

NARROWING THE DIGITAL DIVIDE OF PEOPLE WITH DISABILITIES TO ENSURE THE TECHNOLOGY AND SOCIAL INCLUSION

MEMPERKECIL KESENJANGAN DIGITAL PENYANDANG DISABILITAS UNTUK MEMASTIKAN INKLUSI TEKNOLOGI DAN SOSIAL

Riva'atul Adaniah Wahab

School of Public Policy and Management, Tsinghua University
Beijing 100084, China
E-mail: riva.adaniahw@gmail.com

Naskah diterima tanggal 26-11-2019, direvisi tanggal 4-11-2019, disetujui pada tanggal 6-11-2019

Abstract

The digital divide for disabilities is a barrier to information acquisition, which is a basic need for self-development, social environment, and participation in national development. However, the implementation of Indonesian government policies and programs still has not shown the expected results. From the access aspect, some disabilities cannot obtain ICT infrastructures. Moreover, the challenge in accessing the government web is due to the inconsistent implementation of policies. From the ability aspect, the stigma of discrimination that is still developing in educational institutions and the private sector are an integral obstacle to encourage productivity, absorption in the workforce, or open employment opportunities. Thus, the target of fulfilling the proportion of people with disabilities in employment cannot be achieved. Those require collaboration and cooperation between the central government sector, local and central government, central government and private, and educational institutions to fulfill their rights and be able to compete in local, national, and international scale. Furthermore, a joint commitment is required in the form of regulation, policy, or affirmative policy accompanied by supervision and periodic evaluation with clear standards that encourage the fulfillment of the rights of people with disabilities to ICT.

Keywords : digital divide, disabilities, ICT, social inclusion, technology inclusion.

Abstrak

Kesenjangan digital untuk penyandang disabilitas adalah penghalang untuk memperoleh informasi, yang merupakan kebutuhan dasar untuk pengembangan diri, lingkungan sosial, dan partisipasi dalam pembangunan nasional. Namun, implementasi kebijakan dan program pemerintah Indonesia masih belum menunjukkan hasil yang diharapkan. Dari aspek akses, beberapa disabilitas tidak dapat menjangkau infrastruktur TIK. Selain itu, tantangan dalam mengakses web pemerintah masih terjadi karena implementasi kebijakan yang tidak konsisten. Dari aspek kemampuan, stigma diskriminasi yang masih berkembang di lembaga-lembaga pendidikan dan sektor swasta merupakan hambatan integral untuk mendorong produktivitas, penyerapan tenaga kerja, atau peluang kerja untuk disabilitas. Dengan demikian, target untuk memenuhi proporsi penyandang cacat dalam pekerjaan tidak dapat dicapai. Untuk itu dibutuhkan kolaborasi dan kerja sama antarsektor pemerintah pusat, pemerintah daerah dan pusat, pemerintah pusat dan swasta, dan lembaga pendidikan untuk memenuhi hak-hak mereka dan mampu bersaing dalam skala lokal, nasional, dan internasional. Selain itu, diperlukan komitmen bersama dalam bentuk regulasi, kebijakan, atau kebijakan afirmatif yang disertai pengawasan dan evaluasi berkala dengan standar yang jelas yang dapat mendorong pemenuhan hak-hak penyandang disabilitas terhadap TIK.

Kata Kunci : kesenjangan digital, disabilitas, TIK, inklusi sosial, inklusi teknologi.

INTRODUCTION

The issue of the fulfillment of people with disability rights rose since 2006 at The United Nation Convention on The Rights of Persons with Disabilities (CRPD), particularly Article 9. Indonesian Law No. 8/2016 defines disabilities as "*every person who experiences physical, intellectual, mental, or sensory limitations in the long-term causes obstacles and difficulties to participate fully and effectively with other citizens based on equal rights*". They have not only physical limitations but also intellectual and mental limitations (Satu Data Indonesia, 2017). To comply with this issue, Indonesia already ratified several international programs, for instances, 1) CRPD through Law No. 19/2011 and Law No. 8/2016 about People with Disability ensuring equal rights for disabilities, shifted from rehabilitation and protection to community-based and empowerment as national subject development (Satu Data Indonesia, 2017). Article 24 also states the right to obtain information and communication through accessible media (Prestianta, Mardjianto, & Ignatius, 2018), and 2) The 2030 Agenda for Sustainable Development through Presidential Decree No. 59/2017 about Implementation of "Tujuan Pembangunan Berkelanjutan" ensuring disabilities inclusion (Nursyamsi, Arifianti, Aziz, Bilqish, & Marutama, 2015). Indonesia also has Law No. 14/2008 concerning Public Information Openness ensuring the disabilities rights to obtain information is a human right. All people should have access to information (Masyhur, 2015). According to these regulations, ICT must be obtained and utilized by all people, including disabilities, without discrimination. Disabilities should have equal opportunity and equal access to all ICT facilities, have the right to obtain information and communication through accessible media, and rights to be a recipient of the government programs, thus, "no one left behind."

Indonesia has quite several disabilities. The Ministry of Health noted that Indonesia

disabilities are around more than 6 million, 2,45% of the total Indonesia population (Satu Data Indonesia, 2017). Relating to the ICT, the growth of digital era marked by the extensive use of ICT triggers the increased number of the internet user. International Telecommunication Union reported more than 32% of Indonesia people used the internet in 2017. From different sources in the same year, the survey of ICT usage and its implications for the community social and cultural aspects conducted by Indonesia Ministry of Communications and Informatics (Indonesia MCI) even noted that internet users in Indonesia had reached 45% (Windasari, Surendro, & Digital, 2011).

However, amid the development of the digital era, people with disability do not have opportunities "as big as non-disable" to utilize ICT in Indonesia (Prestianta et al., 2018). This condition results in a digital divide, differencing in access to ICT. Digital divide refers to the gap in access to ICT. In its development, it not only includes differences in access to IT, but also the gap in the ability to use ICT. Three main aspects contribute to the occurrence of the digital divide: 1) Access, causing differences in the information acquisition or distribution, 2) Ability, causing different abilities to utilize ICT access, and 3) Content/resources, causing differences in utilizing information available after being able to access (Windasari et al., 2011).

Digital divide for disabilities is a barrier of information acquisition or distribution which is a basic need for self-development, social environment, and its participation in national security and development. ICT helps people with disabilities to have better social and economy integration with their communities supported by personal access to information and knowledge, learning and teaching situations, personal communication and interaction, and access to educational administrative (Khetarpal, 2014). Therefore, Indonesia government urges to deal with this issue.

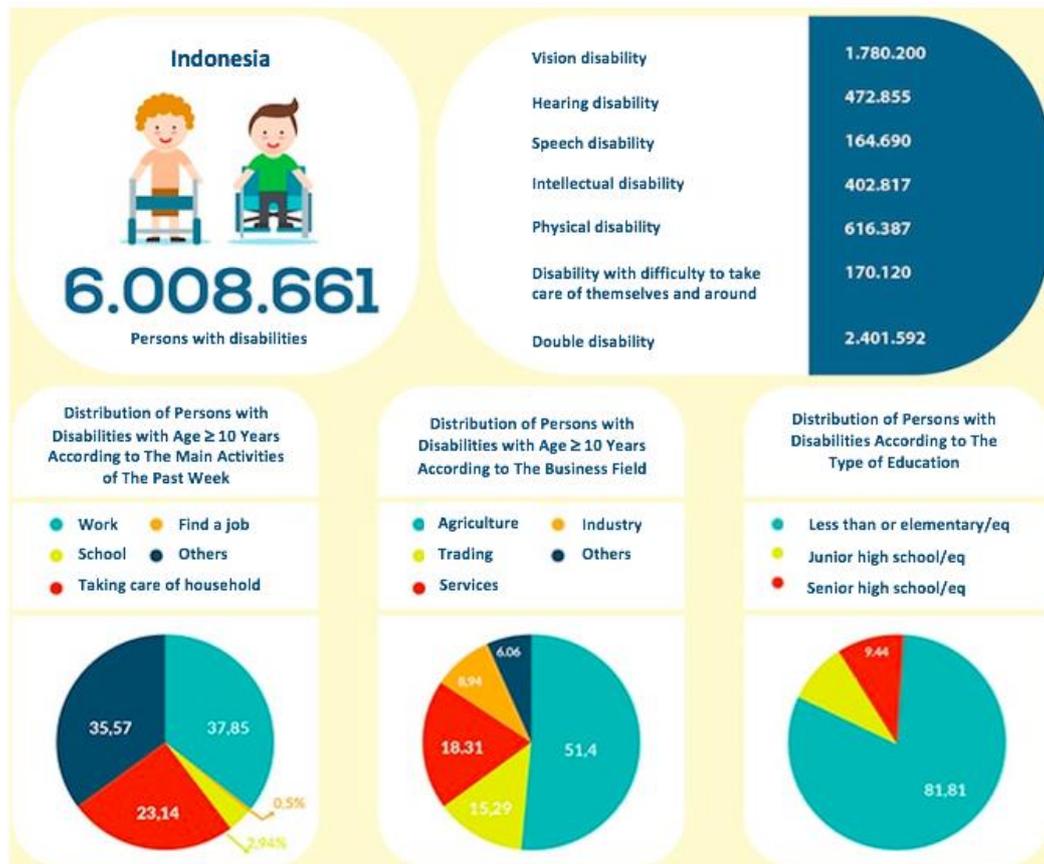


Figure 1. Number of Disabilities in Indonesia (Satu Data Indonesia, 2017)

Some scholars already researched providing ICT for disabilities people, among them are: 1) Khetarpal (2014) used the title “Information and Communication Technology (ICT) and Disability” to provide the picture of ICT access by disabilities in India. This research found that India Disability Bill 2011 and 2012 did not mention about website accessibility. The website has a significant role in accessing social and economic activities. Many central government websites did not comply with the standard, which made to disabilities access. Furthermore, assistive technology availability and ICT accessibility skill were also focused. Several efforts can be made in these conditions are government can promote the affordability of assistive technology and promote the national innovation system collaborating with a public-private partnership. