GOOD GOVERNANCE
Available at : https://stialan.ac.id/jurnal/index.php/gg
POLITEKNIK STIA LAN JAKARTA
p-ISSN : 1412 - 4246
e-ISSN : 2654 - 8240

The Public Sector's Digital Skills Gap in Indonesia: The Challenges and Opportunities

Mala Sondang Silitonga
NIPA School of Administration, Jakarta
malasondang@stialan.ac.id
ORCID: 0000-0001-5215-9855

Abstract

This study aims to investigate how far civil servants' digital literacy contributes to the public sector's digital transformation by examining various factors of sharing knowledge concept, such as willingness to learn, willingness to share, and digital transformation. This study employs a mixed-methods approach. The quantitative approach relies on an online survey of 125 local civil servants. A qualitative approach was used with in-depth interviews and focus group discussions with civil servants in Jakarta, West Java, and Yogyakarta provinces. The data gathered was then analyzed using the regression technique. The results of the study show that willingness to learn and willingness to share have no effect on the impact of digital transformation. This is supported by qualitative data, which shows that regulation is the most important factor, followed by increasing efforts to equip ASN in all generations with stronger digital skills.
Keywords: *Skill Gap, Digital Transformation literacy, Willingness to Share, Willingness to Learn.*

INTRODUCTION

Government policy directions and strategy in the National medium-term Development Plan for 2020-2024 (RPJMN 2020-2024) in the field of Apparatus, State Civil Apparatus (*Aparatur Sipil Negara* or ASN) with priority programs for Bureaucratic Reform and Governance focus on transforming public services that requires integrated and electronic-based services, strengthening community supervision on public service performance, and strengthening innovation ecosystems. Furthermore, the current bureaucratic innovation that leads to digital transformation requires the presence of civil servants or ASN (hereinafter, the terms civil servants and ASN will be used interchangeably) with high level of digital literacy.
The report from Indonesian Ministry of National Development Planning (herewith called Bappenas) shows since Covid-19 pandemic outbreak there was an increase in internet usage by 27 million people (15%) and there was an additional 4 million people who made online connections within one year (2020-2021). People increased their use of the internet for working, studying, as well as maintaining social ties safely without leaving their homes.

Prior to COVID-19 pandemic, the global trend of Digital Government started in early 2000. The non-natural disasters caused by the spread of Covid-19 has accelerated the need for digital transformation in providing services in the public sector. Citizens want fast, easy, and more efficient online services comparable to what the get from the private sectors. To meet these demands, government institutions must develop a digital-based services. With accelerating digital transformation in public sector, it is hoped the government can improve access to the quality of public services, promote innovation, as well as develop collaborative experimentation within the government (OECD, 202). For example, in West Java Province, around 33 public service applications were introduced during the covid pandemic to improve services. These include platform form monitoring

DOI: https://doi.org/10.32834/gg.v19i1.585

the flexible working arrangement (Asropi, Silitonga, & Indriyani, 2022), presence systems using geotagging/ geolocation, video conferencing to consolidate various meetings over a virtual platform, and also smart city development (Wahyudi et al., 2022).

Digital-based technology that is built into integrated system and structure to improve the quality of public services requires the readiness of human resources with digital literacy. Digital literacy is the competencies of human resources revealing the relationships of individuals with digital tools. However, study shows not all of civil servants in Indonesia have a baseline level of digital literacy.

There is a pervasive sense that government has fallen behind in the digital era. Public-sector organizations are struggling to meet the service-delivery expectation of citizens living in a digital world. The difficulties in getting access to an internet connection in rural area and limited competence of human resources in the use of digital devices has delayed or slowed down the process of public services. The government's ability to meet its internal digital needs for its workforce has proven to be a challenge.

