN DESKRIPTIF 23 (2003).

<sup>6</sup> See Circular Letter of the Minister of Communication and Information Technology of the Republic of Indonesia [Number](#) 3 of 2016.

<sup>7</sup> BEREC, “Report on OTT Services”, BoR, (16) 142, 2016, page 14. [https://berec.europa.eu/eng/document\\_register/subject\\_matter/berec/reports/5751-berec-report-on-ott-services](https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/5751-berec-report-on-ott-services), accessed on 01-09-2020, at 10.05.

<sup>8</sup> Wedge Greene & Barbara Lancaster, *Over the Top Services*, 4(7) PIPELINE MAGAZINE 2 (2006). Retrieved from: <http://www.pipelinepub.com>, accessed on 01-09-2020, at 13.17.

<sup>9</sup> Busson, A., Paris, T., Simon, J.P, “The European Audiovisual Industry and the Digital Single Market : Trends. Issues and Policies, *Communications & Strategies*, IDATE, Com & Stra Dept, Vol 1 (101), 2016, p. 17-40, 1<sup>st</sup> quart. <https://ideas.repec.org/a/idt/journal/dwej10101.html>.

*internet, voice and messaging services that do not require the infrastructure of any telecommunication operator”<sup>10</sup>*

An evitable change of traditional society into digital society also requires massive changes in the context of laws and regulations. Users of information technology or devices face an unstable and volatile legal environment, such as the absence of related regulations, change of national regulations, and conflicts between existing regulations<sup>11</sup> A comprehensive formulation of regulations on digital technology and internet media came as an urgency concerning the broad and massive utilization of internet media to support daily activities and transactions, especially during the pandemic where the physical encounter are being limited due to the effort of breaking Covid-19 cycle.

Pavan Duggal defines Cyberlaw as : “an aspect of the law that lives based on an attachment to the internet media, which is closely related to various aspects, issues and parties that are also related to the internet media. In this case, legal issues related to Cyberlaw are also closely related to the field of Intellectual Property and contract law, because it is a domain that includes the fields of law and regulation. The main topics that frequently intersect are internet access and use, privacy, freedom of expression, and jurisdiction”.

Cyberlaw also deals with internet media and technology as well as electronic elements which include computers, software, hardware and information systems”.<sup>12</sup> The advent of science and technology, which is the foundation of internet development, has become a reality in everyday life as the materials demanded by the public are non-negotiable. This is supported by the facts that statistically the number of internet users in the world reached 4.54 billion people in January 2020, covering nearly 59% of the world's population, as stated by J. Clement,<sup>13</sup> Thus use of internet media is expected to provide advantages to the business world and not only the industrial world. The benefits of the internet are greatly felt by the public in general. It can even change society's current habits such as in their career, education, communication, and entertainment media.

Regarding the elevated numbers of internet users, Murray puts forward a

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<sup>10</sup> Ebru Tekin Bilbil, Methodology for the Regulation of Over-the-top (OTT) Services : The Need of A Multi-Dimensional Perspective, *International Journal of Economics and Financial Issues*, 2018, 8 (1), p. 101 -110, <https://www.econjournals.com/index.php/ijefi/article/download/5809/pdf>.

<sup>11</sup> Joel R. Reidenberg, *Lex Informatica: The Formulation of Information Policy Rules Through Technology*, 76(3) TEX. L. REV. 553,553 (1998).

<sup>12</sup> See. <https://www.techopedia.com/definition/25600/cyberlaw>

<sup>13</sup> J. Clement, *Worldwide digital population as of January 2020*, <https://www.statista.com/statistics/617136/digital-population-worldwide/> (accessed on 9-09-2020, at 15.07 GMT +7).

“Network Communitarianism” as a pattern of thinking to apply a form of regulation to the internet. Further, Murray argues that a network system created in cyberspace can be responsible for the regulation of virtually-occupied space.<sup>14</sup> This argumentation of Murray is relevant considering the fact that technology now has been widely integrated in socio-economic activities for example e-commerce as a digital economic transactions involving digital technology as a medium for carrying out economic transactions.<sup>15</sup>

The digital disruption phenomena brought several important consequences starting from the escalated value of data and information as “The Economist” stated that “*Data is the new oil*” referring to the shifting in the current business, the world’s most valuable resource is no longer oil but data.<sup>16</sup> Digital disruption expose the society into borderless space in various activities, thus the importance of the regulations as the means of protection is inevitable. The advancement of information, communication and digital platform trigger the emergence of Cyber Law.<sup>17</sup> Besides the easiness and effectiveness, the activities in cyberspace also has its risky consequences from hacking activities, data privacy and other types of cyber crimes.<sup>18</sup>

Revised Act on Electronic Information and Transactions on Law Number 19 / 2016 on the Amendment to Act Number 11 year 2008 on Electronic Information and Transaction arises as the response to vast growing of digital transformation in Indonesia. This revision seeks to provide internet safety necessary legal basis while also promoting the development of digital economy to serve the community on the process of change caused by rapid technological improvement in current development.

Although this law aim to strengthen the role of the government to facilitate the electronic communication by means of reliable and safe electronic platform by moving towards the uniformity of rules, regulations and the validation and integrity of electronic records, however, this act still fail to manage the comprehensive regulations concerning Over the Top Services. The main and common factor because the unique

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<sup>14</sup> ANDREW D. MURRAY, THE REGULATION OF CYBERSPACE: CONTROL IN THE ONLINE ENVIRONMENT, 10 (2006).

<sup>15</sup> KENNETH C. LAUDON & CAROL GUERCIO TRAVER, E-COMMERCE 2017: BUSINESS, TECHNOLOGY, SOCIETY 9 (13th ed., 2017).

<sup>16</sup> The Economist, *Regulating the Internet Giants :The World’s Most Valuable Resource is No Longer Oil But Data*, May 6<sup>th</sup>, 2017, <https://www.economist.com/leaders/2017/05/06/the-worlds-most-valuable-resource-is-no-longer-oil-but-data>.

<sup>17</sup> Kofi. A. Anan in United Nations Conference on Trade And Development, E-Commerce and Development Report, 2004, page 4.

<sup>18</sup> JHON CHIRILLO, HACK ATTACKS REVEALED 5 (2001).



character and nature of OTT comparing to conventional telecommunication providers, these OTT provide their services by “sitting over” the bandwidth developed by telecommunication provider,<sup>19</sup> also the facts that many OTT Service providers are global companies without any entities in Indonesia, therefore they are often argue that considering they are not classified as legal entity in Indonesia so that Indonesian regulations have no binding force upon them. Historically, the formation of legal norms to be applied to cyberspace has been opposed by several activists. One of them is John Perry Barlow who later published the "Internet Declaration of Independence", in which he stated that the government has neither the right to regulate nor have the method to enforce laws in cyberspace, because, as he stated, cyberspace is beyond the jurisdiction of any country.<sup>20</sup>

Despite the unavailability of comprehensive regulations concerning the OTT services and providers caused by uptight antagonism and debates regarding internet and cyberspace independence, there is undeniable fact that the digital society of Indonesia has been firmly and widely built, therefore these OTT services nowadays can be said as a familiar platform used by Indonesian, therefore the government took some necessary measures and initiatives by utilizing these OTT platform in order to overcome the escalation of Covid-19 cases as well as the part of government's strategies to break the Covid -19 cycle in Indonesia.

#### **A. Utilization of Over-The-Top Digital Platform in Overcoming Covid-19**

The spread of Covid-19 has now occurred in various countries all over the globe. The current level of spread is increasing, thus, one of the solutions that widely used are by utilizing technology to tackle the spread of Covid-19. In reducing the number of infected cases, the government implemented social distancing and physical distancing as the policies and strategy used to prevent the spread of the pandemic, and also utilized information technology media as the tool to support many strategic measures

There are some important considerations of utilizing information technology to tackle the escalation of Covid-19 outbreaks. First, the utilization of digital technology surely will be able to minimize and even replace the physical contact and interactions between people, Second digital platform enable the changing of information in the fastest way possible with wide scope. Third, digital technology widely used by Indonesian: There were 175.4 million internet

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<sup>19</sup> Wedge Green & Barbara Lancaster, *supra* note 8.

<sup>20</sup> Barlow, John Perry, “*Declaration of the Independence of Cyberspace*”, <https://www.eff.org/pt-br/cyberspace-independence>, accessed on 09-09-2020, at 16.52 GMT +7.

users in Indonesia in January 2020, the number of internet users in Indonesia increased by 25 million (around 17%) between 2019 and 2020, internet penetration in Indonesia stood at 64 % in January 2020. This is supported by the highest number of mobile connections in Indonesia: there were 338,2 million mobile connections in Indonesia in January 2020, the number of mobile connections in Indonesia increased by 15 million (+4.6 %) between January 2019 and January 2020. <sup>21</sup>

The utilization of digital platform are getting higher in pandemic situation alongside with the utilization of various internet-based application for example zoom, Google meets to conduct work from home and school from home and various e-commerce<sup>22</sup> platform to shop from home. There's also social caused transmitted through You tube as digital platform to promote and raise the awareness of society to actively participate in handling Covid-19.

Those facts and statistical data encourage Indonesian government to develop digital based platform intended to support the public in dealing with the pandemic. A collaboration between Copyright and the Digital Platform is developed in the form of "PeduliLindungi" / "Care and Protect" Application. This is made based on an application generated from copyright that can be used to monitor the movement of those who is confirmed Covid-19 positive, those who makes contact, and provide restrictions for someone who is under surveillance or positive to move in quarantine or isolation. The application is made through the Decree of Communication and Information Minister Number 171 Year 2020, this application appointed to conduct the function on tracking, Tracing and Fencing conduct through reliable infrastructure, system and telecommunication application that guarantee the protection of data privacy. "Peduli – Lindungi" created in order to identify the person that has been in close contact with a confirmed Covid-19 patient. The aforementioned system are accessed via telephone network and synchronously integrated with the existing and updating data of Covid-19 spread and confirmed patients.

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<sup>21</sup> Simon Kemp, *Digital 2020: Indonesia* (Feb.18, 2020), <https://datareportal.com/reports/digital-2020-indonesia>.

<sup>22</sup> Julian Ding defines "Electronic commerce or e-commerce is transaction activities of commercial buying and selling both in the form of goods or services using electronic media infrastructure, hence, there is no need for the physical attendance of the parties. E-commerce transactions are carried out regardless of national boundaries or requirements in the applicable system.", JULIAN DING, E-COMMERCE: LAW & PRACTICE 25 (1999).

The “*tracking*” function aims to monitor / track the historical movement of confirmed patients, the “*tracing*” function aims to gain the information concerning with whom the confirmed patients were previously having a physical contacts and the “*fencing*” function aims to fencing or limit the movement of confirmed patients / high risk-patients in order to keep them in quarantine / isolation. This application would send the necessary notification in case there is a possibility that the person has contacted physically with the confirmed patient or be in the same area with the confirmed patient in order to enable the tracing and monitoring of confirmed patients and potentially infected person’s movement in order to minimize the potential spread of Covid-19.

The application and computer programs are the protected object under the Law of Republic Indonesia Number 28 Year 2014 on Copyright Law. Copyright object defined broadly in Indonesian Copyright Law as any form of creation in science, art and literature resulted from the inspiration, ability, thinking capacity, imagination, workmanlike, skill or expertise that being expressed to actual forms. Generally, there are 2 (two) main aspect of copyright objects in daily life: Functional benefit and artistic benefit. Copyright itself generates 2 (two) kind of exclusive rights for the creators: economic rights and moral rights. The challenge of the utilization of copyright objects in this pandemic lies in the quest of intersection between exclusive rights and social functions.

Considering the urgent needs of society to have several solutions during this challenging times we identified the strengthen approach on social functions of copyright objects on solving various problems arising from the multidimensional crisis as the effect of Covid-19 pandemic. Social function in the term of copyright aims to provide the opportunity for the society to enjoy the benefit of copyright object for educational and scientific purpose also as the tools of problem solving.

Indonesian Government provides free access to ‘Peduli – Lindungi / Care and Protect’ application in accordance with The Law Number 24 year 2007 on Disaster Management mandates the utilization optimum use of science and technology as the tools of disaster management, including this Covid-19 pandemic that has been declared as emergency disaster by WHO and numerous countries all over the world including Indonesia that force the government to take necessary measures and strategies in order to stop the escalation of the pandemic.

As mentioned earlier, this research also found that another copyright objects

for example zoom, Google meet and even deliberately created computer programs are widely used and utilized during the pandemic as the platforms to conduct e-learning from elementary school to university and this proved to have decreased the volume of physical contacts (at least in school and universities area). Some industries and businesses (especially in high risk regions) also utilized these platforms in Work from Home method. In the term of consumption and trade activities, apart from previously well established e-commerce platform, there are many new-developed digital platforms to provide the service concerning consumption needs.

In entertainment aspects, the utilization of Over the Top platforms and services are increasingly higher, for example Netflix acquired 15,7 millions new subscriber during the pandemic, many actor, actresses and celebrities also utilized YouTube platforms to express their arts, producing the shows in order to collect viewers and generate economic income during the pandemic. Many production houses also utilize Over the Top platforms to distribute their film, series, music and other kind of entertainment programs.

With regards to YouTube Digital Platform, there are a lot of contents created and uploaded such as songs dedicated to cope with Covid 19. This is a contribution from the Creator in dedicating the song so that the public are aware and avoid the virus to stay at home during this pandemic. It should also be noted that there is also a parody song with regards to this pandemic. The creator makes a non-commercial contribution in a form of public social donation.

Those findings show the massive utilization of copyrights objects as well as over the top platform, thus this research prove that the benefit and positive role of over the top platforms and copyrights objects are inevitable during this pandemic. Through the nature forms of OTT platform and various computer programs and applications, the society get many beneficial supports especially the fulfillment for their needs, the media to support their education and working demands and also the platforms to express their creativity in order to gain economic benefit.

The government also widely use Over the Top platform as one of the main support system and infrastructure to stop the escalation and break the cycle of Covid -19 by providing tracking, tracing and fencing application as well as utilizes these platform to spread the awareness and campaign in order to persuade the society to actively taking parts in the strategic effort to combat Covid-19 pandemic.

Based on the undeniable fact that digital societies have been firmly and widely established in Indonesia and all over the globe and the findings concerning massive utilization and endless potential development of Over the Top Platforms and Copyright Objects utilization in daily activities and transaction, it's an urgency for Indonesia to taking the strategic steps in formulating the comprehensive regulations of Over the Top Platforms and the strengthening the social function of copyright utilization that embodied the balance between the protection of creator's economic and moral rights while at the same time provide the platforms that enables the creation to be utilized widely by the society as the part of problem solving especially during these challenging times.

#### **4. Closing**

Indonesia regulates the Copyright protection on Law Number 28 year 2014, nevertheless the protection of copyright on Over The Top Platform remains a challenge concerning till this date there are no comprehensive regulations in Indonesia that manage to comprehensively regulates OTT platforms, services and providers, which most them are global companies and do not established any legal entities in Indonesia and the unique nature of OTT platforms that provide their service without having to build physical telecommunication infrastructure.

The copyright objects on Over the Top Platforms are massively utilized to support the activities, transactions and other essential various need fulfillment of society for OTT platforms are able to minimize and even do not require any kind of physical contacts between the parties. This nature is an important support for the strategic measures took by the government such as physical distancing, study from home and works from home in order to break the spread of Covid -19 pandemic. OTT platforms also proved to be an effective and potential platform to express the arts and creativity in order to generate income and other economic and social benefits. Besides, OTT platform and digital technology also used by the government in develop "Peduli-Lindungi / Care and Protect" application with wide functions of tracking, tracing and fencing of confirmed and high-risk patient in order to prevent the wider spread of the Covid-19 pandemic.

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## **Indonesian Copyright Protection for Animation and Its Role in Supporting Creative Economy : Doctrinal, Normative , Practical Consstrain and Its Solution**

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### **ABSTRACT**

In 2009, President Susilo Bambang Yudhoyono in 2009 declared that the Creative Economy had better become the "backbone" of the Indonesian economy. This is because creative economy is a unique "soft power" for Indonesia, considering Indonesia has a great potential for it has immensely rich human resources, natural resources, and cultural diversity.

The fact is that many Indonesians have a world-class reputation in the field of animation/film. Names, like, Andre Surya, Michael Reynold Tagore Rini Triyani Sugianto, Griselda Sastrawinata, Ronny Gani Teja have been involved in the production of big titles, such as Spiderman or The Avenger. Unfortunately, many animators are still not aware of the copyright protection for animation as their intellectual creation.

This research is a socio- legal research conducted between the year 2017 to 2020. The research results show, first, the philosophical basis of intellectual property rights is derived by John Locke with the Fruit of and GWF Hegel with the Personality theory. John Locke philosophy is significant in the countries adhering to the Common Law tradition. GWF philosophy in the countries adhering to the civil Law tradition. As a matter of fact Indonesia inherits the Civil Law tradition from the Netherlands

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and the uniqueness of Pancasila.

Pursuant to Article 28 of Indonesian Constitution 1945 copyright is a fundamental right and is derived by Law Number 28 of year 2014 regarding Copyright. Copyright law stipulates among others: standard of copyrightability, automatic protection, terms of protection: life +70 years after the death of the author, substantive exclusive rights covering both economic and moral dimensions, and limitation to copyright.

Second, there are doctrinal constraints, normative constrain and practical constrain of animation copyright protection in the frame of creative economy. The doctrinal constraints are the automatic protection doctrine, the dichotomy idea and expression doctrine. The normative constraints that include: the removal of the provision of the norm originality from Copyright law, the emphasizes fixation requirements is only for sound recordings and not cover other works, the regulates substantive right rigidly and separately not in generally, whereas in many infringement cases may include several substantive rights at once. Does not regulate resale royalty rights although Indonesia is rich in fine artists. The practical constraint include lack of comprehensive understanding of copyright protection from law enforcement officers, the lack awareness of communities.

Third, there are several solutions offered. In terms of animation copyright protection, the best solution can be emulated are examples from America and Japan. America protects animation works which includes various measures, protecting computer program like beta tests, computer copyright clearance, tests using Sufficient Delineation and Story Being Told standards, etc. While the best triple helix-based example is carried out by Japan by its success in garnering collaboration, synergy and integrity between government, industry, and universities in the development of the creative economy.

**Keywords:** copyright, protection, animation, creative economy.

## 1. Introduction

In the year 2005 *John Howkins* introduced the term of ‘creative economy’ for the first time through his book under a title “*The Creative Economy: ‘How People Make Money from Ideas’*”.<sup>1</sup> The terminology becomes popular. On August 5, 2009, then-Indonesia’s President, Dr. Soesilo Bambang Yudhoyono, through the Presidential Instruction No. 6 of 2009 on the Development of Creative Economy (*Inpres No.6/2009 tentang Pengembangan Kreatif Ekonomi*) launched the National and Regional Industrial Development Program intended to bring progress in creative fields able to support the national economic development.<sup>2</sup> Although the development of creative industry in Indonesia has already started since the last ten-fifteen years, public awareness and understanding about this sector is very low, because they do not yet understand the roles of creative industry and creative economy for the development of a country.

When this research began in 2017 the role of creative industry was very significant. It contributed 720.000.000.000 rupiahs or 8, 62% of Indonesia’s Gross Domestic Bruto (GDB) and is the fourth largest sector in employment with over 17 million workers.<sup>3</sup> At that time according to World Economic Forum (WEF) at the Global Competitiveness Report 2018, Indonesia ranked 41th out of 138 countries and ranked 4th among ASEAN countries.<sup>4</sup>

When it comes to creative innovation, this rank might come out as rather surprising considering that Indonesia has lots of globally known experts in creative economic sectors, for example, in fashion, there is Tex Saviro who designed the stage dress for Lady Gaga; in culinary there are Ari Munandar (the Executive Chef of the Hilton Hotel) and Putri Mumpuni; in product design, there are Lenny We and Rahardil Hermawan, the designers of Barong and the Greatness masks. In animation, there are Andre Surya, Michael Reynold Tagore Rini Triyani Sugianto, Griselda Sastrawinata, Ronny Gani Teja who were involved in films like Spiderman and The Avenger and others.<sup>5</sup>

The word animation comes from the Latin “animare” or “animatio.” Animation is moving images created from drawings, models, etc. that are photographed or created by a computer ... Animation is also the process by which an animated movie, esp. a cartoon, is made from drawings done by hand or by a computer.<sup>6</sup>

Animation works are produced by teams of production, but in practice, the success of animation works is (often, if not always) enjoyed by the producers (investors). There has not been an adequate protection, specifically, for animators.

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<sup>1</sup> Rahmi Jened, “Potensi dan Perlindungan Hak Kekayaan Intelektual (HKI) Ekonomi Kreatif”, Makalah dan presentasi (PPT) pada Seminar Nasional Peranan HKI dalam dan Pengembangan Peradaban Bangsa, Kerjasama Asosiasi Pengajar Hak Kekayaan Intelektual dan Fakultas Hukum Universitas Sumatera Utara, Medan, 9 Oktober (2017), p. 1-4 (quoted from John Howkins, *How People Make Money from Ideas*, Penguin, UK, (2002), pp.

<sup>2</sup> Henry Soelistyo Budi, *Konsepsi, Opini dan Aktualisasi Buku Kedua*, (Penaku, Jakarta, 2013), p. 147-148.

<sup>3</sup> Esti, RK, dan Suryani D, “Kontribusi Ekonomi Kreatif pada PDB”, 2018, p.12at Laporan Badan Pusat Statistik, Jakarta, (2018).

<sup>4</sup> [www.indonesia-investmentst.com](http://www.indonesia-investmentst.com).

<sup>5</sup> Rahmi Jened, see supra note no. 1 at 5-7.

<sup>6</sup> <https://dictionary.cambridge.org/dictionary/english/animation> (last visited at May 1, 2020).

Animators in an animation work consist of a lot of creative workers. An animator can be a:

- a. Character Drawer
- b. Character Creator
- c. Story writer
- d. Photographer
- e. Film producer

Creative economy and animation sub-sector in particular has so much untapped potential, yet, with how low the public (and even the authorities') awareness and understanding on the matter, Indonesia's creative economy will not be able to flourish as well as it could. If public and authority awareness is not improved and the creative industry is not better-supported, it will be a tremendously wasted opportunity for Indonesia. This paper to analyze legal philosophy and copyright principles of animation as copyrighted work, the doctrinal, normative and practical constrain of copyright protection for animation and its best practice as solution.

## **2. Discussion**

### **A. The Philosophical Basis of IPR and the Principle of Copyright Law for Animation Works**

The principle of copyright law animation works must be dig from the philosophical basis of the protection of copyright law in Indonesia. The philosophical foundation of intellectual property rights (IPRs) was contained in Aristotle's politics in the 4<sup>th</sup> century BC. It began with the notion to award authors, or inventors, who produced intellectual creations that were useful for the society.<sup>7</sup> However, the philosophical debate, about IPR concepts and regimes only started in the 18<sup>th</sup> century.<sup>8</sup> Jened cites two prominent philosophers whose philosophies implying that intellectual creation was a property (and thus, could be protected). These philosophers were John Locke, with his Fruit of Labor Theory, and Georg Wolfgang Fredrich Hegel, with his Personality Theory.<sup>9</sup>

John Locke's philosophy with the Fruit of Labor theory is significant in the countries adhering to the Common Law tradition, and G.W.F. Hegel's with the Personality theory in the countries adhering to the Civil Law tradition.<sup>10</sup> Both Locke and Hegel's theories originated from natural law theory, that stemmed from 'morality': what is good and what is bad.<sup>11</sup>

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<sup>7</sup> Rahmi Jened, *Hukum Hak Cipta ( Copyright Law)*, Citra Aditya Bakti (CAB, Bandung, 2014), p. 1 as quoted from Anthony D' Amato and Doris Estelle Long, *International Intellectual Property Anthology*, ( Anderson Publishing, Cincinnati, 1996), p.25-26.

<sup>8</sup> *Id.*

<sup>9</sup> *Id.* at 1-3

<sup>10</sup> *Id.*

<sup>11</sup> *Id.*

Locke's preposition in "Life, Liberty and Property", referred to a property as a right associated with one's efforts (the labor theory), Locke 's core propositions are these:<sup>12</sup>

1. God given the world to people in common;
2. Every person has a property in his own person;
3. A person's labor belongs to him;
4. Whenever a person mixes his labor with something in the common he thereby makes it his property;
5. The right of property is conditional upon a person leaving the commons enough and as good for other commoners;
6. A person cannot take more out of the commons than they can use to advantage.

While Hegel in his conception "Right, Ethic and State" referred to IPR as a right associated with one's personality ...Property is, among other things, the means by which an individual could objectively express a personal, singular will. In 'property a person exists for the first time as reason'.<sup>13</sup>This personality theory as 'reward concept' where property has, both, economic and moral rights implications.<sup>14</sup>

As a matter of facts, Indonesia inherits from the Netherlands with the uniqueness of Pancasila. Copyright as part of Human Rights is stipulated in the Indonesian Constitution 1945, specifically in Article 28 C (1) that: "Every person shall be entitled to self development through the fulfilment of his/her basic needs, he entitled to acquire education and to obtain benefit of science and technology, art and culture for the sake of enhancing of his/her quality of life and for the sake of the welfare of mankind.."

Indonesia ratified Agreement on Establishing the World Trade Organization through Law Number 7 of 1994 and its 15 agendas, among others is Agreement on Trade Related Aspects of Intellectual Property Rights including Trade in Counterfeit Goods (TRIPs). In the Indonesian context, legal harmonization contains actions that seek to adjust, match and balance the provisions of the TRIPs Agreement and the interests of Indonesian intellectual property law, in the framework of realizing the National Goals stipulated the 1945 of Republic Indonesia Constitution. <sup>15</sup>

The Principle of Copyright Law No. 28 of 2014 for Animation Work as follows:

- a. The principle of national treatment;
- b. The principle of Automatic protection;

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<sup>12</sup> PETER DRAHOS, A PHILOSOPHY OF INTELLECTUAL PROPERTY 43 (1996)

<sup>13</sup> GWF. HEGEL, PHILOSOPHY OF RIGHT 235 (as quoted by Anthony D. A'mato and Doris Estelle Long, *supra* note 7, at 32.)

<sup>14</sup> Rahmi Jened, *supra* note 7, at 25-26.

<sup>15</sup> "melindungi segenap bangsa Indonesia dan seluruh tumpah darah Indonesia dan untuk memajukan kesejahteraan umum, mencerdaskan kehidupan bangsa dan ikut melaksanakan ketertiban dunia yang berdasarkan kemerdekaan, perdamaian abadi dan keadilan social ( shall protect all the people of Indonesia and their entire native land, and in order to improve the public welfare, to advance the intellectual life of the people and to contribute to the establishment of a world order based on freedom, abiding peace and social justice)".

c. The principle of independence protection.

Not all works in the fields of science, art, and literature (literary) can be copyright-protected. Article 9(2) TRIPs stipulates, "Copyright protection shall extend to expression and not to idea, procedures, methods of operation or mathematical concepts as such". This norm in accordance with the standards of copyright-ability as follows:<sup>1616</sup>

(1) Originality

*The word 'original'..... Or the test of 'originality' is not that the work be novel or unique. Even a work based upon something already in the public domain may will be original.*

(2) Creativity

*Creativity as a standard of copyright ability is to a great degree simply a measure of originality. Although a work that merely copies exactly a prior work may be held not to be original, if the copy entails the independent creative judgement of the author in its production, that creativity will render the work original.*

(3) Fixation

*A work is fixed in a tangible medium of expression when its embodiment in a copy phonorecord, by or under the authority of author, is sufficiently permanent or stable to permit to be perceived, reproduced or otherwise communicated for a period of more than transitory duration. A work consisting of sound, images, or both, that are being transmitted, is 'fixed' for purpose of this title if a fixation of the work is being made simultaneously with its transmission.*

*(The writer note: the order is chaged according to the needs of protection in civil law tradition country that must meet intellectual personal creation).*

Indonesia inherited the Civil legal tradition from the Dutch. In the Civil law tradition, the level of originality and creativity relatively must be of a high degree, while the level requirement for fixation is not absolute.<sup>1717</sup> Originality in Civil law

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<sup>16</sup> Rahmi Jened, *Penyesuaian Perlindungan Hak Cipta terhadap Persetujuan TRIPs*, (Yuridika, Law Faculty of Airlangga University, Surabaya, 2000),p. 27. Earl W. Kintner dan Jack Lahr, *An Intellectual Property Law primer*, (Clark Boardman, New York, 1982), p. 346-349.

<sup>17</sup>

<sup>17</sup> Rahmi Jened ,see supra note no. 7 at7 ( quoted from Silke Lewinsky , “ International and European Copyright Law, Teaching Material, EC-ASEAN Intellectual Property Co-operation Program (ECAP II), EPO and Munich Intellectual Property Law Center(MIPLC) Max Planck Institute, Munich, Germany,( 2004), p.5-7.

asks for personality of the author imbued in a work and emphatically, it must be ‘an intellectual personal creation’.<sup>18</sup> Unfortunately in the new Copyright Law Number 28 of 2014 the legal term “originality” has been removed, whereas this legal term “originality” is very important. According to Arthur Miller that:<sup>19</sup>

**The essence of copyright is originality** which implies that copyright owner or claimant originated the work. By contrast to a patent. However, a work of originality not to be novel. An author can claim copyright in a work as long he created it himself, even if a thousand of people created it before him. Originality does not imply novelty. It only implies the copyright claimant did not copy from someone else...”

The ‘creativity’ requirement means a creation is produced based on inspiration, intellectual ability, dexterity, imagination, skills or expertise that are expressed in a tangible form.<sup>20</sup>

While, ‘fixation’ means copyright protects an "expression" of a work in a fixed form and does not protect an "idea" as such. Copyright protects the expression of an idea that is displayed in a sufficient time, not ones that are short and temporary, such as body painting as in Adam Ant case.<sup>21</sup>

Pursuant to Article 40 of Law Number 28 of 2014 that are creation or works protected under copyright law as follows:

(1) In this Law, a work that is protected shall be the work in the field of science, arts and literature which includes:

- a. books, pamphlets, typographical arrangement of published works, and all other written works;
- b. sermons, lectures, addresses and other works of utterance;
- c. visual aid made for educational and scientific purposes;
- d. songs or music with or without lyrics;
- e. dramas, musical dramas, dances, choreographic works, puppet shows, pantomimes;
- f. all forms of art, such as paintings, drawings, engravings, calligraphy, carvings, sculptures, collage;
- g. applied arts;
- h. architecture;
- i. maps;
- j. batik art and all other patterns art;
- k. photographic works;
- l. Potrait;

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<sup>18</sup> *Id.*

<sup>19</sup> Rahmi Jened, *supra* note 16, at 29 ; ARTHUR MILLER AND MICHAEL H.D, INTELLECTUAL PROPERTY: PATENT, TRADEMARKS AND COPYRIGHT 200 (1990)

<sup>20</sup> Article 1 number 2 (old) Copyright Law No. 19/2002

<sup>21</sup> Rahmi Jened, *supra* note 7, at.84

- m. Cinematographic works;
- n. translations, interpretation, alteration anthologies, database, adaptations, arrangement, modification of other works resulting from transformation; traditional cultural expression ;
- o. translations, adaptations, arrangement, transformation or modification of traditional cultural expression;
- p. compilation of works or data whether in a readable format by computer or other media;
- q. compilation of traditional cultural expressions as long as the compilation constitutes an original works;
- r. video games; and
- s. computer programs.

Animation is arguably the most important creative form of the twenty first century. Animation as an art, an approach, an aesthetic and an application informs many aspects of visual culture, from feature-length films to prime-time sit corns; from television and web cartoons to display functions on a range of new communications technologies. In short, animation is everywhere.”<sup>22</sup>According to Bob Thomas that:<sup>23</sup>

Ultimately, all animation teaching is about learning "tricks," Over the years I have learned a few more tricks than the raw beginner is likely to know, hence my presenting them herein. It must never be forgotten that animation is all about illusion too; it is not real filmmaking, about real characters, but the audience has to believe it is so. Consequently, the tricks you know to create this illusion, ...”

The process of making animation begins with a gradual creative process. Usually, it starts from developing an idea until it becomes a story board form that contains a script and a communication strategy. The idea is expressed in a sketch image. Furthermore, the process is broadly divided into 3 (three) stages. First, the writer processes a script brief which contains an explanation of the story telling. The second stage compiles a creative brief based on research from similar work products. The third stage is a summary presentation to get approval. Furthermore, a story film is made with pre-production stages which include scenario writing, script writing, casing and storyboard making. In this stage, the originality of the idea or ideas gets very attention. After that, taking pictures based on the script and improvisation of the cameraman. The last stage is post-production, which is an editing process that includes image cutting, sound effects and writing effects.<sup>24</sup>

Animation may appear in work of art in the form of images, text, audio or audio visual which created to communicate a special message to the public or audience. What and how the stories are scripted needs for original ideas that understand the demands of the targeted audience or consumers both functional and emotional in nature.

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<sup>22</sup> PAUL WELLS. UNDERSTANDING ANIMATION 34-36 (2013)

<sup>23</sup> BOB THOMAS. WALT DISNEY:” AN AMERICAN ORIGINAL. DISNEY ELECTRONIC CONTENT” 56 (2017)

<sup>24</sup> Henry Soelistyo *Hak Kekayaan Intelektual: Konsepsi, Opini dan Aktualisasi ( Buku Pertama,* Penaku, Jakarta, p.193-194.

Based on the understanding of the animation work and manufacturing process mentioned above the animation work is included in the copyright protection as stipulated in Article 40 of Law No. 28/2014 specifically: <sup>25</sup>

- (1) Fine art in the form of pictures (Article 40 letter f)<sup>26</sup>
- (2) Photographic works (Article 40 letter k)
- (3) Cinematographic works (Article 40m)
- (4) Video games (Article 40 letter r)
- (5) Writing computer programs (Article 40 letter s)

Each work must meet the standard of copyright-ability, based on the question of fact.

Pursuant to Article 40 Letter f of Law No. 28 /2014 Animated defined as fine art in the form of pictures, especially those that are in the form of two dimensions, pin form of images. Protection is given when the image is, fulfilling the originality in its expression and fulfilling the elements of creativity (creativity) in the expression that is already integrated with the theme and character of the animation. The fixation of the image can be seen from its peculiar aspects, for example, with a cute and adorable character in a bow tie full dress costume and his partner Minnie with a large bow on his head.<sup>27</sup> Juki is a name and original Indonesian character by Faza Ubaidillah or Faza Meonk. Animated works can also be juxtaposed with 'Photography works' (Article 40 letter k).<sup>28</sup> The concepts of originality, creativity and fixation are fulfilled as seen from the aspects of lighting (exposure), photo taking angle, montage, flash and others. The concept of originality, creativity and embodiment can be fulfilled when the animated work appears complete with spyki hair and bunny teeth and certain pose.<sup>29</sup>

Animated works can also be included as Cinematographic works (Article 40 letter m).<sup>30</sup> The concepts of originality, creativity and fixation are fulfilled as seen from the aspects of the process starts from developing an idea until it becomes a story board form that contains a script and a communication strategy. The idea is expressed in a sketch image. Furthermore, the process is broadly divided into 3 (three) stages as mentioned above, the concept of originality, creativity and fixation fulfilled, in the Pre production -production itself after approval and post production. In the production process include several activities and personel such as additional scenes, amorphic, answer print, apple box, art department, aspect ratios shooting without additional light

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<sup>25</sup> Nadya Prita Gemala., *Perlindungan Hak Cipta Karya Animasi dan Peranannya Terhadap Ekonomi Kreatif di Indonesia*, thesis Dissertation, Doctor of Jurisprudence, University of Pelita Harapan (UPH), Jakarta, (2020), p.105-6.

<sup>26</sup> motifs, diagrams, sketches, logos, color elements, and beautiful letters.

<sup>27</sup> Interviewed with painter or animator August 2019

<sup>28</sup> Pphotography work is "the process of painting or writing using light media".

<sup>29</sup> Cinematography is the creation of moving images, including documentary films, commercial films, reportages or story films made with scenarios, and cartoon films.

<sup>30</sup> Cinematographic works can be made on celluloid tape, video tapes, video discs, optical discs and / or other media that are possible to be shown in theaters, on the big screen or in audio-visuals "broadcast on television or other media. Similar works are made by film companies, television stations or by individuals.



(available light), devices that use sound or image elements (audio visual), the process of unifying and harmonizing sounds of various types and forms sound (audio mixing), shooting angle, sound effects, natural sound of the object of an image (ambience), background, actor or movie voice actor or dubber, main or principal director, assistant producer, producer animator, and others.<sup>31</sup>

Animation works are involved also in the production of 'video games' (Article 40 letter r).<sup>32</sup> Usually video game created by computer program or software.<sup>33</sup>

Animation can also be categorized as writing 'computer program' (Article 40 letter s). Computer in this case what is protected is the source and object code. Based on this definition, a computer program is a form of expression in a language, code or notation that causes a device that has the ability to process information, which can perform certain functions. Computer programs, whether in the form of source code or object code, are copyright protected works.<sup>34</sup>

Broadly speaking, the process of creating computer program work takes place in two stages. First, making plans in the form of writing notes or flowchart which is the pouring of the basic ideas of creation, by using a special language in the form of codes that can only be read in computer language. Second, source code converted into object code so that it is possible to be used to operate computer equipment through its magnetic signals.<sup>35</sup>

A computer program is a work that is contained in a certain medium of expression, which is not particularly storage material, but includes all forms of storage that are normally not something that can be seen, such as electronic and magnetic, capable of producing such works. In this case, computer memory as electronic and magnetic storage is an adequate medium of expression for fixation requirements. With regard to computer programs, this requirement means that a computer program is an original effort from the creator (programmer). Element of creativity is simply related to the problem of originality. A creativity is showing the existence of a causal relationship between the creator and his creation. The creator of the computer is someone who gives existence to something. Lesson learned from America also protect beta test as a very initial protection for computer program.<sup>36</sup> Computer programming is made possible by the skill, effort and experience of programmers who create computer language to be understood and read. Animation used for a story as shown in Pixar Films that animation is a power to tell stories. Animation can bring characters to life with emotional narratives, creativity and artistic expression.

The acquisition of rights depends on the legal system governing the rights themselves. Copyright is automatic protection as stipulated in Article 5 (2) of the Bern Convention:

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<sup>31</sup> Interviewed with Animator August 2019.. and also from [www.wikipedia.org](http://www.wikipedia.org)

<sup>32</sup> The definition a video game is "a game by electronically manipulating images produced by a computer program on television screen or other display screen." So a video game is a game that manipulates the image electronically by a computer program on a television screen or other layer.

<sup>33</sup> Interviewed with game developer August 2019. and also from [www.wikipedia.org](http://www.wikipedia.org).

<sup>34</sup> Rahmi Jened, "Hak Cipta Program Komputer", Warta IKADIN, 9 Juli (2000), p.5-6.

