ARTICLE

The Challenges of Digital Competency Implementation Towards World-Class Bureaucracy

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ABSTRACT
Industrial revolution 4.0 creates various improvements toward technology utilisation in every sector, offering efficiencies in every part of life. As a consequence, the government needs to respond to it in public service practices. Therefore, digital competency is mandatory for Indonesian civil servants. Due to the lack of civil servant's competency in technology usage and the bureaucratic environment, the Indonesian government sees this as a big challenge. Moreover, digital competency improvement must be carried out from both training and development in terms of competency development. Thus, using a qualitative descriptive method with a desk study review from various literature sources, such as books and news (printed and online), this paper offers an overview of the challenges and solutions in implementing digital competency in the public sector, both internally and externally. Internally, the technology utilisation solutions are focused on technology infrastructure improvement, strengthening civil servant's competencies, work habit transformation, and organisational relations. On the other hand, from the external side, the solution comes from the contract-based government employee's (PPPK) recruitment and collaboration with the private sector, as often done by many government agencies. However, whatever solution is chosen, strengthening the usage of information technology in the public sector will always face challenges.

A. INTRODUCTION

Industrial revolution 4.0 has changed many things in the world. If in the industrial revolution 3.0, the production process changed from relying only on humans to automation on machines. In the fourth stage of this revolution, machines can be controlled and human life is controlled by technological advances called the internet. *The Internet of things* became a major part of developing this fourth stage of the world's industry. Besides, in the industrial revolution 4.0, our ears are familiar with the terms *cloud computing, artificial intelligence, big data*, and so on. The development of technology in this era has spoiled humans with a variety of conveniences in daily needs. Idiom "world in hand" is no longer mere idiom. Because with the development of technology, we can do everything from home, work from home, banking transactions, shopping, connecting with relatives who are in other parts of the world, even learning from the palm with the smartphone. According to Iivari et al.,

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technology today has become the basis of learning for children. Learning patterns change from traditional to digital-based (Iivari et al., 2020:1)

However, besides the positive impacts mentioned above, the development of technology followed by the development of the digital economy has a less favourable impact, especially for the labour sector. With the utilisation of the internet, the labour sector faces great challenges in human utilisation, especially as a service provider. For example, banks that already rely heavily on the internet, then the librarians' profession has become increasingly rarely searched because *source e-book* is very easy to find.

Although shifting many professions and labour, the development of digital technology also creates many professions and jobs such as social media manager, cloud computing service, mobile apps developer, etc. The results of the Future Jobs Survey 2020 conducted by the *World Economic Forum* (2020:36) have at least 15 skills most needed in 2025, as shown in the figure below.
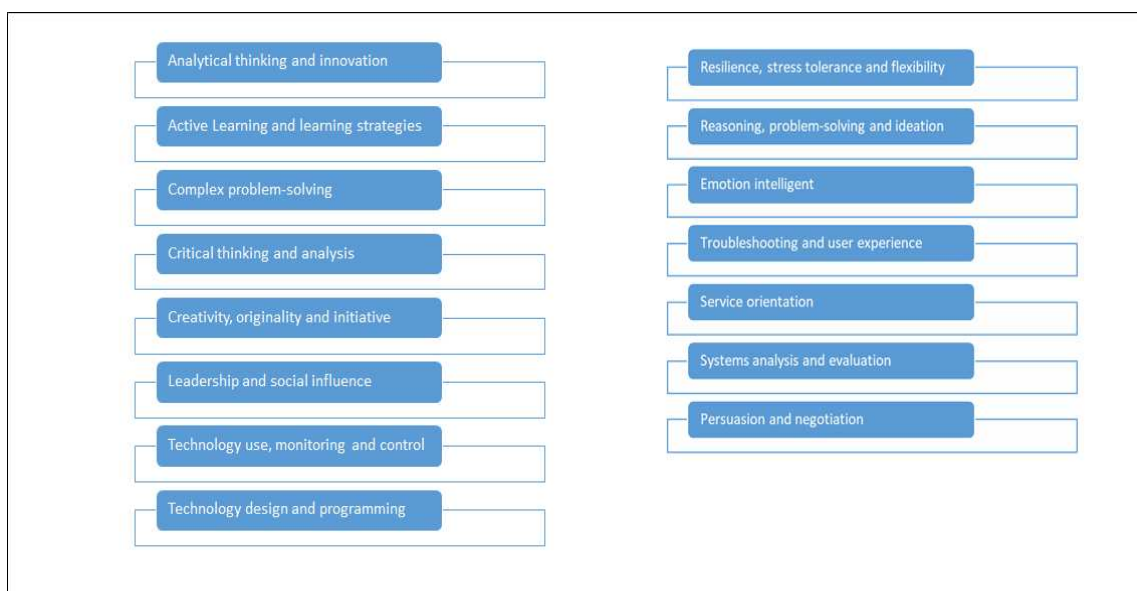
Source: *World Economic Forum* (2020:36)

Figure 1. Top 15 Skills for 2025

In response to this, President Joko Widodo (Jokowi), as quoted by Antara stated that in the next 15 years, Indonesia needs at least 9 million digital talents, or the equivalent of 600 thousand digital talents per year (Pribadi, 2020). Therefore, according to Jokowi, this digital transformation effort must begin with careful and equitable planning throughout Indonesia. Added by Jokowi, the mastery of digital technology will improve the competitiveness of Indonesia, which today we are still ranked 56th out of 63 countries from the survey of IMD institutions *World Digital Competitiveness* 2019 (Pribadi, 2020).

