



## Legal Status of Artificial Intelligence-Based Health Insurance Services: Challenges, Opportunities for Customer Protection



Rika Riyanti <sup>a</sup>

*Manuscript submitted: 31 January 2022, Manuscript revised: 28 April 2022, Accepted for publication: 13 June 2022*

### Corresponding Author <sup>a</sup>



### Keywords

*health insurance;  
health pattern;  
health sector;  
human healthcare;  
legality;*

### Abstract

This study examines various sources of publications to complement the discussion of legal literacy studies on applying artificial intelligence based on health insurance and public services regarding challenges and opportunities in consumer protection. Several studies have been published on artificial intelligence; some even have one regarding health, but the legal status has not been found in consumer protection for technology-based insurance. On that basis, the existence of this research. We obtained data from several electronic searches and analyzed them to answer the research problem. Our approach is that we first analyze the data with an understanding of the questions, then search the data electronically and then review it; it involves a system of data coding, interpretation, and in-depth evaluation. Finally, based on the discussion of the results, it can be concluded that the use of intelligence applications in terms of public services in health insurance is something that helps the implementation of health insurance, which includes very transparent data, where the algorithm has been designed in such a way. Ways that can provide security in terms of cybercrime, keep customers' identities secret, prioritize justice and eliminate discrimination against consumers, legal justice in the form of intellectual rights from the impact of work and customer privacy will continue to be a commitment and responsibility that can be accounted for in an accountable manner by every insurance that uses artificial intelligence application. Hopefully, these findings provide essential strength for the development of future studies.

*International Journal of Health Sciences © 2022.  
This is an open access article under the CC BY-NC-ND license  
(<https://creativecommons.org/licenses/by-nc-nd/4.0/>).*

### Contents

Abstract.....	1023
1 Introduction.....	1024
2 Materials and Methods.....	1026

<sup>a</sup> Politeknik Negeri Pontianak, West Kalimantan, Indonesia

3	Results and Discussions .....	1026
3.1	Leverage AI to prevent fraud .....	1026
3.2	AI helps measure premiums, and the sum insured .....	1029
3.3	Duping in health insurance .....	1029
4	Conclusion .....	1030
	Acknowledgments.....	1030
	References .....	1031
	Biography of Authors .....	

## 1 Introduction

Artificial intelligence is now increasingly popular not only in education and government military business but also in the health sector by using the sophistication of data and the flexibility of algorithms in identifying health patterns and information and achieving predictions and results that exceed those of previous machines (De Spiegeleire et al., 2017). In such a dependent on the medical world on data processing and various complicated results of medical and scientific studies that produce data that is so large and continues to grow that this condition makes it possible for the medical world to be handled by machines or artificial intelligence. Then the artificial intelligence system, in this case, will be readily accepted and continue to grow in human health care, starting from research data, analyzing data, finding work patterns, predicting health diagnoses, and even health care and insurance. This insurance health product, paired with advanced technology, is intended so that people can access insurance protection quickly and easily through their smartphones (Horowitz et al., 2018). Digitalization technology in the insurance industry is necessary not to be left behind and continue to compete (Riikkinen et al., 2018). AI-based health management platforms in Indonesia have great opportunities to respond to various challenges in the health sector in Indonesia. Using AI in health services is beneficial in increasing clinical and administrative capacity. Increasing administrative capacity through the use of AI can be done with telemedicine. However, technological sophistication must ensure legal status and consumer protection (Kaplan & Haenlein, 2020).

Artificial intelligence-based on health, Indonesia's board stages have extraordinary open doors in answering different difficulties in the well-being area in Indonesia. Artificial consciousness in well-being administrations is not just valuable in expanding clinical limits but also authoritative limits (Hamadache et al., 2019). Expanding regulatory limits using AI should be possible with telemedicine. In any case, mechanical refinement should guarantee lawful status and buyer security. Advances, for example, AI, make additional opportunities to offer more lawful types of assistance with less expense and proficiency, particularly after developing new companies or legitimate tech that can give full and free legitimate discussions. Different elements that can impact the improvement of regulation are legislative issues, globalization, financial matters, and authentic variables. Of the many variables recently referenced, innovation is the most complex challenge to changing callings. This is because many individuals can become jobless mainly through the revelation of one new apparatus or little instrument. It can likewise be found in the legitimate area, which has started to be disturbed by innovation; for instance, in the whole United States court framework, in one year, getting cases of claims three times, not precisely the web-based debate goal framework through eBay (Cantú-Ortiz et al., 2020).

The combination of data innovation in the modern world has brought forth the Industrial Revolution 4.0. This combination is driven by innovative improvements like the Internet of Things (IoT), blockchains, artificial consciousness (AI), enormous information, distributed computing, and 3D printing (Tien, 2017). Blockchain and artificial reasoning are the two main advancements impacting the fourth modern transformation. Artificial brainpower is a movement to make clever machines. It empowers an element to work appropriately and have premonition given its environment. Artificial knowledge is progressively being applied in drugs, clinical gadgets, and medical services to assist different innovative work with organizing and patient consideration. Artificial reasoning programming consolidates AI and the capacity to gain from information (independence learning) without any guidelines-based programming. Artificial knowledge can incorporate AI, regular language handling, master frameworks, vision, discourse, arranging, and mechanical

technology. The regulation and artificial reasoning field has had an acquaintance of around thirty years; bringing about artificial consciousness is not new to the law (Bhardwaj et al., 2021).

Notwithstanding, artificial intelligent innovation in government frameworks, lawful business, and legitimate experts in earlier years has been extremely sluggish. In the hour of modern transformation 4.0, the interest in artificial reasoning expanded and grew emphatically (Yigitcanlar et al., 2021). This increment is because of the requirement for a change in legitimate administrations and the accessibility of legal information. The effect of artificial reasoning innovation is likewise found in courses in graduate schools, where there is another accentuation on picking up utilizing electronic devices, and a developing number of legal tech new companies, legal tech affiliations, and legal tech meetings are being held. Moreover, a few regulation schools in America and Europe have laid out an exploration and preparation focus connected with "regulation and knowledge innovation (Buhmann & Fieseler, 2021).

The production of AI machines has started to create as well as robot legal advisors and robots equipped for delivering lawful choices. Robots are supposed to have the option to have a positive effect in a few viewpoints connected with the legal framework process since mechanization is thought of as ready to beat people and increment efficiency. Then again, robots are likewise ready to give careful judgments. A bunch of essential thoughts connected with artificial consciousness is a fundamental beginning stage to see the effect of these advancements in the legal arena. AI will not just affect transformation but will make a troublesome difference in almost every industry. This will not just affect items and administrations; it will likewise influence the regular routines of individuals all over the planet. From one perspective, computerized reasoning will bring financial doors and provoke that should be noticed immediately (Cath, 2018). In the meantime, then again, worldwide wards all over the planet today have considerable contrasts in their administrative way of dealing with this artificial consciousness technology.

Computer applications for legitimate critical thinking have advanced from simple word processor applications to mechanized case regulation examination. PCs are utilized as savvy agents whose errand is to tackle some legitimate issues (Smuha, 2021). Efforts to use artificial reasoning innovation have been completed by utilizing PC programs as web search tools to gather information from lawful databases naturally. Artificial knowledge can likewise assist legal advisors with planning lawful issues, looking for contentions, and help with drafting a reminder to guard against the investigator. This innovation can help attorneys look through case data sets naturally with the force of contemporary machine computing. One illustration of contemporary machine computerization innovation connected with AI is robots (Wirtz et al., 2020).

Robots should proceed to create and advance by noticing and interfacing with the biological system examples of human existence. Here, robots can be advanced in brutal ways of behaving, and robots can enter straightforwardly into their framework as a standard, and in any event, when unlawful demonstrations have entered the robot framework, the actual robot can turn into the culprit (Rampersad, 2020). For instance, Microsoft 2016 made AI talk like a young lady. This robot can utilize millennial shoptalk, determined to assist with further developing client support. AI should adjust through learning after collaborating with people, yet the robot's capacity to store all data into the framework and not having the option to figure out the data brought a debacle when AI began posting tweets (Dirican, 2015).

For every risky business activity for consumers, such as AI-based insurance applications, the legal status must be clear to avoid regrettable impacts both by consumers and the state based on public protection. The rise of innovations such as AI in the increasingly refined healthcare realm has created legal tensions across the planet, so there is a need for legitimate reporting on these innovations (Belanche et al., 2020). One consideration that the essayist finds attractive and the writer needs to use as an insightful way to concentrate on improving computerized intelligence innovation is the possibility of moderate regulation or the reasonable law hypothesis. From a legal point of view, this hypothesis can be used logically because the total concentration is on the controlling human, not the rules, items, or assurance foundations. Moderate regulatory phenomenology is a mentality that does not depend solely on objectivity or does not only look at real side effects in the future but seeks to investigate the significance of AI in the legal arena and consumer protection of health insurance (Gessl et al., 2019; Sukmana et al., 2021). Furthermore, the authors must understand the evolving legal outlook on the advancement of artificial intelligence innovation), particularly in protecting healthcare services. For this reason, we will examine the legal status of AI and apply it to public health insurance services.

## 2 Materials and Methods

Next, in the method section, the author will describe the word like a literature review aiming to get views and perspectives on a legal artificial intelligence help service guarantee and the challenges and opportunities in protection (Harper, 2011). To continue this study, the first step we took was to understand the research question and the mortgage, then determine the criteria for the data to complete the discussion of this study. The next step is to decide on an electronic data search database. After the data is collected, we conduct a review to get the results. Furthermore, efforts to code data to love data evaluate and interpret the data; finally, we can conclude by reporting the design literature review data (Jamshed, 2014). Our data search was conducted electronically on several publication information sources, including Taylor and France publications, Emerald, Google Scholar, ERIC, and Sagepub. This study relies on secondary data. Then we design a descriptive qualitative report under a phenomenological approach, namely an effort to obtain data that answers the study problem from several existing data. Thus, we undertook a literature review study that began with problem formulations, data collection, and final data reporting (Musheke et al., 2013).

