



REGULATION AND LITERACY MUST STRENGTHEN DIGITAL TRANSFORMATION

Francisca Romana Nanik Alfiani

Fakulty of Law, Universitas Borobudur, Indonesia

Email: ciscaromana@gmail.com

ABSTRACT

Indonesia has prepared a digital transformation roadmap for the next 25 years, which serves as a guideline for digital transformation in four strategic sectors: digital infrastructure, government, digital economy, and society. The government has accelerated digital transformation, but regulations must strengthen and anticipate all obstacles and impacts of digital transformation. To reduce adverse effects and increase the growth of various sectors, digital transformation must be guarded by adequate regulations that strengthen rather than hinder it. Currently, the acceleration of digital transformation is supported by Law Number 6 of 2023 concerning Job Creation, Presidential Regulation of the Republic of Indonesia Number 82 of 2023 concerning the Acceleration of Digital Transformation and Integration of National Digital Services, and a statement from related state institutions. A digital literacy program has been held, but a Microsoft survey shows that Indonesian society's digital civility still needs to improve. Based on the Global World Digital Competitiveness Index 2023, Indonesia is in the 45th position out of 64 countries, still behind Malaysia and Thailand. Completing the 2021-2024 Digital Indonesia Roadmap is one of the mandates from the five 2020. The roadmap focuses on four strategic domains: modernizing digital infrastructure, accelerating digital government, digital economy, and digital society. The government has embarked on an ambitious nationwide digital transformation program, and there is a palpable energy on digital transformation efforts at all levels of government.

Keywords: Regulation, Literacy, Digital Transformation

INTRODUCTION

Indonesia achieved upper-middle-income country status in 2019 but returned to being a lower-middle-income country in 2020 due to the Covid-19 pandemic. There needs to be more than Indonesia's economic recovery to return Indonesia to upper middle-income status. Business-as-usual development is required to bring Indonesia out of the middle-income trap (MIT) before 2045. Therefore, a comprehensive transformation is necessary to realize the dream of a golden Indonesia in 2045. Indonesia is in its efforts to become a developed country with increasing income; in addition to downstream natural resources proclaimed by President Joko Widodo, digital transformation is needed in all existing sectors to strengthen developing

countries into developed countries. Currently, the global industrial sector is very dependent on digital technology. The maturity in the field of digital technology in a country will, of course, have an impact on the progress of every industrial sector in that country. Industry 4.0, which is currently running, is also continuing to move forward with digital technology, which continues to develop. This indeed allows the government, public institutions, and entrepreneurs to utilize existing digital technology to advance their work ecosystem.

In the 2020-2024 National Medium Term Development Plan (RPJMN), the issue of digital transformation is one of the six mainstream national development approaches. The 2021-2024 Digital Indonesia Roadmap is a strategic guideline to facilitate Indonesia's digital transformation in four sectors: digital infrastructure, government, economy, and society. In the digital Indonesia roadmap, ten priority sectors have been mapped, including digital transformation and tourism, digital trade, digital financial services, digital media and entertainment, digital agriculture and fisheries, digital real estate, and cities, digital education, digital health, industrial digitalization, as well as digitalization of government institutions. For Indonesia, digital transformation and digital technology maturity are needed to connect access from areas across the islands so that there is no longer a digital divide and all islands can enjoy the convenience of public services with easy digital access in all government sectors. From Sabang to Merauke, from Miangas to Rote Island, there are currently 38 provinces. Digital transformation is expected to increase growth in many sectors, especially the digital economy sector, which has the potential to reach 330 billion US dollars by 2030

Things that must be prepared to oversee the implementation of digital transformation to reduce obstacles and negative impacts are regulations and digital literacy for Indonesian society, which consists of various ethnic groups, including traditional law communities who use different languages. Digital transformation has fundamentally changed the business landscape and societal order, including value systems, both public and private moral, ethical, and legal value systems. Legal issues that may arise include but are not limited to protecting intellectual property rights, e-commerce, electronic contracts, personal data protection, financial technology, digital banking, cybercrime, big data, and others. Indonesia already has regulations related to Information and Communication Technology (ICT). Recently, the government has even stipulated Presidential Regulation of the Republic of Indonesia Number 82 of 2023 concerning the Acceleration of Digital Transformation and Integration of National Digital Services (Perpres No. 82/2023) and a digital literacy program has been implemented, launched by the Ministry of Communication and Information (Kemeninfo) on May 20 2021, in 514 districts and cities to equip people to interact in the digital space in terms of ethics, abilities, security and digital culture.

Current regulations related to ICT and digital transformation and digital literacy programs organized by the government are expected to be able to strengthen and reduce obstacles and negative impacts of digital change, even though there is no big umbrella in the form of a law that regulates explicitly digital transformation in Indonesia, this is considering the massive and rapid development of ICT, meanwhile making law requires a long process and takes a long time, besides that, many challenges arise when making the law.

RESEARCH METHODS

This research uses a qualitative approach with descriptive methods. Using this method can answer research questions related to regulations and digital literacy programs that can strengthen the implementation of digital transformation in Indonesia. Secondary research used data from the Ministry of Information and Communication, Microsoft, journals, and other related literature. Next, the data is collected according to the writing topic, combined, compared, analyzed using qualitative data analysis, and concluded.

RESULTS AND DISCUSSION

In social life, humans need order that can guarantee individual and collective comfort and security. Therefore, various regulations were created to prioritize the public interest. Regulations require humans to act according to their free will but are full of responsibility. Before it is formed into a regulation, there is a long process that the regulatory formulators must go through. Starting with collecting data on problems that are obstacles or obstacles for the community. Followed by mapping the problems that will be analyzed through scientific and academic studies. This analysis process also often involves experts in the field. After that, the solution formulation will be compiled into a regulation. The state or government is the institution that originates or formulates the main regulations that regulate human life. Apart from that, regulations are also made by private parties who have certain powers(Hale, 1952).

According to Joseph Stiglitz, regulations are restrictions on what individuals or companies should do. From an economic point of view, government intervention through the presence of regulations is needed to protect the market from potential failures and problems that could result in an economic crisis and those whose behavior is highly restricted may complain or object because regulations have a tendency to eliminate or reduce profits and have a negative effect on innovation(Stiglitz, 1985). Appropriate regulations can actually advance innovation and improve welfare. David Levi-Faur defines regulation according to different points of view. For example, for people with a 'right' perspective, regulation is a dirty word that represents the heavy hand of authoritarian governments and regulatory bodies that limit human or national freedom. For the 'left wing' regulation is part of the superstructure that serves the interests of the dominant class and frames power relations in an apparently civilized form. For legal scholars, regulation is often a legal instrument, while for sociologists and criminologists regulation is another form of social control, so they emphasize regulatory instruments such as issues of restorative justice and responsive regulation. For some people, regulation is something carried out exclusively by government, state affairs and law enforcement(Levi-Faur, 2011).

In Indonesia until 2022, there have been 1,750 laws, 217 regulations instead of laws (Perpu), 4,875 government regulations, 2,364 presidential regulations, 18,278 ministerial regulations, 5,872 agency/institution regulations, 18,817 regional regulations, and 58,218 other regulations. Rules related to information and communication technology (ICT) and digital transformation include Law Number 19 of 2016 concerning Amendments to Law Number 11 of 2008 concerning Information and Electronic Transactions (UU ITE), Government Regulation

Number 71 of 2019 concerning System Implementation and Electronic Transactions, as well as their implementing regulations (Ahmed et al., 2021); Law Number 11 of 2020 concerning Job Creation Fees in the Post, Telecommunications and Broadcasting Sectors; Government Regulation Number 46 of 2021 concerning Post, Telecommunications and Broadcasting; Ministerial Regulation Number 5 of 2020 concerning Electronic System Operators for Personal Use; UU no. 27 of 2022 concerning Personal Data Protection (PDP Law); Law Number 6 of 2023 concerning Job Creation was promulgated on March 31 2023. This regulation stipulates Government Regulation instead of Law (Perppu) Number 2 of 2022 concerning Job Creation as law. This rule responds to the decision of the Constitutional Court (MK) No. 138/PUU-VII/2009, which states that Law No. 11 of 2020 is conditionally unconstitutional; Presidential Regulation of the Republic of Indonesia Number 17 of 2023 concerning the Acceleration of Digital Transformation in the Field of Government Goods/Services Procurement and Presidential Regulation of the Republic of Indonesia Number 82 of 2023 concerning the Acceleration of Digital Transformation and Integration of National Digital Services. POJK Number 21 of 2023 concerning Digital Services by Commercial Banks (POJK Digital Services) and SEOJK Number 24/SEOJK.03/2023 concerning Digital Maturity Level Assessment for Commercial Banks (SEOJK Digital Maturity Assessment for Banks/SEOJK DMAB).

Digital transformation has given rise to conditions in society that are increasingly simple and dependent on digital technology, marked by the emergence of various activities in the virtual world, both private and public interests, such as electronic commerce (e-commerce), electronic Government (e-government; digital Government), even electronic court (e-court). The regulation of these electronic activities brings new legal concepts, such as electronic signatures (e-signatures), electronic payments (e-payments), and online trials (e-litigation). The latest thing concerns relationships between people, which are forced to be carried out through interfaces, especially during the COVID-19 pandemic; the parties do not meet physically but use online facilities. Therefore, new legal concepts were born due to electronic activities, which have given rise to several problems. For example, regarding the systematization of relevant laws, such as whether or not contract law can be applied in the Civil Code about electronic commerce as regulated in the ITE Law and the PDP Law, where until now, there are no derivative regulations and personal data protection institutions in place. The Government made them. This problem shows that there is still a gap between new legal concepts and interpretations of existing legal provisions, which has the potential to impact legal practice.

On the other hand, updating legal materials related to digital transformation faces challenges: Adjustments to legal materials and their implementation must follow technological developments that impact all development sectors. For example, the status of electronic evidence in civil and criminal law, online justice (e-court) applications, legal limitations, sanctions, and law enforcement related to technological advances. Sectoral ego in forming statutory regulations means that much statutory regulatory material regulates overlapping authority and creates burdens for stakeholders. There are still many laws and regulations that could be of better quality due to a lack of initial studies based on the need for the formation of laws with the mindset that every problem that arises in society must be regulated. This understanding is also possible with the formulation in Article 10 letter e of Law Number 12 of 2011 concerning the Formation of Legislative Regulations (UU No. 12 of 2011), which states that the content material that must be regulated by law contains: e. fulfilling legal needs in

society. This provision means that everything can be claimed to fulfill legal needs in society and, therefore, must be made into law. It is essential to study regulations stipulated by institutions, which must be grouped as statutory regulations. This is because of the provisions in Article 8 of Law Number 12 of 2011, which states that statutory regulations also include regulations stipulated by the MPR, DPR, DPD, MA, MK, BPK, KY, BI, Minister, and Village Head.

The content of statutory regulations cannot be determined with certainty, especially in the context of the formation of laws. This is because Articles 28A to Article 28J, Chapter Many people think all human rights must be regulated by law. However, the law should only regulate fundamental rights. Unclear hierarchy of legal regulations. This happens because of the institutional structure and the mention of "state institutions" for every existing institution, even though these institutions are in the executive (government) domain, so the difference between the terms state institutions (staatsorganen) and government institutions (regeringsorgaan) is neglected. The problem becomes more comprehensive with the existence of auxiliary state bodies. It became confusing after the amendment to the 1945 Constitution of the Republic of Indonesia because all institutions formed based on the 1945 Constitution of the Republic of Indonesia, laws, presidential regulations, or other regulations, are called state institutions. This, of course, becomes more difficult if we try to apply it within an institutional structure, especially if the definition of a law states that an institution is a state institution. The planning and realization of the planning program for forming statutory regulations must be more rational. There are no formal guidelines for public consultation, so there is heterogeneity in the consultation forms with different standards. Legislative and regulatory files (drafts, academic texts/supporting analysis, discussion minutes) must still be correctly available (NASIONAL & INDONESIA, n.d.).

Another challenge is that regional legal reform must remain integral to national legal reform. In essence, regions are the spearhead of the implementation of national development. One legal product in the region is a Regional Regulation (Perda), as stipulated in Article 18 paragraph (6) of the 1945 Constitution of the Republic of Indonesia. The Regional Regulation is a legal basis for the Regional Government to carry out Regional Autonomy and Assistance Duties. Even though it has a strategic and vital function, the current existence of regional regulations has quite crucial problems and challenges; for this reason, the right strategy needs to be developed to resolve them. This is important to do considering that currently, the number of Regional Regulations is the largest among the number of other statutory regulations, so the quality of Regional Regulations, which are good or not so good, will significantly impact society. In November 2019, the Regional Autonomy Implementation Monitoring Committee (KPPOD) found that 347 Regional Regulations (Perda) needed to be revised and improved investment (Permatasari, 2021). The complex regional regulations result from a KPPOD study of 1,109 of 153 districts/cities in 32 provinces. Results of a 2016 study by the National Commission on Violence Against Women (Komnas Perempuan) recorded 365 regional regulations that were considered discriminatory against women. These regulations are often found in Aceh, West Sumatra, West Java, East Java, South Kalimantan, South Sumatra, and Sulawesi. This contradicts Regency/City Human Rights principles such as non-discrimination, siding with vulnerable groups, and inclusion (Mondosiyoko, 2021). On 21 June 2016, the Minister of Home Affairs issued a cancellation announcement.

3.143 Regional Regulations and Regional Head Regulations need to be revised. The aim of canceling the regional regulations is to strengthen the nation's competitiveness in the era of competition. Regional rules that are considered to hinder regional economic growth and lengthen bureaucratic channels hinder investment and ease of doing business must be canceled. Furthermore, the Ministry of Home Affairs (Kemendagri) is evaluating regional regulations that conflict with the constitution and higher statutory regulations (UU) and whether they are in accordance with Pancasila, the 1945 Constitution, and the Law as a pillar of nationality. The government is also evaluating regional and head regulations outside the spirit of maintaining Indonesia's diversity and unity (Isra et al., 2019).

The existence of challenges and problems in making national and regional regulations must, of course, be a concern for stakeholders in determining the legal umbrella for digital transformation. Rules must strengthen, not hinder. Moreover, technological developments are so fast that lawmaking can only be done slowly, which is a challenge.

Digital Literacy

Digital literacy was first coined by an Information and Communication Technology (ICT) observer from the United States, Paul Gilster. Digital literacy is the ability to use information and understand various formats from various sources. Digital literacy skills become as important as having a driving license (SIM) for motorbike or car drivers if presented via a computer or smartphone (Law et al., 2018). In its development, the term digital literacy was strengthened by UNESCO, which defined it as the ability to access, manage, understand, integrate, communicate, evaluate, and create information safely and precisely through digital technology for employment, decent work, and entrepreneurship. It also covers computers, ICT, information, and media literacy (Al-Khulaifi, 1997).