The bureaucratic sector also gets the effects of this technological advancement. Bureaucracy as the implementer of public services must follow the development of the external environment by providing better services in this digital era. Therefore, the public sector is challenged to transform and improve public services by utilising digital technology. Besides being supported by adequate infrastructure, civil servants as the main core of the bureaucracy need to be equipped with new capabilities to develop this strategic environment, especially in the mastery of digital competence.

A study conducted at the Agency for The Assessment and Application of Technology, for example, already has the readiness to implement an electronic service digitisation office (*E-Office*) but not yet entirely ideal. The planned Electronic Based Governance System

(SPBE) has not been fully integrated and requires further development (Eve & Roy, 2020:7). This means that the process to go to the digital government is currently in progress. While preparing supporting infrastructure facilities, the preparation of digital competencies is also important. One of them is with the development of digital competencies.

Digital competency development has its problems. Referring to Mathis & Jackson (2011: 254), training planning cannot necessarily only see the needs of employees; however, it must follow the concept of strategic training concerning that *training* alone is not enough to improve the performance of employees and organisations, there needs to be a collaboration between the strategic plan of the organisation and the human resource development plan that has been prepared so that the training conducted can effectively improve employee competence, increase value and benefit the organisation (Mathis & Jackson, 2011:252).

The concept of training and development is interpreted differently by Mathis & Jackson (2011:303). Training is a process where people or employees acquire skills that can be used to do daily work (Mathis & Jackson, 2011:250). Meanwhile, *development* is defined as an effort to improve employees' ability so that the employee has more capabilities than the required capabilities in his/her position (Mathis &Jackson, 2011:303). The difference between *training* and *development* can be observed in detail in the table below.

Table 1. Differences between Training and Development

	Training	Development
Goals	Learn specific behaviors and actions	Understands information concepts and context, develop judgement, expand capacities for assignments
Time Frame	Shorter term	Longer term
Effectiveness Measures	Performance evaluation and assessment, cost benefit analysis, passing tests and certification	Availability of qualified people when needed (talent pool) Possibility of promotion from within HR-based competitive advantage

Source: Mathis & Jackson (2011:303)

Civil servant competency development is one of the government's focuses in RPJP 2005 - 2024. The map of ASN development in RPJP 2005-2024 is reduced to four stages in each RPJM. This year, Indonesia has entered the fourth phase in the RPJP 2002-2024. In this fourth phase (RPJM 2020-2024), ASN development is focused on developing World Class Government, with the ideals of Smart ASN, which has the characteristics: having nationalism, integrity, hospitality, networking, mastering foreign languages, mastering information technology and entrepreneurship. Suppose this Smart ASN can be formed at the end of this fourth phase. In that case, Indonesia's competitiveness may increase, and rapid, precise, accurate public services and utilising the development of information technology is no longer a dream for the bureaucratic world.

However, the Indonesian government has very heavy homework if it wants to realise these dreams. In terms of human resources, the data mentions that the average competence of civil servants is still low. This can be seen from the data of *Talent Pool* Nasional to 1007 JPT Pratama and Administrator Official issued by BKN, which states that 65.44% are in *box* VI, which means that it has medium potential with low competence. Meanwhile, JPT Pratama and Administrator Officials with competence and medium to a high potential (*box* I to 4) amounted to 15.59% (National Civil Service Agency, 2019b).
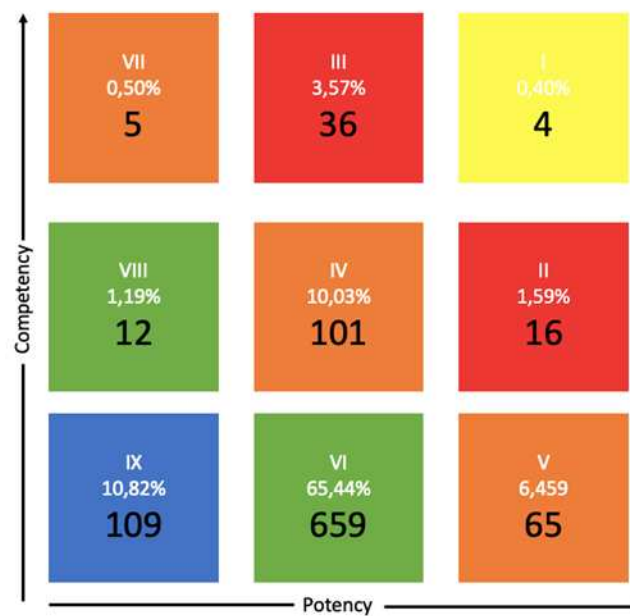
Source: National Civil Service Agency (2019)
Figure 2. Result of *Talent Pool* Nasional JPT Pratama and Administrator Official

