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ADVOCATE PROFESSION TOWARDS AUTOMATION IN INDUSTRIAL REVOLUTION 4.0 ERA

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Abstract

Legal service and business competition have changed in the last decade because of technology changes. Artificial Intelligence technology in the form of robots, chat bots, and digital assistants will influence the practice of law in industrial revolution 4.0 era. By 2025, based on The Learning Generation report, released by the United Nation Commissions on Financing Global Opportunity, said that half of the world's jobs are at high risk to get the impact of automation in the coming decades. Legal profession such as lawyer will feel this impact, with the emergence of robot lawyers. The method used in this paper is a juridical normative method with statute approach and conceptual approach, and descriptive analysis. The results will be obtained from this study; firstly, correlation between advocate profession and automation. Secondly, law field which will get impact from automation. Thirdly, what the lawyer should prepare to face the condition of radical technology changing in Industry 4.0, because in this Era, we must innovate more rather just imitate past glory. " '

Layanan hukum dan persaingan usaha telah banyak berubah dalam beberapa dekade terakhir berkat adanya perkembangan teknologi. Teknologi kecerdasan buatan dalam bentuk robot, chat bots, dan asisten digital akan mempengaruhi praktek hukum di era revolusi industri 4.0. Pada tahun 2025, berdasarkan laporan The Learning Generation, yang dikeluarkan oleh The United Nation Commissions on Financing Global Opportunity, menyatakan bahwa setengah dari pekerjaan dunia berisiko tinggi terkena dampak otomasi dalam beberapa dekade mendatang. Profesi hukum seperti advokat juga akan merasakan dampak ini, dengan munculnya pengacara robot. Metode yang digunakan dalam tulisan ini adalah metode yuridis normatif, dengan menggunakan pendekatan perundang-undangan dan pendekatan konseptual, dan analisis deskriptif. Hasil yang

diperoleh dari penelitian ini; pertama, korelasi antara profesi advokat dan otomasi, kedua, dampak dari otomatisasi advokat dalam bidang hukum, ketiga, hal yang harus dipersiapkan oleh profesi advokat untuk menghadapi kondisi perubahan teknologi di Industri 4.0.

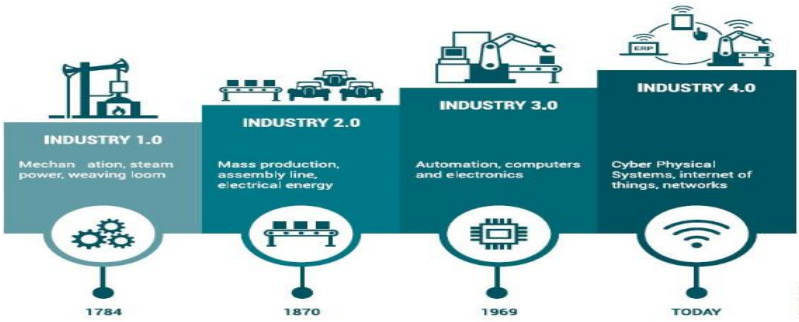
Keywords: Lawyer, Industrial Revolution 4.0, Technology.

Introduction

The development of the industrial revolution 4.0 will bring revolutionary changes to various aspects of human life. The term 4.0 industrial revolution was officially present and introduced in Germany, namely at the Hannover Fair in 2011.[1] Then the term is increasingly known thanks to the birth of the book The Fourth Industrial Revolution, which was composed by Klaus Schwab, a scientist from Germany. The Industrial Revolution itself is actually not a new term. The first industrial revolution was marked by the discovery of steam engines by James Watt in England in 1784. Then the second industrial revolution, occurred since the beginning of the 20th century namely the introduction of conveyor belts by Henry Ford and Frederick Taylor as well as manufacturing through Scientific Management in the form of standardized work systems effective and efficient. Furthermore, The Third Industrial Revolution was present in the 1960s to 2010 because of the existence of automize production through information technology and electronic systems, this was stated by Alvin Toffler in his book, the third wave. Then, unlike the previous industrial revolution, the 4th generation industrial revolution has a broader, multidimensional and complex scale and scope marked by the existence of cyber-physical systems.[2] The stage of development of the industrial revolution can be seen in figure 1.

[1] Henning Kagermann, Wolf-Dieter Lukas, and Wolfgang Wahlster, "Industrie 4.0: Mit dem Internet der Dinge auf dem Weg zur 4. industriellen Revolution", *VDI nachrichten*, vol. 13, no. 1 (2011).

[2] Jaap Bloem, Menno Van Doorn, Sander Duivestein, David Excoffier, René Maas, and Erik Van Ommeren, *The Fourth Industrial Revolution Things to Tighten the Link Between IT and OT* (Groningen: Sogeti VINT, 2014).



Source: https://www.alj.com/en/perspective/unlocking-digital-success-combining-industry-4-0-lean-management

Figure 1. The Four Stages of the Industrial Revolution.[3]

Technological advances in the 4.0 industrial revolution will have an impact on various scientific disciplines such as economics, law, industry and government. The fields emerged thanks to the development of new technologies including artificial intelligence robotic,[4] nanotechnology, biotechnology, quantum computer technology, blockchain, internet-based technology, and 3D printers.[5] Kagermann said that industrial revolution 4.0 is the integration of cyber physical system (CPS) and internet of things and services (IoT and IoS) into industrial processes including manufacturing and logistics and other processes.[6] In general, there will be five major

[3] Abdul Latif Jameel IPR Company, Unlocking Digital Success: Combining Industry 4.0 and Lean Management, https://www.alj.com/en/perspective/unlocking-digital-success-combining-industry-4-0-lean-management, accessed on October 25, 2018.

[4] *AI is rapidly being applied to all major sectors of the economy and society, including medicine, finance, national defense, transportation, manufacturing, the media, arts and entertainment, and social relationships*. Gary E Marchant, "Artificial Intelligence and The Future of Legal Practice", *Scitech Lawyer*, vol. 14, no. 1 (2017), p. 20-23..

[5] Klaus Schwab, *The Fourth Industrial Revolution* (Geneva: World Economic Forum, 2016), p. 1.

[6] Henning Kagermann, Johannes Helbig, Ariane Hellinger, and Wolfgang Wahlster, *Recommendations for implementing the strategic initiative Industrie 4.0: Securing the future of German manufacturing industry*, Final report of the Industrie 4.0 Working Group (Forschungsunion, April 2013). Availble on http://www.acatech.de/fileadmin/user_upload/Baumstruktur_nach_Website/Acatech/root/de/Material_fuer_Sonderseiten/Industrie_4.0/Final_report__Industrie_4.0_accessible.pdf, accessed on October 26, 2018.

challenges faced in the era of industrial revolution 4.0, namely aspects of knowledge, technology, economics, social and politics.[7]

Many countries in the world, both developed and developing countries, have included the fourth industrial revolution wave on their national agenda, as well as in Indonesia, which has compiled the initiative "Making Indonesia 4.0" to implement the 4.0 industrial revolution strategy and roadmap in Indonesia. This roadmap involves various stakeholders, ranging from government institutions, industry associations, business actors, technology providers, as well as research and education institutions. Making Indonesia 4.0 roadmap provides clear directions and strategies for future Indonesian industry movements, including in five sectors that are in focus and 10 (ten) national priorities in an effort to strengthen Indonesia's industrial structure.[8]

Based on the results of the research, Mc Kinsey (2017) has predicted that in 2030 there will be a large work transformation in 46 countries or what is called automation (this transition will exceed the shift in the agricultural system to the manufacturing system), namely 75 million to 375 million workers (3% -14% of global workers) will switch job categories. In addition, all workers need to adapt because their work will evolve along with increasing machine capabilities.[9]

Mc Kinsey research presented that automation will have an serious effect on 800 types of professions, and it is also associated with workers in the legal sector or the legal profession in the United States, Mc Kinsey and Company found that 69% of legal jobs will be automated and as many as 23% of lawyers will experienced

[7] Keliang Zhou, Taigang Liu, and Lifeng Zhou, "Industry 4.0: Towards future industrial opportunities and challenges", in *2015 12th International conference on fuzzy systems and knowledge discovery (FSKD)*, IEEE. pp. 2147-2152.

[8] Airlangga Hartarto, "Making Indonesia 4.0", Opening remarks by the Minister of Industry of the Republic of Indonesia, http://www.kemenperin.go.id/download/18384, accesed on September 2, 2018

[9] James Manyika, Susan Lund, Michael Chui, Jacques Bughin, Jonathan Woetzel, Parul Batra, Ryan Ko, and Saurabh Sanghvi, *Jobs lost, jobs gained: Workforce transitions in a time of automation* (Kazhakkoottam: McKinsey Global Institute, 2017), p. 8.

automation until 2030.[10] In addition, research from Remus and Levy has estimated that there will be potential for automation in the legal profession in the United States as much as 13% to 23% within a period of 5 years.[11]

In addition, based on Deloitte's research, it is estimated that there will be 100,000 legal jobs lost due to automation in the UK in 2025.[12] Research from JP Morgan has tried using artificial intelligence computer programs to replace the advocate's performance for 360.000 hours of work and the results show that the document review software only made fewer mistakes than human performance, besides that the machine is more efficient at work because the engine never demands a vacation.[13]

Surely the proliferation of automation predictions on advocacy or legal profession work in the United States and Britain,[14] and if it is associated with the automation of the profession advocate in Indonesia it becomes an interesting thing to study because inevitably Indonesia has entered the era of industrial revolution 4.0, especially with the era of information technology, the world increasingly knows no boundaries between countries and other countries (borderless).

Based on the background above, the formulation of the problem discussed next is: What is the effect of automation on the advocate profession? What legal fields will be affected by automation? How

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[10] David Johnson, "Find Out If a Robot Will Take Your Job"*, Time* (April 21, 2017), http://time.com/4742543/robots-jobs-machines-work/, Apr. 19, 2017, accessed on September 1, 2018.

[11] Dana Remus and Frank Levy, "Can robots be lawyers: Computers, lawyers, and the practice of law", *Geo. J. Legal Ethics*, vol. 30 (2017), p. 501.

[12] Deloitte Insight, "Over 100,000 Legal Roles to Be Automated", *Legal IT Insider* (Mar. 16, 2016), https://www. legaltechnology.com/latest-news/deloitteinsight-100000-legal-roles-to-be-automated/, accessed on 3 August 2018.

[13] Hugh Son, "JP Morgan: Software Does in Seconds What Took Lawyers 360,000 Hours", *Bloomberg* (Feb. 27, 2017),
https://www. bloomberg.com/news/articles/2017-02-28/jpmorgan-marshals-an-army, accessed on November 2, 2018.

[14] Gary A Marchant, "*Artificial Intelligence and the Future of Legal* Practice", *American Bar Association* (Nov. 1, 2017),
https://www.americanbar.org/groups/science_technology/publications/scitech_lawyer/2017/fall/artificial-intelligence-and-future-legal-practice, accessed on October 25, 2018.

should the Indonesian advocate profession respond and anticipate automation in the era of industrial revolution 4.0?

The type of research used is normative juridical research. The researcher tries to examine and analyze the application of rules or norms in positive law.[15] The approach used in this study is the statute approach and the conceptual approach. The legislative approach is carried out by examining and examining the regulations related to the theme of the research, while the conceptual approach is used because it uses an approach that seeks to offer new conceptions related to the new theme of advocate automation in the era of industrial revolution 4.0.

The analysis used is descriptive analysis, which is analyzing a study that aims to provide a concrete description or explanation of the state of the object or problem under study without drawing conclusions in general.[16] The data used in this writing are secondary data, namely library material that includes official documents, library books, legislation, scientific works, articles, and documents relating to research material.[17]

Advocate Profession in Indonesia

Advocate profession in Indonesia is regulated in Law No. 18 of 2003 concerning Advocates. In article 5 paragraph (1) of the Advocate Law, it is stated that the existence of law enforcement, free and independent advocates is guaranteed by the laws and regulations of the law.

Table 1. Advocate's duties in the Laws and Regulations in Indonesia

Law No. 8 of 1981 concerning Criminal Procedure Law (KUHAP)	**Law No. 18 of 2003 concerning Advocates**	**Law No. 48 of 2009 concerning Judicial Power**	**Law No. 16 of 2011 concerning Legal Aid**
Provide legal	Giving legal	Providing legal	Perform legal

[15] Johnny Ibrahim, *Teori dan Metodologi Penelitian Hukum Normatif* (Malang: Bayumedia Publishing, 2006), p. 295.

[16] Soerjono Soekanto, *Pengantar Penelitian Hukum* (Jakarta: UI Press, 1981), p. 10.

[17] Soerjono Soekanto and Sri Mamudji, *Penelitian Hukum Normatif, Suatu Tinjauan Singkat* (Jakarta: RajaGrafindo Persada, 2011), p. 13.

assistance to suspects or defendants during the time and at the examination level. Article 54	services (Article 1 point 2)	assistance to poor justice seekers. Article 56 paragraph (1)	assistance services. Article 9 letter d
In the case of a suspect or defendant suspected or charged with a crime that is threatened with capital punishment or criminal threat.	Providing only legal assistance to inadequate justice seekers (Article 22 paragraph (1).		Organizing legal consultations, legal counseling and other activities related to legal assistance. Article 9 letter e
	Keep everything that is known or obtained from the client confidential because of a professional relationship. Article 19 paragraph (1)		

The urgency of the position of the advocate profession in Indonesia includes; *First*, lawyers as legal service providers and legal aid providers. Advocates in this case provide legal assistance and legal aid. Legal assistance means that the provision of legal assistance with a broad scope is not only used for incapable justice seekers, but also for the provision of legal assistance by lawyers who use the honorarium.[18] While the legal aid means free or inexpensive legal services provided to those who cannot afford to pay full price.[19] *Second*, advocates as supervisors and guardians of the integrity of the judiciary. The role of an advocate as a supervisor can be seen in Law Number 48 of 2009 concerning Judicial

[18] Bambang Sunggono and Aries Harianto, *Bantuan Hukum dan Hak Asasi Manusia* (Bandung: Mandar Maju, 2009), p. 9.

[19] Henry Campbell Black, Bryan A. Garner, Becky R. McDaniel, David W. Schultz, and West Publishing Company. *Black's law dictionary*, vol. 196 (St. Paul, MN: West Group, 1999) p. 975.

Power in Article 38 paragraph (1) and article 38 paragraph (2). Bagir Manan stated that advocates play a role in the judicial process, a judicial process will not be efficient and effective without an advocate.[20]

Third, advocates are a counterweight to the dominance of law enforcement officials. Justice from the judicial process will be created if both parties are in a balanced position (public prosecutor and defendant). Therefore, advocates in their role as defenders assist suspects/defendants in obtaining fair decisions.[21] *Fourth*, advocates as defenders of human dignity. The important function of advocates as defenders of human dignity is:[22] a) Protect the rights of justice seekers who are treated outside of humanity. b) To be immediately examined and tried not to drag on for prolonged periods without legal certainty. c) Accompany suspects or defendants both at the level of investigation, prosecution and examination in court proceedings as a form of legal protection as stipulated in the law.

Advocate Professional Automation

In the past two decades, there have been many technological developments in the fields of artificial intelligent and robotics. Future technological developments are even predicted to be more spectacular and many experts argue that technology will change many things in the future throughout the world.[23] The definition of automation to date can be said to be diverse. Automation can be said to be using machines and computers to substitute for human labor in a widening range of tasks and industrial processes.[24]

According to Cambridge Dictionary, automation is the use of machines or computers instead of people to do a job, especially in

[20] Bagir Manan, *Menegakkan Hukum Suatu Pencarian* (Jakarta: Asosiasi Advokat Indonesia, 2009).

[21] Erni Widhayanti, *Hak-hak Tersangka/Terdakwa di dalam KUHAP* (Yogyakarta: Liberty, 1988), p. 24.

[22] Abdussalam and DPM Sitompul, *Sistem Peradilan* Pidana (Jakarta: Restu Agung, 2007), p. 370.

[23] Harold L. Sirkin, Michael Zinser, and Justin Rose, The robotics revolution: The next great leap in manufacturing (Boston: BCG Perspectives, 2015). See also, Erik Brynjolfsson and Andrew McAfee. *The second machine age: Work, progress, and prosperity in a time of brilliant technologies* (New York: WW Norton & Company, 2014).

[24] Daron Acemoglu and Pascual Restrepo, *Artificial Intelligence, Automation and Work*. National Bureau Of Economic Research Working Paper Series No. 24196, Cambridge (January 2018), p. 3.

a factory or office.[25] Whereas based on the International Society of Automation, what is meant by automation is:

> The creation and application of technology to monitor and control the production and delivery of products and service. Using our definition, the automation profession includes everyone involved in the creation and application of technology to monitor and control the production and delivery of products and services; and the automation professional is any individual involved in the creation and application of technology to monitor and control the production and delivery of products and services. Automation involves a very broad range of technologies including robotics and expert systems, telemetry and communications, electro-optics, cybersecurity, process measurement and control, sensors, wireless applications, systems integration, test measurement, and many, many more.[26]

Along with the progress of auto manufacture, of course automation will affect legal services. Automation of the advocate profession will go through robotic lawyers, data analysis, artificial intelligence, automation of legal documents which will certainly be part of the law in the future. At present, artificial intelligence in several countries in the United States, Europe, Australia, and several countries in Asia has entered legal practice. A recent survey of managing partners of the United State law firm shows that more than 36% of law firms and more than 90% of large-firm law firms (with more than 1,000 advocates) currently use or actively explore the use of artificial intelligence systems in their legal practice.[27]

Automation of the advocate profession has also been seen in Indonesia little by little through the development of artificial intelligence technology in a forum of the Asosiasi Regtech and Legaltech Indonesia (IRLA). Sixth legal startup like *legalgo, pop legal, startup legal clinic, lawble, privyID, eclis.id, eclis,* dan *hukum online* start

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[25] Cambridge Advanced Learner's Dictionary & Thesaurus, Cambridge University, https://dictionary.cambridge.org/dictionary/english/automation, accessed on October 21, 2018.

[26] The International Society of Automation, *What is automation*, https://www.isa.org/about-isa/what-is-automation/, accessed on October 20, 2018.

[27] Thomas S. Clay and Eric A. Seeger, *Law Firms in Transition* (Altman Weil Inc, 2017), http://www.altmanweil. com/LFiT2017/, accessed on August 8, 2018.

using artificial intelligence technology. According to IRLA General Chair Charya R. Lukman, the association aims to make people more aware and understand about law, through various product and technology innovations introduced by members of their ecosystem.[28] This startup also offers legal services online, starting from making documents, arranging permits, to establishing a company.

One example of a legal startup in Indonesia is *RegTech*. This such startup was started using technology like *e-ktp reader*, *fingerprint scanner* and *3D facial recognition* to support verification of community identity, in addition to actively providing knowledge to the public about the law such as the legality of digital signatures, providing workshops for lawyers, legal staff, notaries, prosecutors, judges related to law and digitalization.[29] Comparison of several countries in the world related to the predictions of the advocate's automation profession are as follows:

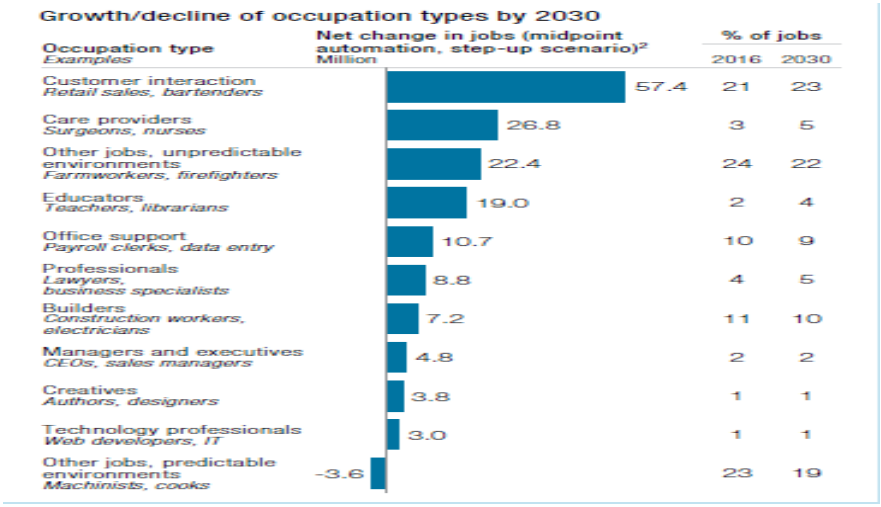
China

Changes from agriculture to manufacturing systems in China will continue along with increasing income and consumption levels. Based on Mc Kinsey's predictions, there will be 31% of jobs that will be automated in 2030 in China.[30] The predictions of professional automation in China until 2030 can be seen in the Figure 2.

[28] Rizqi Maulana, "Enam Startup Lokal Bentuk Asosiasi RegTech dan Legaltech di Indonesia", *Techinasia* (Sep 19, 2017), https://id.techinasia.com/asosiasi-regtech-dan-legal-tech-indonesia, accessed on July 3, 2018.

[29] Anisa Menur A. Maulani, "*Indonesia's Startup Legal Clinic, a helping hand for startups' legal woes*", *e27* (May 31, 2019), https://e27.co/startup-legal-clinic-a-helping-hand-for-startups-legal-woes-20160413/, accessed on June 25, 2019.

[30] James Manyika et al., *Jobs lost, jobs gained:…*, p. 92.



Source: Mc. Kinsey Global Institute

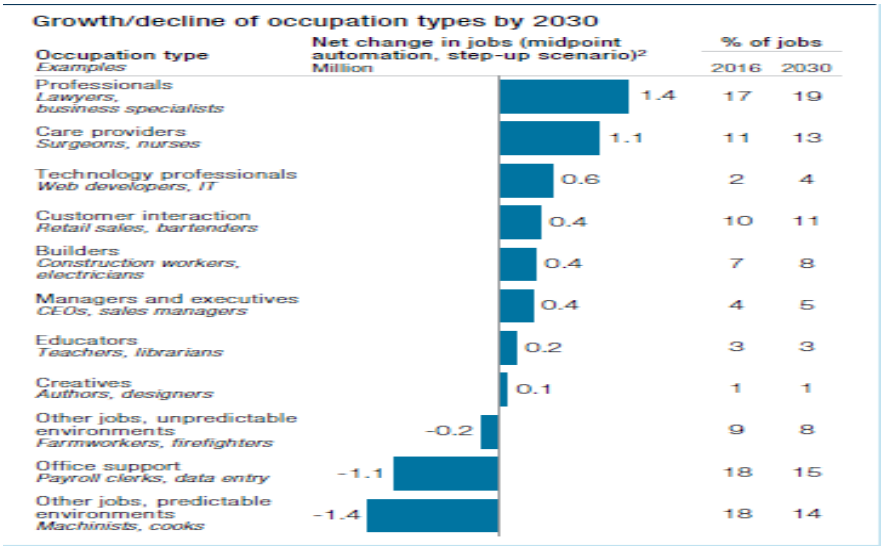
Figure 2. Professional Automation Prediction in China in 2030

Based on the picture above, it is known that there will be an advocate/lawyer profession automation of 8.8 million jobs in China in 2030. If seen in the movement of the year, in 2016 there were 4% of advocate professions in China that changed their profession and 5% of professions advocate in 2030 who must think about changing his profession. When viewed in these two percentages, the profession of an advocate profession in China is not large compared to the automation of the retail sales or bartender profession which reaches 57.4% in 2030 and the automation of the advocate profession is expected to be at a moderate level of automation.

Germany

Germany is currently dealing with the problem of an aging population (aging population), and a reduction in the age population of workers. Large per capita income makes Germany a country capable of facing the era of automation. But the health care costs of an aging population (aging population) will certainly affect consumer spending which is getting bigger, besides automation is predicted to create new jobs. In Germany, there will be 24% of jobs that will be affected by automation in 2030 (mid scenario), or there will be 47% of

the jobs that are rapid scenario in 2030.[31] List of professions affected by automation can be seen in the figure 3.



Source: Mc. Kinsey Global Institute

Figure 3. Professional Automation Prediction in Germany in 2030.

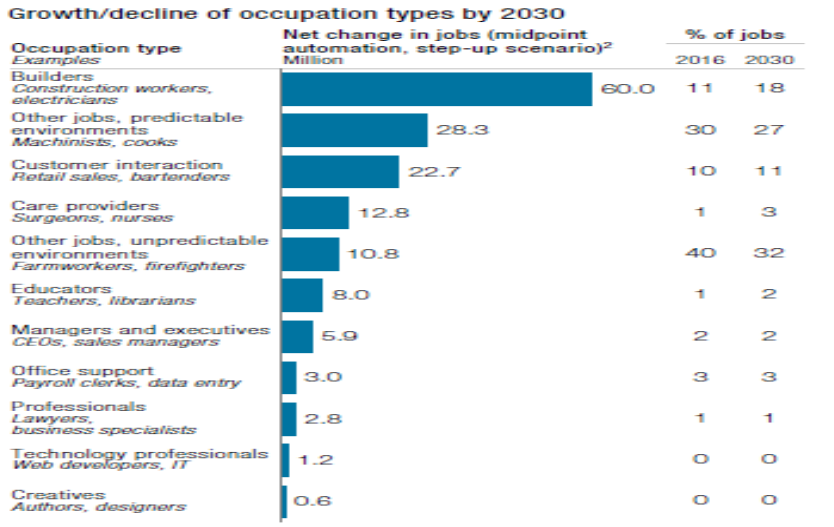
Based on the picture above, it is known that the profession of advocate/lawyer profession is around 1.4 million jobs in Germany in 2030. Advocate's level of automation is the highest level of automation compared to the automation of other professions such as nurses or workers in the construction field. When viewed in the movement of the year, in 2016 there were 17% of the advocate profession in Germany who had to change their profession, and by 19% of the advocate profession in 2030 who had to consider changing their profession.

