

Information Technology as Part of Economic Innovation Will Drive the Law Innovation

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Abstract. The racing tide of the development of information technology will change the human paradigm. Especially if information technological developments become part and aggregate of economic innovation which results in and requires adjustments or innovations to applicable laws. In this article, two cases study are cited for discussion: crypto currency and artificial intelligence. In several countries prohibit crypto currency as a digital currency, while other countries allow it with strict regulations, including Indonesia. Artificial Intelligence has been widely used, not only as a business support, but also as a new form of business, such as Elon Musk's business model. Seeing the character of information technology which is universal and used by humans in all countries but with different legal orders, especially the development of information technology as an inseparable part of economic innovation. For this reason, it is necessary to accelerate legal standardization for the use of the same information technology everywhere without causing conflict with different customs and norms.

Keywords: Information Technology, Economic Innovation, Law Innovation.

1 Introduction

The main factor driving changes in the current world economic order is the racing tide of developments in information technology. This also has implications for the social order of society. Changes in the economic order and changes in the social order of society have forced many countries to carry out legal reforms. Moreover, humans are the center of technological and economic development. Ironically, humans created information technology, but the impact of the development of information technology actually changed the human paradigm and made humans dependent on information technology. In fact, this dependency is getting bigger and cannot be avoided. The economy is also an inseparable part of human, as social creatures who need each other to fulfill their needs.

Meanwhile, if we talk about law in general, then what is meant by law is the entire collection of rules or regulations for living together: all regulations regarding human behavior that apply in social life, the implementation of which can be carried out with sanctions.[1] Materials and Methods

This article was prepared based on normative legal research methods. The author conducted research on legal principles, legal systematics, legal history, synchronization, and especially laws regarding information technology in various countries, then compared them

using secondary methods in the form of books, literature, and official documents issued by the government.[2]

The data processing and analysis used are qualitative; The discussion uses a philosophical and historical approach to find philosophical principles and the basis for the development of positive law.

2 Results and Discussion

2.1 Information Technology, Artificial Intelligence

In 1950, Harvard University and The Massachusetts Institute of Technology (MIT) included the ideas of computer circuits and numerical calculations as part of computer science. In the course of time, computer science and therefore information technology are getting more complex and enabling big data process handling.[3]

Additionally, Alan Turing, J. Presper Eckert, and John Mauchly were considered the main pioneers of computer technology in the mid-1900s, with major credit for their efforts focused on designing the first digital computer. At the same time, Turing raised the topic of artificial intelligence technology. The definition of artificial intelligence was first formulated by John McCarthy, a computer expert from the United States, in 1956. According to McCarthy, artificial intelligence is a part of computer science that develops intelligent machines. McCarthy's assumption, intelligence is a few computational abilities to achieve certain goals.[4]

Intelligence is the basic concept of AI. The Google company states that there are four capabilities that represent AI intelligence, namely visual perception, voice recognition, decision-making, and translation capabilities.[5]

Technological innovation has revolutionized the world in the twenty-first century. The presence of the internet has increased efficiency and made life easier for people around the world. Millions of processes could be carried out in seconds. Innovation in communications is also important because people are starting to rely on smart devices such as computers to communicate, not just through conventional telephone lines and cables. The presence of email was a big breakthrough when a company in one part of the world could communicate within seconds via email with its suppliers or its customers in another part of the world. Not only that, computers and the internet have made e-commerce possible, thereby changing merchandising without place and time restrictions 24/7 borderless.

2.2 Technology as part of Economic Innovation

The changes in the economic order that have taken place recently are characterized by the global trend of '24/7 online trading', without restrictions on age, nationality, country, or time. Transactions no longer only use existing 'tangible banknotes 'or coins' – physical, or electronic – but also use digital currencies that are available exclusively in electronic form. Electronic versions of currencies already dominate the financial systems of most countries.

The economy is an inseparable part of humans as social creatures who need each other to fulfill their needs. In fulfilling these needs, transactions or exchanges of goods or services occur using payment instruments. The word economy comes from the Greek *oikonomia*,

namely oikos and nomos, translated as managing the household. So, economics is the management or administration of the wealth and resources of a community (such as a city, state or country). Sociopolitical organization of society's wealth and resources. Controlled, economical, or economical use of resources. [6]

The convergence between the financial industry and information technology based on artificial intelligence in the form of digital applications [read: FinTech] enables the online trading (e-commerce) without restrictions of time (24/7), place, nationality, and age. Widely known e-commerce applications in Indonesia are, among others, Gojek, Grab, Shopee, Lazada, Tokopedia, and, Bukalapak which are allowed to use the existing tangible banknotes and coins-physical or electronic for their transactions (Indonesian Law Number 7 of the 2011 Year).

Digital money has developed since 1997, when the Coca-Cola company offered transactions from its vending machines using cellular vouchers. In 2000, PayPal appeared. Digital currency was introduced in Indonesia in 2007 and has become increasingly popular. Therefore, the Indonesian government issued regulations on the use of electronic money in Indonesia (Bank Indonesia Regulation Number 11/12/PBI/2009). Currently, digital currency is widely used by many banks in Indonesia, both private and state-owned. The existence of digital currency has expanded beyond e-money and others.

In 2009, the financial world was shocked by the existence of a cryptocurrency called bitcoin, which is a decentralized digital currency, has an exchange rate model, and is not linked to conventional currency systems anywhere in the world. Cryptocurrency was invented in 2008 by a pseudonym name Satoshi Nakamoto. In 2009, the currency was released as open-source software. A white paper published on October 31, 2008, used the words "bitcoin" and blockchain as the backbone of crypto technology. In general, bitcoin is a transaction conducted online peer-to-peer (p2p) without going through a third party or intermediary (decentralized). Meanwhile, another unique thing is that blockchain technology is immutable (transactions cannot be changed) because the data on blockchain is interconnected and transparent. [6] Many crypto-currencies, such as bitcoin can generally be transferred undetected from one country to another via peer-to-peer transactions on various exchanges because of their decentralized nature. This decentralized structure allows the crypto currency to exist outside the control of governments and central authorities.

Currently, society is not only part of the economy but also part of information technology. Society's dependence on information technology is increasing. The use of intelligence in Indonesia is still relatively low compared to several countries such as Singapore, Japan, Korea, China, and the United States, but there is a trend of increasing use of artificial intelligence in Indonesia. This can be seen from the use of 950 robot units in 2017 to 1200 robots units in 2018, an increase of 20 percent.

2.3 Technology as a Business Portfolio

The development of information technology, especially the development of artificial intelligence, has an impact on people's way of life. Artificial intelligence is not only used in the manufacturing industry to improve service quality and save costs but has also been applied in other fields such as health services, education, law, and public services, both government and private. In fact, there is now a trend toward using artificial intelligence technology as a business portfolio. This trend has given rise to new business models, which are one of the drivers of economic regulatory innovation.

The use of artificial intelligence technology as a business portfolio is conducted by, among others, Elon Musk at his Neuralink Corporation, OpenAI, DeepMind Technology, SpaceX, Tesla, and xAI.

2.4 Law Innovation (Legal Reform)

Artificial intelligence (AI) is a series of rapidly developed technologies that could provide a variety of economic and social benefits across industries and social activities. However, the technology that enables socio-economic benefits can also create new risks or negative consequences for both individuals and society. For this reason, law as a catalyst must be present to facilitate this process of racing the tide of change through legal reform (law innovation), which is still not evenly distributed in all countries throughout the world. Even though the characteristics of information technology are the same throughout the world, it turns out that legal regulations in each country are different. As a concrete example of the regulatory principles for the development and use of bitcoin and artificial intelligence in several countries around the world.

2.5 The Cryptocurrency arrangement

Even though cryptocurrencies have been around since 2009, governments and regulators in various countries are still looking for ways to regulate their use. Consumers and businesses must be protected from all forms of fraudulent activity. For this reason, preventive measures must be implemented to combat the use of illegal cryptocurrencies. Many countries have stepped forward to regulate cryptocurrencies in their countries. But the process has been slow and controversial. At this time, cryptocurrency regulations are still being researched and developed around the world. Many countries are designing policies and laws, while others are still lagging behind for various reasons.

The first country to adopt measures requiring cryptocurrency service providers to detect and stop the use of illegal cryptocurrencies was the European Union (EU). Furthermore, the European Union's steps have been followed by the United Kingdom (UK), where cryptocurrency is classified as an illegal means of payment. Cryptocurrencies are simply property, and trading in commodities similar to cryptocurrencies is also prohibited in the UK. In Singapore, as in the UK, cryptocurrencies are also classified as property but not legal tender. Singapore's monetary authority regulates and permits cryptocurrency exchanges under the Payment Services Act (PSA). However, Singapore is a cryptocurrency trading paradise, as profits are not taxed. The tax is only imposed on companies that regularly transact in cryptocurrencies and treat the profits as income. The use of cryptocurrencies in India is not only legal but also not prohibited. However, India is preparing a law that will ban all private cryptocurrencies in India.

In 2021, South Korea will also ban all cryptocurrency exchanges. Cryptocurrency and virtual asset service providers must be registered with the Korea Financial Intelligence Unit (KFIU), a division of the Financial Services Commission (FSC). Cryptocurrencies in China are classified as property for the purpose of determining inheritance for heirs, but trading in cryptocurrencies is prohibited. Cryptocurrency as a public financing facility must receive

approval from the Chinese government. Then, in May 2021, China officially banned bitcoin mining.

The European Union, UK, Singapore, South Korea, and China have strictly regulated the use of cryptocurrencies and even banned them as a means of payment. However, there are also countries that legalize cryptocurrencies, including Canada, which became the first country to approve bitcoin trading on the Toronto Stock Exchange (ETF). Similarly, Brazil, on November 29, 2022, passed a law legalizing cryptocurrencies as a payment method but not legal tender. With the aim of increasing the adoption of digital currency in the country. Furthermore, in 2022, the United States, under the Joe Biden administration, classified the use of cryptocurrencies and created cryptocurrency regulations as a path to a digital dollar. Likewise with Japan. Cryptocurrency is property that can be traded on the exchange market. Japan treats trading profits generated from cryptocurrencies as investor income and other taxes, as stipulated in the Payment Services Act (PSA). Crypto currency exchange registration can be done at the Financial Services Agency (OJK) with the obligation to comply with APU/CFT regulations. In 2020, the Japan Virtual Currency Exchange Association (JVCEA) was founded, of which all crypto exchanges in Japan are members. Australia also classifies cryptocurrencies as legal property and taxes capital gains. Exchanges are free to operate in the country, provided they register with the Australian Transaction Reports and Analysis Center (AUSTRAC) and meet certain AML/CFT obligations.

Meanwhile, Indonesia banned the use of cryptocurrencies as a means of payment on January 1, 2018. However, it allows cryptocurrencies as commodities. Cryptocurrency is a commodity regulated by the Commodity Futures Trading Supervisory Agency (BABBEFTI), not a financial service product, and is a means of payment.

2.6 The Development and Usage of Artificial Intelligence

In principle, almost all countries in the world do not prohibit the use and development of artificial intelligence in their countries, even though there are several cases that are detrimental to humans, such as the theft of personal data. Artificial intelligence can also be used to commit fraud, harassment, and hoaxes, as well as to threaten national and international security, as reported by 26 AI experts from the Universities of Oxford, Cambridge, and various other institutions. In 2015, in India, a young worker was stabbed by a robot. In another incident in the United States in 2017, Wanda Holdbrook was killed by a robot that suddenly came carrying truck parts and dropped them on Wanda's head. In 2021, a self-driving Tesla car killed one passenger.

Seeing these cases and a few potential problems in the use of artificial intelligence, either due to misuse, negligence in supervision and use, or the use of artificial errors, this has encouraged many countries, intra-state organizations, and even companies to formulate regulations that regulate the principles of development and the use of artificial intelligence.

In mid-2018, a few companies issued principles for building and using AI, such as Microsoft's Responsible AI Principles, IBM's Trust and Transparency Principles, and Google's AI Principles. Intra-governmental organizations are also formulating similar subjects, such as the G7 adopting the Charlevoix Common Vision for the Future of Artificial Intelligence. The EU published its Ethical Guidelines for Trustworthy AI in 2019. As of 2020, at least 50 countries, including the EU, have established national strategies for the development and use of artificial intelligence. [5]

Furthermore, in February 2023, the officials of the Association of Southeast Asian Nations (ASEAN) agreed to issue ASEAN Guidelines on the Governance and Ethics of Artificial Intelligence.

Several countries, such as the European Union, the United States, Singapore, China, and Indonesia, have conducted legal reforms regarding artificial intelligence, of which the European Union is the forerunner. On August 25, 2023, the European Union passed the Digital Services Act (DSA), a law on digital services. Furthermore, on September 14, 2023, Bill Gates, Elon Musk, Mark Zuckerberg, and Sundar Pichai, as well as labor and human rights activists, were invited by United States Senate Leader Chuck Schumer to discuss on a panel making regulations regarding the development and application of information technology and artificial intelligence threats.

Singapore has formulated AI regulations based on risk management, namely first, measurement and regulation. Second, risk management in terms of automatic policymaking. Third, management. Fourth, customer relationship management.[7] China has also released its New Generation Artificial Intelligence Development Plan (AIDP). One of the targets of China's national strategy is to establish ethical norms for AI policy and regulation. Apart from that, in March 2019, China formed the National New Generation Artificial Intelligence Governance Expert Committee, which released eight AI governance principles, namely-improving human welfare, respecting human rights, privacy, fairness, transparency, accountability, collaboration, and readiness to face the latest risks.