## 3 Results and Discussions

In the following section, we present the result and discussion over the literature review of research evidence from relevant sources of publication and observation. We could repeat that this study aims to gain more understanding of the regulation status of Artificial Intelligence-Based Health Insurance Services and what challenges opportunities in the protection community in general and insurance consumers in particular.

### 3.1 Leverage AI to prevent fraud

Of late, artificial intelligent innovation is, to be sure, being prevalently talked about and utilized. Artificial intelligence is additionally utilized in different fields, remembering the well-being area for the type of protection (Asatiani et al., 2020; Lopez et al., 2019). Consequently, an ever-increasing number of individuals in Indonesia are utilizing AI to make the early location of extortion or misrepresentation in the case cycle. The AI utilized by Allianz protection, for instance, has had the option to investigate 7,500 case entries consistently and can perform examination two times as quickly as manual examination. The protection we are at present ready to distinguish instances of cases connected with deceitful exercises with an AI exactness of more than 80%. Subsequently, we can accelerate the whole course of client guarantees that are generally sensible and give a superior encounter to clients. This recognition cycle by AI works in a single bundle with the protection guarantee process by clients. This accelerates the case cycle, particularly with slow entries often experienced in health care coverage claims (Chummun, 2018).

On the off chance that the case is made physically, the case must be paid following seven working days. Utilizing AI, 95% of cases can be made in 48 hours or less. Allianz, utilizing AI until October 2020, has paid upwards of 150,000 cases with an all-out guarantee of more than 490 billion rupiahs (Riikkinen et al., 2018). Allianz Health Insurance has likewise experienced different advantages in the wake of utilizing AI beginning around 2019. Consumer loyalty has expanded to 4.4 from 5.0 in light of the consumer loyalty score for the protection administrations presented by Allianz Indonesia. Afterwards, the utilization of AI will not be restricted to health care coverage but will likewise be applied to other business areas. "By doing everything, organizations can diminish costs for paying made-up claims and work on cost proficiency, with the goal that the organization's business environment can stay steady and helpful (Lomis et al., 2021).

Artificial intelligence, namely in the United States, has been used to make legal decisions like a judge; besides that, predictive analytics technology is developed to make predictions about the outcome of the litigation (Riikkinen et al., 2018). The United States has also carried out predictive coding to determine will a recidivist le commit more crimes or not in the future. Second, Riyadh announced in 2017 that the beautiful robot Sofia would be granted Saudi Arabian citizenship. Third, Japan in 2017 granted the Shibuya Mirai a residence permit based on particular regulations. However, this action is contrary to the law on residence permit procedures in Japan in the form of special regulations related to residence permits which are only

intended for foreign specialists who work in Japanese companies, participants in family reunification programs, entrepreneurs, and investors who do so (Dwivedi et al., 2021).

Business people in Japan, scientists, artists, and world-class athletes, foreigners who marry Japanese nationals, international students while studying in Japan, foreign nationals in exceptional cases, and the granting of citizenship in Japan have been regulated through the Japanese Citizenship Act (Lauterbach, 2019). Fourth, one of the critical projects affecting the provision of legal aid is the emergence of DoNotPay chat in the UK, which currently has legal aid services covering more than 1,000 legal fields. The popularity of these legal aid services arose because artificial intelligence has helped solve legal problems for more than 160,000 people due to the illegal issuance of parking tickets to car owners. This system was expanded to assist refugees in solving problems—their laws.

In addition, the UK has established an artificial intelligence committee in the House of Lords to review artificial intelligence-related issues and regulations. Fifth, in Russia, the company Sberbank launched robotic lawyers that can file lawsuits against individuals, and the GlavstrahControl company launched robots to help resolve insurance disputes (Gwagwa et al., 2021). In 2015, the Russian Parliament drafted the Grishin Act. The draft law makes amendments to the provisions of the Civil Code of the Russian Federation, which gives legal responsibility to robot developers, operators, or manufacturers, and the new rules will cover the issue of robot representation in court. In addition, legal conventions related to robotics models and artificial intelligence introduce rules on how to create and use robots (Lu et al., 2018).

From one viewpoint, there is a supposed, on the off chance that robots can go with independent choices through innovation that develops without anyone else such that robot frameworks will develop consequently following the human world, then it is conceivable that the activities of robots can hurt people and society at large (Garbuio & Lin, 2019). In any case, then again, there is an assessment that expresses that robots invigorate the human way of behaving and cannot be considered "completely human," so there is no requirement for lawful elements and legitimate plans for artificial reasoning innovation. The regular conviction that is growing today is that robots ought to be treated as simple machines and were made to serve humankind in that job.

Assuming that people take a gander at moderate regulation, the fair idea needs to return to their fundamental way of thinking, particularly regulation for humans. This way of individual thinking is viewed as a moderate regulation determinant and direction point (Fiske et al., 2019). The law is responsible for serving people, not the opposite way around, so the law is not an establishment free of human interests. Nature is not entirely set in stone by its capacity to serve human government assistance. This makes moderate regulation embrace a philosophy specifically supportive of equity regulation and favourable to individual law. According to this point of view, the comprehensive set of laws is not a tree of insurance but an instrument that should be dedicated to serving human interests (Roberts et al., 2021).

Moderate regulation is worked with two foundations: (1). A steady concern should be created about how to urge the law to offer the country endlessly better types of assistance. (2). The longing to energize the public so in policing is no chance to stop; however, individuals generally believe the law should accomplish something towards an ideal situation (Sapci & Sapci, 2019). On the substance, not the system in regulation alone. In straightforward language, the law should acknowledge considerable equity, not just focus on procedural equity, then, at that point, express that in the Pancasila state regulation, still, small voice is prevalent, to accomplish equity as moral equity or the standard of justice." Regarding translation, moderate regulation has an idea, specifically understanding the legitimate cycle as a course of freedom from a customary idea, which can presently not be utilized to serve the present life (Galasso & Luo, 2018).

Buchanan et al. (2020), said that the translation is an understanding that does not necessarily depend on the rationale yet leaves the daily logic schedule. This is because the translation is completed by hopping; in particular, there is no legitimate connection between the old idea and the new idea; that is the reason this understanding is called a dynamic translation, or at least an understanding that does not stop at a simple exacting perusing of the text. This translation is utilized in the ever-evolving lawful technique for remembering to decipher regulations and guidelines so that they can be applied for the long-term benefit and greatness of humanity. Presently we do not entirely figure out artificial consciousness innovation. A significant idea and the underlying achievement in the connection between human interests and robots is the prospect of regardless of whether robots can be legitimate subjects (Wang et al., 2020). Assurance of

legitimate subjects will surely prompt lawful ramifications and as the reason for advantageous interaction among robots and people from here on out.

Nonetheless, our general public is not entirely prepared for this change in outlook since there will be numerous perspectives connected between regulation and society, which obviously will be highly confounded assuming advanced mechanics innovation proliferates (Guihot et al., 2017). Generally speaking, what should be considered is that the law ought to be proactive, and preferably the guideline is made as an underlying system to keep issues from happening (preventive). In this manner, it is not prudent to hold on until issues emerge, in particular when there is an enormous utilization of mechanical innovation and afterwards search for the law, what strategies or moves should be made in the public eye to have the option to lay out a cooperative mutualism with robots. What is extremely clear is that robot innovation and computerized reasoning will make another period for humanity; as Stephen Hawking said, "the ascent of strong AI will be either awesome or the most terrible thing ever to happen to humankind (Turner, 2018).

Regarding guidelines and the development of new regulations, Ishii (2019), said that the arrangement of regulation is an action of picking and utilizing the technique to accomplish specific social and legitimate objectives in the public arena. Later on, on the off chance that artificial brainpower innovation can foster quickly in Indonesia, assuming we survey reasonable, legitimate hypotheses, the State and Stakeholders ought to energize the introduction of new regulations in light of the craving to accomplish social objectives that are wanted by the local area, as in the public authority (Tyagi & Chahal, 2020). Authoritative foundations do not consequently make guidelines connected with computerized reasoning, yet these principles should likewise be based up, explicitly paying attention to the goals and necessities of the local area. This happens because dynamic legitimate phenomenology withdraws from a subjectivist outlook that does not just gander at a noticeable side effect yet attempts to investigate the significance behind the peculiarity. From the point of view of social and legitimate development, innovation is not something nonpartisan but a human creation, including human endeavours to shape guidelines connected with artificial reasoning innovation (Yeh et al., 2021).

Consequently, artificial brainpower innovation ought to have the option to work on human government assistance by working with movements of every kind to accomplish a superior life. Moyle's (2019), reasoning with its dynamic regulation spots people as its beginning stage is essential. This ought to be trailed by scholars, makers, and designers of data innovation with the goal that the innovation made can give joy to humans. Sociologically, regulation-making or regulation should not be visible as a sterile and independent movement. In this viewpoint, regulation-making has social beginnings; social objectives go through social mediation and have social effects (Clarke, 2019). Concerning lessening pressures in irreconcilable circumstances, a local area participatory methodology is required so what they see as their inclinations can be obliged in the regulation that will be shaped, as in the legitimate responsive hypothesis and the moderate lawful theory.

The law that should be created here is not just regulation for people as the postulation of moderate regulation, yet different and developed into regulation for people and innovation (Lawless & Sofge, 2017). This postulation is proposed to oblige human interests, yet additionally mechanical interests to create for human government assistance and science. The advancement of innovation and data innovation specifically affects human existence and the climate around people. Putting practical issues as the beginning stage of artificial consciousness innovation is a work to put people in a focal situation as commanded by Pancasila in the Second Precept. Given moderate regulation, putting people in the primary position should be trailed by masterminds, makers, and designers of data innovation so the innovation can give people joy (Porter et al., 2020).

Based on the beginning stage of moderate legitimate reasoning over, the investigation of moderate regulation should be considered as material in layout regulations connected with artificial brainpower innovation, which are supposed to be valuable for people and for the improvement of innovation itself, so what should be a worry is that computerized reasoning innovation, which should be a device for humankind to escape from subjection, transforms into a component that subjugates human (Chakraborty, 2018).

---

### 3.2 AI helps measure premiums, and the sum insured

Insurtech startup Qoala and programming as a help (SaaS) organization Kata.ai uncover the capability of artificial consciousness in supporting the Indonesian protection industry (Yaram, 2016). One of them is to gauge the premium and aggregate guaranteed. Koala VP Marketing Cliff Sutantijo said insurance agencies in numerous nations had taken on AI-first. He gave a model; artificial consciousness is implanted in facial acknowledgement innovation to decide an individual's smoking level. "The higher the degree of smoking propensity, the higher the medical coverage expense," expressed Cliff during a conversation named "Help Conversations Turned Into Conversions," cited from a public statement (Johnson et al., 2021). Premium is how much cash should be paid by the client at a specific time given the insurance contract. While the total guaranteed is the cash that the insurance agency should pay on the off chance that the policyholder makes a case for the surefire risk (Kunderevych et al., 2022).

Following this capability, Qoala upholds the advancement of AI in the country. "Particularly for insurance, we trust that AI can change individuals' insight that protection is vital to safeguard us from undesirable things (Eling et al., 2022). Kelley et al. (2018), added that AI could be utilized to develop different client experiences in executing protection administrations. Notwithstanding, this innovation can be applied from upstream to downstream or start-to-finish administrations to offer an added benefit to customers. "It can begin from somebody purchasing an insurance contract until later inclination the advantages of the protection. Participation in planning the National Artificial Intelligence Strategy is essential. This task plans to construct Indonesian HR in the field of prevalent AI. Park et al. (2021), evaluated that Indonesia should zero in on applying AI to each modern area to help the public system. This step is viewed as ready to build Indonesia's seriousness in tackling different issues in each area, including protection. He et al. (2020), said the National Strategy for Artificial Intelligence would zero in on working on the nature of public administrations and other vital endeavours that affect the more extensive local area. This procedure is supposed to aid the public authority in carrying out AI. In its execution, the service helps out different gatherings, including Huawei. "Huawei is supposed to have the option to contribute through its innovation and skill in AI, distributed computing, and 5G,".

### 3.3 Duping in health insurance

Generally, insurance is an understanding between two gatherings, in particular, the Insurance Company and the Contract Holder, which is the reason for getting expenses by the Insurance Company as a trade-off for: giving repayment to the Insured or Contract Holder because of misfortune, harm, costs caused loss of benefit or responsibility (World Health Organization, 2021). Legitimate obligation to outsiders that might be endured by the Insured or the Policy Holder because of the event of an unsure occasion; or give instalments given the passing of the Insured or instalments in light of the existence of the Insured with benefits whose sum still up in the air as well as founded on the consequences of asset the executives (Article 1 passage 1, Law No. 40 of 2014) (Thomas et al., 2019).

This implies that insurance is a legally binding connection between the backup plan who concurs with the protection taker or policyholder in regards to paying instalments to give subsidizes for the guaranteed party to cover misfortunes on the insurable interest after the petitioner party presents a conventional case because of at least one occasions in the obvious yet questionable future. The gatherings limited by the agreement are lawfully obliged to have sincere intentions, remembering for passing on material data that is fundamental for understanding the two players. The absence of honest intentions on one of the two players can prompt protection misrepresentation (Van Dijk et al., 2021). Entirely honest intentions in the execution phase of the understanding are legitimacy, to be specific, a proper evaluation of the way of behaving of a party in completing what will be concurred. Subsequently, the guideline of sincere intentions suggests that a party's opportunity to pursue an understanding cannot be acknowledged voluntarily yet is restricted by entirely pure intentions (Wang et al., 2018). Therefore, health insurance has a legal relationship between the company and customer patients who receive recognition and protection with policyholders in terms of instalment services to provide convenience for guaranteed parties to keep promises for insurable interests after the applicant submits a conventional case because of at least one opportunity in the future. Clear future that is the importance of legal support for health insurance.

## 4 Conclusion

In the conclusion section, the paper will conclude the findings of the study of various sources of information and data related to studies that aim to gain in-depth knowledge of the legal status of artificial intelligence based on health insurance services in terms of challenges and opportunities in consumer protection efforts. Based on data exposure supported by study evidence and the perspectives of experts, especially the section on artificial intelligence and health insurance, we can conclude that the legal status of the use of artificial intelligence in the context of health insurance for public service efforts is an innovation in the world of modern medicine and health care which is part of the industrial revolution to innovate and improve internet of thing work services where this development has an impact on the transformation of data and public services, especially in the health insurance section.