Besides, it seems that the spread of age is a problem in the bureaucratic body. Data from BKN per June 2019 stated that the highest number of civil servants are at the age of 51-55 years (20.6%), while the age groups 36-40 and 41-45 amounted to 15% of each. While civil servants aged 26 - 30 years only amounted to 3.9% (Badan kepegawaian Negara, 2019a). If we project to the next five years, this figure will still give the same picture, where the age of 50 years and above has the highest number. Suppose this is considered to be the cause of low digital competence in the bureaucratic environment. In that case, the data submitted by Hedi M Idris (Head of The Center of Literacy and Profession or Human Resource Informatics – Ministry of Communication and Information Technology) as cited by Detik makes sense. Hedi said that only 20% of all civil servants understand information technology (Rahman, 2016). In line with the data, Randy Wrihatnolo (Principal Planner Bappenas) said only 12 thousand civil servants use digital to increase their work productivity. Added by Randy, only 1.8 million civil servants claimed to know about digital (Wrihatnolo, 2020). The data means that civil servants are diverse in following the development of technology and utilising technology in carrying out their daily tasks. In fact, according to Kregel & Ogonek, digital transformation expertise and changes in the use of information technology are not only needed for some employees only. The managerial sector also needs to have digital competency (Kregel &Ogonek, 2018:101). That is, digital competence is a necessity for all types and levels of positions in the government sector.

However, changes in the strategic environment are inevitable. Ready or unprepared, the bureaucracy must compete with this development. The development of digital competencies must be encouraged, no matter how difficult it takes. Therefore, the author sees that the bureaucratic sector must immediately take strategic steps to meet the demands of today's development. One of the steps that the government can take is strengthening the mastery of digital competencies to support government competitiveness and the improvement of public services. Yet, is digital competency development enough to pursue the development of this technology? Considering the demographics of civil servants who are less favourable than the age factor and mastery of digital competence. Therefore, this paper aims to provide an

overview of the challenges both within the bureaucratic environment itself (internal) and outside the bureaucracy (external) to strengthen digital competence.

B. LITERATURE REVIEW
Civil Servants Competency Development

The development of civil servant competencies is stipulated in LAN Regulation No. 10 of 2018 on Civil Servant Competency Development. The regulation mandated that civil servants have the right to obtain competency development at least 20 hours of lessons per employee per year (PerLAN No. 10 of 2018, 2018). Speaking of civil servant competency development, it certainly cannot be separated from three (3) types of competencies that must be mastered by civil servants, namely managerial, technical, and sociocultural competences (PerMenPAN No. 38 the year 2017, 2017). The level of mastery of civil servant competence to the three competencies is based on the level of the employee's position. The higher the position, the higher the standard level of competence required.

Therefore, a commitment from the government is required to develop the competency of (Setiadiputra, 2017:21). As conveyed by Setiadiputra (2017:20-22), continuous and integrated competency development is an urgent need to be done immediately to improve employee performance and service implementation. However, the implementation of this competency development can also not be done in a rush. As stated in the previous paragraph, there is a standard of position competency that includes three competencies that civil servants must own. Therefore, the development of the compensatory conducted can be precisely targeted at the competency needs. There must be a measurement of the competency gap by comparing existing competencies and competency standards position (Setiadiputra, 2017:21). However, the problems occurred are often about competency development which is not in line with the needs. It happens because the competency analysis carried out does not go well. Such as the study conducted by Mulyaningsih (2020) in the Magelang city government has surveyed competency development needs. In the study, Mulyaningsih (2020:97-98) stated that problems are filling out surveys because few employees participate in surveys. It is also mentioned that staff managers fill some surveys, so the survey is not in line with the actual needs of civil servant competency development (Mulyaningsih, 2020). This complicates the analysis of competency gaps and the determination of the urgency of competency development. It also means that there has not been a high commitment to the development of civil servant competence both from the agency and from the civil servant himself.

To improve access to competency development, some regions try to find the most appropriate strategy so that the development of civil servant competencies in the local government environment can be fulfilled. Wardani et al. (2015), Ayas & Sinaga (2019), and Febrisoni (2020) researched several local governments to look at competency development practices and offer strategies to improve programs and access competency development. Wardani et al. (2015:46-47) and Ayas & Sinaga (2019:49-50) offer several strategies to improve competency development: improving budgeting, cooperation with external parties, and improving the facilities required for competency development. Meanwhile, Febrisoni (2020:27-30) offers strategies to reduce the needs of the competency development budget through programs on the job training and blended learning. According to Febrisoni (2020:30), both methods can attract more competency development participants with relatively lower budget needs.

From some research related to competency development above, competency development is an activity such as competency development conducted in managerial, technical, and sociocultural training. Also, competency development is seen from the needs of employees. The survey is the indicator, and competency development needs are based on individual needs.

The difference between our research and the context of digital competencies is the focus. Because of the massive and rapid need for digital competency, civil servants need special mastery. Therefore, the implementation of digital competency development needs to be done, especially within the training framework. Also, for the mastery of digital competencies, some challenges will be faced especially internal problems in the government sector.
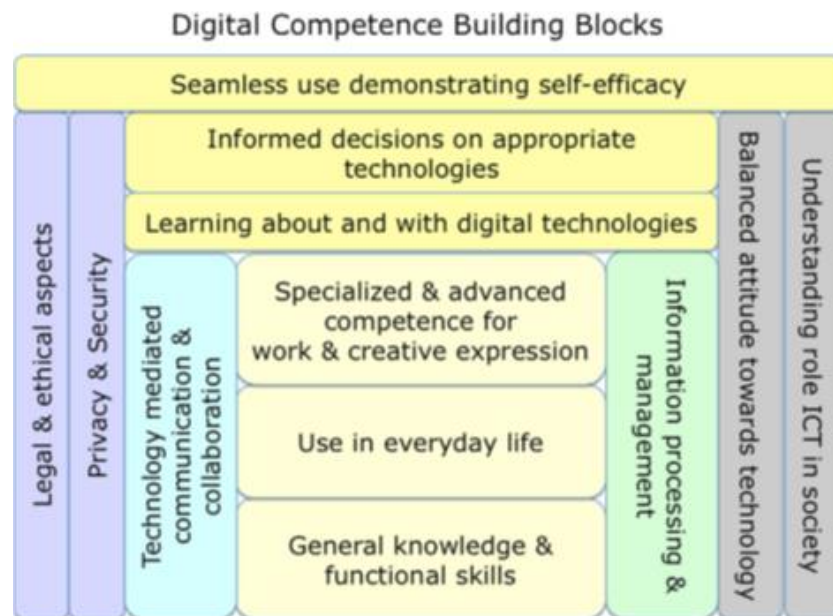
Digital Competency Mastery

Digital competency is a multidisciplinary concept. Some are related to the technical use of communication and information technology (ICT). Still, others explain that digital competence is the knowledge needed to face the 21st century (Gallardo-Echenique et al., 2015:1). With the development of technology that is increasingly massive today, digital competence is needed by every organisation. In his article, Nyikes (2018:25) says that the need for digital mastery is evenly distributed in all sectors and professions, even down to professions considered traditional. However, digital competence is often defined in a narrow and limited way to internet-related capabilities as part of digital technology. Digital competence has a very broad meaning ranging from technological mastery to the ethical dimension in the utilisation of such technology. The results of studies conducted by Nyikes (2018) and Janssen et al. (2013) agree that digital competence needs to be widely understood and not limited to technological mastery alone.

In his paper Nyikes (2018:126) says three things must be emphasised in defining digital competence, namely: (1) technological dimensions related to the knowledge and use of new technologies, (2) ethical dimensions related to the responsible use of information and communication technology, and (3) cognitive dimensions related to how to access, select and criticise the information obtained. Besides, digital competencies are also related to abilities and skills (Nyikes, 2018:127). Logical and critical thinking skills are very decisive in managing information and communication skills. In contrast, skills in digital competencies show skills in digital information search, sorting information, storing information, creating with information, and providing digital information and communication and social networks in cyberspace (Nyikes, 2018:127).

Research on digital competencies was also conducted by Janssen et al. (2013), which defines digital competencies through *Delphi study* to 95 professionals from various fields of science. From the study, it was concluded that digital competence is not only about the knowledge in using communication tools and applications contained in it, but also related to knowledge and attitudes related to law and ethics, privacy and security, as well as understanding the role of information and communication technology and attitudes in interpreting technology (Janssen et al., 2013:478). Emphasised by Janssen et al. (2013:478), all of which will create a safe and healthy use of technology.

As a result of the study, Janssen et al. (2013:478) found twelve areas in digital competencies referred to as "*digital competence building blocks*".

As explained by Janssen et al. (2013:478), "*digital competence building blocks*" are interrelated. In his writing, exemplified box "*legal & ethical aspects*" will be very relevant in the use of technology in everyday life, the use for specialised and advanced competence to the use of technology that is common and appropriate to the needs of general knowledge and functional skills. From the diagram above, it is recognised by Janssen et al. (2013:478) that in this study, the concept of digital competence gave birth to an interesting debate and should be seen as a plural concept and describe networks that connect goals, domains/regions, and levels of use of information and communication technology.

Digital Competence Building Blocks

Source: Janssen et al. (2013:478)

Figure 3. Digital Competence Building Blocks

C. METHOD

The method used in this study was a qualitative descriptive method. Komariah & Satori (2011:23) explains qualitative research conducted to obtain an overview of descriptive phenomena such as the process of a working step, the formula of a recipe, understandings of a diverse concept, characteristics of goods and services, images, styles, ordinances of culture, physical models of an artefact and so on. Similar opinions were also conveyed by Sukmadinata (Sukmadinata, 2011), qualitative descriptive research was conducted to explain and describe existing phenomena, both natural and human engineering, which pays more attention to characteristics, quality, the interrelationship between activities.