In the national strategy, AI development in Indonesia focuses on the areas of health, bureaucratic reform, education and research, food security, and smart city mobility. In developing AI, Indonesia pays attention to principles of inclusiveness, sustainable development, and prosperity. Human-centered values and justice. Transparency and explanation ability resilience, security, safety, and accountability. This principle is translated into the Indonesian context, oriented towards the benefit of humanity, based on Pancasila, constructive interaction between stakeholders, and the application of the principles of Law Number 11 of the 2019 Year concerning the National System of Science and Technology. The regulations in Indonesia related to artificial intelligence that have been issued are, among others:

- Information and Electronic Transactions [UU Number 19 of the 2016 Year, Amendments to Law Number 11 of the 2008 Year];
- National Research and Innovation Agency [Presidential Regulation Number 74 of 2019 Year]
- Personal Data Protection [Law Number 27 of the 2022 Year];
- Standard Classification of Industrial Fields of Artificial Intelligence-Based Programming Activities [Regulation of the Minister of Communication and Informatics Number 3 of the 2021 Year];
- Preparation of AI Ethics and Value-added Guidelines [Ministry of Communication and Information, in Press Release Number 322/HM/KOMINFO/09/2023, 21 September 2023];
- Trade through electronic systems to regulate the business climate in the digital world and regulate business competition so that it is fairer and, does not benefit or harm any party [Regulation of the Minister of Trade Number 31 of the 2023 Year]

3 Conclusion

The convergence between the financial industry and information technology based on artificial intelligence has resulted in the need for a renovation of the trading model that is based on a 24/7 economy without restrictions of place, nationality, or age.

The racing tide of development and application of artificial intelligence technology that impacts human life has not been facilitated by uniform legal changes throughout the world. EU countries, pioneers, have gone as far as to prepare regulations relating to the benefits and risks of AI.

AI technology and science are universal; therefore, there is a need for uniformity and standardization of regulation and ethics for the application and utilization of AI in industry and in public.

Many crypto-currencies, such as bitcoin, can be transferred undetected from one country to another via peer-to-peer transactions on various exchanges because of their decentralized nature. This decentralized structure allows the crypto currency to exist outside the control of governments and central authorities.

There is a need for a Uniformity Artificial Intelligence Act based on a risk-oriented approach that establishes obligations for providers, users, and other participants across the AI value chain. Additionally, AI systems that pose unacceptable risks will be banned, and AI systems that pose high risks will be subject to strict liability before they can be marketed.

The idea of joint regulation through standardization is based on the New Legal Framework, with a particular focus on how systems of joint regulation, standardization, and certification contribute to AI governance in the world and in individual countries and address various ethical and legal issues of (substantial risk) AI systems.

Reference

- [1] Anwar, A., "Peran Modal Manusia terhadap Pertumbuhan Ekonomi Regional di Jawa," *Jurnal Economia*, vol. 13, no. 1, hlm. 79–94, 2017, doi: <https://doi.org/10.21831/economia.v13i1.13323>.
- [2] Assingkily, Muhammad Shaleh., *Metode Penulisan Pendidikan (Panduan Menulis Artikel Ilmiah Dan Tugas Akhir)*. Yogyakarta: K Media, 2021.
- [3] Mutohhari, F., Sofyan, H, dan Nurtanto, M, "Technological competencies: a study on the acceptance of digital technology on vocational teachers in Indonesia," dipresentasikan pada the 1st International Conference on Law, Social Science, Economics, and Education, ICLSSEE 2021, Jakarta: EUDL.
- [4] Manning, Christoper, *Artificial Intelligent Definition,* in *Human-Centered Artificial Intelligent*. California: Standford University, 2020.
- [5] Rouhiainen, L, *Artificial Intelligence: 101 Things You Should Know Today About Our Future*. California: CreateSpace Independent Publishing Platform, 2018.
- [6] H. R. Slotten, *The Oxford Encyclopedia of the History of American Science, Medicine, and Technology*. Oxford University Press, 2014. doi: 10.1093/acref/9780199766666.001.0001.
- [7] A. Afriyanto, R. Riswadi, dan A. Redi, "Optimizing the Online Performance Management System Application in Supporting the Performance of the Republic of Indonesia Police," dalam *Proceedings of the 2nd Multidisciplinary International Conference, MIC 2022, 12 November 2022, Semarang, Central Java, Indonesia*, Semarang, Indonesia: EAI, 2023. doi: 10.4108/eai.12-11-2022.2327370.