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Legality of Artificial Intelligence (AI) Technology in Public Service Transformation: Possibilities and Challenges

Siti Mariyam [1,*] and Setiyowati Setiyowati [1]

[1] Faculty of Law, Universitas 17 Agustus 1945 Semarang, Semarang, Indonesia

[*] *Corresponding author*

Abstract. The purpose of this study is to analyze and formulate transformation policies in public services based on the use of information technology in the 5.0 era. This research is normative juridical research, with the empirical, case, and conceptual approaches, secondary data-based data sources analyzed by descriptive analysis. The results of the study show that the use of technology in the 5.0 era is relevant is Artificial Intelligence (AI) technology; this technology can be used in the context of public services in the cash transfer sector and also in services in the security sector, in the public service sector in the context of providing cash assistance. AI technology is used to process and analyze beneficiary data, and in the security sector, AI technology can be used to predict crime and recommend the presence of security forces. AI can also be used to detect faces where AI can guarantee greater accuracy than humans in face and time police officers. The use of AI in the context of public services has had an impact, namely in the form of a reduction in the role of humans in public services, in addition to placing AI at the forefront of public services, making public service interactions no longer person to person but the person to machine. The challenge of using AI in the public service sector is the very minimal readiness to operationalize the use of AI by the government.

Keywords: Artificial intelligence, Public service, Use of information technology

Abstrak. *Tujuan dari penelitian ini adalah menganalisis dan merumuskan kebijakan transformasi dalam pelayanan publik berbasis pemanfaatan teknologi informasi di era 5.0. Penelitian ini merupakan penelitian yuridis normatif, dengan pendekatan empiris, kasus dan konseptual, berdasarkan sumber data sekunder yang dianalisis dengan metode analisis deskriptif. Hasil kajian menunjukkan bahwa pemanfaatan teknologi di era 5.0 yang relevan adalah teknologi Artificial Intelligence (AI), teknologi ini dapat digunakan dalam konteks pelayanan publik di bidang transfer tunai dan juga dalam pelayanan di bidang keamanan. , di bidang pelayanan publik dalam rangka pemberian bantuan tunai. Teknologi AI digunakan untuk mengolah dan menganalisis data penerima manfaat dan pada bidang keamanan teknologi AI dapat digunakan untuk memprediksi kejahatan dan merekomendasikan keberadaan aparat keamanan selain AI juga dapat digunakan untuk mendeteksi wajah dimana AI dapat menjamin akurasi yang lebih besar dari manusia dalam menghadapi dan petugas polisi waktu. penggunaan AI dalam konteks pelayanan publik telah memberikan dampak yaitu berupa pengurangan peran manusia dalam pelayanan publik, selain menempatkan AI sebagai garda terdepan dalam pelayanan publik, membuat interaksi pelayanan publik tidak lagi bersifat personal. ke orang tetapi orang ke mesin. tantangan penggunaan AI di sektor pelayanan publik adalah kesiapan yang sangat minim untuk mengoperasionalkan penggunaan AI oleh pemerintah.*

Kata kunci: *Kecerdasan buatan, Pelayanan public, Penggunaan Teknologi Informasi*

1. Introduction

Modernization and advances in information technology have begun to develop very rapidly due to the emergence of the concept/system of globalization which wants a country and individuals to work together to eliminate territorial boundaries between countries. The progress of technology and information has received a positive response by the world community, including the people of Indonesia, where the use and consumption of goods with the latest technology mark social changes that show modernization in Indonesian society.

Developments in the field of telecommunications and technology are currently ranked first in bringing about social change in society. The development of increasingly advanced telecommunications technology can be interpreted as the loss of distance that separates individuals from one another so that technology transfer and knowledge transfer will occur more quickly.[1]

Social change in all aspects of people's lives can basically be categorized into several eras or eras, namely era 1.0, were in this era, community groups were identified as groups of people who hunted and gathered and lived side by side in harmony with nature, then entered the 2.0 era. In this era, humans have formed groups that depend on the agricultural sector for their livelihood.