This method is very helpful for the author in providing an overview of digital competency mastery solutions and challenges faced by the public sector to improve their competence and competitiveness, as well as to improve services to the community

In this paper, data collection is done using secondary data. Researchers conducted a library study of various literature, journals, articles, and news related to ASN posture in Indonesia. This news is in the form of publications of certain institutions and presentation materials from certain institutions. Some laws and regulations have become the basis of the ASN management process in Indonesia. Overall, it correlates with the implementation of digital competencies in bureaucracy.

At the analysis stage, the study did not conduct concept tests or compare theories with field findings. This study illustrates the concept of digital competence and its challenges and implementations in a bureaucratic environment. The concept of competency development and digital competence in the theoretical framework are used to provide limitations in the discussion section. Therefore, the author calls this study applied research to make the analysis and recommendations submitted in writing more practical and easy to use.

D. RESULT AND DISCUSSION

The fulfilment of digital competencies becomes the public sector or government organisations' need to meet the challenges of industrial 4.0 or towards industrial 5.0. One of them is by injecting digital development into the business process of public sector organisations. This will allow public sector organisations to be competitively competitive

with other sectors, especially the private sector. So that it can align public organisations with private.

One of the government sector's efforts is to familiarise the use of information technology through innovation. Nowadays, many public organisations bring up many innovative products related to information technology. One of them is through leadership training of a new pattern that results in a project change. The majority of change projects are web-based application systems or mobile to support bureaucratic performance. Digital acceleration efforts made through the project channel of change are a good initiation. However, this needs to be balanced with the setup of other things especially related to the availability of supporting information technology with work productivity.

Digital competence is a concept that develops from digital literacy. However, as stated by Janssen et al. (2013:477), digital competence is the knowledge to use applications and devices and is closely related to the skills to communicate with information and communication technology (ICT) and information skills. The use of ICT requires knowledge and attitude about aspects of law, ethics, privacy, and security as well as understanding the role of ICT in society and being able to place itself against technology (Janssen et al., 2013:477).

Looking at the context above, the implementation of digital competencies in the public sector becomes a necessity. One of them is to keep up with environmental demands outside the government. However, the fulfillment of digital competencies in the bureaucratic body can be maximised by taking several approaches both from the internal side, namely related to competency development, organisational habits, and infrastructure facilities, and from the external side that includes contract-based government employee's recruitment patterns and collaboration with the private sector.

Digital Competency Development for Civil Servants

Civil servant competency development using the concept of training approach. According to Mathis & Jackson (2011:303), training targets, the development of technical competency needs to be required by employees to improve the implementation of daily work carried out in a relatively short time. This is in line with PerLAN No. 10 of 2018, which states that competency development is carried out to fill the competency gap of civil servants with the required competency needs in their positions. Therefore, the concept of competency development is very appropriate to be done for the fulfilment of digital competencies in civil servants.

Speaking of digital competence, there are still many gaps in civil servant knowledge when viewed from the number of civil servants with digital literacy. Based on the publication of civil servant data by BKN per June 2020, the number of civil servants is 4. 121.176, and according to Bappenas, only 1.873.391 (Wrihatnolo, 2020) have digital competencies. This means that there are still 2.247.785 civil servants who do not have digital competence. This is a challenge in itself, and the development of civil servant competence with a large number will certainly be an inhibitory factor. One of them is if competency development is still correlated with the competency development budget.

They were referring to the data submitted by Febrisoni (2020:24-25) in implementing competency development activities in BPSDM West Kalimantan Province in 2018-2019 the budget for bangkom activities 2.508.247.600 with approximately 280 participants. This means that when viewed by comparing the budget with the number of employees, each employee needs a budget of around 8.958.027.

However, this has been anticipated by The Regulation of State Administrative Institutions No.10 of 2018 on The Development of Civil Servant Competencies. The development of civil servant competencies can be done through classical and non-classical

learning. Classical learning is structured learning and is conducted in the classroom. While non-classical learning, more flexible because learning is not only limited in the classroom. One form of non-classical learning is through e-learning.

E-Learning has gone through a wide variety of evolutions and has diverse forms. It is starting with online learning in 1980, Moore et al. (2011:130). Through non-classical learning, it can reduce the budget for training, which has been an obstacle in implementing competency development.

This means that the fulfilment of digital competencies can be done through classical and non-classical learning. Classical learning requires employees to enter the classroom, while non-classical learning does not require it and is more flexible regarding place and time.

However, on the other hand, competency development also needs to pay attention to civil servants' ability to receive learning materials. Especially related to digital competencies. Non-classical learning, one of which is through e-learning will certainly minimise the problem of competency development, namely budget. However, on the other hand, the implementation of competency development through e-learni*ng* also raises new problems related to the ability to master information technology.

This is based on the data of civil servants who still rely on over 50 years. When looking at the distribution of BKN data, the portion of civil servants is still dominated by employees aged 50 years and above.