<sup>35</sup> Henry Sulistyo Budi, "Hak Cipta Program Komputer", Paper of National Seminar Copyright on Computer Program ( Software), Law Faculty of Airlangga University cooperation with Pt Microsoft Indonesia and Indonesia Intellectual Property Society (IIPS), Surabaya, (2000), p.8-10.

<sup>36</sup> GENE K LANDY & AMY MASTROBATISTA, THE IT, DIGITAL LEGAL COMPREHENSIVE 10 (2010).

*The enjoyment and the exercise of these rights shall not be subject to any formality; such enjoyment and such exercise shall be independent of the existence of protection in the country of origin of the work. Consequently, apart from the provisions... the extent of protection... shall be governed exclusively by the laws of the country where protection is claimed.*

Pursuant to Article 1.1 Law No. 28/2014 that “ Copyright is the exclusive right of the author that rise automatically based on the principle of declarative after an creation embodied in a tangible form without prejudice of the restriction in accordance with the provision of legislation” .The protection and implementation of copyright must be provided without the need to fulfill certain formalities and its implementation is independent from the existence of protection of the State of origin of the work. Consequently, as part of this provision, extended protection must be governed exclusively by the laws of the State where copyright protection is requested.

Copyright is the embodiment of human rights born automatically since a work meets the copyright requirements (standard of copyright's ability) created by the creator. Unlike other fields of IPR, such as Patents and Trademarks, copyright is born from the moment a work is born (expressed) by the creator. Since then there has also been recognition of copyright. There is no procedure of copyright registration.

The protection of animated works related to the creation of the animated character and copyright protects the author of the character. However, in Indonesia when the animated work is part of the film, then the film as cinematographic work must be registered in order to obtain a distribution permit. This obligation is based on Law No. 33 / 2009 concerning Film.

The exclusive right of the author consist economic and moral rights. According to Henry Soelistyo Budi, moral rights concern the authorship of the author, while economic rights are related to the author ownership.<sup>37</sup> According to Rahmi Jened, economic rights are the right to exploit their creations through their own use, through license agreements or through transfer of rights by obtaining financial benefits, while moral rights are related to integrity and attribution, the author.<sup>38</sup>

Article 4 of Law no. 28/2014 stipulates that copyright has the dimensions of moral rights and economic rights. Economic rights are regulated in Article 9 of Law no. 28/2014 that includes:

- a. Publication of the Works;
- b. Reproduction of the Work in all its forms;
- c. Translation of the Works;
- d. Adaptation, arrangement or , transformation of the Works; or
- e. Distribution of Works or copies;
- f. Performance of the Works;

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<sup>37</sup> HERY SULISTYO BUDI, PLAGIARISME, PELANGGARAN HAKCIPTA DAN ETIKA 66-67 (2011).

<sup>38</sup> Rahmi Jened, *supra* note 7, at 120 -123.

- g. Announcement of the Works;
- h. Communication of the Works; and
- i. Rental of the Works.

Meanwhile, moral rights are stipulated in Article 5 of Law no. 28/2014 as follows:

- a. to include or to exclude their name on the copy with respect to the public use of their works;
- b. to use an alias or pseudonym;
- c. to change their works to comply to comply with appropriateness in society;
- d. to change the title or sub title of their works;
- e. to defend their right in the event of a distortion, of works, mutilation of works, modification of works or other acts which will be prejudicial to their honor or reputation.

In addition, there are certain actions even without the author's permission, but they are not considered as copyright infringement which is included in the limitation of the author's right norms,<sup>39</sup>

According to Martin Stenlefben that the doctrine of limitation to author right or copyright has been developed since the beginning of the Bern Convention<sup>40</sup> in civil law tradition countries, such as Germany and France.

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<sup>39</sup> The Fair Dealing Doctrine is very commonly used in the UK and countries with Commonwealth jurisdictions which cannot at all be applied to matters outside the fields of education, research and knowledge enhancement and information dissemination. fair use , While Fair dealing doctrine is not as flexible as the concept of fair use doctrine belongs to the United States. RAHMI JENED, HAK KEKAYAAN INTELEKTUAL: PENYALAHGUNAAN HAK EKLUSIF 105-108 (2007).

<sup>40</sup> The Bern Union through *Bureau for the Protection of Intellectual Property (BIRPI)* regulate copyrifht limitation as follows:

- a. *Public speech;*
- b. *Quotation ;*
- c. *School book and chrestomathies ;*
- d. *Newspaper Pasals ;*
- e. *Reporting current events ;*
- f. *Ephemeral recordings ;*
- g. *Private use;*
- h. *Reproduction by photocopying in libraries*
- i. *Reproduction in special characters for the use of the blind ;*
- j. *Sound recording of literary works for the use of blind ;*
- k. *Text of the songs ;*
- l. *Sculptures on permanent display in public places ;*
- m. *Artisics work used as a background in films or television programmes ;*
- n. *Reproduction in the interests of public safety .*

Futhermore according to Martin Stenlefben that:<sup>41</sup>

*Limitation and exceptions to copyright are provision in copyright law which allow for copyrighted work to be used without a license from copyright owner relate to a number important consideration such as market failure, freedom of speech, education and equality access. In order to maintain an appropriate balance between the interest of right holders and users of protected work, copyright law allow certain limitation on economic right that is cases in which protected work may be used without the authorization of the right holder and with or without payment of compensation.*

The norm of limitation of copyright limitation is r stipulated in Article 13 TRIP "Members shall confine limitation or exception to exclusive rights to certain special cases which do not conflict with a normal exploitation of the work and do not unreasonably prejudice the legitimate interest of the right holder".

Article 13 of the TRIPs stipulates that there are 3 (three) stages of testing (three step test) to test whether this limitation is not abused whose main purpose is to provide a balance between the granting of Exclusive Rights and the limitation of Exclusive Rights. This test is for justification that is in line with the teleological argument because it lies as a boundary between the exclusive rights of the Author and the privileges and the main balance to use (preference to use).<sup>42</sup>

The objectives of limitation, fair dealing and fair use include: <sup>43</sup>

a. Conducting Research and Study

Limited designation of copyright material in the classroom or in a limited manner for research and educational purposes in an educational setting;

b. Writing Critic or Review

Retrieval of material for the purposes of criticism (process) while writing a review (the result of applying criticism as a mental choice).

c. Reporting news in a newspaper, magazine or similar periodical provided a sufficient acknowledgment of the work is made;

d. Writing reports in newspapers, magazines and others that provide adequate knowledge (for the public), as long as they do not take parts of the copyrighted work inappropriately and do not include newspaper clipping services.

e. Giving professional advice by legal practitioner or patent attorney

Provision of professional advice by a legal practitioner or patent consultant.

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<sup>41</sup> MARTIN STENLEFBEN , COPYRIGHT, LIMITATIONS AND THREE STEP TEST IN INTERNATIONAL AND EC COPYRIGHT LAW 86-88 (2003).

<sup>42</sup> Rahmi Jened, *supra* note 34, at. 152-58.

<sup>43</sup> Ratna Diyah, Perbandingan Dokrin Fair Use pada Internet antara Amerika dan Indonesia, Thesis, Program Pascasarjana Universitas Diponegoro, Semarang, 2008, p. 34.

Basically, copyright infringement occurs when the other party:<sup>44</sup>

- (1) to carry out what is the exclusive right of the creator or copyright holder;
- (2) without permission and;
- (3) for commercial purposes.

In the event of a copyright infringement that related to animation several tests are developed:

- a. Substantial similarity;<sup>45</sup>
- b. Look and feel test;<sup>46</sup>
- c. Abstraction-filtration and comparison test;<sup>47</sup>
- d. Story being told test;<sup>48</sup>
- e. sufficient delineation test.<sup>49</sup>

## **B. Doctrinal, Normative and Practical Constraint in Animation Copyright Protection**

Regarding the copyright protection of animation works as a sub -sector of the creative economy there are doctrinal, normative and practical constraints. The doctrinal constraint related to a dichotomy of ideas and expressions and the automatic protection. Copyright protection is given for the expression of the idea and not for the idea as such, as an illustration in the case of *Donoghue. Allied Newspaper Ltd.* Where Donoghue sued the journalist who wrote his résumé as a racer in *Enthralling Stporties of the King of Sports*.<sup>50</sup> Judge Farwell states that: “*A person may have a brilliant idea for a story, or a [picture but the protection which is the result of communication of the idea is the copyright of the person who has clothed the idea in the form.*”<sup>51</sup>

Lesson learned from America, the animated work inherent in cartoon cases makes it easier for courts to identify these characters as "expressions" rather than just "ideas" with the substantial similarity test. Copyright infringement in the form of piracy, which is in the form of direct duplication, requires very complicated evidence. In this case, there are two tests, namely look and feel and abstraction-filtration-comparison. The look and feel test is related to the use of animated works on various websites because different websites will differ in their appearance on the monitor and also differ in their settings. This is related to copyright

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<sup>44</sup> Rahmi Jened, *supra* note 7, at 16-17.

<sup>45</sup> Rahmi Jened, *supra* note 18, at 62-65.

<sup>46</sup> Henry Sulistyo Budi, *supra* note 33, at 7-8.

<sup>47</sup> Rahmi Jened, *supra* note 28, at 5.

<sup>48</sup> Michael Hans, *Perlindungan Hak Cipta Karakter Fiktif*, Thesis Dissertation, Faculty of Law, Airlangga University, Surabaya, 2018, p.134-35.

<sup>49</sup> *Id.*

<sup>50</sup> Jill Mc. Keough and Andrew Stewart, *Intellectual Property Right in Australia*, Butterworth, Sydney, 1997, p.

<sup>51</sup> Rahmi Jened I, *supra* note 7 at. 86-87.

hijackers where computer programs are observed and analyzed for their sequence, structure and arrangement of programs, so that clear evidence of substantial similarities can be obtained. The Abstraction-filtration test and comparison are used by the judge learned hand in the case of the dichotomy of ideas and expressions abstraction level. While the second test, a gradual analysis of the computer program is carried out including identification to determine the differences in program structure abstraction (ideas are separated from expressions) and then filtering the elements of the creation protected by copyright and those suspected to be the result of infringement to determine the level of similarity between the imitated programs.

Originally in certain jurisdictions using character standards must also be "a story told" (Story Being Told) a protected fictional character must be the center of the story. The story must be about and about the fictional character. Whereas events, backgrounds, and other parts of the story are a supporting factor for telling the fictional character and not the other way around.

In its development, several courts in the United States have tried to formulate certain tests or standards to impose limits on protection for fictional characters, namely by using the character "deemed sufficiently described" (Sufficient Delineation) which determines whether the character is depicted adequately and differently, thus guaranteeing protection. The more specific and unique the character's appearance and personality, the better the chances of copyright protection. For example, no one can copyright the idea of a character with general superpower traits, but Superman in particular includes his specific looks and costumes, his alter ego, his weakness to kryptonite, etc. can be copyrighted because of its highly delineated character.

By using the Sufficient Delineation standard, the only animated fictional characters that can be protected are animated fictional characters that have been given adequate descriptions by the author, so that they become unique characters and are not the same as other characters. -where. Judge Learned Hand Nichols stated in his decision, "it follows that the less developed the characters, the less they can be copyrighted; that is the penalty an author must bear for marking them too indistinctly."<sup>52</sup>

Reproduction of a popular or well-depicted cartoon character or their almost identical likeness to a commercial merchandise without the copyright owner's authorization is almost a copyright infringement. Infringements were found where the plaintiffs claimed valid copyright ownership; and copying by the defendant the elements of the original work.

Doctrinal constraints of automatic protection of copyright, may cause lack understanding of law enforcement officials, which always questions the Certificate of Copyright.

The normative constraint can be seen from the removal of the provision of the norm originality from Copyright law. for example without norms. originality, so it is possible that the person who made a creation in a different media thought it was not a copyright infringement, such as the case of Lilian Lie whose photo creation was taken over and manifested in the form of an animated painting by Aris Muninggar.<sup>53</sup>

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<sup>52</sup> Michael Hans, *supra* note 44, at 236-237.

<sup>53</sup> Arismuninggar face book that already removed.

The heavy setting of fixation requirements is only for sound recordings and not cover other works, the redundant regulation substantive rights and the waiver of resale royalty rights. Another example, since the fixation just only for sound recording so the Badui or Mentawai tribe traditional cultural expression without an image recording device or voice recorder may not be copyright protected according to law. Another illustration is when an animation fixed in the form of an image which is then translated into a computer program in the form of binary code. The words sound recording and recording limit the electronic media storage device to the creation of computer programs.

The practical constraint include lack of comprehensive understanding of copyright protection enforcement officers, the lack awareness of communities.

### **C. Alternative Solutions to Copyright Protection Constraint in Supporting Animation as A Creative Economy Sub-sector**

The dichotomy idea-expression constraint can be overcome by test of story being told test or sufficient delineation test which adopted from America's legal practice. Furthermore, there is automatic protection of copyright as doctrinal constrain, especially to provide evidence for the right holder. The acquisition and protection of copyright is automatic (automatic protection) and the recording of the work as initial evidence of copyright (prima facie evidence). This is inline with the Holmes statement that: <sup>54</sup>

*While registration is not mandatory, it is highly desirable for a number important reasons. Registration of the copyright is a statutory prerequisite to instituting an infringement action. It is also a prerequisite to recovering special statutory damages..... In addition, a certificate of registration constitutes "prima facie" evidence of the validity of the copyright. Finally, registration is necessary for a transfer of ownership...*

So the weakness of automatic protection doctrine is strengthened in Article 64 Paragraph (1) and (2) Law No. 28/2014 states that:

- (1) The Minister shall carry out the recording and deletion of Works and related Products.*
- (2) The recording of works and related products as referred to in Paragraph (1) is not a condition for obtaining copyright and related rights.*

The Letter of Works Creation Record is prima facie evidence of the existence of copyright. Actually all civil and criminal evidence can be used to prove the existence of the author right or copyright. In this case civil evidence as stipulated in Article 1866 of Code of Civil ( Burgerlijk Wetboek/ BW) and Article 146 Code of Civil Procedural Law (HIR / 284 RBG )must be utilized which includes:<sup>55</sup>

- a. Letters;
- b. Witnesses;

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<sup>54</sup> WILLIAM C. HOLMES, INTELLECTUAL PROPERTY AND ANTITRUST LAW 9 (1983).

<sup>55</sup> Rahmi Jened, *supra* note 1, at 105-107.

- c. Recognition;
- d. Oath;
- e. The Judge's Presumption.

In the criminal copyright case, the evidence as stipulated in Article 184 of the Criminal Procedural Code (KUHP) which includes:

- a. Witness statement
- b. Expert statement;
- c. Letter;
- d. Instructions;
- e. Suspect/ defendant Statement

Indonesia copyright Law No. 28/2014 has also stipulated criminal sanction which also adopted from American Laws and regulation providing criminal penalties. Since every copyright infringement is a criminal act so it must be subject to imprisonment .  
<sup>56</sup>

Regarding with the originality norm as normative constraints can be corrected by explicitly stipulated these norm in Copyright Law as follows: “Work shall mean any result of works of an Author, which shows originality in the field of science, arts and literature”. Then the legal term of author should means: “is one or several people together who on their inspiration gave birth to a creation based on the ability of the mind, imagination, skills or expertise outline in authentic and personal form”.

The redundant of fixation norms that only focus for phonorecord works, should be corrected by stipulation: “Fixation is publications and reproductions fixed by sound recording, image recording or both that can be seen, heard, duplicated or communicated through any device.”

The normative constraints of substantive economic right stipulated in Article 9 UU No.28/2014 can be overcome by general, firm and clear norm as follows: “Copyright is an exclusive right for an author or the recipient of the right **to publish or reproduce** of his works or to grant permission for said purposes without decreasing the limit according to the prevailing laws and regulations. The fixation is the transference embodiment in all form either permanently or temporary, with any media including internet media, so the work can be read, heard or seen by others.”

Then the definition of “**publication**” shall mean: “the reading, broadcasting, exhibition, selling, distribution, or dissemination of a work by utilizing whatever means including the internet or by any manner so that such work is capable of being heard, seen, by any other person.”

Whereas the term of “**reproduction**” shall mean: “to increase the number of a work either as a whole or its substantial parts using either the same or different

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<sup>56</sup> BOB GELDOV, CASE BETWEEN INDONESIA AND AMERICA.



material including changing of the form or mode of a work permanently or temporary.”

Then again, the absence resale royalty right as a normative constraint can be overcome by setting norms firmly. The resale royalty norm is very important for Indonesia which has a very high cultural diversity and human resources who are artistic and creative.

Finally, the practical constrain related to the legal structure and legal culture. From the aspect of legal substance as stated above, it is related to the absence of legal norms, obscurity of legal norms and emptiness of legal norms resulting in weak aspects of legal substance, vacuum of law and obscurity of legal norms resulting in less comprehensive legal culture and legal structure, this constraint can be overcome by capacity building of law enforcement officer. The constraint s of lack awareness of the community can be remove by continuing legal education and socialization. In order to build capacity of law enforcement enforcer and to improve the legal culture of the Indonesian people and the wider community can be followed of Triple helix model of innovation by Japan. Triple Helix Model refers a set of interactions between academia ( the university) , industry and government to foster economic and social development.<sup>57</sup> Although this model was developed in 1990’s by Henry Etzkowits and Leydesdorff, but in terms of animation Copyright protection the best practice can be seen from Japan.

Initially, there was a Project so called “Cool Japan” used in front of the public at an NHK World event with the same title to introduce the uniqueness of Japan to foreign nationals. In its widespread use, Cool Japan is part of the Ministry of Foreign Affairs (MOFA) policy for the promotion of Japanese popular culture. Cool Japan as for cultural or public diplomacy purposes to create a good image of Japan in the eyes of the world, as a country that is peaceful and rich in culture.<sup>58</sup>

But then, the Japanese government realized the potential for reaping economic benefits. In 2005, Japan Export and Trade Organization (JETRO) reported that Cool Japan made a positive contribution to the Japanese economy. Then, in 2011, the Japanese government put Cool Japan under the care of the Japanese Ministry of Economy, Trade and Industry (METI), this shows that there is an economic agenda by the Japanese government regarding Cool Japan globally, namely to revitalize its economy ( Fisher, 2014).<sup>59</sup>

In Cool Japan, the anime and manga industry has a huge influence (Kelts, 2010). Anime and manga are the result of the creative industry from Japan. The results of the creative industry in the form of anime and manga entertainment are very easily accessible to online users. Many official internet sites that provide anime and manga

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<sup>57</sup> <http://financialexpress.com>.

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[https://www.meti.go.jp/english/policy/mono\\_info\\_service/creative\\_industries/creative\\_industries.html](https://www.meti.go.jp/english/policy/mono_info_service/creative_industries/creative_industries.html).

<sup>59</sup> Rod Fisher, Japan Country Report, available at <http://www.cultureexternalrelation.eu/2014/03/12/japan-report>; Ahmad Al Farouqi, Nandang Sutrisno & Agus Riswandi, *The Law of Anime: Otaku, Copyright, Fair Use and Its Infringement in Indonesia*, 1(1) JOURNAL OF INTELLECTUAL PROPERTY JIPRO (2020)

legally both first party and third party. However, many internet users also choose to download pirated content through illegal sites or peer-to-peer (P2P) networks.<sup>60</sup>

Anime and manga as products of the creative industry are also items that are prone to become targets for the misuse of illegal content in the form of piracy. The problem of piracy against anime, among others, appears in the form of fansub sites that provide access to streaming and downloading anime for free. International conventions on copyright do not support fansubs. However, considering that the target of fansub is foreign fans, this is illegal.

Meanwhile, for manga, scanlation sites have emerged which provide access to read manga. Scanlation is often seen by fans as the only way to read manga that is not yet legally distributed in the territory of the country.<sup>61</sup>

Illegal access is mostly done in the form of fansub for anime and scanlation for manga. Fansub is a version of a show or series that has been translated by fans and has been given subtitles in a language other than the original. The most common material in English fansubs is anime. Scanlation is the result of the process of scanning, translating, and editing a comic from one language into a particular language by fans. Fansub and scanlation are often seen by fans as the only way to enjoy anime and manga that have not been licensed for release in their area (The Japan Times, 2010). However, this fan translation activity violates copyright laws of Japan as a producing country.<sup>62</sup>

The rapid growth of anime and manga production makes it increasingly difficult to access and expensive licensing fees to get all the various titles. This made fans take the initiative to take source material and make fan-made translations. As a community, Japanese-speaking fandom members, who wish to share new material with other fans, translate and create anime fansub and scanlation manga and disseminate them to the public via the internet. The results of these translations are generally released on user sites free of charge by utilizing file-sharing technology, and these illegal business that is detrimental to Japan and transnational crimes according to the classification in the United Nations Convention on Transnational Crime.

In July 2014, the Japanese Ministry of Economy, Trade and Industry (METI) announced a new plan to tackle overseas copyright infringement of anime and manga (METI, 2014). The plan is in the form of a program entitled "Manga Anime Guardians Project (" MAGP ") in which METI brings together renowned professionals in the anime industry and to work together to form a committee to combat copyright infringement. The MAGP committee consists of leading anime and manga studios and distributors such as Aniplex, Kadokawa, Good Smile Company, Kodansha, Sunrise, Shueisha, Shogakukan, Games, Pierrot, and Bushiroad. MAGP has created its own website whose main feature includes links to official websites dedicated to buying or accessing translated anime and manga. The site is Manga-Anime-Here.com. In addition,

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<sup>60</sup> See new Copyright Protection Risk, available at <http://www.japantimes.co.jp/opinion/2015/01/03/editorials/newcopyrightprotectionrisk#jfjpy>.

<sup>61</sup> See Widhi Prasetya Nugraha, *Upaya Jepang dalam Melindungi Hak atas Kekayaan Intelektual Industri Anime dan manga*, FISIP, UNDIP, (2015), available at <http://www.ejournal3.unidip.ac.id>.

<sup>62</sup> Cool Japan / Creative Industries Policy, [https://www.meti.go.jp/english/policy/mono\\_info\\_service/creative\\_industries/creative\\_industries.html](https://www.meti.go.jp/english/policy/mono_info_service/creative_industries/creative_industries.html).

METI's plan to tackle illegal sites is to make contact with sites that are known to have content that violates copyright (METI, 2014).<sup>63</sup>

The approach taken by MAGP can be seen from the way the policy will work. The way it works is broadly divided into three stages (METI, 2014). First, MAGP attempted to remove illegal anime and manga by contacting 580 websites suspected of spreading illegal anime and manga. In this effort, the sites concerned will be given a DMCA (Digital Millenium Copyright Act) warning and ask to remove any illegal content. Second, MAGP will create a site that provides facilities for accessing anime and manga officially called "Manga-Anime Here" (mangaanimehere.com). The site gives users access to a list of official sites to get the anime and manga they want. Third, MAGP will encourage fans to access only official content through a series of promotions. Among them is an official video containing several snippets of anime characters inviting fans to stop piracy activities.<sup>64</sup>

In its three steps of work, MAGP demonstrates a persuasive way of working to persuade both illegal site owners and the users of these sites to stop running and using these illegal facilities that harm Japan. In exchange, Japan has prepared a Manga-Anime Here site for anime and manga fans from abroad to be able to get anime and manga that have been translated into English.

METI through MAGP aims to combat piracy sites that distribute millions of videos without copyright and without a license uploaded by the voters of these sites. However, the MAGP approach does not appear to have the desired effect. The MAGP website is difficult to navigate and includes only a small proportion of anime and manga titles. Although several well-known series were presented, many popular series were missing. While there are other legal accesses to some of this content, MAGP's efforts to simplify the consumption of anime and manga online are pointless and disappointing compared to the number of titles carried by other streaming sites. Japan is the best practice in a way triple helix approach can be maximum utilized.

The role of the Indonesian government in supporting the development of the creative economy is carried out through the making of regulations and discretions (policies) including:<sup>65</sup>

- (1) In 2007 the Establishment of Indonesian Design Power by the Ministry of Trade;
- (2) In 2007 the Establishment of Mapping Study of Creative Economy Contribution at Trade Expo Indonesia;
- (3) In 2008 the Launching of the Development of Indonesia's Creative Economy Blue Print of Creative Economy Sectors;
- (4) In 2009 the Declaration of Indonesia Creative and Creative Economy as Back Bone;
- (5) In 2011 the establishment of the Ministry of Tourism and Creative Economy through Presidential Regulation No. 92/2011 (Perpres No. 92/2011):

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<sup>63</sup> *Id.*

<sup>64</sup> Widhi Prasetya Nugraha, *supra* note 58.

<sup>65</sup> Nadya Prita Gemala, *supra* note 44, at 303-10.

- (6) In 2012 the Organizing of Creative Week and Revitalization of the grand activity Creative Products (PPKI) which ha;
- (7) In 2012 the Launchment of a creative industry mascot called OK - which stands for Creative People;
- (8) In 2014 the Enactment of Copyright No. 28 of year 2014 (UU No. 28/2014);
- (9) In 2015 the establishment of the Creative Economy Agency (BEKRAF) through Presidential Regulation No. 6 of year 2015 (Perpres No. 6/2015).
- (10) In 2019 the Announcement of Creative Economy Review 2019 is an activity carried out as a reference for knowing the current national economic condition and future prospects. This activity is carried out in collaboration with higher education institutions and involves all creative economy stakeholders as follows:
  - a. Orbit;
  - b. SCARA;
  - c. LOCK
  - d. Create;
  - e. KKON;
  - f. Docs by The Sea;
  - g. BIGGER;
  - h. BEACON;
  - i. Bekraf Creative Labs;
  - j. Bekraf Developer Day (BDD);
  - k. Bekraf for Pres Startup (Bekup);
  - l. Kelas Keuangan, sertifikasi profesi, pelatihan Komisi Film Daerah (KFD)

According to World Economic Forum (WEF) at the *Global Competitiveness Report* 2019, Indonesia ranked the 50<sup>th</sup> (out of 141 countries) and ranked 4<sup>th</sup> among ASEAN Countries, behind Singapore, Malaysia and Thailand.<sup>66</sup> Based on the *Global Innovation Index 2019*, Indonesia ranked 85<sup>th</sup> out of 123 countries.<sup>67</sup> The role of creative industry in supporting the economy is very significant. During the global crisis in 2014, Indonesia's creative economy contributed almost 800.000.000.000 rupiahs or 10% of Indonesia's GDP. In 2019, it contributed 1.200.000.000.000 rupiahs. Creative industry GDP contribution (from highest to lowest) is as follow:<sup>68</sup>

- (1) Culinary 41.40%

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<sup>66</sup> Badan Pusat Statistik Kontribusi Industri Kreatif Terhadap Perekonomian Indonesia (Dalam Milyar), Jakarta,( 2019).

<sup>67</sup> [www.ekonomi.bisnis.com](http://www.ekonomi.bisnis.com).

<sup>68</sup> Badan Ekonomi Kreatif , Hasil Penelitian, Jakarta, 2018, p.3-5.

- (2) Fashion 18.01%
- (3) Craft 15.40%
- (4) Television and Radio 8.27%
- (5) Publishing 6.32%
- (6) Architecture 2.34%
- (7) Game Application & Developer 1.86%
- (8) Advertising 0.81%
- (9) Music 0.48%
- (10) Photography 0.46%
- (11) Performing Arts 0.27%
- (12) Product Design 0.25%
- (13) Fine art 0, 22%;
- (14) Film, Animation and Video 0.17%
- (15) Interior Design 0.16%
- (16) Visual Communication Design 0.66%.

Apart from contributing to national GDP, the creative industry is the fourth largest sector in employment, with over 17million workers in 2019.<sup>69</sup>

### **3. Recommendation**

First, the amendment of Copyright Law no. 28/2014 should include the ideal foundation of Pancasila in its Preamble and in the Article that stipulates principle, grounds and purpose of the Copyright Law.

Second, the terminology of the originality, creativity, and fixation should be expressed clearly in the legal provision or legal norms of Copyright Law Number 28 of 2014. The terminology of “Fixation” or the “fixation norms” should to be made more general are not limited to sound recordings. The resale royalty right as should be governed in Copyright Law No.28 of year 2014 because Indonesia has a very high cultural diversity and human resources who are artistic and creative in various fine art works.

Third, the understanding of the doctrine of ideas and expressions, automatic protection to copyright, limitation and fair dealing beta test and sufficient delianation must become an important part of the discourse in court that can be seen from American best practice.

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<sup>69</sup> *Id.*

Fourth, the competence of law enforcement officer should be enriched by training or capacity building program.

Fifth, the government, academic and industry should hand in hand to develop economy creative that can be seen in Japanese best practice.

Sixth, the legal culture of the wider community must also be enhanced through continuous socialization and the inventory actions to avoid misappropriation conduct by any other countries and to avoid cultural sink as well.

## **Certificate of Supplementary Protection (CSP) Regime in Canada: Amendments and Analysis of Granted, Pending, and Refused CSP Applications**

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### **Abstract:**

According to the Comprehensive Economic and Trade Agreement (CETA), Canada introduced Certificate of Supplementary Protection (CSP) regime on 21 September 2017. Before CETA was executed, Canada was the only country of G7 (Group of 7) countries not to legislate Patent Term Extension (PTE). On 21 September 2020, CSP regime completed three years of existence. During these three years, few changes took effect in CSP regime. This article provides in-depth evaluation of CSP regime and such relevant changes. It also covers comparative analysis of number of CSP applications granted, pending, refused, and withdrawn. During these three years, about 95% CSP applications were filed for medicinal ingredient for human use and about 5% CSP applications were filed for medicinal ingredient for veterinary use. This article also provides analysis of type of patents referred in CSP applications, CSP

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applicant-wise analysis, and terms of granted CSPs. Comprehensive summary of Federal Court of Canada cases which involved challenges filed by CSP applicants over refusal of their CSP applications by the Minister of Health Canada is also provided. For example, decisions released by Federal Courts are providing directions to the Minister of Health Canada and has potential to act as guidance for future decisions regarding CSP applications. Basis analysis of three years CSP data, this article also provides some suggestions to the CSP applicants.

**Keywords:** Certificate of Supplementary Protection, Shingrix, Belsomra, CSP Register, Minister of Health Canada



## 1. Introduction

Supplementary protection certificate (CSP) regime is an important moment for the Canada's intellectual property (IP) framework. On one hand, CSP regime provides an opportunity to innovators of pharmaceutical and veterinary products to recover investments made to obtain marketing authorizations for medicinal products, and on other hand, it impacts the timing of entry of generic products in the Canadian market. As per the Trade-Related Aspects of Intellectual Property Rights (TRIPS) Agreement, patent term is for a maximum of 20 years. CSP in a way acts as a mechanism to compensate for regulatory delays in the marketing of new pharmaceutical products. The European Union (EU) and Canada signed 'Comprehensive Economic and Trade Agreement' (CETA) on 30 October 2016.<sup>1</sup> and thus on 21 September 2017, Canada amended its *Patent Act 1985* and introduced CSP for pharmaceutical and veterinary products.<sup>2</sup> The CSP regime of Canada has been created with the aim of meeting obligations under Article 20.27 of CETA, which requires parties to provide an additional period of protection for patent-protected pharmaceutical products, while continuing to balance the interests of stakeholders and the public within the Patent Act of Canada.

## 2. Canada CSP Regime and Changes in Last Three Years:

The Patent Act of Canada was amended on 21 September 2017, to include CSP regime. This Act provides patent term, typically up to 20 years from the date of first patent filing. This term of the patent can be extended by CSP. Sections 104 – 134 of the Patent Act of Canada are related to the CSP, which provide legal framework for various timelines, requirements and procedures.<sup>3</sup> The term of CSP is determined by subtracting five years from the period beginning on the filing date of the patent application and ending on the day on which the authorization for sale is issued, but in any event is not more than two years.<sup>4</sup> In Canadian CSP, eligible drugs are defined broadly to include medicinal ingredient for human and veterinary use.<sup>5</sup> Medicinal ingredients with mere prescribed variation or combinations of medicinal ingredients which differ only with respect to a variation in the ratio between those ingredients, are to be treated as the same medicinal ingredient.<sup>6</sup>

As per regulation 2 of CSP, the prescribed variations are (a) a variation in any appendage within the molecular structure of a medicinal ingredient that causes it to be an ester, salt, complex, chelate, clathrate or any non-covalent derivative; (b) a variation that is an enantiomer, or a mixture of enantiomers, of a medicinal ingredient; (c) a variation that is a solvate or polymorph of a medicinal ingredient; (d) an in vivo or in vitro post-translational modification of a medicinal ingredient; and (e) any

combination of the variations mentioned in paragraphs (a) to (d).<sup>3</sup>

CSP Term = [Notice of compliance date – Patent filing date] – five years, with a cap of two years.<sup>4</sup>

Notice of compliance date is the date on which a particular therapeutic product was granted market authorization by receiving a Notice of Compliance (NOC) from Minister of Health, Canada. The Minister of Health may reduce the term of the CSP if unjustified delay in obtaining the authorization for sale is found.<sup>4</sup> The CSP takes effect only if the patent remains valid. If the calculation results in Zero or negative value, such CSP issued never takes effect.

A patentee who meets following conditions may apply for CSP. First condition is that the patent mentioned in the CSP application should be in force. Second condition is that the filing date for the application for the patent mentioned in the CSP application should be on or after 1 October 1989. Third condition is that the patent mentioned in the CSP application should pertain to a medicinal ingredient, or combination of medicinal ingredients, contained in a drug for which an authorization for sale was issued on or after 21 September 2017. Fourth condition is that the authorization for sale should be the first authorization for sale with respect to the medicinal ingredient or the combination of medicinal ingredients. Fifth condition is that there should not be any other CSP issued with respect to the medicinal ingredient or the combination of medicinal ingredients. Sixth condition is that if an application for a marketing approval of medicinal ingredient was submitted in any member country of EU, United States of America (USA), Australia, Switzerland, and Japan<sup>3</sup>, before the application for the authorization for sale was filed with the Minister of Health, the application for the authorization for sale should be filed before the end of 24 months, if the application for CSP was filed no later than the first anniversary of the day on which Section 59 of the CETA Implementation Act comes into force. In any other case, CSP application should be file before the end of 12 months beginning from the day on which the first such application for a marketing approval was submitted.<sup>7</sup> Since, the period of 24 months has already passed, such applications will not be eligible for CSP.

An application for a CSP shall be filed with the Minister of Health before 120 days<sup>3</sup> that begins on (a) the day on which the authorization for sale is issued, if the patent mentioned in the CSP application is granted on or before that day; or (b) the day on which the patent mentioned in the CSP application is granted, if the patent is granted after the day on which the authorization for sale is issued.<sup>7</sup>

Fee for application of CSP was Canadian \$9,011. Beginning on 01 April 2018, the fee increases annually by an amount equal to 2% of the fee payable in the previous year, rounded up to the nearest dollar.<sup>3</sup> The fee as of 01 April 2020 is \$9,564.<sup>8</sup> There are no maintenance fees for CSPs. An application for a CSP shall mention (a) the patent number, the medicinal ingredient or combination of medicinal ingredients, and the number of the authorization for sale; (b) the day on which the first application for a marketing approval that is equivalent to an authorization for sale was made and the country name.<sup>7</sup>

CSP application form which was originally released was valid from 21 September 2017 to 21 September 2018. It was then modified three times to accommodate changes which were made from time to time. First modified form was valid from 22 September 2018 to 14 May 2019. Second modified form for CSP application was valid from 15 May 2019 to 31 March 2020. Third modified form for CSP application is effective from 01 April 2020. CSP grants the same rights, privileges and liberties that are granted by the patent. These rights, privileges and liberties are granted only with respect to the making, constructing, using and selling of any drug that contains the medicinal ingredient, or combination of medicinal ingredients mentioned in CSP.<sup>9</sup> CSPs are transferable only if the patent mentioned in the CSP is transferred. Infringement action can be brought if any of these rights are violated by anyone. Infringement action against a person violating the rights of CSP holder cannot be brought if the violation is for export purpose from Canada. CSP regime does not offer any protection for a person violating the rights of CSP holder for day 1 entry after the expiry of CSP.

The COVID-19 Emergency Response Act, effective 25 March 2020, contained several additions to the Patent Act of Canada.<sup>10</sup> These amendments provide that on the application of the Minister of Health, the Commissioner of Patents shall authorize the Government of Canada and any person specified in an application to make, construct, use and sell a patented invention to the extent necessary to respond to a public health emergency along with a requirement to pay the patentee any amount that the Commissioner considers to be “adequate” remunerations. However, the Commissioner is prohibited from making an authorization under these new provisions after 30 September, 2020.<sup>11</sup>

A CSP or any claim in the patent mentioned in CSP, may be declared invalid or void - on the basis that it was issued in spite of non-compliance or that the patent mentioned in the certificate no longer complies with the requirements.<sup>12</sup> The Attorney General of Canada or an interested person may, at any time after a CSP takes effect

and after the expiry of three years from the date of the grant of the patent mentioned in the certificate, apply to the Commissioner alleging that there has been an abuse of the exclusive rights granted under a CSP issued with respect to that patent and asking for relief under the Patent Act of Canada. The exclusive rights under a CSP are abused in any of the following circumstances: (a) the demand in Canada for the drug is not being met to an adequate extent and on reasonable terms; (b) by reason of the refusal of the certificate's holder to grant a license or licenses on reasonable terms, the trade or industry of Canada or the trade of any person or class of persons trading in Canada, or the establishment of any new trade or industry in Canada, is prejudiced, and it is in the public interest that licenses should be granted; (c) any trade or industry in Canada, or any person or class of persons engaged in such a trade or industry, is unfairly prejudiced by the conditions attached by the certificate's holder to the purchase, hire, license, use or working of the invention protected by the certificate.<sup>13</sup>

As per regulation 3(2) of CSP, patents pertaining to product *per se*, product by process, or its method of use are eligible for CSP.<sup>3</sup> Each application is permitted to mention only one patent.<sup>7</sup> As per the Description (c) of CSP regulations, claims that are directed to a formulation containing the medicinal ingredient, including compositions, preparations or similar claim types, do not make a patent eligible for a CSP. A claim to a formulation does not protect the medicinal ingredient or combination of medicinal ingredients *per se*. A claim to a formulation may be directed, for example, to the improvement of the stability of medicinal ingredients. This is consistent with CETA, which only requires the protection of the medicinal ingredient or combination of medicinal ingredients when claimed "as such".<sup>3</sup> Reissued patents are also eligible for CSP.<sup>6</sup>

Holder of the certificate or the applicant is obliged to, before the end of 30 days<sup>3</sup> that begins on the day on which the new patent is issued, provide the Minister of Health with written notice of the number of the new patent to which the certificate or application relates.<sup>14</sup> A CSP shall set out (a) the patent number; (b) the medicinal ingredient or combination of medicinal ingredients; (c) a statement as to whether it relates to use of medicinal ingredient in humans or to veterinary use; (d) the number of the authorization for sale; and (e) the day on which the certificate's term begins and ends.<sup>15</sup>

### **Register of Certificates of CSP and CSP Applications and Guidance Document for CSP**

The register of certificates of CSP and CSP applications is maintained in accordance with the CSP certificate of supplementary protection regulations and the

Patent Act of Canada.<sup>16</sup> It includes information from CSPs and CSP applications. The register is a searchable database.<sup>17</sup> CSPs are granted by Health Canada, not the Intellectual Property Office (CIPO) of Canada. CIPO records do not include a copy of or reference to the CSP (unless a person chooses to file the CSP). The guidance document was published by Health Canada on 21 September 2017. It is updated on 15 May 2019 and 21 September 2018. This guidance document provides an overview of the CSP application process for applicants. This includes information on i) how to provide a CSP application ii) the service standard for processing applications and iii) the roles and responsibilities of applicants and Health Canada. This guide is useful for i) Owners of Canadian patents, ii) Canadian and foreign drug companies, iii) Canadian and foreign regulatory bodies.<sup>18</sup>

### **3. Analysis of CSP Applications of Three Years after CSP Regime Implementation:**

CSP regulations are implemented since 21 September 2017 and are governed by the Canadian Patent Act and the CSP regulations of Canada. Eligibility for CSP focuses on ‘Eligible Authorization for Sale’, ‘Eligible medicinal ingredient or combination’, and ‘Eligible patent’. Since then, total 65 CSP applications were received by the Ministry of Health Canada till 24 September 2020.<sup>19</sup> Table 1 below describes the distribution of these CSP applications.

**Table 1: Total CSP Applications Filed**

<b>Description</b>	<b>Number of CSP Applications</b>
Medicinal ingredient for human use	62 (95.38%)
Medicinal ingredient for veterinary use	3 (4.62%)
<b>Total</b>	<b>65 (100%)</b>

#### **3.1 Applicant-wise Analysis of CSP Applications**

Comparative analysis of all 65 CSP applications based on the applicants is shown in Table 2. Novartis Pharmaceuticals have filed the most number of CSP applications (8 applications), followed by Pfizer Canada (6 applications), Eli Lilly Canada Inc., Astrazeneca Canada, Bayer Inc., Merck Canada Inc. (4 applications each). Novartis Pharmaceuticals is the most successful applicant to get CSPs awarded (6 of 8 applications were awarded CSPs), followed by Pfizer Canada (5 of 8 applications are awarded CSPs).<sup>16, 17, 20</sup>

**Table 2: Applicant-wise Analysis of CSP Applications**

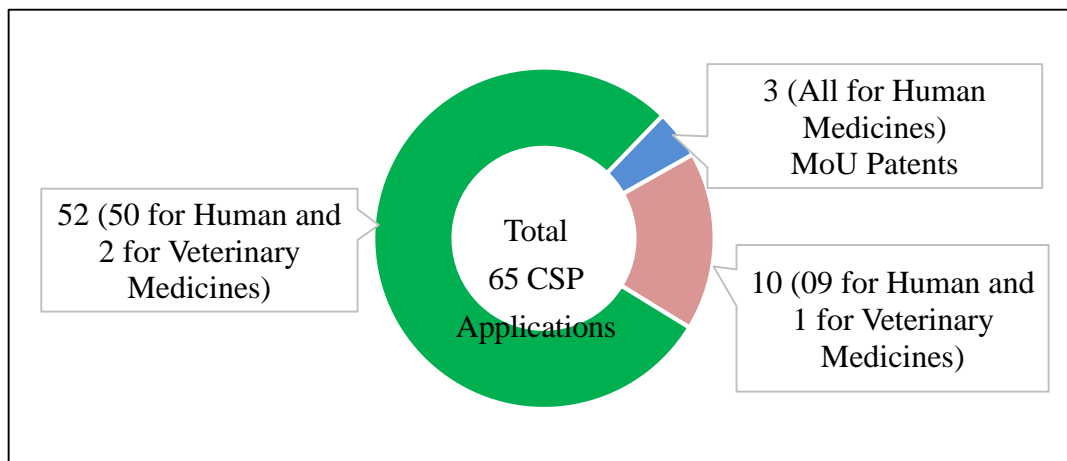
<b>Name of the CSP Applicant</b>	<b>Human/ Veterinary Use</b>	<b>No. of CSP Applications filed</b>	<b>No. CSPs Issued</b>	<b>No. CSPs Pending</b>	<b>No. CSPs Refused</b>	<b>No. of CSP Withdrawn</b>
Abbvie Corporation	Human	3	2	0	1	0
Akcea Therapeutics	Human	1	1	0	0	0
Amgen	Human	1	1	0	0	0
Astellas	Human	1	1	0	0	0
Astrazeneca Canada Inc.	Human	4	3	0	1	0
Bausch Health	Human	1	1	0	0	0
Bayer Inc.	Human	4	3	1	0	0
Deciphera Pharma	Human	1	0	1	0	0
Dompe Farmaceutici	Human	1	0	0	1	0
Elanco Canada Limited	Veterinary	1	1	0	0	0
Eli Lilly Canada Inc.	Human	4	4	0	0	0
Endoceutics	Human	1	0	1	0	0
Gilead Sciences Canada	Human	1	0	0	1	0
GlaxoSmithKline Inc.	Human	2	1	0	1	0
Hoffmann- LA Roche	Human	3	2	1	0	0
Janssen Inc.	Human	3	3	0	0	0
Merck Canada Inc.	Human	4	3	0	1	0
Novartis Canada	Human	8	6	1	0	1
Novo Nordisk Canada	Human	3	1	1	1	0
Otsuka	Human	1	0	1	0	0
Pfizer Canada ULC	Human	6	5	1	0	0
Sanofi-Aventis Canada	Human	2	2	0	0	0
Seattle Genetics	Human	1	0	1	0	0
Shire Pharma Canada	Human	1	1	0	0	0
Takeda Canada Inc.	Human	1	1	0	0	0
Vertex Pharmaceuticals	Human	1	1	0	0	0
ViiV Healthcare ULC	Human	3	2	0	1	0
Zoetis Canada Inc.	Veterinary	2	2	0	0	0
<b>Total</b>		<b>65</b>	<b>47</b>	<b>9</b>	<b>8</b>	<b>1</b>

**(1) Analysis of Types of Patents Covered in CSP Applications**

Patents which are cited in CSP applications were studied to understand the type

of invention these patents claim. The analysis provided the conclusion that out of the total 65 CSP applications, in 52 CSP applications product patent was cited, in 10 CSP applications composition/combination patent was cited, and in 3 CSP applications method of use (MoU) patent was cited (Refer Figure 1).<sup>16, 17, 21</sup>

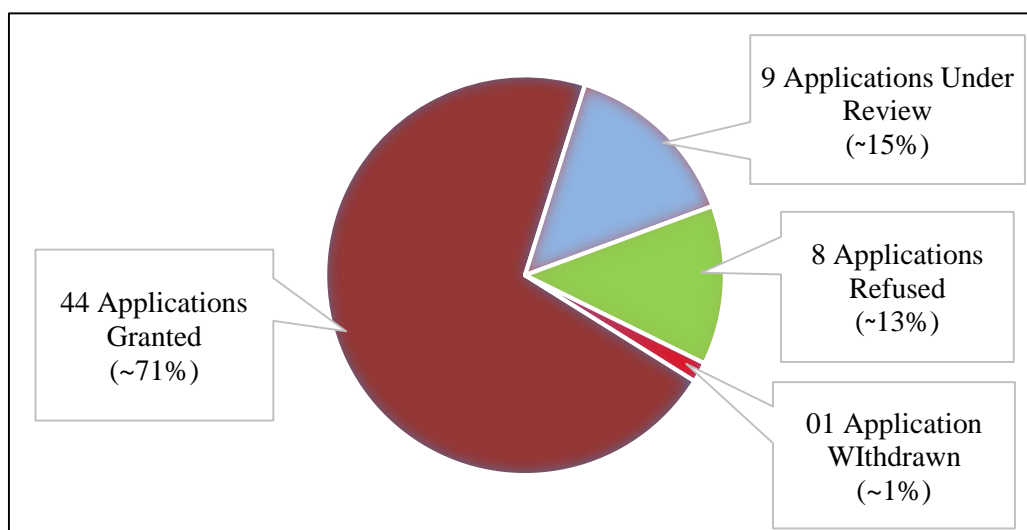
**Figure 1: Analysis of Types of Patents Covered in CSP Applications**



## (2) Analysis of CSP Applications for Medicinal Ingredient for Human Use

Out of the total 65 CSP applications, 62 CSP applications cover medicinal ingredient for human use and 03 CSP applications cover medicinal ingredient for veterinary use. Of the 62 CSP applications for medicinal ingredient for human use, 44 CSP applications were granted and awarded CSPs. 9 CSP applications were under review, 8 CSP applications were refused and 1 CSP application was withdrawn (Refer Figure 2).<sup>16, 17, 20, 21</sup>

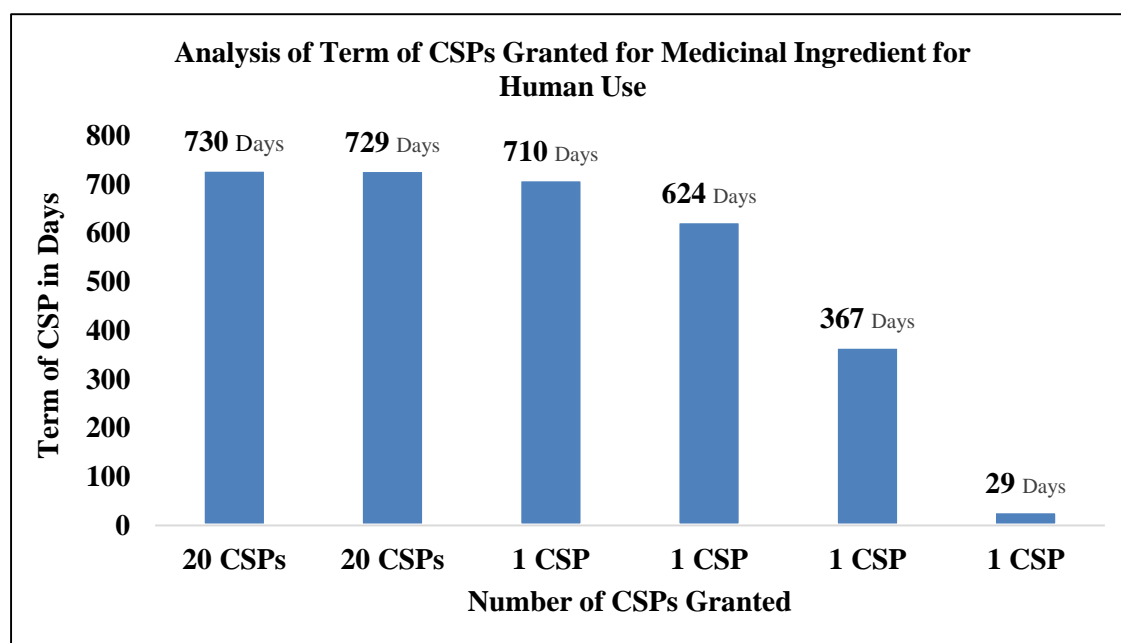
**Figure 2: Analysis of CSP Applications for Medicinal Ingredient for Human Use**



37 CSP applications out of 44 CSP applications for medicinal ingredient for human use have cited product patents whereas in 6 CSP applications composition/combination patents are cited while method of use patent was cited in 1 CSP application.