Furthermore, the era entered the era of 3.0, a society that promotes industrialization through the industrial revolution, allowing mass production. Era 3.0 ended up being replaced with era 4.0. This era is marked by people's behavior based on information sources. This era is marked by increased added value by connecting intangible assets as information networks. And then finally, in 2019, the world community was introduced to the 5.0 era, which is an era where technology and information advances were built with the aim of human welfare and happiness.[2]

Society 5.0 is a society that lives with all technological advances, but still these advances are centered and used for the benefit of humans. Era 5.0 has a difference from era 4.0, where society 4.0 is required to find and process information from a

[1] Nasution, Robby Darwis. "Pengaruh modernisasi dan globalisasi terhadap perubahan sosial budaya di Indonesia." *Jurnal Penelitian Komunikasi Dan Opini Publik* 21, no. 1 (2017): 30-42.

[2] Handayani, Ni Nyoman Lisna, and Ni Ketut Erna Muliastrini. "Pembelajaran Era Disruptif Menuju Era Society 5.0 (Telaah Perspektif Pendidikan Dasar)." In *Prosiding Seminar Nasional IAHN-TP Palangka Raya*, no. 1, pp. 1-14. 2020.

specified database, then society 5.0 does not need to search and process information because all social problems and activities of human life have been recorded by Artificial technology. AI will do intelligence (AI), and then all the information obtained in facilitating human affairs. This progress is believed to create and create a happy society; however, the author has the assumption that the change from the 4.0 era to the 5.0 era is expected to occur as an adaptation and not infrequently give rise to problems, especially in the public service sector.

The public service sector is the essential sector in the context of realizing the ideals of the nation as stated in the 1945 Constitution of the Republic of Indonesia, namely protecting the entire Indonesian nation and the entire homeland of Indonesia, realizing public welfare, educating the nation's life, and participating in carrying out world order based on independence lasting peace and social justice.

So in realizing the ideals of the Indonesian nation amid the demands for progress of the era in the 5.0 era, the Indonesian government actually needs to respond to this progress by taking several strategic steps, namely trying to ensure that advances in information technology can be accessed and distributed thoroughly to all elements of society without exception, and strive to always improve by implementing a public service transformation policy based on the use of information technology in the 5.0 era.

Research with the theme of transforming public services based on the use of technology has actually been carried out by several previous researchers. In order for this paper to be original, in this section the author will compare the results of previous studies with research conducted by the author, where the results of similar studies will be described.

Research conducted by Arya Bimantoro et al, entitled Paradoxes of Ethics in the Use of Information Technology in Era 5.0, this study emphasizes the positive and negative aspects of technology in the 5.0 era, so that researchers try to provide suggestions so that ethical education trained through learning can minimize the adverse effects of using technology. information in the 5.0 era.[3]

M Bruzza, et al shows how important the use of information technology in public services in Peru is, as well as describes the use of e-government-based public

[3] Bimantoro, Arya, Wanda Alifiyah Pramesti, Satria Wira Bakti, M. Aryo Samudra, and Yusuf Amrozi. "Paradoks etika pemanfaatan teknologi informasi di era 5.0." *Jurnal Teknologi Informasi* 7, no. 1 (2021): 58-68.

services.[4] Nuryanto puts forward the discussion about the unpreparedness of the implementation of public administration in utilizing AI technology and information.[5] Yasa, et al, revealed that there are obstacles in the context of strengthening bureaucratic reform towards the era of society 5.0 in Indonesia, such obstacles as the dominance of bureaucratic pathology, culture of corruption, as well as the unpreparedness of the bureaucracy for the use of technology and information in the orientation of public services to the community.[6] Hasymi expressed the importance of using technology information in a government and put forward the obstacles in the use of technology in the 5.0 era.[7] Setyowati and Ahmad concluded that in fact the progress and development of information in the 5.0 era is the basis for improving the community's economy in order to move towards a modern society.[8] Windah emphasizes the important aspects of skills or competencies in the field of information technology today. Apart from being an effort to adapt and compete in the era of the industrial revolution 4.0 and the information society 5.0. This is also a filter so that people can act maturely in information.[9] Sofianto prioritized aspects of technology services at the hospital level, where the authors focus more on issues regarding the factors that influence and hinder the services used based on information technology in the hospital environment.[10] Moreover, Pratama et al, discussed the implementation and

[4] Bruzza, M., M. Tupia, and F. Rodríguez. "An E-government implementation model for Peruvian state companies based on COBIT 5.0: definition and goals of the model." *International Journal of Humanities and Social Sciences* 11, no. 3 (2017): 675-682.

[5] Nuryanto, Adi. "Tantangan Administrasi Publik di Dunia Artificial Intelligence dan Bot." *Jejaring Administrasi Publik* 12, no. 2 (2020): 139-147.

[6] Yasa, Andika, Suswanta Suswanta, M. Rafi, Fajar Rahmanto, Deni Setiawan, and Mochammad Iqbal Fadhlurrohman. "Penguatan Reformasi Birokrasi Menuju Era Society 5.0 di Indonesia." *Nakhoda: Jurnal Ilmu Pemerintahan* 20, no. 1 (2021): 27-42.

[7] Hasymi, Edi. "Penguatan Birokrasi Aparatur Negara Menuju Revolusi Industri 5.0 di Kecamatan Koto Tangah Padang Sumatera Barat." *Jurnal Ilmiah Pendidikan Scholastic* 5, no. 3 (2021): 90-100.

[8] Setyowati, Luluk, and Deni Nasir Ahmad. "Pemanfaatan Big Data Dalam Era Teknologi 5.0." *ABDINE: Jurnal Pengabdian Masyarakat* 1, no. 2 (2021): 117-122.

[9] Andi, Windah, Purwanto Purwanto Putra, Oktaria Renti, and Yulistia Annisa. "Kebutuhan Literasi Informasi dan Digital bagi Masyarakat di Pekon Podosari Kecamatan Pringsewu Provinsi Lampung." *Lentera Pustaka: Jurnal Kajian Ilmu Perpustakaan, Informasi Dan Kearsipan* 6, no. 2 (2020): 1-13.

[10] Sofianto, Arif. "Inovasi Layanan Berbasis Teknologi Informasi Pada Rumah Sakit Sebagai Bentuk Reformasi Birokrasi." *Jurnal Litbang Provinsi Jawa Tengah* 18, no. 1 (2020): 81-102.

obstacles in the implementation of e-RT/RW.[11] Furthermore, Setia concluded that the use of technological advances needs to be utilized in such a way as to realize effective and efficient governance. in the tax reform sector.[12]

Based on previous research, in principle this research has a substantial difference with the research above where the research conducted by the author will discuss technological advances in the 5.0 era and suggest that the government in implementing public policy needs to utilize the technologies in the 5.0 era as a support in order to realize the welfare and ideals of the Indonesian nation.

2. Method

The research that discusses the policy of transforming public services based on the use of information technology in era 5.0 is a normative juridical research,[13] by using an empirical approach, a case approach and a conceptual approach. The data used in this study is based on secondary data, where secondary data is sourced from primary legal materials, namely pre-existing legal materials in the form of statutory provisions, secondary legal materials in the form of literature such as journals, books and data systems sourced from the internet. and tertiary legal materials in the form of a large Indonesian dictionary and a legal dictionary. Data collection techniques used by reviewing and reviewing the literature, the data obtained were analyzed using descriptive analytical methods.

3. Result and Discussion

Humans use technology because they have reason. With reason, humans want to get out of trouble, want to live better, safer, and so on. Technological developments occur because a person uses his mind to solve every problem he

[11] Pratama, Rizky Hersya. "Pelayanan publik berbasis teknologi informasi dan komunikasi (tik), elektronik rukun tetangga/rukun warga (e-RT/RW)(Studi e-Government di Kelurahan Ketintang Kecamatan Gayungan Pemerintah Kota Surabaya)." PhD diss., Brawijaya University, 2015.

[12] Yunas, Novy Setia. "Desain Kebijakan Reformasi Sistem Perpajakan Melalui E-Taxation Di Indonesia: Belajar Pada Keberhasilan Reformasi Sistem Perpajakan Di Jepang." *CosmoGov: Jurnal Ilmu Pemerintahan* 4, no. 1 (2018): 71-89.