Graph 1. Distribution of Civil Servants by Age
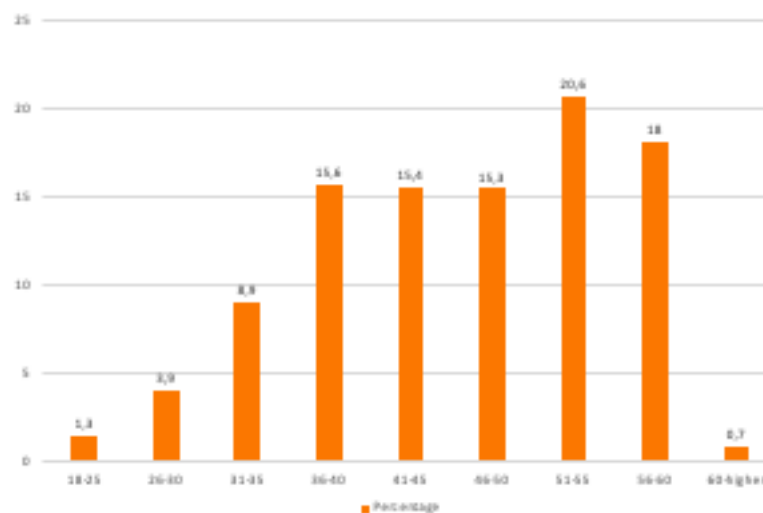

Source: Badan Kepegawaian Negara (2019a:19)

Based on the graph above, the most age distribution is at 51-55 years as much as 20.6%. Next is at the age of 56-60, as much as 18% (Badan Kepegawaian Negara, 2019a:19). This is inversely proportional to millennial civil servants. If calculated based on the last year of birth in 1985, Millennial civil servants mean a maximum of 35 years old has a percentage of 14.1%. This number is still less when compared to civil servants who are currently aged 51-55 years.

The graph above shows that employees still fill the portion of civil servants over 50 years. That is, the fulfilment of competence with e-learning also needs to pay attention to the above aspects.

Other problems also arise related to the posture of civil servants. Let's look at the above posture, and we simulate the projection of the next five years. Civil servants can meet the

needs of digital competencies, then the simulation of competency development targets as follows:

Graph 2. Projected Distribution of Civil Servants in the next 5 years
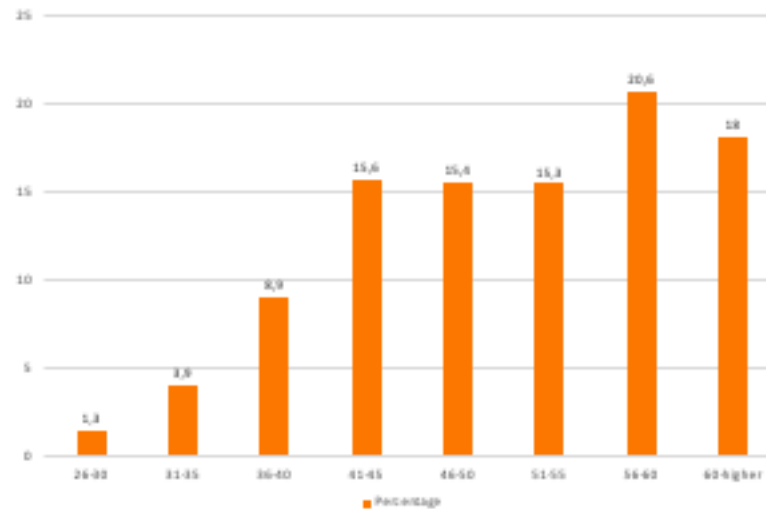
Source: processed by the author

Based on the graph 2., The projection of civil servants in the next five years or 2025 does not see the addition of new recruitment civil servants or the reduction of civil servants for other reasons. Based on the data above, in 2025, if targeting millennial civil servants are a maximum of 35 years old, then the percentage of the number will be less. There are only 5.2% of civil servants under the age of 35 years. However, the number of civil servants over the age of 50 years is increasing. The number is about 53.9% or more than half of civil servants within the next five years aged over 50 years.. Therefore, accelerating the fulfilment of digital needs of civil servants' competency becomes a priority. Especially for employees who are in the middle age group, namely 35-50 years old. This means that the challenge to accelerate competency development becomes a necessity. One consideration is that the employee age group millennials are also not very large compared to generation X.

Besides, the development of civil servant digital competencies also needs to be balanced with other aspects. One of them is the organisation's climate. The organisational environment also supports the creation of digital culture so that digital competence will also increase indirectly. The development of civil servant competencies, especially related to digital competencies, is carried out for all civil servants. The solution can be done by making digital competencies general competencies. This is in line with Ilomäki's opinion that emphasises creating digital competency standards to meet the needs of digital competency mastery (Ilomäki et al., 2016:657).