Keeping public offices well-staffed is essentials for efficiency of public services. Public sector institutions are generally filled by at least three generations simultaneously with varying level of digital literacy, giving rise to a digital divide. There is no clear consensus about definition of digital divide. However, the term "digital divide" was initially used to refer to inequalities in access to digital communication technologies for a variety of activities (OECD, 202), highlighting the link between digital and other forms of inequality (Robinson, DiMaggio, & Hargittai, 2003). The digital divide is an indicator that shows how information and communication capacity is connected to the access, use, and impact of digital technology (Hilbert, 2014). Generation X (born in the period o1965-1980) must struggle to catch up with generation Y or millennials (born in the period 1981-1996) and generation Z (born in the period 1997-2012) who are just starting to enter the world of work with high digital literacy skills and continues to develop. This is not surprising since generations Y and Z are known as *Digital Natives.* Digital natives are the generation born where technology is already in their environment. Meanwhile, generation Y referred to as *Digital Immigrants*, is the generation that was born and grew up without really working on the sophisticated devices (digitalization) that continue to develop today (Prensky, 2001).

Civil servants are an important agent of change in the digital transformation era, where information is the main commodity of society. The research of the World Bank (2016) reports until 2030 Indonesia needs nine million people who have high-level digital literacy (Bank, 2020). This number includes civil servants (ASN) with excellent digital competence. Improving the digital skills of ASN will help supercharge effort to modernize government. A lack of digital literacy among ASN is a root cause of some of the challenges public-sector organizations face in adapting to and succeeding in the digital era. Although government institutions are carrying out activities for digital transformation, it raises the questions of how ready ASN in all generations are for digital transformation. This research aims to determine how the digital skill gap among different generations of ASN in Indonesia be overcome within the framework of digital transformation in the public sector and whether the sharing knowledge from younger generation has influenced Generation X everyday technology use? The results are expected to identify elements that will contribute to the development of digital literacy in public sector.

LITERATURE REVIEW

In this section, will explain the concept of the digital literacy and digital divide, followed by the Civil Service Digital Skills Gap in Indonesia, and the importance of sharing knowledge across generations.

Digital Literacy

Digital literacy can be defined as awareness, attitude, and ability or skills (life skills) to understand, identify, access, manage, integrate, evaluate, analyze information, tools and digital facilities that are accessed through computer device effectively to generate new knowledge, to communicate, to think critically and to construct social action (Gilster, 2017) (Haynes, 2011) (Martin, 2005) (UNESCO, 2015). However, digital literacy should not be perceived as using a technological or digital platform. There are two essential aspects: first is about people's ability to use digital information and technology in various formats and communicate information effectively. Second is about the ability to generate (produce) information and evaluate (Bertelsmann Foundation and the AOL Time Warner, 2002). Therefore, the effective use of information is directly associated with an individual's digital literacy level.

Digital literacy is one of the pillars supporting the realization of the digital transformation in Indonesia. Every individual needs to understand that digital literacy is an important thing needed to be able to participate in today's modern world. With the increase in the number of internet users in Indonesia, the lack of knowledge, risks to cybersecurity, and the availability of proper devices to access the internet are among the obstacles hampering people from going online. Therefore, Indonesian people must not only familiar with technology, but must use it carefully.

Based on the National Digital Literacy Survey, which refers to the digital literacy framework from UNESCO, Indonesia's Digital Literacy Index is still at a "moderate" level (3,47 out of 5,00), where the lowest sub-index is "information and digital literacy" (3,17) and the highest is "the security and technology capability" sub-indexes (3,66) (Informatika, 2020). The very large number of users and inadequate digital literacy skills are a big challenge and opportunity for the government to provide digital-based public services.

Digital literacy and digital abilities have become factors that affect the public services delivery. With the right digital competencies, ASN are empowered to digitally transform their institutions with policies that take advantage of the opportunities offered by new technologies. However, to build an enabling digital-based environment and to face the challenges of digital era governance, 4.3 million civil servants require a new set of skills and competencies.

Civil Service Digital Skills Gap

There is no doubt that the Covid-19 crisis has restricted mobility and let to an increase in the dependence on digital tools for providing and accessing public services, including in Indonesia. This trend has been visible at all levels of government. Digital government strategies are required to embody the important change of paradigm brought by the digital transformation. The application of digital governance to reform governmental structures and public services is widely viewed

as the solution to sustain democracy, reduce costs, improve quality of public services, and improve bureaucracy (Milakovich, 2021).

With digitalization, all processes related to information are carried out through digital platforms and technological devices. Therefore public officials who can keep up with the information age should be able to use information intensively and successfully in decision-making processes or solve the problems they may encounter in providing services. Civil servants must equip themselves with the necessary competencies to adapt their government visions, missions, and strategies in the digital age. The development of digital competencies is one of the top priorities of government and central and local levels in Indonesia.