Digital literacy in the era of Industrial Revolution 4.0 (digital literacy 4.0) is knowledge about data systems (data literacy), mastery of technology (technology literacy), and the role of humans (human literacy). Data literacy is the ability to understand the sea of data and information produced from various data and information sources (big data) using mixed media and through multiple continuously connected devices. Technological literacy is the individual and group's ability to manage, access, integrate, evaluate, create, and communicate information using specialized assistance appropriately, effectively, and responsibly. Human literacy is understanding human life between people and nations with diverse cultural backgrounds, especially in the Industrial 4.0 era (Ellitan, 2020). Digital literacy plays a vital role in creating a digital society with a critical-creative mindset and outlook so that hoaxes and misinformation do not easily fool people, are involved in cyberbullying, and become targets of fraud in cyberspace.

Digital literacy is the best defense to prevent all forms of crime in the digital space and has many benefits for society, as Brian Wright argues in his infographic work entitled Top 10 Benefits of Digital Literacy: Why You Should Care About Technology (Maulana, 2015) which contains information about The benefits of digital literacy include, namely, speed in searching for data which can save time. Online service users and service providers obtain efficiency because they do not have to deal directly with customers (saving time). Looking for the definition of a term on an online platform will be easier and faster than looking for it in a printed glossary, so the task can be completed quickly (Learning Faster). Discount offers via

digital platforms can be easily found, so buyers can compare the prices of the products they want to buy (Savings Money). The circulation of information from various sources makes it easier for internet users to find the correct information according to their needs; for example, when people want to go abroad, they can look for information on the destination country, culture, and tourist attractions they are going to. Want to visit the internet (Making It Safer)?

Through digital literacy skills, when receiving the latest information, the recipient will always check whether the notification is accurate (Acquiring Up-to-date Information). The existence of an internet network when using applications or social media makes us feel connected to society, especially in communication. So, if someone feels urgent, they can directly communicate with their friend (Always Connected). Digital literacy allows everyone to search, study, analyze and compare the information they obtain. This can undoubtedly prepare better decisions from researching and comparing data. The statement can be valuable if it can influence us to act on something (make better decisions). The ability to operate computers such as Microsoft Word, Microsoft Excel, and Microsoft PowerPoint is one of the skills that everyone must have. This helps with daily work. This ability can be obtained by reading and trying to operate the existing manual. (Can work).

Many internet users who frequently access content in images, sound, and audiovisual (video) spread across the internet feel entertained and happy. However, not all of this content is entertaining. Sometimes, there is also content that makes people sad or even angry. Savvy internet users can be careful when filtering this content to get in a "well-being" mood. (Happier). If directed well, the dissemination of content can contribute to the development and change in the dynamics of social life. If viewed from a broader scope, the dedication of one's thoughts shared via the internet becomes a form of expression that can later influence world life, both now and in the future. (Influencing the World) (Castells, 2002).

Based on the 2020 Digital Civility Index, Microsoft Indonesia is ranked 29th with a 76 or low digital civility score. There are two risk factors that most influence the low digital courtesy of Indonesian society. First, intrusive risks related to the emergence of unwanted contacts, hoaxes, spam, fraud, hate speech, and discrimination. Second, the risk of behavior such as harsh treatment, provoking anger, misogyny, recruitment for terrorism, online violence, microaggressions, and cyberbullying. The above behavior causes increased crime in the digital era. Apart from that, people are very easily influenced by *fake news* (hoaxes) (Barclay, 2018).

The latest data shows that the ability of Indonesian people to use digital technology has generally improved since the start of the pandemic until now. This can be seen from the report on the results of measuring Indonesia's digital literacy index in 2022, which was released by the Ministry of Communication and Information (Kemenkominfo) together with the Katadata Insight Center (KIC) on February 1, 2023, according to the report, Indonesia's digital literacy index in 2022 is at level 3, 54 points on a scale of 1-5. This means that, in general, the digital literacy level of Indonesian society is at the "medium" level. The index rose 0.05 points compared to 2021, which was still at 3.49. Even when compared to 2020, the figure increased by 0.08 points. The index is measured using four pillars: digital skills, ethics, safety, and culture. Citing survey results, the digital skills pillar has not changed from the previous year. However, an indicator has recorded a decline from the prior year; namely, the indicator for adjusting to suitable communication methods has decreased to 3.81 in 2022 from 3.82 in the last year. Furthermore, the digital ethics pillar recorded a significant increase in its score and was the

largest among the other posts. Several indicators increase the score for this pillar, such as the indicator I not to comment negatively (score 4.07) and not share screenshots on social media (score 3.97). Then, there is the digital safety pillar, which is one of the pillars with the lowest increase. According to the report, most of the contributions came from the indicator of being used to create secure passwords with a combination of numbers, letters, and punctuation (score of 3.48).

Meanwhile, the minor contribution came from the ability indicator to distinguish the contents of emails containing spam/virus/malware messages with an index of 2.66. Pillars of digital culture. This pillar was recorded as the only pillar whose index score decreased from the previous year. However, the index score in this pillar is generally still the highest among the others. The most significant indicators in this pillar are adjustments to good communication methods between the two parties and consideration of audiences' feelings from other religions, with an index score of 3.49 points each. Geographically, the survey states that the Western Indonesia is generally superior in digital literacy compared to the other areas (AZIZUL, 2022).

Meanwhile, Central Indonesia is the region with the lowest digital literacy score. Meanwhile, Western Indonesia excels in the pillars of digital ethics and digital culture, while Eastern Indonesia excels in digital skills and digital safety. The national digital literacy survey has been conducted since 2020 and continues to this day. This survey helps know and meet society's digital literacy targets and effective strategies for providing digital literacy (Martin, 2008). The survey results provide a basis for the Ministry of Information and Communication to map targets and the digital literacy needs of society so that the National Digital Literacy Program can be executed effectively and remain on target. The government strives to increase society's digital literacy as an essential foundation for realizing digital human resources through the digital literacy framework.

Digital Literacy Framework

The Ministry of Information and Communication uses the digital literacy framework to design Indonesia's digital literacy program and curriculum for 2020–2024. Four pillars are part of the digital literacy curriculum development framework. Namely, Digital skills are an individual's ability to know, understand, and use ICT hardware, software, and digital operating systems. Digital Ethics is an individual's ability to realize, emulate, adapt, rationalize, consider, and develop digital ethical governance. Digital Safety is the user's ability to recognize, model, apply, analyze, evaluate, and increase awareness of personal data protection and digital security. Digital culture is an individual's ability to read, describe, get used to, study, and build national insight into the values of Pancasila and Bhinneka Tunggal Ika in everyday life, as well as the digitalization of culture through the use of information and communication technology (Masie & Chronaki, 2022).

Apart from that, the National Library of the Republic of Indonesia (PNRI) has also developed an information literacy program that is part of Indonesia's library service program. The E-resources service located at <http://e-resources.perpusnas.go.id/> provides digital services containing various sources of information in the form of journals, e-books, multimedia, and manuscripts. ePerpus is a digital library service with a business-to-business (B2B) concept initiated by Kompas Gramedia. ePerpus offers digital library management for schools,

companies, agencies, and communities: <https://www.eperpus.com/home/>. Gramedia Digital is an eBook application with a complete collection of books, newspapers, and magazines from well-known authors and publishers. Gramedia Digital can be accessed via Android or Apple smartphones or tablets. <https://ebooks.gramedia.com/>.

Digital Transformation

Indonesia's current population is 270 million people, with a GDP per capita of \$4,196 (2019), \$4,038 (2020), and \$4,287 (2021). Indonesia's land area is 1.9 million km² (land), 8.1 million km² (ocean), consisting of 17,504 islands, 34 ministries (4 coordinating ministries), 38 provinces, 532 cities/regencies, 6,994 sub-districts, 74,958 villages; and 9,655 community health centers. Indonesia will experience a demographic bonus in 2045, which refers to the proportion of the productive age population, which will increase significantly, thus opening up opportunities for Indonesia to utilize digital technology to encourage national economic growth. Based on the Indonesian population projection report issued by BPS, it is stated that in 2045, the projected population in the 15 to 64-year-old age group will reach 214.2 million people out of a total population of 329.1 million people. This means that in 2045, the number of people of productive age will be 65% of Indonesia's total population (Gallos et al., 2021). The government must be able to take advantage of this moment to increase productivity and economic growth, as well as design policies that align with changes in labor market demand, which are influenced by dynamic technological developments. Through digital transformation, there is the potential to create around 9-12 million new jobs.

However, on the other hand, the digitalization process has also triggered a decline in demand for employment. As many as 60% of the working-age population in Indonesia work in six (6) main sectors, namely agriculture, forestry, fisheries, trade, retail, manufacturing, accommodation and culinary services, construction, and education, which are potentially threatened by the crisis. Automation. Routine and simple jobs can be replaced by machines and automation, causing a decline in demand for labor in these sectors. Therefore, facing digital transformation in the world of work requires careful planning. In the long term, the government must also design policies to meet the aging era, aligning with the "Advanced Indonesia 2045 vision." The Indonesian government does this with four pillars, namely: Human Development and Mastery of Science and Technology (IPTEK), Sustainable Economic Development, Equitable Development, and Strengthening National Resilience and Governance. Technology is developing more and more rapidly.

For this reason, the government must be more alert and accustomed to managing digital technology (mobile internet and automation). Technologies that reduce physical limitations and distance also need to continue to be developed, accompanied by widespread adaptation to renewable energy technologies (solar, wind, nuclear, biomass, and geothermal) and intensive application of more advanced health technologies. Second, develop hard infrastructure to build digital connectivity and prepare supporting institutions, policies, laws, and regulations. The government has made a 4G mobile broadband network to create capable digital connectivity and deployed the Satria Satellite to provide internet access in 150 thousand public facilities.

At the same time, farming and refarming of spectrum requirements, integration of the Palapa Ring, and installation of 12,083 kilometers (km) of fiber optics have been carried out.

Meanwhile, supporting institutions and policies, the establishment of a National Data Center, the determination of capital expenditure of IDR 8.6 trillion for the 2022–2023 period, and the creation of key legislation in the field of information and communication technology (ICT) are part of it—government efforts to realize the desired digital transformation. Third, develop soft infrastructure to build digital capacity. The government established a Digital Economy Program to achieve this and prepared the nine million digital talents needed in the next 15 years to support digital transformation. First, through (i) adopting digital technology for micro, small and medium enterprises (MSMEs), carrying out digital outreach and literacy, and introducing the concept of digital onboarding for MSMEs; (ii) increasing the adoption of digital technology in six priority sectors (agriculture, maritime, tourism, education, health and logistics) and designating 10 regions in Indonesia as pilot projects; and (iii) supporting the development of digital startups by building Startupdigital. Id, which is tasked with providing training, mentoring, and business matching for startup companies and game developers. There are many challenges faced in driving digital transformation. However, all parties agree that this transformation needs to be accelerated. Apart from ensuring that Indonesia can adapt to a rapidly changing and increasingly dynamic and complex business environment, it is also important for Indonesia to participate in the high-speed vortex of innovation and change.

To support the realization of the Golden Indonesia Vision 2045, the Ministry of Communication and Information launched the Digital Indonesia Vision 2045 on December 13, 2023. The aim is to hope that Indonesia will be able to utilize the untapped potential and master it through directed efforts. And it is controlling the use of digital technology. Indonesia's Vision 2045 states that it is inclusive, namely, the availability of equal digital access and safe digital spaces for all levels of society. Empowering: society's ability to utilize digital technology productively and create added value from its use. Sustainable: Digital transformation is based on meeting the Sustainable Development Goals Agenda. And the government needs to anticipate and project the rapid development of digital technology. It is important to determine which digital technologies need to be adopted and the extent of such adoption required. Apart from that, the government needs to actively prepare human resources that can adapt to advances in digital technology (Fauzia et al., 2021).

Digital transformation is important in business, society, and technological development for several reasons: increasing efficiency and optimizing business and operational processes. Automating routine tasks and applying advanced technologies such as data analysis and artificial intelligence help increase efficiency, reduce costs, and avoid human errors. Competitiveness. Companies adopting the latest technology will be better able to compete in the global market. Digital transformation enables new product development, better market penetration, and increased customer attraction. Innovation. Applying new technologies opens opportunities to create products and services that have never existed, generating added value for customers and companies. Responsive to Change. In an ever-changing world, digital transformation allows companies to be more responsive to changes in the market, consumer trends, and business environment. Companies that can adapt quickly have a better chance of surviving and thriving. Improved Customer Experience. Digital technology enables greater personalization in interactions with customers. By understanding customer preferences and behavior through data, companies can provide more relevant and satisfying experiences.

Global Access. Companies can achieve global market share with minimal geographic limitations through the Internet and digital platforms. This opens up greater expansion and growth opportunities. Data Security and Management. Digital transformation also includes better data management and protection against cyber threats. Implementing strong cybersecurity is becoming increasingly important in this digital era. Connectedness and Collaboration. Digital technology facilitates connectivity and collaboration across locations. Teams and individuals can work together without geographic restrictions, increasing effectiveness and productivity—access to Information and Learning. Digital transformation has revolutionized education and access to information. Individuals can learn and access knowledge more easily through online learning platforms and online resources: Sustainability and Environment. Digital technology can be used to reduce environmental impacts. For example, digitizing business processes can reduce the use of paper and other resources.

In anticipating the development of digital technology and realizing Indonesia's digital ideals in 2045, careful preparation and planning are needed in various sectors, as well as the orchestration of all components of digital development as outlined in the Digital Indonesia Vision 2045 framework, which is supported by three pillars: government modern and responsive digital; digital economy to create an innovative economy based on digital technology; and an empowered and cultured digital society. In realizing digital governance and encouraging a synergistic and reliable digital ecosystem in Indonesia, it is necessary to create an inclusive and just ecosystem where stakeholders play an active role in collaborating in developing and using technology. Through strong synergy between pentahelix (government, society, private sector, NGOs, and academics), we can build an environment that supports innovation and the development of digital technology. The government's role is to develop policies, regulations, and strategic direction to encourage technological growth. The central government plays a role in building a reliable ecosystem and digital development synergy. Meanwhile, regional governments play a role in promoting digital transformation not only in government systems but also in encouraging digitalization in other regional sectors and providing support for developing digital ecosystems within them.

The government has stipulated the acceleration of digital transformation as stated in Presidential Regulation of the Republic of Indonesia Number 82 of 2023 concerning the Acceleration of Digital Transformation and Integration of National Digital Services. In this Presidential Decree, the government is accelerating digital transformation by prioritizing integration and interoperability by implementing Priority electronic-based government system (SPBE) applications. The SPBE Prioritas application is organized to support integrated education services, with the minister responsible for administering government affairs in the education sector. Second, supporting integrated health services, with the minister in charge of government affairs in the health sector, integrated social assistance services, with the minister in charge of government affairs in the social sector. It was third, supporting population administration services integrated with digital population identity services, with the minister responsible for administering domestic government affairs, and fourth, supporting state financial transaction services as an integrated payment service that is integrated with all financial service providers, with the minister responsible for administering government affairs in the field of state finance, government administration services in the area of state apparatus integrated with basic personnel services, with the person in charge minister who carries out

government affairs in the field of state apparatus. Fifth, support public service portal services, national single sign-on services, integrated digital identity services, and integrated SPBE Infrastructure services, including national data centers, intra-government networks, government service liaison systems, and cloud computing, with the minister responsible for administering government affairs in the field of communications and informatics. Sixth, supporting the One Data Indonesia service, with the minister responsible for helping government affairs in national development planning. Seventh, supporting integrated police services, including issuing driving permits and crowd permits, with the person in charge being the Head of the National Police of the Republic of Indonesia.(Gani, 2023)

Three Points of Indonesia's Digital Transformation

Three points must be considered in implementing digital transformation: Indonesia's digital condition. This is because the largest population of digital consumers in 2021 in Southeast Asia is in Indonesia, namely 39 percent. National Digital has enormous opportunities, so it must be exploited. Still, digital economic opportunities also have challenges, the impact of which could kill MSMEs and commodities in the small business sector. Therefore, there is a need for proper supervision and regulation from the government so that we can compete fairly. Apart from that, the biggest homework that must be solved is digital society. The Ministry of Communication and Information has determined that Indonesia needs to produce nine million digital talents. However, the current reality is that Indonesia can only print around 30 thousand per year. On the other hand, Indonesia also has many professors in the crypto field, but unfortunately, they are located or work abroad. Thus, the key is the development of digital human resources.

Second, Indonesia's position globally is one of the important points of digital transformation. Based on a study conducted by Oxford Inside in 2022, Indonesia is still in the middle. If the best scale is 5 and the worst is 1, Indonesia is between 2 and 3. Apart from that, Lemhannas also collected several indices from 2019 to 2022, including the Digital Readiness Index, Innovation Index, National Cyber Security Index, and Economic Transformation Index National. In general, Indonesia's score is consistently at numbers 2 to 3.

For this reason, it must be moved to 4th. By 2045, Indonesia must be at number 5 regarding artificial intelligence readiness. There is a lot of homework that needs to be addressed and must be improved immediately, for example, the National Cyber and Crypto Agency (BSSN), which for years has been trying to create complete cyber regulations, until finally this year, the President signed a national cyber security code. However, Indonesia still does not have a cyber law, only in the form of a presidential regulation (Paterson, 2019).

Third, geotechnology, namely the world's condition, is struggling to think about how to build digital connectivity. There is global technology competition, especially in the two big blocks, namely the United States and China. China and Taiwan control 40 percent of the semiconductor market compared to the United States. Apart from that, South Korea is also conducting experiments on creating semiconductor chips at normal temperatures. This revolution will challenge the machines produced by the Netherlands. Then the National University of Singapore is currently trying to capture the dynamics of the development of Quantum Computing technology. If this thing matures in another four years, all cryptography will become irrelevant. Singapore also has the Army, Navy, Air Force, and Digital and

Intelligence to capture cyber dynamics. They believe that a technological leap from chip breakthroughs to Quantum Computing will make all cybersecurity efforts useless in the next 4 to 5 years.

Currently, Indonesia is at the midpoint of digital connectivity. Of the seventy zettabytes of data in cyberspace via fiber optic and wireless, 32 percent passes through Indonesia. This leaves Indonesia with no choice but to enter digital connectivity. However, a main challenge is being faced, namely the trend of technological separation, which is continuing, for example, the trade barriers implemented by countries in the world, especially the United States. There are four categories of countries: pro-America, pro-China, nonalignment, and confused. These four categories are not ideal for Indonesia, so Indonesia must be able to create a fifth category, namely pro-Indonesia. When discussing ASEAN, the fifth category becomes pro-ASEAN, and the sixth is pro-connectivity. Indonesia opposes state policies that destroy digital connectivity and policies that divide global connectivity. "Indonesia must become a pro-global connectivity country without being separated from technological blocs.

Even though there are many obstacles, the disruption that occurred has provided a big leap for the country to innovate. For example, companies in the health sector became the most innovative because of the Covid-19 pandemic, which made them jump significantly. If you look at the obstacles created by the United States to suppress China's digital development, it makes China jump even more. China has produced breakthroughs that have prevented the United States and Europe from decoupling and de-risking. Countries that believe in and want to jump with technology include China, Japan, and South Korea. Australia, Russia, and Western Europe are in the middle, while African countries are the most afraid of Artificial Intelligence technology. From the things mentioned above, three things need to be considered, including the harsh geopolitics of technology, Indonesia's cyber digital index is at number 2 to 3, even though the ideal condition is 5, and large digital potential. Therefore, Indonesia must immediately organize and tidy up its digital security architecture.

CONCLUSION

Indonesia has many ICT-related regulations and the acceleration of digital transformation, including laws and presidential regulations, financial institution regulations, ministerial regulations, and ministerial circulars.

Law Number 6 of 2023 concerning Job Creation, promulgated on March 31, 2023, contains 1,127 pages and 186 articles. The scope of this law regulates strategic job creation policies, which include improving the investment ecosystem and business activities, employment, and facilitating, protecting, and empowering cooperatives and MSMEs. Apart from that, this regulation covers ease of doing business, support for research and innovation, land acquisition, economic zones, central government investment, government administration implementation, and sanctions imposition. From its content, the Job Creation Law strengthens and encourages the acceleration of digital transformation.

