



Indonesia and the Future of Digital Governance and Government Information (Acceleration Measures the Government Should Take)

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Abstract. In this industrial era 4.0, Indonesia really needs the competence of state civil servants in managing digital and government information, especially the need for digital literacy competence which consists of two aspects, that is technical and non-technical aspects. This research aims to find technical and practical solutions on how digital governance and government information are implemented. This paper uses a library research method with a qualitative approach. Primary data in this research is collected from the scientific studies that have been carried out, while the secondary data is taken from sources that can complete this study. The data analysis process is in the form of exposure or phenomena related to all information which are close to digital governance and government information. In short, the data analysis process is in the form of reducing and presenting data and also drawing the conclusion. The conclusion of this study is that the awareness and ability of digital and information literacy of the civil servants is still low. It is also known that the integration of the system of the government administration through the information system network is still not conducted optimally. The recommendation in this study is that it is necessary for the government to modernize public services by adopting digital technology with reference to e-Government regulations no. 95 of 2018, that is to seek the wider public participation and collaboration, and to ensure the security of existing digital information and data.

Keywords: Digital Government · Government Information · Governance

1 Introduction

Globalization is now increasingly complex and full of challenges, especially in the era of the industrial revolution 4.0 which cannot be separated from changes that occur so quickly. Even the Ministry of Research, Technology and Higher Education in 2018 prepared Indonesian social engineering by creating and improving access, relevance, and quality of Higher Education to produce qualified human resources, as well as increasing science and technology and innovation capabilities to support the nation's competitiveness.

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Experts predict that the industrial revolution era 4.0 will result in 75% of jobs involving science, technology, engineering and math skills, the internet of things, which is a lifelong learning [1]. Changes will continue to take place, even will raise a cyber-physical system-based revolution, which is a combination between digital, physical, and biological domains [2]. Those who do not follow this change will certainly be left behind. Klaus Schwab, an economist from Germany and also the Executive Chair of the World Economic Forum (WEF), introduced the concept of the Industrial Revolution 4.0 which will change people's lives and work. Schwab [2] in his book entitled "The Fourth Industrial Revolution", explained that the industrial revolution 4.0 has fundamentally changed human life and work.

The industrial revolution 4.0 also raises up the technology disruption which in the end will introduce a new culture. In various texts it is said that the new culture includes several things, in which more than 55% of organizations state that the digital talent gap is getting wider [3]. Even in the homeland, in governance, Indonesia must immediately change and improve the quality of the skills of the State Civil Apparatus hereinafter abbreviated ASN (Indonesian abbreviation) with digital technology and internet and require everyone to have social skills at work.

Under the administration of President Joko Widodo, Indonesia has started this and it can be seen from the Making Indonesia 4.0 program as a roadmap, one of which is improving the quality of human resources as stated by KemenPAN-RB. The increase in human resources is of course an upgrade in quality that is truly able to compete and adapt to the times, especially the development of digital and information technology. In the government sector, the Ministry of State Apparatus Empowerment and Bureaucratic Reform hereinafter abbreviated KemenPAN-RB is also moving to create a service atmosphere by increasing the competence of existing ASN by compiling a grand design for the 2020–2024 ASN development to realize professional governance, based on law, and competent in facing the industrial revolution 4.0 or IR 4.0.

Meanwhile, the Regulation from the Head of the State Administration (LAN-Indonesian abbreviation) No. 10 of 2018 on the Development of Civil Servant Competence stated that there is a civil servant exchange scheme with private employees or state or regional-owned enterprises to improve technical competence. Thus, it is very possible for ASN to learn IR 4.0 technology with the private sector. This indicates the government's seriousness to have technology literate human resources [4].

However, there are things that need to be observed, that in the Regulation of KemenPAN-RB No. 38 of 2017, the competence of ASN positions does not describe digital capabilities or IR 4.0 technology at all. The regulation only mentions technical, managerial, and socio-cultural competencies. If it is examined further, the technical competence in this regulation only mentions specific technical skills related to the position held. Therefore, the urgency of the government's need for digital competence for ASN is very high considering the development of technology that moves so fast and cannot be predicted. Indonesia must admit that the capabilities or digital literacy of Indonesian ASN are not yet qualified and even the data from the World Economy Forum for Human Capital Indonesia in 2017 stated that the quality of Indonesian State Civil Apparatus (ASN) was lower than Malaysia and Thailand [5]. For that reason, a digital literacy measurement framework (some literature uses the term 'digital literacy competence')

is needed. The latest study as revealed by Techataweewan & Prasertsin, U proposed a digital literacy framework consisting of: 1) operational skills (cognition, discovery or invention, and presentation); 2) thinking skills (analysis, evaluation, and creativity); 3) collaboration skills (teamwork, networking, and sharing); and 4) awareness skills (ethics, law, and self-protection).

Based on the literacy studies above, the government of Indonesia is to encourage all the ASN to have competencies in managing digital and government information in the Industrial 4.0 era in which the digital literacy competence itself consists of two aspects. Those two aspects certainly cannot be separated from the definitions described above, that is the technical aspects in the form of operational capabilities in using tools, both hardware and software as well as non-technical aspects in the form of required knowledge and behavior as a result of the technical process itself. Therefore, this research will focus on the goal of finding technical and practical solutions in digital governance and government information.

2 Methodology

This paper uses the library research method where the study is carried out based on the collection and analysis of the library data, where the data collection process is carried out by interacting between researchers and books or library materials that are used as reference sources [6]. The data collection technique in this study uses the identification of various discourses through scientific journals, books, magazines, web or other information related to the title of the research to find things related to the concept and digital governance and government information. These scientific articles include Fang, Danuri [7], Rumata & Nugraha [4], Eprilianto et al. [8], Kumar et al. [9] and many other literatures. The data collection technique used is the documentation where collecting data by tracing various references related to the focus of the problem by examining various library materials and literature studies related to research [10].

The data analysis used in the research is in the form of exposure or phenomena related to all information of digital governance and government information. According to Sugiyono [11] reducing data means summarizing, choosing the main things and focusing on the important things. The next step is to select the data that is considered necessary and after that the presentation of the data is carried out. Miles and Huberman in Sugiyono [11] revealed that the presentation of data that is often used in qualitative research is narrative text. The last step of the process is verification or drawing conclusions.

3 Results

3.1 Development of Digital and Information Systems in Indonesia

Based on research [12] in 2017, the number of internet users in Indonesia reached 143.26 million or an increase of 7.96% compared to 2016 which was as many as 132.7 people. The number of internet users in 2017 covered 54.68% of the total population of Indonesia which reached 262 million people. Even the latest data based on a report

released by the Association of Indonesian Internet Service Providers hereinafter abbreviated APJII (Indonesian abbreviation), the total population of Indonesia is currently estimated to reach 272.68 million people in 2021. Meanwhile, the internet penetration rate in Indonesia between 2021 and the first quarter of 2022 reaches about 77.02%. This figure has increased from the beginning of 2019 to the second quarter of 2020 by 73.7%. In that period, Indonesian people who were connected to the internet were reported to have reached 196.71 million people [13].

There are interesting conditions to observe in the APJII survey. The internet penetration in Indonesia can be broken down as follows: ages 13–18 years is around 99.16%, ages 19–34 years is as much as 98.64%, ages 35–54 years is about 87.3%, and ages 55 years and over is in a figure of 51.73%. From the report, it can be seen that the age group of 5–12 years is 62.43%, which is higher than the age group of 55 years and over. Around 89.03% of the internet users access the internet with a mobile phone or tablet device, 0.73% users access the internet via a computer or laptop, and 10.24% people access the internet via a cellphone or tablet as well as a computer or laptop.

Actually, the benefits of digitalization can be felt in the form of: 1) Better services to the community. Information can be provided 24 h a day, 7 days a week, without having to wait for the office to open. Information can be searched from the office, home, without having to physically come to government offices. (2) Improved relations between the government, business people, and the general public. With the transparency, it is hoped that the relationship between various parties will be better, 3) Community empowerment through information that is easily obtained, and 4) Implementation of a more efficient government.

Public demands for good governance are very urgent to be implemented by government officials. One solution obviously needed is the integration of the government administration system through an online information system network between government agencies, both central and regional, to access all data and information, especially those related to public services. From the government side, changes in the strategic environment and technological advances encourage government officials to anticipate a new paradigm with efforts to improve bureaucratic performance and services towards the realization of good governance.

Basically, all decisions and policies taken especially related to digitalization must be clear and firm and have an impact in order to encourage the creation of people's welfare [14]. Therefore, the government is required to be proactive on the expectations of society and global conditions with all the challenges that are triggered by changes and advances, especially in the field of technology. The world has changed and so has Indonesia, where the activities of all communities have been digitalized [8] and people are getting smarter and more well informed, so that there is a tendency that they demand more for public services [9].

3.2 Problems and Challenges of Digital Governance and Information Systems

The amount of government investment in ICT is not directly proportional to the quality of the electronic system that the government provides. Both national and global indices show that Indonesia's ranking has declined from year to year or has been stagnant. The measurement of the e-government index internationally uses the E-Government

Development Index (EGDI) conducted by the United Nation and the E-Government Index by the Waseda Index, while the National E-Government index is carried out by the Ministry of Communications and Information.

In the process of developing digital and information governance, the government faces various problems that must be resolved one by one as soon as possible, such as:

- The low digital literacy of State Civil Apparatus (ASN).
- Although the level of internet users in Indonesia is very high, opportunities and access to the economy remain unequal across the region. This context substantially hinders the impact of digitally enabling participation, transparency and service delivery [15].
- Periodically, the government always evaluates, however, the problem faced by the government based on research conducted by Bouty et al. [16] is that not all local or provincial governments follow the evaluation. It means that the PeGI evaluation is optional and makes the evaluation results not reflect national conditions;
- The development of e-Government in Indonesia is slow and the trend is not positive [17].

4 Discussion

4.1 Technical and Practical Solutions in Digital Governance and Government Information

Digital governance and government information are very important because of the high need for the community to obtain effective, efficient, transparent and accountable public services. This step can be started from policies that facilitate and favor the community, then carry out infrastructure development in the digital field or technology and information that is able to reach the lowest levels of society. In principle, this digital system and its governance apply or use a digital or computerized system (information technology) which aims to organize good governance at both the central and regional levels. By implementing a digital system, it is hoped that the principles of good governance as referred to by the United Nations Development Program (UNDP) can be realized. The nine characteristics of good governance according to UNDP [18] are as follows: Participation; Transparency; Accountability; Effective and Efficient; Legal Certainty or Rule of Law; Responsive; Consensus; Equality and Inclusiveness and Strategic Vision.

As a literature-based research, this study tries to provide some descriptions of technical and practical solutions in order to improve digital governance and government information more globally. The recommendations offered which also reflect on the several studies that have been carried out are as follows:

Improving the Digital and Information Literacy Skills of ASN. Referring to the Regulation of KemenPAN-RB No. 38 of 2017, the definition of ASN digital literacy is formulated as follows: ASN must have ability to use digital technology responsibly and wisely to support work activities, increase work effectiveness and efficiency, and produce policy and program innovations". UNESCO stated that there are at least three private or commercial digital literacy frameworks adopted in several countries, i.e.: International Computer Driver's License (ICDL); Certiport Internet and Computing Core Certification (IC3); and the Microsoft Digital Literacy Standard Curriculum. Indonesia is one of the

countries that adopted two of these frameworks, in addition to Colombia, Egypt, and Qatar [19].

UNESCO also initiated a global digital literacy competence framework, as shown in the following Table 1.

Furthermore, from each of these components, a formulation of the Framework of Digital Literacy Competence of ASN was developed into the dimensions of the competence components and indicators, so that the competence components can be tested and measured. See Table 2.

The data from the two tables above are the competencies that ASN and other government employees must fulfill as part of the government's efforts or initial steps in fixing and improving digital governance and government information.

Table 1. The framework of UNESCO digital literacy competence.

No	Areas of competence	Competence
1	Basic knowledge related to hardware and software	Basic knowledge about hardware and software such as turning on the computer, creating passwords, accounts, knowing how to LOG IN
2	Information and data literacy	Able to search for information with SEARCH ENGINES to search for data, information or other relevant digital content; or to manage and to evaluate data, information and other digital content
3	Communication and collaboration	Interact, share, participate, collaborate through digital technology; know ethics in internet (netiquette); and manage digital identities
4	Digital content creation	Develop digital content; integration and elaboration of digital content; copyright and licenses; and programming
5	Security	Ensure the protection of the device; personal data; health and well-being; and the environment
6	Problem solving	Technical problem solution; identify needs and technological response; use the digital technology creatively; identify the digital competence gaps
7	Competence related to career or job	Knowledge and skills needed to operate specific hardware or software to support specific jobs such as design software programs for engineering or e-learning and so on

Table 2. The framework of the digital literacy competence of ASN.

No	Component of competence	Indicators
1	Digital insight of ASN	<ol style="list-style-type: none"> 1. Know the hardware and software commonly used to support work activities 2. Know the basic terms in the use of digital technology 3. Able to find out relevant data and information and understand the challenges of searching through the internet 4. Have global insight on the development of digital technology 5. Have knowledge into national plans and targets in the field of digital technology and their relevance to the duties and functions of work units or institutions
2	Digital skills of ASN	<ol style="list-style-type: none"> 1. Able to operate applications and to take advantage of features that are commonly used for communication through digital technology in order to support work activities 2. Able to browse relevant data and information and understand the challenges of searching through the internet 3. Able to determine relevant and reliable data and information to be used as a reference 4. Able to map the relevance of digital technology development with the tasks and functions of the work unit or institution 5. Able to adapt digital technology to increase the effectiveness and efficiency of work units or institutions 6. Able to utilize digital technology to make a decision
3	Digital behavior of ASN	<ol style="list-style-type: none"> 1. Have awareness about the risks of using digital technology and the ability to control them 2. Understand the weaknesses and ethical consequences of communicating through digital technology 3. Able to analyze and present data and information, as well as understand ethics and regulations related to digital content 4. Produce policy innovations for institutions that have an impact in improving the quality of public services

Improving the Concept of Integration of the Government Administration System Through an On-Line Information Network System Between Central and Regional Government Institutions to Access All Data and Information, Especially Those Related to Public Services.