This artificial intelligence is an intelligent machine that imports elements of human work, which is very heavy and challenging, but with this service, all work tasks and services can be innovated electronically to provide convenience for companies, consumer employees, and even one flaw in a company. The country they operate in. We noted that artificial intelligence is an innovation that protects and helps many parties, especially consumers when they do business or become members of health insurance.

Furthermore, we also find that the regulations governing consumer protection by implementing intelligence activities in insurance services are generally divided into two parts where one law is indeed one of the main objectives of implementing a computer-based system. Thus, the principle of efficiency is provided by this artificial intelligence engine by providing convenience to many parties so that the presence of artificial intelligence brings benefits to many parties, especially in consumer protection efforts when doing insurance business where the provisions imposed and the convenience guaranteed by strategic intelligence activities are correct. It provides protection and other provisions regulated by law in the Republic of Indonesia.

### *Acknowledgements*

This study received assistance from the government Ministry of Education Directorate of Higher Education we also thank the parties for their services and contributions to feed back the study so that it is completed correctly.



---


## References

- Asatiani, A., Malo, P., Nagbøl, P. R., Penttinen, E., Rinta-Kahila, T., & Salovaara, A. (2020). Challenges of explaining the behavior of black-box AI systems. *MIS Quarterly Executive*, 19(4), 259-278.
- Belanche, D., Casalo, L. V., Flavián, C., & Schepers, J. (2020). Service robot implementation: a theoretical framework and research agenda. *The Service Industries Journal*, 40(3-4), 203-225.
- Bhardwaj, H., Tomar, P., Sakalle, A., & Sharma, U. (2021). Principles and Foundations of Artificial Intelligence and Internet of Things Technology. In *Artificial Intelligence to Solve Pervasive Internet of Things Issues* (pp. 377-392). Academic Press. <https://doi.org/10.1016/B978-0-12-818576-6.00020-4>
- Buchanan, C., Howitt, M. L., Wilson, R., Booth, R. G., Risling, T., & Bamford, M. (2020). Predicted influences of artificial intelligence on the domains of nursing: scoping review. *JMIR nursing*, 3(1), e23939.
- Buhmann, A., & Fieseler, C. (2021). Towards a deliberative framework for responsible innovation in artificial intelligence. *Technology in Society*, 64, 101475. <https://doi.org/10.1016/j.techsoc.2020.101475>
- Cantú-Ortiz, F. J., Galeano Sánchez, N., Garrido, L., Terashima-Marin, H., & Brena, R. F. (2020). An artificial intelligence educational strategy for the digital transformation. *International Journal on Interactive Design and Manufacturing (IJIDeM)*, 14(4), 1195-1209.
- Cath, C. (2018). Governing artificial intelligence: ethical, legal and technical opportunities and challenges. *Philosophical Transactions of the Royal Society A: Mathematical, Physical and Engineering Sciences*, 376(2133), 20180080.
- Chakraborty, S. (2018). Artificial intelligence and human rights: an analysis of whether both are convergent or parallel to each other?. *Novum Jus*, 12 (2), 13-38.
- Chummun, I., Bhaw-Luximon, A., & Jhurry, D. (2018). Modulating matrix-multicellular response using polysucrose-blended with poly-L-lactide or polydioxanone in electrospun scaffolds for skin tissue regeneration. *Journal of Biomedical Materials Research Part A*, 106(12), 3275-3291.
- Clarke, R. (2019). Why the world wants controls over Artificial Intelligence. *Computer Law & Security Review*, 35(4), 423-433. <https://doi.org/10.1016/j.clsr.2019.04.006>
- De Spiegeleire, S., Maas, M., & Sweijts, T. (2017). *Artificial intelligence and the future of defense: strategic implications for small-and medium-sized force providers*. The Hague Centre for Strategic Studies.
- Dirican, C. (2015). The impacts of robotics, artificial intelligence on business and economics. *Procedia-Social and Behavioral Sciences*, 195, 564-573. <https://doi.org/10.1016/j.sbspro.2015.06.134>
- Dwivedi, Y. K., Hughes, L., Ismagilova, E., Aarts, G., Coombs, C., Crick, T., ... & Williams, M. D. (2021). Artificial Intelligence (AI): Multidisciplinary perspectives on emerging challenges, opportunities, and agenda for research, practice and policy. *International Journal of Information Management*, 57, 101994. <https://doi.org/10.1016/j.ijinfomgt.2019.08.002>
- Eling, M., Nuessle, D., & Staubli, J. (2022). The impact of artificial intelligence along the insurance value chain and on the insurability of risks. *The Geneva Papers on Risk and Insurance-Issues and Practice*, 47(2), 205-241.
- Fiske, A., Henningsen, P., & Buyx, A. (2019). Your robot therapist will see you now: ethical implications of embodied artificial intelligence in psychiatry, psychology, and psychotherapy. *Journal of medical Internet research*, 21(5), e13216.
- Galasso, A., & Luo, H. (2018). Punishing Robots: issues in the economics of tort liability and innovation in artificial intelligence. In *The Economics of Artificial Intelligence: An Agenda* (pp. 493-504). University of Chicago Press.
- Garbuio, M., & Lin, N. (2019). Artificial intelligence as a growth engine for health care startups: Emerging business models. *California Management Review*, 61(2), 59-83.
- Gessl, A. S., Schlögl, S., & Mevenkamp, N. (2019). On the perceptions and acceptance of artificially intelligent robotics and the psychology of the future elderly. *Behaviour & Information Technology*, 38(11), 1068-1087.
- Guihot, M., Matthew, A. F., & Suzor, N. P. (2017). Nudging robots: Innovative solutions to regulate artificial intelligence. *Vand. J. Ent. & Tech. L.*, 20, 385.
- Gwagwa, A., Kazim, E., Kachidza, P., Hilliard, A., Siminyu, K., Smith, M., & Shawe-Taylor, J. (2021). Road map for research on responsible artificial intelligence for development (AI4D) in African countries: The case study of agriculture. *Patterns*, 2(12), 100381. <https://doi.org/10.1016/j.patter.2021.100381>

- Hamadache, M., Jung, J. H., Park, J., & Youn, B. D. (2019). A comprehensive review of artificial intelligence-based approaches for rolling element bearing PHM: shallow and deep learning. *JMST Advances*, 1(1), 125-151.
- Harper, D. (2011). Choosing a qualitative research method. *Qualitative research methods in mental health and psychotherapy*, 83-98.
- He, J., Baxter, S. L., Xu, J., Xu, J., Zhou, X., & Zhang, K. (2019). The practical implementation of artificial intelligence technologies in medicine. *Nature medicine*, 25(1), 30-36.
- Horowitz, M. C., Allen, G. C., Kania, E. B., & Scharre, P. (2018). *Strategic competition in an era of artificial intelligence*. Center for a New American Security.
- Ishii, K. (2019). Comparative legal study on privacy and personal data protection for robots equipped with artificial intelligence: looking at functional and technological aspects. *AI & SOCIETY*, 34(3), 509-533.
- Jamshed, S. (2014). Qualitative research method-interviewing and observation. *Journal of basic and clinical pharmacy*, 5(4), 87.
- Johnson, M., Albizri, A., & Harfouche, A. (2021). Responsible artificial intelligence in healthcare: Predicting and preventing insurance claim denials for economic and social wellbeing. *Information Systems Frontiers*, 1-17.
- Kaplan, A., & Haenlein, M. (2020). Rulers of the world, unite! The challenges and opportunities of artificial intelligence. *Business Horizons*, 63(1), 37-50. <https://doi.org/10.1016/j.bushor.2019.09.003>
- Kelley, K. H., Fontanetta, L. M., Heintzman, M., & Pereira, N. (2018). Artificial intelligence: Implications for social inflation and insurance. *Risk Management and Insurance Review*, 21(3), 373-387.
- Kunderevych, O., Bogonis, P., Kliuchko, Y., Chukhrai, L., & Sinenko, O. (2022). Educational information technologies in pandemic: Advantages and disadvantages. *International Journal of Health Sciences*, 6(1), 61-67. <https://doi.org/10.53730/ijhs.v6n1.3172>
- Lauterbach, A. (2019). Artificial intelligence and policy: quo vadis?. *Digital Policy, Regulation and Governance*.
- Lawless, W. F., & Sofge, D. A. (2017). Evaluations: autonomy and artificial intelligence: a threat or savior?. In *Autonomy and artificial intelligence: a threat or savior?* (pp. 295-316). Springer, Cham.
- Lomis, K., Jeffries, P., Palatta, A., Sage, M., Sheikh, J., Sheperis, C., & Whelan, A. (2021). Artificial intelligence for health professions educators. *NAM perspectives*, 2021.
- Lopez, M. M. L., Herrera, J. C. E., Figueroa, Y. G. M., & Sanchez, P. K. M. (2019). Neuroscience role in education. *International Journal of Health & Medical Sciences*, 3(1), 21-28. <https://doi.org/10.31295/ijhms.v3n1.109>
- Lu, H., Li, Y., Chen, M., Kim, H., & Serikawa, S. (2018). Brain intelligence: go beyond artificial intelligence. *Mobile Networks and Applications*, 23(2), 368-375.
- Moyle, W. (2019). The promise of technology in the future of dementia care. *Nature Reviews Neurology*, 15(6), 353-359.
- Musheke, M., Ntalasha, H., Gari, S., Mckenzie, O., Bond, V., Martin-Hilber, A., & Merten, S. (2013). A systematic review of qualitative findings on factors enabling and deterring uptake of HIV testing in Sub-Saharan Africa. *BMC public health*, 13(1), 1-16.
- Park, S. H., Choi, J., & Byeon, J. S. (2021). Key principles of clinical validation, device approval, and insurance coverage decisions of artificial intelligence. *Korean journal of radiology*, 22(3), 442.
- Porter, D. J., Lee, M. K., Iancu, A., Domino, C., Cooper, J. C., Boyajian, J., ... & Roberts, M. (2020). Artificial Intelligence and Big Data Innovations: Navigating the Technology World of the near Future. *U. Dayton L. Rev.*, 45, 1.
- Rampersad, G. (2020). Robot will take your job: Innovation for an era of artificial intelligence. *Journal of Business Research*, 116, 68-74. <https://doi.org/10.1016/j.jbusres.2020.05.019>
- Riikkinen, M., Saarijärvi, H., Sarlin, P., & Lähteenmäki, I. (2018). Using artificial intelligence to create value in insurance. *International Journal of Bank Marketing*.
- Roberts, H., Cows, J., Morley, J., Taddeo, M., Wang, V., & Floridi, L. (2021). The Chinese approach to artificial intelligence: an analysis of policy, ethics, and regulation. *AI & society*, 36(1), 59-77.
- Sapci, A. H., & Sapci, H. A. (2019). Innovative assisted living tools, remote monitoring technologies, artificial intelligence-driven solutions, and robotic systems for aging societies: systematic review. *JMIR aging*, 2(2), e15429.
- Smuha, N. A. (2021). From a 'race to AI' to a 'race to AI regulation': regulatory competition for artificial intelligence. *Law, Innovation and Technology*, 13(1), 57-84.