The challenge is not to introduce digital technologies into public administrations; it is to integrate their use into public sector modernisation efforts. Public sector capacities, workflows, business processes, operations, and frameworks need to be adapted to the rapidly evolving dynamics and relations between the stakeholders that are already enabled by the digital environment (digital society).

Nowadays government institutions in Indonesia consists of at least three generations, namely Generation X, Generation Y (millennials), and Generation Z. These three generations have their own knowledge and capacity of technology usage in their work activities, which can affect their values and latter their attitudes toward work. The millennial generation and the generations that come after (this includes generation Z) generally identified as "Digital Natives". Digital native is someone who was raised in a digital world. They have been surrounded by technology, social media, and can consume digital information and stimuli quickly and comfortably. In contrast, Generation X as the older generation is classified as "Digital Immigrants", who migrate to the latest technology, because they became familiar with technology as an adult. Although all generations show interest in technology, there are notable differences in their attitude toward technology use. Not all the civil servants' reaction about managing technology and digital improvements is the same. Generation X civil servants are still more comfortable to combine both conservative and technology-applied communication. They are also preferring to be engaged with paper-based activities at work.

This condition shows there is gap that forms between the younger generation and older generation or what so called as a generational "digital divide". Digital divide implies that significant minorities of the population are effectively denied access to a technology that, like other public facilities like libraries and superhighways, is thought to be open to anyone (Robinson, DiMaggio, & Hargittai, 2003) (Mansell, 2002).

In an attempt to overcome the problem of digital skills shortage of civil servants, government needs strategy that involve stakeholders and mobilise commitments and efforts towards a digitally enabled institution. *The need to accelerate the transition in* the area of digital government with agile and innovative ways must be established.

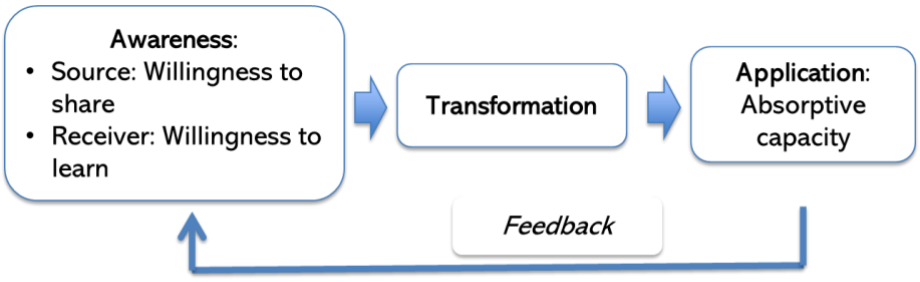
Knowledge Sharing in Digital Transformation

The concept of digital divide refers to the fact that there is difference in the attitude toward technology in technology use. Younger generation have achieved digital literacy and use technology regularly, and the older generation are less well versed in the field (Indriyani & Solihati, 2020).

To drive greater productivity in digital-based service, organization must fundamentally leverage knowledge sharing. A knowledge sharing reflects the employees' willingness to share their knowledge for achieving work goals and can also affect the long-term performance and effectiveness of organizations (Hon, et al., 2021) (B & A., 2004). On the one hand, a knowledge sharing is a crucial part of digital transformation. On the other hand, digital technologies are used for facilitating knowledge sharing and decision-making through enhanced coordination and communication and their impact on job performance in organizations.

Typically, knowledge sharing involves small, incremental changes over time that can be effective if all actors involved agree and have collective willingness (commitment) to support its implementation. The goal is to develop effective and sustainable knowledge sharing culture, by actively involving both the source and the receiver. The success of knowledge sharing is influenced by several factors:

1. *Awareness*: identifying where the right knowledge is. Both receiver and source have the willingness and the ability and resources to do it.
   a. Source: willingness to share
   b. Receiver: willingness to learn
2. *Transformation*: conversion of knowledge in order to make it 'useful' for the receiver where they can produce new knowledge or improve existing knowledge, skills or capabilities
3. *Application* (absorptive capacity): utilizing the knowledge to improve organization's capabilities.
4. *Feedback* (Knowledge externalization): transfer the experiences or new knowledge created by the receiver to the source to make the process of knowledge sharing reciprocal.



Picture 1. Knowledge Sharing Model

METHODS

A pragmatic paradigm is used in this study. The method employed is a mixed-methods approach. The research design used in this study is an explanatory sequential mixed method design. The research procedure begins with a quantitative approach, followed by a qualitative approach. employing a strategy in this study, quantitative research is used to collect, process, and analyze quantitative data in order to answer research questions about the causality relationship between research variables. For the collection, processing, and analysis of qualitative data related to depth of information and strategies to accelerate digital transformation through digital literacy, a qualitative approach is used.

An online survey is used in the quantitative approach. The case study method was used in the qualitative approach. These two methods were used to collect data from three provinces in Indonesia: DKI Jakarta, West Java Province, and DI Yogyakarta Province.

Online survey

There were 125 people participated in an online survey using a Google Form, with 48% female and 52% male respondents. The generation range is as follows: Gen Z is 4%, Gen Y is 36.8%, Gen X is 53.6%, and Baby Boomers are 5.6%. According to the respondents' educational backgrounds, 21.6% were D3, 48.8% were S1 graduates, 28.8% were Masters, and 2.4% were S3. According to the respondents' current positions, 33.6% are in specific functional positions (JFT), 8.8% are in management or supervisory positions, and 57.6% are in general or staff available positions.

The information gathered was then analyzed using regression techniques. The hypothesis that is being developed is as follows:

Hypothesis 1: There is a partial influence of willingness to share on digital transformation literacy.
Hypothesis 2: There is a partial influence of willingness to learn on digital transformation literacy.
Hypothesis 3: There is a simultaneous influence of willingness to share and willingness to learn on digital transformation literacy.

Case study

In-depth interviews were conducted with a select group of informants. A number of key informants from the Ministry of Communication and Informatics, the Bureau of Personnel and HR, Bappeda, and the regional secretariat were chosen for each research locus. The domain technique was used to analyze data from interviews and document reviews. The analysis is carried out using the NVivo software version 12 plus.

RESULTS AND DISCUSSION

Willingness to share

The willingness of ASNs to share skills and knowledge with each other was shown by ASNs at all research locations, namely in West Java, DKI, and DIY Provinces. At the three study loci, the Z generation and Y generation (Millennials) have a great will to help the generations above them (the Z generation and Baby Boomers) increase their knowledge and skills related to applications used in the workplace.

Survey data shows that 96.8% of respondents think that Z generation and Y generation have a desire to help the older generation use applications. This is in accordance with the results of in-depth interviews, which also revealed that young ASNs at the three research loci were very quick to help other ASNs when they had difficulties using the application.

Slightly different conditions exist in the willingness of ASN Z and Y generations to share knowledge. Although the majority of respondents considered ASN to have a high willingness to share their understanding, it was relatively few compared to their willingness to help directly, which was around 72%.

Willingness to learn

The survey data reveals that ASNs at the three study loci have a strong will to learn new things related to the use of applications. However, if the willingness to learn of the Y and Z generations is compared to that of the baby boomers and the X generation, it can be seen that the Y and Z generations have a stronger desire to continue learning.

In this case, 96% of respondents believe that the Z and Y generations have a willingness to learn. Meanwhile, the willingness to learn from the baby boomer generation and the X generation, although relatively high, was only felt by 89.6% of respondents. The best way to obtain knowledge related to applications used by the baby boomer generation and the X generation is by asking the younger generation rather than searching for it themselves on the internet or through other media. This way of obtaining knowledge differs from that of the Z generation and more so from the Y generation, who prefer seeking knowledge independently rather than asking the more senior generation.

Transformation Digital Literacy

The digital transformation process in ASN at the three research loci is going well. ASN can use applications that are introduced and implemented in their institutions. The interesting thing to find in this digital transformation process is that in the Y and Z generations, the transformation process can run easier and faster. Survey data shows that 79.2% of respondents think the Y and Z generations do not find difficulties using applications implemented in institutions. Meanwhile, for the baby boomer and X generations there are still many civil servants who experience problems when operating the application, which is around 45.6% as perceived by respondents.