India

India is expected to be able to survive in the stage of industrialization because previously India was in the agricultural stage.

[31] James Manyika et al., *Jobs lost, jobs gained:…*, p. 94.

Jobs in India in the future will be driven more by the construction industry, besides that the pattern of public consumption will increase in middle income circles. The potential for automation in all jobs will be 9% of automated jobs in 2030 (midpoint scenario), and 19% will be automated in 2030 (rapid scenario).[32] The list of professions affected by automation can be seen in the picture below:



Source: Mc. Kinsey Global Institute

Figure 4. Professional Automation Prediction in India in 2030.

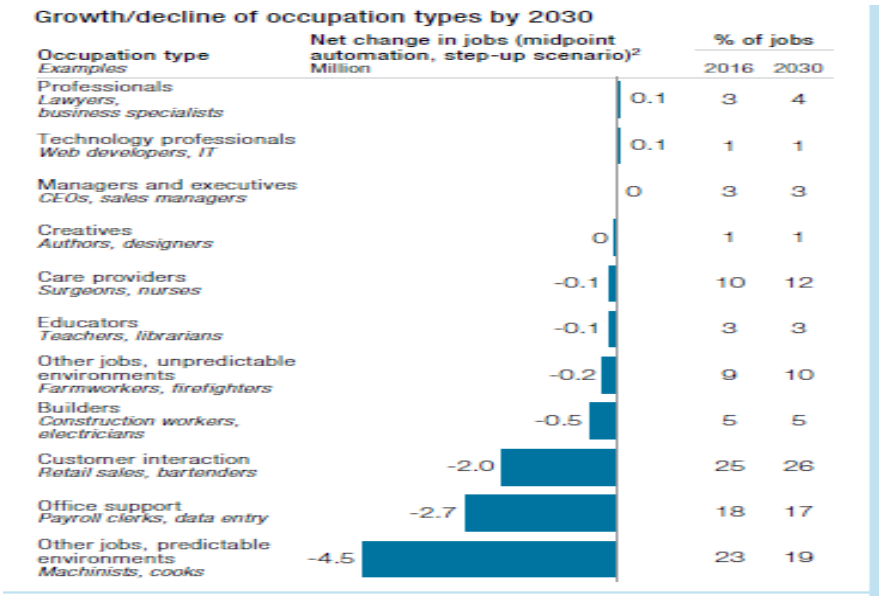
Based on the picture above, it is known that the profession of lawyers/lawyers is around 2.8 million jobs in India in 2030. This level of automation is small compared to other professions such as workers in the construction sector. When viewed in the movement of the year, in 2016 there was 1% of advocate professions in India who had to change their profession, and only 1% of the advocate profession in 2030 had to consider changing their profession.

Japan

Japan is a country that has a large income per capita. This large per capita income will accelerate the automation process. Japan is also

[32] James Manyika et al., *Jobs lost, jobs gained:*…, p. 96.

a country that faces an aging population. Decreasing generations of productive age will certainly affect the future work. The potential for automation is 26% in the year 2030 (midpoint scenario), and 52% in the year 2030 (rapid scenario).[33] The list of professions affected by automation can be seen in the picture below:



Source: Mc. Kinsey Global Institute

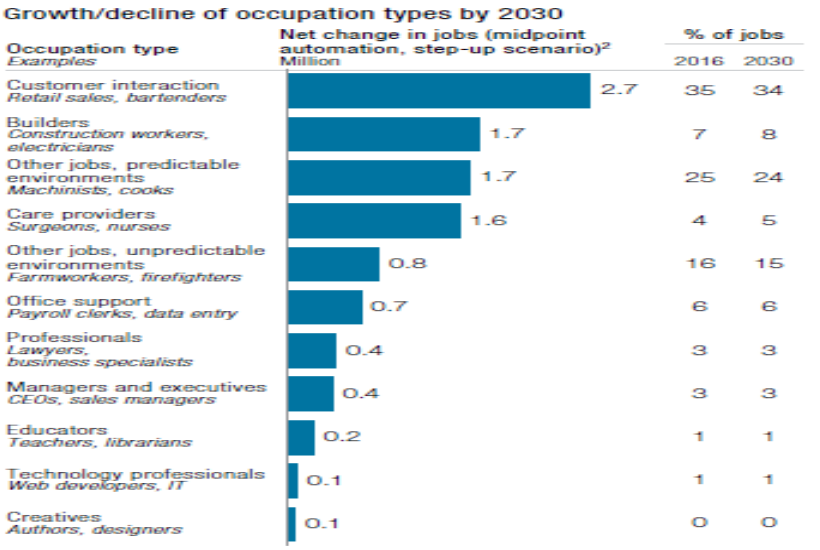
Figure 5. Prediction of Professional Automation in Japan in 2030.

Based on the picture above, it is known that there will be profession advocate/lawyer profession of 0.1 million jobs in Japan in 2030. This level of automation is the highest level of automation compared to other professions such as web developers or IT specialist. When viewed in the movement of the year, in 2016 there were 3% of advocate professions in Japan who had to change their profession, and by 4% of advocate professions in 2030 who had to consider changing their profession.

[33] James Manyika et al., *Jobs lost, jobs gained:*…, p. 98.