Accessing to Fair and Affordable Technology. This is a challenge for the central and local governments. A commitment is therefore needed to seek improvements in online and mobile connectivity, while also identifying and promoting the use of alternative mechanisms for citizen engagement.

Innovating Digital and Information Technology. We are currently in the era of the fourth generation industrial revolution, where at this time, various new technologies that

are disruptive have been discovered. Therefore, the government must take accelerated steps, so that the adaptation of technology does not interfere with the existing government rhythm, and at the end the government's digital and information governance system can go hand in hand with the progress itself.

Modernizing Public Services Through the Adoption of Digital Technology with Reference to E-Government Regulations in the Form of Government Regulation No. 95 of 2018. Indonesia already has e-Government regulations in the form of Presidential Instruction No. 95 of 2018 concerning the Electronic-Based Government System (SPBE). This is also supported by the regulation of the Minister of Communication and Information Technology No. 4 of 2016 concerning about Information Security Management System (ISMS) which has adopted the SNI/ISO 270001:2013 standard and can be used in implementing the Digital Government strategy to increase public trust. The recommendations that have been formulated include: a) ensuring the use of digital technology in all government service policies; b) designing organizational and governance frameworks; c) developing a business case in the application of Digital Government; d) adopting information security standards in the application of Digital Government; and e) developing and implementing a sustainable digital government development strategy.

Striving for Wider Public Participation and Collaboration in Optimizing Digital Governance and Government Information. Digital and government information is an effort to modernize public services through the adoption of digital technology and integrate it in the public sector.

Improving the Organization and Governance of Digital Government. Digital Government organization and governance are truly needed, so that the implementation can be carried out in a planned, coordinated, and measurable manner. It is necessary to identify who should be responsible for coordinating the implementation of the Digital Government strategy. Not only the government must carry out planning, monitoring and evaluation but also the implementation can be carried out in a sustainable way.

The Government Must Have a Strong Measuring Instrument in the Application of Digital Government. It is obviously important that all investments made by the government in developing digital and information governance are optimally applied. An in-depth analysis should be carried out to identify the expected economic, social and political benefits. This is conducted as a justification for public investment and to improve project management.

The Government Must Ensure the Security of the Existing Government Digital Data Information. Information security becomes the main focus of the government after this system is running well, which is manifested in the form of: a) Confidentiality or guarantee of confidentiality of information or data to ensure that information can only be accessed by authorized parties; b). Integrity where the government guarantees that data cannot be changed without the permission of the authorities, maintains the completeness of information and protects against damage or other threats that can cause changes to the original information or data; c). Availability in which the government guarantees that data will be available when needed and ensures that users can access information without interruption.

5 Conclusion

The conclusion of this study is that the level of awareness towards digital literacy is currently still low. The digital awareness in question is the weakness of modernization related to digital progress and current information to the weak ability and knowledge of ASN and the wider community. This awareness should be built by increasing ASN digital knowledge, improving their digital skills and behavior and at the same time, and also building wider public awareness, so that they also have adequate digital competence and all community service needs can be fulfilled optimally and quickly.

The integration concept of the government administration system through an on-line information system network between central and regional government institutions in accessing all data and information, especially those related to public services, is still low. The government must continue to strive, so that all service activities can be maximally accessed by the wider community. The uneven development of digital infrastructure throughout Indonesia has contributed to the inequity of access to technology.

As a note in this research is that the government needs to make sustainable changes, because digital and information technology are always evolving according to the needs of the community. We are currently in the era of the fourth generation industrial revolution, where at this moment, various new disruptive technologies have been discovered. Therefore, now is the time to take a breakthrough, so that technological adaptation can be accessed by all people. The adoption of digital technology must refer to e-Government regulations in the form of Presidential Instruction No. 95 of 2018 and seek wider public participation and collaboration in optimizing digital governance and government information while revamping the organization and governance of digital government that has been running so far with tools of a strong measurement in the application of digital government, so that all government investments in this sector are not in vain and can provide the widest possible benefits for the community. The final step is to ensure the security of government digital data information, so that the data of all users, the public, can be kept confidentially without being changed and can be used whenever needed.

For further research, it is better to conduct a study in order to find out the disparity in the application of digitalization between regions by conducting field research as input and information for stakeholders, so that digital awareness is built and the wider community can feel the modernization of digital and information.

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