This can be done by making digital competencies general competencies. As contained in Permenpan RB No.38 the Year 2017 on Department Competency Standards, three competencies must be owned by civil servants, namely managerial, technical and sociocultural competencies. Digital competency becomes a technical competency for civil servants. But with the record, this competency must be owned by all civil servants at every level, both high leaders, administrators, functional and implementers.

Changes in Habit and Organizational Relationships in Bureaucracy

Digital competencies are needed to improve organisational performance. Assuming the organisation's performance has also changed to a digital organisation, so digital competence is required. In the implementation of day-to-day business in the public sector, it has not fully moved to digital organisations. One indication such as many government agencies, both ministries/agencies, and regions has utilised information technology. However, it is still not fully integrated. For example, related to financial reporting, monitoring conducted by the Ministry of Finance and Bappenas has not been integrated, so the report must be submitted to each organisation.

Therefore, such problems need to be eliminated. Eliminating synchronicity between applications will be a challenge to realise digital organisations. One of them is still the strength of the sectoral ego mental. The stronger authority of one organisation than another is a challenge especially related to some long-running information technology-based applications.

In the micro aspect, the implementation of digital organisations is also not yet fully running, for example, the use of electronic mail in government organisations is not yet maximised and is still semi-electronic. Mail is still created manually, performed scanning process, and inserted into application or e-mail. In the context of other cases, financial reporting is also not fully digital-based. Physical documents are still a prerequisite for administrative completeness documents. Administrative needs that have not accommodated the implementation of digital organisations also need to be changed. Paperless implementation becomes the starting point for digital organisations.

Furthermore, digital organisations are also built with a pattern of good relationships between units. In the government sector, the pattern of relationships between units and between agencies is more based on coordinated relationship patterns. Each organisation still has the authority that cannot be changed. One of them is a dual application that is not interconnected.

The pattern of relationships built by the central government and local government is also coordinated. Decentralised authority to the region gives authority to the local government to manage itself. This authority gets to a more technical level, developing information technology-based applications independently owned by the central government. As a result, application duplication occurs, and a data mismatch between applications. The bigger problem is that the formation of big data or one data cannot be implemented.

Strengthening Digital Infrastructure in Bureaucracy

Facilities and infrastructure are still classic issues in the creation of digital organisations. The facilities and infrastructure of public sector organisations have not fully accommodated digital needs both in terms of quantity and specifications. The first is related to the need for computer equipment. The paradigm that is still valid, the needs of computers adjust to the work. This means that if the work is in writing, all it takes is a low to medium specification computer. The digital needs of organisations require computers with high specifications to keep up with the rapid development of technologists. Fulfilling the need for digital facilities and infrastructure will affect the completion of employee work and encourage macro changes in the organisation. Alzadjali & Elbanna (2020: 377), in their case study, said that the fulfilment of digital facilities and infrastructure in an agency could drive change to a national scale. Alzadjali & Elbanna (2020: 256) researched the adaptation of cloud computing at the Ministry of Health in Oman using an institutional theory approach. As a result of the research, the macro approach through institutional theory provided a deep understanding in encouraging organisations to apply digitalisation, especially cloud computing (Alzadjali &Elbanna, 2020:377). The need for the development of digital competencies, if based on the opinion of Adzadjali & Elbana, has been demanded until the availability of cloud computing.

Cloud computing is an on-demand information technology service model performed over self-service networks and not tied to devices and locations (Marston et al., 2011:177). Added by Marston et al. (2011), cloud computing implementation emphasises several aspects, namely: resource utilisation, physical resource virtualisation, design, dynamic resources, flexible resource provisioning, location-exposed devices, and operational costs. Therefore, with the definition and aspects of cloud computing, as Alzadjali &Elbanna (2020:376) said, cloud computing is a new generation in information technology that demands a thorough understanding and handling both macro and institutional.

The need for cloud computing will be a projection in fulfilling digital facilities and infrastructure in the bureaucracy. Shortly, it will implement the pattern of Flexible Working Arrangement (FWA) to fulfil work needs from anywhere and anytime. Given the experience at the Oman Ministry of Health, the implementation of cloud computing in terms of fulfilling digital competencies is a possible thing to do.

The next problem related to the provision of infrastructure facilities is the gap between the needs and the paradigm of goods managers. The needs of digital facilities and infrastructure such as computers for each employee have not been met evenly. Many employees still rely on personal items or digital equipment belonging to the office that is used interchangeably. In position, not all employees work behind the desk using computers. However, the fulfilment of support equipment for back-office employees is also a necessity and still a challenge.

On the one hand, the fulfilment of digital needs also moves very quickly. The development of information technology forced a very rapid digital change that resulted in changes in computer specifications. This change could take place in less than five years. However, in recording goods, there is a time limit on the use of goods, which is usually limited to a minimum of five years. This means that an item can change when it has entered five years of service. For digital goods, the time of five years becomes very long. It is also necessary to anticipate that information technology in the government sector is always up to date and not to be missed compared to the surrounding environment. Therefore, intervention with an institutionalised approach is the most appropriate solution to encourage digital facilities and infrastructure (Alzadjali & Elbanna, 2020:378).

Acceleration of Knowledge Transfer with Contract-Based Government Employee (PPPK)

Public sector organisations contract Contract-based government employees (PPPK) to work in government agencies and get salaries from the government. These employees work to carry out government work. PPPK is contracted based on competence. In this case, PPPK is an employee who has the expertise and is proven by certification. PPPK is regulated in Government Regulation Number 49 of 2018 concerning PPPK (PP No. 49 of 2018). In these laws and regulations, PPPK is an Indonesian citizen who meets certain requirements, who is appointed based on a work agreement for a certain period to carry out government duties (PP No. 49 of 2018, 2018).

The difference between PPPK and civil servants is that PPPK is an employee with skills ready to use that can work in the short term. So the assumption is that there is no need for competency development. PPPK recruitment is the implementation of the concept of "buy" in the process of employee competency development as conveyed by Mathis & Jackson (2011:290) and Boxall & Purcell (2011:197). The bureaucratic sector chose to implement the concept of "buy" by recruiting professionals from specific fields needed to accelerate organisational goals.

PPPK is used as a medium for the transfer of digital-related knowledge. Assuming one PPPK person can provide knowledge for one work unit. This can be done because PPPK is

contracted to do certain jobs or projects and has time constraints. So the pattern of working relationships with co-workers is expected mutually. That is, one PPPK person can collaborate with many civil servants.

The knowledge transfer mechanism is carried out by establishing a working group (pokja) consisting of one PPPK employee and several civil servants. This pokja will work on a project with a specific target. In that project, besides the target group, there are also individual targets, especially civil servants. Civil servants will obtain this individual target through transfer knowledge from PPPK.

Private Sector Collaboration with the Public Sector

Private sector collaboration is an alternative to fulfilling public sector digital competencies. This collaboration becomes the last alternative when other digital competency fulfilment efforts have not been able to accelerate the needs of digital competencies. According to Emily R. Lai, collaboration is the group's attachment to be able to solve problems together (Lai, 2011:2). This is in line with Haryono (2012:49) that collaboration is interpreted as cooperation conducted by several parties who have similar goals, perceptions, willingness to process and provide mutual benefits, compassion, and community-based. Added by Haryono (2012:49), collaboration should be done with the principles of cooperation, sharing of duties, equality, and shared responsibility.

Collaboration between the public and private sectors is done by dividing the work according to its capacity. The public becomes a temporary user while the private sector becomes a provider and transfers knowledge to the public sector. This is done to bridge the condition that most civil servants still have minimal knowledge of digital competence. Looking at Bappenas data on digital mastery above, most civil servants still on the knowledge of digital know has not yet reached used for work productivity. Therefore, collaboration with private parties is expected to be a means of transfer of digital competency knowledge from private to public.

The form of collaboration can be done within the framework of government-private collaboration and civil servant competency development. The collaboration was conducted with Public-Private Partnership (PPP). PPP is a form of cooperation in which the government requires capital incentives, the need for long-term infrastructure, and the combination of desirable development financing between the government and parties outside the government (Ismowati, 2018:143).

PPP can be done by cooperating with companies engaged in the communication and informatics sector. Private companies can provide digital platforms that can be used by the government sector and provide transfer knowledge for civil servants on digital competencies. Ismowati referred to this as a service contract. The division of roles between the government and private parties is to carry out certain tasks (Ismowati, 2018:143). One of them is the provision of digital platforms.

In this framework, collaboration on the development of civil servant competencies can also be done by exchanging civil servants and employees from the private sector. From the public sector side, the concept of exchange is carried out in the framework of competency development civil servant. Meanwhile, from the private sector, this exchange can be utilised in terms of policy information fulfilment. The advantage is that both parties can fill each other's competencies as civil servants for digital competencies, both individuals and organisations and the private sector get information about certain policies.

The exchange programs offered are specific to developing the competence of employees or organisations for example, by sending employees to learn big data to private companies. Another option can be done by hiring private employees in the government sector by providing projects or target work related to big data to those employees.

E. CONCLUSION

The development of technology has become part of everyday human life. Inevitably, we have to follow the likes and dislikes if we do not want to be left behind during the low-lying development of the times. Similarly, the bureaucratic sector must meet the public demands for fast and accurate public services through information technology. One of the efforts to make this improvement is to improve the digital competence of civil servants. This effort is in line with the government's goal of realising World Class Government which one of the targets is to create Smart ASN in 2024.

However, looking at the demographics of civil servants who are uneven in the distribution of age and the mastery of digital competencies, this paper provides recommendations on several solutions that the bureaucracy can take to accelerate digital competence, including challenges that follow the solution. The first is a solution that can be done in the internal bureaucracy, namely: the development of digital competencies of civil servants, changes in habits and organisational relationships, and the improvement of facilities and infrastructure. The second solution is a solution that is done by cooperating with parties outside the bureaucracy, namely recruitment of professional PPPK in the field of information and communication technology and collaboration with the private sector.

Contributorship

In writing this article, both authors contributed in a similar role. Therefore, both authors are the main authors of this article.

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