Mexico

Mexico, including a country with a large population of young people, has the effect that there will be enough workers to deal with automation. Low to medium income levels are predicted to experience a low impact of automation. Automation potential is 13% in the year 2030 (midpoint scenario), and by 26% (rapid scenario).[34] The list of professions affected by automation can be seen in the picture below:



Source: Mc. Kinsey Global Institute

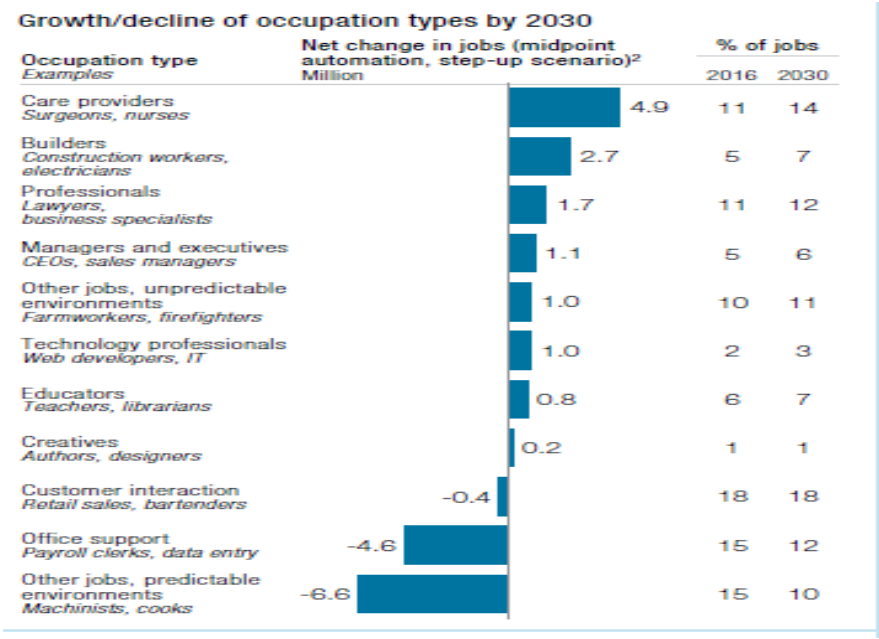
Figure 6. Professional Automation Prediction in Mexico in 2030.

Based on the picture above, it is known that there will be 0.4 million jobs in Mexico's professional advocates/lawyers in 2030. This level of automation in the advocate profession in Mexico is a moderate level of automation that is equivalent to the level of automation of the CEO or sales manager. When viewed in the movement of the year, in 2016 there were 3% of advocate professions in Mexico who had to change their profession, and by 3% of advocate professions in 2030 who had to consider changing their profession.

United States

[34] James Manyika et al., *Jobs lost, jobs gained:*…, p. 100.

Automation will have a significant effect in the United States, so one in three workers in the United States must think about changing job categories. The potential for automation in the United States is 23% in the year 2030 (midpoint scenario), and up to 44% of the automation in 2030 (rapid scenario).[35] The list of professions in the United States affected by automation can be seen in the picture below:



Source: Mc. Kinsey Global Institute

Figure 7. Prediction of Professional Automation in the United States in 2030.

Based on the picture above, the advocate/lawyer profession automates around 1.7 million jobs in the United States in 2030. This level of automation is the third highest level of automation compared to other professions. When viewed in the movement of the year, in 2016 there were 11% of advocate professions in the United States who had to change their profession, and 12% of advocate professions in 2030 had to consider changing their profession.

[35] James Manyika et al., *Jobs lost, jobs gained:*…, p. 102.

Technology driving automation such as artificial intelligence and robotics does not always have negative effects such as disruption of innovation, but on the other hand can provide significant benefits to increase productivity, increase economy and business, and help economic growth. The replacement of workers by robots does not necessarily occur instantly, but increasing the competence of human resources and adaptability in the future will greatly determine the level of automation in a profession.[36] Automation will provide benefits for humans who are able to adapt because there will be many new jobs and opportunities, although on the other hand there will also be jobs that disappear, besides that there can also appear fields of advocate profession that were not previously predicted namely the hybrid profession.

The Impact of Automation in the Industrial Age 4.0 in the Field of Law

Industry 4.0 has a close relationship with automation and data exchange technology. The five main technologies that support the implementation of Industry 4.0 are internet of things, artificial intelligence, human machine interfaces, robotics and sensor technology, and 3D Printing technology. The application of artificial intelligent through legal start up is only the beginning of radical technology that will change legal practice because artificial intelligence in addition to containing large threats also has potential and opportunities in it.

Based on the searches conducted in several law firms in America and Europe, the application related to artificial intelligence in Industry 4.0 will have an impact on the five legal fields that are automated as follows:

Due diligence

Due diligence is also called legal audit. Basically, the legal audit is related to legal opinion, because in the process of issuing a legal opinion, the legal audit must be carried out beforehand. Legal audit is an examination into the company of all activities and documentation

[36] James Manyika et al., *Jobs lost, jobs gained:*…, p. 105-106.

relating to the law.[37] Due diligence is predicted to be affected by automation so that it becomes more effective and efficient including speeding up the contract review process, legal research and electronic discovery.[38] Some artificial intelligent examples related to due diligence are the *iManage's RAVN whose M&A Due Diligence Robot* yang berfungsi untuk mengotomasi proses review dan mengekstrak which functions to automate the review process and extract data, besides that there is also a LitIQ which is computational technology that serves to reduce contract disputes, in addition there are start ups such as legal sifter, seal, luminance which has a function to help simplify the due diligence process.[39]

Prediction technology

Artificial intelligence software can help predict the results and effects of litigation. This prediction in the United States has been started since 2004, by a group of professors from Washington University who checked the accuracy of the algorithm of Supreme Court court decisions on 628 cases in 2002. They compared the algorithm results done by legal experts and were done by machines. The results of the alogarithm check statistics of court decisions show that the engine has a better prediction with a level of accuracy of up to 75% compared to if done by legal or human experts who only have an accuracy rate of 59%. In addition there are also several comparative predictions between humans and machines in analyzing cases in the Human Rights Court in Europe as follows:

> Prof. Daniel Katz of Michigan State University and his two colleagues achieved a 70.2 percent accuracy on case outcomes of the Supreme Court in their 2017 study. Similarly, Nikolaos Aletras of University College London and his team used machine learning to analyze case text of the European Court of

[37] Yulfasni, *Hukum Pasar Modal* (Jakarta: Badan Penerbit Iblam, 2005), p. 45.

[38] Kira Systems, "How Ai Is Transforming The Due Diligence Process", *Raconteur* (Oct. 18, 2017), https://www.raconteur.net/sponsored/how-ai-is-transforming-the-due-diligence-process, accessed on November 3, 2018.

[39] Edgar Alan Rayo, "AI in Law and Legal Practice – A Comprehensive View of 35 Current Applications", *emerj* (May 20, 2019), https://emerj.com/ai-sector-overviews/ai-in-law-legal-practice-current-applications/, accessed on 11 June 2019.