[13] Satria, Adhi Putra. "Environmental Quality Protection in the Period of Industrialization to Realize Environmental-Based Industry." *UNIFIKASI: Jurnal Ilmu Hukum* 6, no. 2 (2019): 156-163.

faces. Technological progress is something that cannot be avoided in this life, because technological progress will run in accordance with scientific advances. Every innovation is created to provide positive benefits for human life. Technology also provides many conveniences, as well as a new way of doing human activities. Humans have also enjoyed the many benefits brought by technological innovations that have been produced in the last decade.

Technology literally comes from the Greek, namely "tecnologia" which means a systematic discussion of all arts and crafts. The term has the root word "techne" in ancient Greek means art (art), or craft (craft). From this literal meaning, technology in ancient Greek can be defined as the art of producing the means of production and using them. The definition then develops into the use of science according to human needs. Technology can also be interpreted as "knowledge about how to make things (know-how of making things) or "how to do things" (know-how of doing things), in the sense of the ability to do something with a high value, both the value of benefits as well as the selling value.

The development of technology is actually always in line with the times, in the context of this research the meaning of technology used to show changes in public services, is the technology that existed in the 5.0 era, namely AI technology.

3.1. Artificial Intelligence (AI) Technology in the 5.0 Era

Artificial Intelligence,[14] or what is known in Indonesia by the term artificial intelligence is part of the branch of computer science that tries to learn about how to make and/or design a computer machine with the aim of being able to carry out an activity, activity or job that is the same and better than what is done by humans.[15] In addition, AI can also be understood as a computer system designed to identify and model human thought processes which can then imitate human behavior.[16]

Artificial Intelligence (AI) can be categorized as a relatively young field of science, where historical records show that the idea of AI was first coined by scientists and researchers in 1950 where scientists and researchers began to come

[14] Callier, Patrick, and Olivier Sandel. "De l'intelligence artificielle à son application en médecine." *Actualités Pharmaceutiques* 60, no. 611 (2021): 18-20.

[15] Chen, Lijia, Pingping Chen, and Zhijian Lin. "Artificial intelligence in education: A review." *Ieee Access* 8 (2020): 75264-75278.

[16] Dahria, Muhammad. "Kecerdasan Buatan (Artificial Intelligence)." *Jurnal Saintikom* 5, no. 2 (2008): 185-197.

up with the idea of designing a machine that can imitate all work. man. Artificial Intelligence (AI) was popularized by John McCarthy in 1956 at the Dartmouth conference. At the conference John McCarthy stated the main goals of artificial intelligence, namely knowing and modeling human thought processes and designing machines so that they can imitate all the characters of humans.[17].

The method that is often used when developing AI is based on a framework known and developed as Case Based Reasoning or CBR. Where CBR tries to analyze by comparing a new case and an old case. The comparison results are calculated using the similarity of the equation of the new case with the old case. Thus, CBR is known as a system that looks for similarities using a similarity algorithm to calculate how accurate the level of similarity.[18]

Artificial Intelligence, its existence is still used in the 5.0 era along with other technologies such as Robots and Iot. Era 5.0 itself has just been inaugurated, at the beginning of 2019 in Japan and was made as a new paradigm shift for the industrial 4.0 resolution. The concept of AI in the 5.0 era can allow us to use digital science or robotics that aims to meet all human needs, achieve human welfare and comfort.[19]

Era 5.0 actually has differences with the previous era, namely 4.0 or also known as the era of the information society, in the 4.0 era humans tend to collect various information through certain networks or databases to be analyzed by humans. However, in Society 5.0, people, things and their entire systems are connected in cyberspace and the optimal results obtained by AI beyond human capabilities are fed back into the physical space. This process brings new value to industry and society in ways that were previously impossible.[20]

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[17] Wijaya, Edi. "Analisis Penggunaan Algoritma Breadth First Search Dalam Konsep Artificial Intellegencia." *Jurnal TIMES* 2, no. 2 (2013).

[18] Devianto, Yudo, and Saruni Dwiasnati. "Kerangka kerja sistem kecerdasan buatan dalam meningkatkan kompetensi sumber daya manusia Indonesia." *J. Telekomun. dan Komput* 10, no. 1 (2020): 19.

[19] Suzuki, Katsuaki. "Contribution of the Japan Society for Educational Technology toward a Super-Smart Society (Society 5.0)." *Information and Technology in Education and Learning* 1, no. 1 (2021): p001-p001.

[20] Farida, Naili. "7. Peran Teknologi Informasi dalam Menciptakan Masyarakat Informasi." In *Forum*, vol. 37, no. 1, pp. 40-48. Faculty of Social and Political Sciences Diponegoro University, 2006.

3.2. Artificial Intelligence (AI)-Based Public Service

Based on the literature review shows that in principle era 5.0 has a breath that is in harmony with the concepts and programs of the SDGs launched by the United Nations regarding the future of humans, one of these programs is to make human life easier with all advances in information technology.

The Sustainable Development Goals explicitly aim to eradicate poverty and hunger, reduce inequality within and between countries, improve water and energy management, and take urgent steps to tackle climate change. In contrast to the MDGs, the SDGs emphasize the importance of efforts to end poverty to be carried out together with strategic efforts to increase economic growth, implement social policy measures to meet various social needs (such as education, health, social protection, employment opportunities), and policy measures to address climate change. and environmental protection.

The SDGs consist of 17 goals and 169 targets, which cover various sustainable development issues. The list of 17 goals in the SDGs is as follows:

1. Poverty – End poverty in all its forms everywhere
2. Food – End hunger, achieve food security, improve nutrition, and promote sustainable agriculture
3. Health – Ensuring a healthy life and promoting health/well-being for all at all ages
4. Education – Ensuring quality, inclusive and fair education, increasing opportunities for lifelong learning for all
5. Women – Achieving gender equality and empowering all women and girls
6. Water – Ensure the availability and sustainable management of water and sanitation for all
7. Energy – Ensure access to affordable (purchasable), reliable, sustainable and modern energy for all
8. Economy – Promote sustainable and inclusive economic growth; full participation in productive work, decent work for all
9. Infrastructure – Build durable/strong infrastructure, promote inclusive and sustainable industrialization, support innovation
10. Inequality – Reducing inequality within and between countries
11. Habitation – Building cities and human settlements that are inclusive, safe, durable/strong, and sustainable
12. Consumption – Ensuring sustainable consumption and production patterns
13. Climate – Take urgent action steps to address climate change and its impacts

14. Marine Ecosystem – Protect and sustainably use the oceans, seas and marine resources for sustainable development
15. Ecosystems – Protect, restore and promote sustainable use of the earth's ecosystems, sustainably manage forests, stop and reverse soil degradation (destruction) and loss of biodiversity (biodiversity)
16. Institutions – Creating peaceful and inclusive societies for sustainable development, providing access to justice for all, building effective, accountable and inclusive institutions, at all levels
17. Sustainability – Strengthening the means of implementation and revitalizing (reviving) the global partnership for sustainable development.

From the government's perspective, technological advances in the 5.0 era should be utilized to further optimize public services. public services as referred to in the writing of this research are limited to two things that will be discussed, namely services from the service sector for government programs, namely direct cash assistance programs and the security sector.[21]

With regard to the conventional cash transfer program sector, currently, it has received a lot of attention and tends to experience various problems, these problems are related to the existence of inappropriate data, where some people who really need it do not receive assistance at the time. distributed, on the basis that the person is not included in the list of recipients, but on the contrary there are people who are well off even get assistance, even more ironically the people who have died are still registered as citizens who are entitled to receive assistance.[22]

AI technology can actually overcome data inaccuracies in BLT reception as mentioned, considering that AI is able to analyze various kinds of data[23], because the system in it uses an array of algorithms. AI systems can easily collect various data for later analysis, where the results will be adjusted according to what is being programmed. In addition, AI technology is also capable of not only analyzing data,

[21] Haywood, Lorren Kirsty, and Mothusi Boihang. "Business and the SDGs: Examining the early disclosure of the SDGs in annual reports." *Development Southern Africa* 38, no. 2 (2021): 175-188.

[22] Akib, Irwan, and Risfaisal Risfaisal. "Bantuan langsung tunai." *Equilibrium: Jurnal Pendidikan* 3, no. 2 (2015).