Absorptive Capacity

ASN's capacity to absorb or adapt to changes in digitalization in the environment is sufficient for the third locus study, which is DKI Jakarta Province, DIY Province, and Province West Java. In contrast, if capacity to absorb is examined in greater detail based on group generation, we can observe that the senior and junior generations of ASN have different capacities for adaptation. The survey results show that 96% of respondents believe that the capacity to absorb the Y and Z generations is already good. On the other hand, the baby boomer and X generations' capacity to absorb was only perceived by 68.8% of respondents.

The effect of Willingness to Share on Digital Transformation Literacy

Hypothesis test 1:

Ha1: There is a partial effect of willingness to share on digital transformation literacy

H01: There is no partial effect of willingness to share on digital transformation literacy

Tabel 1. Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3.910	.801		4.879	.000
	Willingness to Share	.132	.135	.112	.981	.329
	Willingness to Learn	-.012	.078	-.018	-.154	.878

a. Dependent Variable: Digital Transformation Literacy

Source: SPSS output

According to the coefficient table above, the t-test value for the effect of willingness to share on digital transformation literacy is 0.981, with a calculated significance value of 0.329. The calculated significance value exceeds 0.05. As a result, we can conclude that Ha1 is rejected and H01 is accepted. The results of hypothesis testing indicate that there is no partial effect of willingness to share on digital transformation literacy.

This finding contradicts Langley's Szulanski theory (Szulanski, 1996), which states that the willingness to share shapes the transformation process. Despite the fact that the research locus already has a willingness to share and digital transformation literacy, it turns out that the two are unrelated. According to the informants, the process of digital transformation at the research locus is more due to policy coercion. In this case, the local government is using policies to compel ASNs to undergo digital transformation. The interesting thing is that a number of civil servants can participate in the digital transformation process without even being aware of it. Some of these ASNs only need to pay or seek assistance from others.

The effect of willingness to learn on digital transformation literacy
Hypothesis test 2
Ha2: There is a partial effect of willingness to learn on digital transformation literacy
H02: There is no partial effect of willingness to learn on digital transformation literacy
The t-test value for the effect of willingness to learn on digital transformation literacy is -0.154, with a significance value of 0.878, according to table 1. This significance level is higher than 0.05. As a result, it is possible to conclude that Ha2 is rejected and H02 is accepted. The results of hypothesis 2 testing show that there is no partial effect of willingness to learn on the digital transformation literacy.

As with willingness to share, the relationship between willingness to learn and digital transformation literacy in this study differs from Langley's theory. The digital transformation process that takes place at the research locus is unaffected by ASN's eagerness to learn. The willingness to learn among ASNs is relatively high, particularly among the younger generation. However, at the research locus, this does not appear to be the driving force behind digital transformation. The coercion of policies implemented by the leader is the main supporting factor.

The effect of willingness to share and learn on digital transformation literacy
Hypothesis Test 3
Ha3: There is a simultaneous influence of willingness to share and learn on digital transformation literacy
H03: There is no simultaneous influence of willingness to share and learn on digital transformation literacy.

Tabel 2. ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	1.836	2	.918	.642	.528[b]
	Residual	174.356	122	1.429		
	Total	176.192	124			

a. Dependent Variable: Digital Transformation Literacy

b. Predictors: (Constant), Willingness to Learn, Willingness to Share

Source: SPSS output

The F test value for the simultaneous influence of willingness to share and willingness to learn on digital transformation is 0.642, with a significance value of 0.528, according to the ANOVA table above. The significance level is higher than 0.05. As a result, it can be concluded that Ha3 is rejected and H03 is accepted. The results of testing Hypothesis 3 show that there is no simultaneous effect.

At the research locus, willingness to share and willingness to learn have no effect on digital transformation literacy. A simultaneous analysis of the influence of these two variables on digital transformation literacy yields the same results. As a result, the gap between the research findings and Langley's theory is becoming increasingly clear. Based on interview data, it is clear that the process of digital transformation that occurs at the research locus is more influenced by policy coercion. Because of policy compliance or fear of sanctions, ASNs at the research locus implement digital transformation in the performance of their functions.