Out of the 44 awarded CSPs for medicinal ingredient for human use, 20 CSPs awarded with the term of 730 days, 20 CSPs with the term of 729 days, 1 CSP awarded with the term of 710 days, 624 days, 367 days, and 29 days each. 730 days is the longest term and 29 days is the shortest term granted for CSPs (Refer Figure 3).<sup>16</sup>

**Figure 3: Analysis of Term of CSPs Granted for Medicinal Ingredient for Human Use**



First CSP for medicinal ingredient for human use is set to come in force as early as in October 2022 and last one to come in force is in June 2033. First CSP for medicinal ingredient for human use would complete its term in October 2024 and the last CSP would complete its term in February 2034.<sup>16</sup>

Between the years 2022-2033, about 27 % (12 out of 44) CSPs are set to come in force in 2029, about 19 % (8 out of 44) CSPs are set to come in force in 2031, approximately 16 % (7 out of 44) CSPs are set to come in force in 2026, 11% (5 out of 44) CSPs are set to come in force in 2030 and 9% (4 out of 44) CSPs are set to come in force in 2028.<sup>16</sup>

Between 2024-2034, about 27% (12 out of 44) would complete their term in 2031, about 21% (9 out of 44) would complete their term in 2033, about 16% (7 out



of 44) would complete their term in 2028, about 11% (5 out of 44) would complete their term in 2032 and about 9% (4 out of 44) would complete their term in 2030.<sup>16</sup>

### (3) Analysis of CSP Applications Refused

A total of eight CSP applications (all related to medicinal ingredient for human use) were refused by Health Canada. Table 3 below provides information on drug products for which CSP applications were refused along with the reasons the refusal. Of a total of eight refused CSP applications, only three companies/sponsors [GlaxoSmithKline, ViiV, and Merck] have raised the dispute against Ministry of Health, Canada and are seeking the relief in Federal Court of Canada.<sup>22, 23, 24</sup>

**Table 3: Analysis of Refused CSP Applications**

S. N.	Product  Patent Number  CSP Application  Number  Sponsor	Reason(s) for Refusal
1	Belsomra (Suvorexant)  Patent Number:  CA 2670892  CSP Application: 900038  Sponsor: Merck <sup>16, 17, 21</sup>	There was no authorization for sale that met the requirements of the Patent Act of Canada.  Application (i) referred to a New Drug Submission did not result in a NOC and (ii) referred to a NOC date for a subsequently filed New Drug Submission (NDS) that was not filed within the prescribed time. <sup>24</sup>
2	Bevespi Aerosphere  (Glycopyrronium  Bromide) / Formoterol  Fumarate Dihydrate)  Patent Number:	The patent did not meet the requirements of paragraph 106 (1) (c) of the Patent Act of Canada and subsection 3(2) of the CSP regulations because it did not pertain to the combination of medicinal ingredients. <sup>23</sup>

	<p>CA 2763936</p> <p>CSP Application: 900014</p> <p>Sponsor: Astrazeneca<sup>16, 17, 21</sup></p>	<p>Patent did not include an eligible claim: it included claims to a formulation or use of a formulation.<sup>25</sup></p>
3	<p>Biktarvy (Bictegravir Sodium / Emtricitabine / Tenofovir Alafenamide Hemifumarate)</p> <p>Patent Number: CA 2416757</p> <p>CSP Application: 900028</p> <p>Sponsor: Gilead<sup>16, 17, 21</sup></p>	<p>The patent did not meet the requirements of paragraph 106(1)(c) of the Patent Act of Canada and subsection 3(2) of the Certificate of Supplementary Protection Regulations of Canada because it did not pertain to the combination of medicinal ingredients.<sup>23</sup></p> <p>Patent claims were directed to one of the drug but not the combination of drugs.<sup>25</sup></p>
4	<p>Juluca (Dolutegravir Sodium / Rilpivirine Hydrochloride)</p> <p>Patent Number: CA 2606282</p> <p>CSP Application: 900021</p> <p>Sponsor: ViiV<sup>16, 17, 21</sup></p>	<p>The patent did not meet the requirements of paragraph 106(1)(c) of the Patent Act of Canada and subsection 3(2) of the Certificate of Supplementary Protection Regulations of Canada because it did not pertain to the combination of medicinal ingredients.<sup>23</sup></p>
5	<p>Maviret (Glecaprevir /Pibrentasvir)</p> <p>Patent Number: CA 2807847</p> <p>CSP Application: 900001</p>	<p>The timing requirement of paragraph 106(1)(c) of the Patent Act of Canada was not met because the authorization for sale issued before September 21, 2017. In addition, the patent did not meet the requirements of paragraph 106(1)(c) of the Patent</p>

	Sponsor: Abbvie Corporation <sup>16, 17, 21</sup>	Act of Canada and subsection 3(2) of the Certificate of Supplementary Protection Regulations of Canada because it did not pertain to the combination of medicinal ingredients. <sup>23</sup>  NOC issued before 21 September 2017, and the patent claims specify only one drug and not the combination of drugs. <sup>25</sup>
6	Oxervate (Cenegermin) Patent Number: CA 2346257 CSP Application: 900022 Sponsor: Dompe Farmaceutici <sup>16, 17, 21</sup>	There was no authorization for sale as required by paragraphs 106(1)(c) and (d) of the Patent Act of Canada, amongst other provisions. <sup>23</sup>  CSP application was filed prior to the issuance of the NOC. <sup>25</sup>
7	Rebinyn (Coagulation factor IX (Recombinant), Pegylated) Patent Number: CA 2462930 CSP Application: 900011 Sponsor: Novo Nordisk <sup>16, 17, 21</sup>	The application did not meet the requirements of paragraph 106(1)(d) of the Patent Act of Canada because the authorization for sale was not the first authorization for sale that had been issued with respect to the medicinal ingredient. The medicinal ingredient differed from the coagulation factor IX in previously authorized drugs only with respect to prescribed variations and was considered to be the same medicinal ingredient in accordance with subsection 105(3) of the Patent Act of Canada. <sup>23</sup>
8	Shingrix (Varicella Zoster	The patent did not meet the requirements of

	<p>Virus Glycoprotein E)</p> <p>Patent Number:</p> <p>CA 2600905</p> <p>CSP Application: 900006</p> <p>Sponsor:</p> <p>GlaxoSmithKline<sup>16, 17, 21</sup></p>	<p>paragraph 106(1)(c) of the Patent Act of Canada and subsection 3(2) of the Certificate of Supplementary Protection Regulations of Canada because it did not pertain to the medicinal ingredient.<sup>23</sup></p> <p>Patent did not include an eligible claim: it included formulation claims to the antigen and adjuvant.<sup>25</sup></p>
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#### 4. IV. Federal Court Cases Regarding CSP Applications in Canada:

Since CSP regime was implemented, there are few disputes between the CSP applicants and Ministry of Health Canada over granting the CSP. Out of the 8 refused CSP applications, 3 such decisions are challenged in the Federal Court of Canada [GlaxoSmithKline, ViiV, and Merck]. These Federal Court cases are summarized below.

##### 4.1 GlaxoSmithKline Biologicals SA V. The Ministry of Health Canada

GlaxoSmithKline has received approval for Shingrix from Health Canada.<sup>26</sup> It is a vaccine containing varicella-zoster virus glycoprotein E (gE)) which is useful in the prevention or amelioration of shingles in adults older than 50, or in immunocompromised persons. Canadian patent number CA 2600905 is the cited in CSP application.<sup>27</sup> This cited patent claims use of an immunogenic composition to make a vaccine where the composition contains gE antigen, and an adjuvant. Vaccine is described in the New Drug Submission (NDS) as a two-component vaccine containing the gE antigen and the adjuvant. Minister refused CSP due to patent not claiming a medicinal ingredient or the use of a medicinal ingredient; essentially Shingrix only has one medicinal ingredient – the gE antigen. In view of the Minister of Health Canada, to be eligible for a CSP, “a patent must include at least one claim limited to one or more medical ingredients or to their use” and that GlaxoSmithKline’s patent didn’t meet this requirement because each of the claims in the patent included a non-medical ingredient (i.e., an adjuvant). On Aug 31, 2018, GlaxoSmithKline has challenged this decision in Federal Court of Canada

(T-1603-18).<sup>28</sup>

In April 2020, the Federal Court of Canada issued its decision interpreting the CSP regulations in *GlaxoSmithKline biologicals SA v Canada (Health)*, 2020 FC 397.<sup>29</sup> Justice Barnes stressed the importance of an interpretation that was consistent with the purpose and intent of the Canadian European Trade Agreement. The Federal Court of Canada decided that the Minister of Health was required to reconsider whether GlaxoSmithKline's Shingrix vaccine was entitled to additional protection pursuant to a CSP. The Federal Court of Canada held that the Minister's decision to refuse a CSP was unreasonable, finding that "medicinal ingredient" includes any ingredient that has "biological activity" in view of the CSP and CETA, and ordered the case back to the Minister for redetermination.

The Minister of Health Canada had filed a Notice of Appeal of the Federal Court's decision and a Motion for Stay of the Federal Court's order to reconsider the CSP application pending the appeal. The motion to stay the Federal Courts order was dismissed in September 2020 finding that the Minister of Health Canada would not suffer any irreparable harm if the stay was not granted. It also ordered that the appeal continue in an expedited manner in accordance with the Minister's request.

#### **4.2 ViiV Healthcare ULC V. The Ministry of Health Canada**

This case relates to a fixed-dose combination of two antiviral drugs. The patent cited in CSP applications appears to claim only one antiviral; however, none of the claims of the cited patent are directed to other antiviral. CSP was refused for this application by the Minister of Health Canada. Refusal was on the basis that the patent does not pertain to the combination of medicinal ingredients.<sup>24</sup> The Minister of Health Canada advised that it was not eligible for CSP because the cited patent did not "pertain to" the combination of the medicinal ingredients.<sup>30</sup> The Minister of Health Canada refused to grant a CSP on the basis that the cited patent contained claims directed to only one of the medicinal ingredients, rather than both medicinal ingredients. According to the Minister's view, Canada's CSP legislation requires that an eligible patent contain a claim for the combination of all the medicinal ingredients in the drug product. The Minister of Health Canada argued that this interpretation accurately reflected Canada-European Union Comprehensive Economic and Trade Agreement's requirement that a basic patent protects "a product as such". As per the Subsection 3(2) of the CSP regulations sets out which patents may be eligible for a CSP pursuant to section 106 of the Patent Act of Canada, and insofar as combinations are concerned, refers to the patent claiming the "combination of all the medicinal ingredients contained in the approved drug". The Minister had found that: "where the approved

drug contains a combination of medicinal ingredients, [an eligible] patent must include a claim for the combination of all the medicinal ingredients, a claim for the combination of all the medicinal ingredients as obtained by a specified process, or a claim for a use of the combination of all the medicinal ingredients” in order to meet the requirements of CSP regime section 3(2). The conclusion drawn by the Minister of Health Canada was based upon the Regulatory Impact Analysis Statement (RIAS) of CSP regulations, and Guidance Document to help interpret the relevant provisions of the Patent Act and the CSP regulations of Canada.

On February 22, 2019, ViiV has challenged this decision in Federal Court on several grounds, including that the Minister's interpretation of the CSP regulations was contrary to the purpose and intent of CETA.<sup>31</sup> Justice Fuhrer of the Federal Court held that the Minister's decision was unreasonable on the basis that the Minister failed to give due regard to CETA when interpreting the relevant provisions of the Patent Act and the CSP regulations of Canada, especially since ViiV had raised detailed arguments relating to CETA in its submissions to Health Canada.<sup>32</sup> In particular, the Court noted that the CETA Implementation Act requires that the CSP legislation be interpreted in a manner consistent with CETA. Justice Fuhrer also stated that it was unreasonable for the Minister to refer to CETA only in passing, and to rely on these resources (RIAS and the associated Guidance Document) to the exclusion of CETA. Justice Fuhrer also commented that CETA seems to “provide a broader scope of protection than the Minister's interpretation allows”, as it mentions that a drug product must be “innovative and creative” to be eligible for a CSP, rather than “new”.

Additionally, the court remarked that although the cited patent only contains claims to one of the two medicinal ingredients, it does protect combination of antivirals “as such”, which is consistent with the requirements under CETA. In other words, the court suggested that a patent containing claims directed to only one medicinal ingredient may be eligible for a CSP with respect to a drug product that contains a combination of medicinal ingredients. If this interpretation had been applied by the Minister in its decision, the cited patent likely would have been eligible for a CSP with respect to combination of antivirals. Ultimately, the Court decided that the submissions made by ViiV with respect to CETA should have been addressed by the Minister in deciding whether to grant a CSP for combination of antivirals. The matter has been ordered to be remitted to the Minister for redetermination. If this decision stands, it would expand the scope of eligible patents for CSP protection. On a broader level, this decision requires the Minister to consider, in addition to the statutory language, the underlying impetus and policy behind new regulations to ensure that Canada is meeting its international obligations with respect to the protection of IP

rights domestically.

#### **4.3 Merck Canada Inc. V. The Minister of Health Canada**

Merck applied for CSP for Suvorexant (Belsomra).<sup>33</sup> Canadian Patent CA2670892 was cited in CSP application.<sup>34</sup> CSP application was rejected because the application (i) referred to a NDS which did not result in a NOC and (ii) referred to a NOC date for a subsequently filed NDS that was not filed within the prescribed time following marketing approval in the United States; and the application was not filed within the prescribed period following the grant of the patent.<sup>24</sup> On 06 September 2019, Merck has challenged the decision of Minister of Health Canada in Federal Court of Canada (T-1471-19).<sup>22</sup>

#### **5. Conclusion**

It is observed that the innovator companies are trying to get benefit from CSP in Canada. This would be beneficial for patients in Canada as they would get access to newer medicines as early as possible. About 95% CSP applications relate to medicinal ingredient for human use and 5% relate to medicinal ingredient for veterinary use. Through analysis of patents cited in CSP applications, it was observed that about 80% CSP applications cited product patents, about 15% CSP applications cited combinations/composition patents, while remaining 5% cited CSP applications cited method of use patents. About 68% CSP applications out of the total CSP applications were granted, about 12% were refused and the remaining cases are awaiting decision from the Minister of Health Canada. Most of the granted CSPs are awarded full term of 2 years. Three decisions of the Minister of Health Canada are challenged by CSP applicants in Federal Court of Canada. It is observed that the Federal Court held that the decisions of refusing CSPs were unreasonable and were rescinded back for reconsideration. Federal Court seems to be largely relying on reading of CSP regime in the light of CETA and related international obligations that Canada is required to follow. The Federal Court decisions are more in line with the Supplementary Protection Certificate (SPC) in the EU. Any challenge to the decision of the Minister of Health Canada regarding CSP, is likely to be successful if it is supported by the provisions of CETA or intention behind Canada signing the CETA agreement.

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