> Human Rights and reported a 79 percent accuracy on their outcome prediction.[40]

Legal analytics

The field of legal analysis is also included in the impact of automation in the era of the Industrial Revolution 4.0. Through legal analytics tools, an advocate can trace important data from past cases, besides that it can also find out whether the case wins or loses in court and the history of how a judge decides the case. Legal analytics has evolved from its traditional description of analyzing data and using that data for assistance strategies in the litigation process to become an increasingly extensive description of combining various types of business applications and legal practices using big data systems.

> Using big data to guide decisions is one of the most important trends of the last decade. It has intensified so much that universities now offer courses, and indeed degrees, in data analytics.[41]

There are 10 (ten) categories of legal analytics that will develop in the marketplace during the Era of Industrial Revolution 4.0, namely *research analytics, docket/judicial analytics, billing/practice management analytics, case analytics, E-discovery/big data analytics, compliance analytics, contracts analytics, document automation analytics, risk analytics, tax analytics*.[42]

Document automation

Through document automation technology, law firms can use software templates when creating data-based legal documents. This Document Automation has developed in major countries in the Americas, Europe, Australia, Asia and Africa. One of the start-ups focusing on document automation is an artificial intelligent platform formed by Cambridge University PhDs named Luminance (this start-

[40] Edgar Alan Rayo, "AI in Law and Legal Practice…",

[41] Viktor Mayer-Schönberger and Kenneth Cukier. *Big data: A revolution that will transform how we live, work, and* think (Boston: Houghton Mifflin Harcourt, 2013), p. 6-12.

[42] Josh Becker and LexisNexis, "4 Ways that Law Firms Benefit from Legal Analytics", LexisNexis (2018) https://www.lexisnexis.com/pdf/legal-analytics/Legalanalyticwhitepaper.pdf, accessed on November 4, 2018.

up received the best artificial intelligent Start Up) award, which is able to automatically reads, compares and analyzes data space wide in many cases, and provide advocates instant view advice regarding complex transactions. The following is a function of artificial intelligence in document automation:

> Using Artificial Intelligent transactional for legal documents automation, court papers and even legal precedents can be generated by a user simply completing a questionnaire. The outcome of the user completing the questionnaire is a first draft of the relevant documents which the lawyers will pour over and consider whether any amendments thereon may be necessary. Cutting out the time-consuming aspect of lawyers having to spend time in the preparation of the legal documents benefits both lawyers and clients alike: the lawyers will save time and therefore have the capacity to address more matters concurrently; and by lawyers spending less time on any single matter, the client's fees will be reduced significantly.[43]

Intellectual property

The machine of artificial intelligence in the Age of Industrial Revolution 4.0 can guide advocates in analyzing intellectual property. Products supported by artificial intelligent receive protection under copyright, patents, trademarks, and trade secrets. Some examples of artificial intelligence products get intellectual property protection as below:

> According to the World Intellectual Property Organization (WIPO) between 2007 and 2017 there are 3,054 patents were filed on Artificial Intelligent. Those include: 1,030 applied for in the USA; 674 in China; 467 in the Republic of Korea; and the remainder in the EPO and other regional patent offices. In the USA such inventions fall within separate class 706 (artificial intelligent), but according to WIPO class system, where AI are not allocated, they can fall under G10L (speech or voice

[43] VDMA Attorneys, "Artificial Intelligence in a law firm – Transforming the legal profession", *GoLegal* (Jul 3, 2018) https://www.golegal.co.za/artificial-intelligence-law-firm/, accessed on November 5, 2018.

processing), G06N (computer system based on specific computational models). [44].

Professor Ryan Abbott, professor of law and health from the University of Surrey, School of Law, provides views regarding the relationship of automation and intellectual property as below:

> Ryan Abbott analyses how intellectual property should adapt to innovation generated by computers. He emphasises that computers are doing more than ever before, and their work goes far beyond manual labour. Not only doctors, lawyers, and scientists, but also inventors, can be partially replaced by computers. In this respect, Abbott's contribution launches a challenging proposition, namely to recognise computers as true inventors. Abbott holds that this recognition will functionally produce more innovation because it will incentivise the development of creative computers.[45]

Advocate's Profession Facing Automation in the Industrial Age 4.0

The future challenge in the form of artificial intelligence and the development of robotics that is predicted to disrupt the advocate profession is not an easy challenge. In some countries, they have begun to anticipate developments and thoughts related to artificial intelligence that can replace human roles because they are considered more effective and efficient. A book written by Thomas Davenport and Julia Kirby, provides seven values that can be used to face the era of industrial revolution 4.0:[46]

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[44] Michael Sloan, Yujia He, "The Global Race for Artificial Intelligence – Comparison of Patenting Trends", *Wilson Center* (March 1, 2017), https://www.wilsoncenter.org/blog-post/the-global-race-for-artificial-intelligence-comparison-patenting-trends, accessed on November 2, 2018.

[45] Xavier Seuba, Christophe Geiger, and Julien Penin, "Intellectual Property and Digital Trade in the Age of Artificial Intelligence and Big Data", *Global Perspectives and Challenges for the Intellectual Property System* (International Centre for Trade and Sustainable Development Publications Series, June 2018).

[46] Thomas H. Davenport and Julia Kirby, *Only humans need apply: winners and losers in the age of smart machines* (New York: Harper Business, 2016).

1. Design and create the machine's thinking. Very difficult to create such systems without a substantial amount of human labor and guidance.
2. Provide "big-picture' perspective". As computers are not good at "big picture," unstructured thinking issues such as comparing multiple solutions to the same problem, whether new information sources are needed or even just whether something "makes sense" or not.
3. Integrate and synthesize across multiple systems and results. Humans are better at integrating information and triangulating correct answers.
4. Test and monitor. The role of humans to observe that systems no longer provide high-quality answers and need to be updated or replaced"
5. Know how to best apply the system. Know the machine's weaknesses and strengths,
6. Elicit the necessary information. Determining and obtaining the appropriate information, often through questioning and information gathering
7. Persuade humans to take action on automated recommendations. No matter how smart our machines become and no matter how good the advice they provide, it is ultimately humans who have to take—or not take—the actual actions that follow from our fellow humans.