CONCLUSION

Digital literacy can no-longer be viewed as just a technical challenge; it requires a broader change in mindset and management. ASN's willingness to share and learn have no effect on digital transformation literacy. This study comes to different conclusions than Langley's theory. Policies implemented by government bureaucratic leaders determine more about the digital transformation process. ASN policy compliance is a determining factor in the digital transformation process in Indonesian local governments.

The impact of policy on the digital transformation process is enormous. As a result, Indonesia's central and regional governments can use policy strategies to accelerate the country's digital transformation process. However, other factors, such as the process of changing organizational culture, must also be considered in order for technological transformation to be sustainable. it is also clear that the digital transformation of our public administration will only succeed if all ASN and government offices also support this change.

The limitation of this research is the coverage of respondents who are observed from the public sector, this study has not been observed and combined the conditions that occur in the private sector. Suggestions for future research are to extract data by looking at the workload and rhythm of various employees by conducting in-depth interviews with civil servants in central government agencies/private sectors who have different job characteristics from local governments.

REFERENCES

OECD. (202). *Innovating the Public Sector: From Ideas to Impact.* Paris: OECD.

Asropi, Silitonga, M. S., & Indriyani, D. (2022). How can I Connect? the Link between Flexible Work Arrangements and Inter-organizational Networks (Case study: Indonesian Civil Service). *Jurnal Borneo Administrator: Media Pengembangan Paradigma dan Inovasi Sistem Administrasi Negara Volume 18 No 1*.

Robinson, J. P., DiMaggio, P., & Hargittai, E. (2003). New Social Survey Perspectives on the Digital Divide. *IT & Society, 1*(2), 1-2.

Hilbert, M. (2014). The bad news is that the digital access divide is here to stay: Domestically installed bandwidths among 172 countries for 1986–2014. *Telecommunication Policy, Elsevier, 40*(6), 567-581.

Prensky, M. (2001). Digital Natives, Digital Immigrants. *MCB University Press, 9*(5).

Bank, W. (2020). *The Promise of Education in Indonesia.* Washington: World Bank.

Gilster, P. (2017). *Digital Literacy.* New York: Wiley Computer Publications.

Haynes, B. (2011). The impact of generational differences on the workplace. *Journal of Corporate Real Estate, 13*(2), 98-108.

Martin, A. (2005). DigEULit-a European Framework for Digital Literacy: a Progress Report. *Journal of ELiteracy, 2*.

UNESCO. (2015). *Indonesia, literacy for life skills and entrepreneurship: promising EFA practices in the Asia-Pacific region, case study; abridged version.* Bangkok: UNESCO Office Bangkok and Regional Bureau for Education in Asia and the Pacific.

Bertelsmann Foundation and the AOL Time Warner. (2002). *21st century literacy summit: white paper.* Bertelsmann.

Informatika, K. K. (2020). *Survei Literasi Digital Indonesia.* Jakarta: Kemkominfo.

Milakovich, M. (2021). *Digital Governance Applying Advanced Technologies to Improve Public Service.* Routledge.

Mansell, R. (2002). From digital divides to digital entitlements in knowledge societies. *CurrentSociology, 50*(3), 407-426.

Indriyani, D., & Solihati, K. D. (2020). An Overview of Indonesian's Challenging Future: Management of Artificial Intelligence in Education. *Advances in Social Science, Education and Humanities Research, 564*, 279-284.

Hon, A. H., H.Y, A., Fung, P.Y, C., Senbeto, & L, D. (2021). Willingness to share or not to share? Understanding the motivation mechanism of knowledge sharing for hospitality workforce. *Journal of Hospitality Marketing & Management*.

B, V. d., & A., d. R. (2004). Knowledge sharing in context - the influence of organisational commitment, communication climate and CMC use on knowledge sharing. *Journal of Knowledge Management, 8*(6), 117-130.

Szulanski, G. (1996). Exploring internal stickiness: Impediments to the transfer of best practice within the firm. *Strat. Manag. J., 17*, 27-43.

Wahyudi, A. A., Widowati, Y. R., & Nugroho, A. A. (2022). STRATEGI IMPLEMENTASI SMART CITY KOTA BANDUNG. *Jurnal Good Governance, 18*(1).