- Sukmana, M. E., Kristiyanto, A., & Liskustyawati, H. (2021). The relationship between emotional intelligence and hardiness on stress resistance in athletes with disabilities in Indonesian national Paralympic committee. *International Journal of Health & Medical Sciences*, 4(1), 23-37. <https://doi.org/10.31295/ijhms.v4n1.450>
- Thomas, K. S., Durfey, S. N., Gadbois, E. A., Meyers, D. J., Brazier, J. F., McCreedy, E. M., ... & Wetle, T. (2019). Perspectives of Medicare Advantage plan representatives on addressing social determinants of health in response to the CHRONIC Care Act. *JAMA network open*, 2(7), e196923-e196923.
- Tien, J. M. (2017). Internet of things, real-time decision making, and artificial intelligence. *Annals of Data Science*, 4(2), 149-178.
- Turner, J. (2018). *Robot Rules: Regulating artificial intelligence* Springer.
- Tyagi, A. K., & Chahal, P. (2020). Artificial intelligence and machine learning algorithms. In *Challenges and applications for implementing machine learning in computer vision* (pp. 188-219). IGI Global.
- Van Dijk, N., Casiraghi, S., & Gutwirth, S. (2021). The 'Ethification' of ICT Governance. Artificial Intelligence and Data Protection in the European Union. *Computer Law & Security Review*, 43, 105597. <https://doi.org/10.1016/j.clsr.2021.105597>
- Wang, Y., Kung, L., Wang, W. Y. C., & Cegielski, C. G. (2018). An integrated big data analytics-enabled transformation model: Application to health care. *Information & Management*, 55(1), 64-79. <https://doi.org/10.1016/j.im.2017.04.001>
- Wang, Y., Xiong, M., & Olya, H. (2020). Toward an understanding of responsible artificial intelligence practices. In *Proceedings of the 53rd hawaii international conference on system sciences* (pp. 4962-4971). Hawaii International Conference on System Sciences (HICSS).
- Wirtz, B. W., Weyerer, J. C., & Sturm, B. J. (2020). The dark sides of artificial intelligence: An integrated AI governance framework for public administration. *International Journal of Public Administration*, 43(9), 818-829.
- World Health Organization. (2021). Ethics and governance of artificial intelligence for health: WHO guidance.
- Yaram, S. (2016). Machine learning algorithms for document clustering and fraud detection. In *2016 International Conference on Data Science and Engineering (ICDSE)* (pp. 1-6). IEEE.
- Yeh, S. C., Wu, A. W., Yu, H. C., Wu, H. C., Kuo, Y. P., & Chen, P. X. (2021). Public perception of artificial intelligence and its connections to the sustainable development goals. *Sustainability*, 13(16), 9165.
- Yigitcanlar, T., Corchado, J. M., Mehmood, R., Li, R. Y. M., Mossberger, K., & Desouza, K. (2021). Responsible urban innovation with local government artificial intelligence (AI): A conceptual framework and research agenda. *Journal of Open Innovation: Technology, Market, and Complexity*, 7(1), 71.

### Biography of Author

	<p>Rika Riyanti is a lecturer at the Politeknik Negeri Pontianak, Indonesia, she is also active in organizations and writes scientific papers in various national and international journals.</p> <p><i>Email: <a href="mailto:rikarianti0808@gmail.com">rikarianti0808@gmail.com</a></i></p>
---	---