[23] Yudistira, Novanto. "Peran Big Data dan Deep Learning untuk Menyelesaikan Permasalahan Secara Komprehensif." *EXPERT: Jurnal Manajemen Sistem Informasi dan Teknologi* 11, no. 2 (2021): 78-89.

but also processing big data. As well as correcting documents accurately considering one of the benefits of artificial intelligence, which is being able to detect errors in documents better. Spelling errors can be detected immediately and then corrected by the AI system. It's very important to know when an application crashes due to an input error.

So based on this, the use of AI technology in the 5.0 era for public services, in the field of providing Cash Direct Assistance can be done at the community data collection stage, in addition to the technology data collection stage in the 5.0 era, it is possible that there will be a process of distributing aid that can be done through drone technology to avoid there was a riot during the distribution of the *BLT* program.

The use of AI in public services can not only be used for interests in the BLT service sector, but also in the security sector. AI technology can actually predict crime and recommend the presence of security forces. AI can be used to determine patterns in looking at the point of security to predict where the crime is and the potential for further crime. In addition, in the security sector. In the security sector AI can also be used to detect faces where AI can guarantee greater accuracy than humans in the face and time of officers. Machines can use parameters to Identify faces beyond what humans can normally detect. Today's AI technology is even sophisticated enough to find one face amid several in stadiums – something that recently helped China catch crime at crowded sporting events.

3.3. Obstacles and Challenges

The presence of AI in public services will have positive and negative impacts, the positive impact is that AI can work according to directions effectively and efficiently as described above, however its presence cannot be separated from negative impacts. The use of AI in the public service sector has reduced the role of humans in public services, besides the placement of AI at the forefront of public services makes public service interactions no longer person to person but person to machine. Such interactions certainly have the potential to cause misunderstandings considering that AI works based on rigid algorithm commands. So, when there are things that cannot be detected by the order, the community can be unserved.[24]

[24] Imawan, S. "Artificial Intelligence dan Motivasi Pelayanan Publik". Kolom, DetikNews, (2021).

The challenges that will be faced by the Indonesian people in positioning or utilizing AI as a medium for public services in the 5.0 era related to AI readiness in Indonesia are still low. The report by Oxford Insights and the International Development Research Center, entitled Government AI Readiness Index 2019 shows that Indonesia in the application of AI in government ranks fifth in ASEAN. While in the world ranking, Indonesia is in position 57 of 194 countries with a score of 5,420.

In addition, the obstacles and challenges will also relate to the readiness of skilled workforce to use and develop AI, the readiness of regulations governing ethical use and responsible use of AI, the readiness of computing infrastructure and supporting data in AI and the readiness of industry and public sectors to adopt AI innovation.

Government collaboration is needed through ministries/agencies, universities, the private sector, and associations for the readiness to use AI and BOT. There are 3 important pillars that are part of the AI development strategy, namely research and development, national challenges, and AI implementation. (Nuryanto 2021) In addition to these challenges, there are other challenges, namely how the government can optimize AI and human performance in certain systems, of course this needs to be addressed. breakthroughs and further thoughts and research on the combination of AI and human performance.

4. Conclusion

Public Service Transformation Policy Based on the Use of Information Technology in Era 5.0 actually needs to be implemented in Indonesia, where the relevant use of technology in era 5.0 is AI technology, this technology can be used in the context of public services in the cash transfer service sector and also in services in the public sector. security, in the public service sector in the context of providing cash assistance AI technology is used to process and analyze beneficiary data and in the security sector AI technology can be used to predict crime and recommend the presence of security forces besides AI can also be used to detect faces where AI can guarantees greater than human accuracy in the faces and timing of police officers. the use of AI in the context of public services has had an impact, namely in the form of a reduction in the role of humans in public services, in addition to placing AI at the forefront of public services, making public service

interactions no longer person to person but person to machine. the challenge of using AI in the public service sector is the very minimal readiness to operationalize the use of AI by the government.

This research has consequences for the development of further research, where there needs to be a study or research that specifically discusses optimizing AI and human performance in certain systems, as a combination, of course this needs to get breakthroughs and thoughts and further research on the combination of AI and human performance.

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