Successful advocates in Industry 4.0 are certainly advocates who are able to adapt to new technologies and create innovations in the field of law.[47] Advocate profession in the face of Automation in Industrial Age 4.0 should prepare themselves with additional expertise as follows: *First*, having knowledge related to legal knowledge engineer, in the future the advocate profession will be more related to computerized technology so that strong analytical skills are needed in matters related to artificial intelligent , consortium blockchain technology, internet of things, artificial intelligence, scalability, centralization risk, usability, cryptocurrencies, smart contracts, human

[47] Michael Simkovic and Frank McIntyre, "The economic value of a law degree", *The Journal of Legal Studies*, vol. 43, no. 2 (2014), p. 249-289.

machine interfaces, robotic and sensor technology, stict coding, cyber security and big data analysis so that advocates are able to think comprehensively and complexly , because the ability to think like that is not owned by robots.

> Some aspects of lawyers' jobs are more vulnerable to change than others. While algorithms are effective at processing data, they're weaker in areas requiring emotional intelligence and human judgment. Complex areas of statutory law, like tax, will benefit from technology's superior processing skills, but humans will probably always be better at negotiating deals, mediating disputes, or making ethical judgments.[48]

Second, has the ability to deal with legal hybrid cases and includes multidisciplinary aspects.

> The lawyers of the future as setting rather than enforcing the rules, working together with programmers to ensure the algorithms are properly written. The lawyer will move from litigating the dispute to programming smart contracts from the outset. Lawyer should understand media law, internet, cyber space and data protection.[49]

Advocates will be superior when they have the latest specialist skills in the field of law and legislation in accordance with the needs of industry 4.0 and those advocates must have strong attachments to their clients.[50]

> Machines will generally be most effective at finding patterns in past data to predict the future. But if the current time is radically disconnected from the past or involves small amounts of specialized information, machines will have less data to analyze. Consider, for example, hypothetical banking legislation, equivalent in scope and novelty to the Dodd-Frank legislation of

[48] Rachel Hall, "Ready for robot lawyers? How Students can prepare for the Future of Law," *The Guardian* (Jul 31, 2017), ttps://www.theguardian.com/law/2017/jul/31/ready-for-robot-lawyers-how-students-can-prepare-for-the-future-of-law, accessed on August 15, 2018.

[49] Rachel Hall, "Ready for robot lawyers? How…"

[50] Russell G. Pearce and Eli Wald, "The Relational Infrastructure of Law Firm Culture and Regulation: The Exaggerated Death of Big Law", *Hofstra Law Review*, vol. 42, no. 109 (2013), p. 15-31.

2010, passed ten years hence.[51] Lawyer and client thereby fostering relationships of trust, which allow the lawyer to facilitate clients to see their long-term legal self-interest, even when clients'passions and confusions cloud that interest.[52]

Conclusion

Technological developments in the Industrial Revolution 4.0 will certainly bring changes to the legal field in Indonesia, whether sooner or later, those changes will be felt to this country due to the borderless nature of technology. At present, countries with more legal fields feel the influence of the automation of the 4.0 industrial revolution, namely in the field of law and the advocate profession in countries such as Europe and America where more research related to science and technology is aimed at developing things that support the acceleration of the Revolution Industry 4.0 like artificial intelligent technology, consortium blockchain technology, internet of things, scalability, centralization risk, usability, cryptocurrencies, smart contracts, human machine interfaces, robotic and sensor technology, stict coding, cyber security and big data analysis.

In Indonesia automation is predicted not to be as fast as in countries in America and Europe, but we must prepare ourselves to anticipate these things because the development of technology through artificial intelligent and robotics systems is evident nowadays and the law must immediately adjust to existing developments even though the law will ultimately always lag behind the event (*het recht hink achter de feiten aan*). The advocate's automation predictions are also seen in Mc's research. Kinsey (a company that has an automation effect data base on 800 types of professions worldwide). Associated with workers in the legal sector or lawyers in several countries such as China, Germany, India, Japan, Mexico and the United States. The results of the

[51] Dodd-Frank, *Wall Street Reform and Consumer Protection Act*, Public Law No. 111- 203, 124 Statue 1376 (2010) (codified in scattered sections of 7, 12, 15, 22, 31, and 42 U.S.C.).

[52] Stephen Ellmann, "Client-Centeredness Multiplied: Individual Autonomy and Collective Mobilization in Public Interest Lawyers' Representation of Groups", *Virginia Law Review*, vol. 78 (1992), p. 1103-1173.

study indicate that the level of automation of the advocate profession also varies in several of these countries.

If we look at automation in developed countries like the United States, Japan, Germany the level of automation of advocate professions is at the highest level of automation compared to other types of professions such as information technology specialist or web developer (where this work is a job that should have a very rapid rate of change adjust to technological changes). The automation of the advocate profession in developed countries is even higher than the automation of the nurse profession or jobs in the construction sector in the country. Mexico and China have a moderate level of advocate profession automation, equivalent to the automation of the work of the CEO or sales manager, whereas in India, the level of automation of the advocate profession is at a low level. Automation (the transfer of technology from traditional human-based work to technology-based work) to the advocate profession has also seen its influence in Indonesia, little by little seen through the development of regulatory technology or legal technology including applications *legalgo, pop legal, startup legal clinic, lawble, privyID*, *eclis.id*, hukum online and several other legal start ups. The legal field that will be affected by automation in the Era of Industrial Revolution 4.0 is predicted to be the most exposed to the fields, namely due diligence, prediction technology, legal analytics, document automation, intellectual property.

There are a number of new legal issues that will emerge in the Industrial Age 40 related to artificial intelligence such as the issue of legal accountability of unmanned cars, the legality of automatic weapons, robots engaged in finance whose work is not in accordance with business competition law, and security aspects from a robotic doctor or the results of a trial from a robot lawyer as a result of the advancement of big data technology and algorithm. In addition, the automation of the Industrial Revolution 4.0 will also bring about changes in legal substance that must be anticipated in the future, of course this will also change how an advocate practices in the future and there is a possibility that this will change the legal map in the Industrial Revolution 4.0 automation era.

Based on the conclusions above, the advice that can be given is that the profession of the advocate profession in the Era of Industrial Revolution 4.0 will contain opportunities and challenges. If an advocate can use this opportunity well, automation will support the advocate profession more than to distort the advocate profession. Successful advocates in Industry 4.0 are certainly advocates who are able to adapt to new technologies and create innovations in the field of law. Therefore, an advocate in the future is required to have knowledge related to a legal knowledge engineer, has the ability to deal with legal hybrid cases and includes multidisciplinary legal cases, and a future advocate must have a strong determination to always learn and be open minded because there will be a lot of research and legal cases that will be transformed through sophisticated technology.

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