Digital technology continues to develop rapidly while updating digital technology regulations through the formation of laws contains many challenges both in terms of

procedural and material content, so what is needed at this time is the creation of a Governance Framework for Digital Transformation Regulations whose formulation does not conflict with laws and regulations. President, state institution regulations, ministerial regulations related to ICT and digital transformation. The framework contains formulas for adding and strengthening guidelines for regions in enacting Regional Regulations (Perda) that must not conflict with existing higher regulations so that existing Regional Regulations can enhance rather than hinder them. The digital transformation governance framework is also a guideline and a monitoring medium, providing accurate, up-to-date, integrated, accountable, and easily accessible information on obstacles and obstacles to success regarding the implementation of digital transformation at the central and regional levels.

Digital literacy programs that are carried out must continue to be carried out in collaboration with academics, cultural figures, non-governmental organizations (NGOs), religious leaders, and traditional community leaders with literacy material that adapts to Indonesian culture so that the community will easily adopt it.

Through the digital literacy program, the government can simultaneously search for digital talent and unlock the potential for digital access by empowering visionary children who are updated with current developments and have digital technology skills to strengthen the vision of a Golden Indonesia 2045.

BIBLIOGRAPHY

- Ahmed, R. K., Muhammed, K. H., Qadir, A. O., Arif, S. I., Lips, S., Nyman-Metcalf, K., Pappel, I., & Draheim, D. (2021). A legal framework for digital transformation: a proposal based on a comparative case study. *International Conference on Electronic Government and the Information Systems Perspective*, 115–128.
- Al-Khulaifi, M. (1997). *An automated bibliographic network for the libraries of Riyadh, Saudi Arabia: A feasibility study*. University of London, University College London (United Kingdom).
- AZIZUL, G. N. (2022). *AKTIVITAS KOMUNIKASI ORGANISASI PT PERMODALAN NASIONAL MADANI (PERSERO) CABANG WARU 2 DALAM MENINGKATKAN LITERASI DIGITAL KARYAWAN MELALUI APLIKASI PNM DIGI*. Universitas Bhayangkara Surabaya.
- Barclay, D. A. (2018). *Fake news, propaganda, and plain old lies: how to find trustworthy information in the digital age*. Rowman & Littlefield.
- Castells, M. (2002). *The Internet galaxy: Reflections on the Internet, business, and society*. Oxford University Press, USA.
- Ellitan, L. (2020). Competing in the era of industrial revolution 4.0 and society 5.0. *Jurnal Maksipreneur: Manajemen, Koperasi, Dan Entrepreneurship*, 10(1), 1–12.
- Fauzia, F., Virantika, A., & Firmansyah, G. (2021). Langkah langkah Strategis Pemenuhan Kebutuhan SDM Talenta Digital di Lingkungan Pemerintahan Indonesia. *Proceeding KONIK (Konferensi Nasional Ilmu Komputer)*, 5, 39–46.
- Gallos, P. G., Mantas, J., Pape-Haugaard, L., Randell, R., Stoicu-Tivadar, L., Weber, P., & Winter, A. (2021). EFMI. *Yearbook of Medical Informatics*, 30(01), 340–345.
- Gani, T. A. (2023). *Kedaulatan Data Digital untuk Integritas Bangsa*. Syiah Kuala University

Press.

- Hale, R. L. (1952). *Freedom through law: Public control of private governing power*. Columbia University Press.
- Isra, S., de Villiers, B., & Arifin, Z. (2019). Asymmetry in a decentralized, Unitary State: Lessons from the special regions of Indonesia. *JEMIE*, 18, 43.
- Law, N. W. Y., Woo, D. J., de la Torre, J., & Wong, K. W. G. (2018). *A global framework of reference on digital literacy skills for indicator 4.4. 2*.
- Levi-Faur, D. (2011). *Handbook on the Politics of Regulation*. Edward Elgar Publishing.
- Martin, A. (2008). Digital literacy and the “digital society.” *Digital Literacies: Concepts, Policies and Practices*, 30(2008), 151–176.
- Masie, I., & Chronaki, C. (2022). EFMI Inside-the Official Newsletter of the European Federation for Medical Informatics-2021-1. *Acta Informatica Medica*, 137–177.
- Mondosiyoko, H. (2021). Implications of Discriminative Regional Policies in Indonesia towards Women in Theperspective Feminist Legal Theory. *Budapest International Research and Critics Institute-Journal (BIRCI-Journal)*, 4(4).
- NASIONAL, B. P. H., & INDONESIA, R. (n.d.). *NASKAH AKADEMIK RANCANGAN UNDANG-UNDANG TENTANG PEMBINAAN HUKUM NASIONAL*.
- Paterson, T. (2019). Indonesian cyberspace expansion: a double-edged sword. *Journal of Cyber Policy*, 4(2), 216–234.
- Permatasari, A. D. P. (2021). THE URGENCY OF HARMONIZING CONTRADICTORY REGIONAL REGULATIONS THAT HINDERS THE INVESTOR INTEREST ON INVESTMENT. *UNTAG Law Review*, 5(1), 65–73.
- Stiglitz, J. E. (1985). Credit markets and the control of capital. *Journal of Money, Credit and Banking*, 17(2), 133–152.

Copyright holder:

Francisca Romana Nanik Alfiani (2024)

First publication right:

Asian Journal of Engineering, Social and Health (AJESH)

This article is licensed under:

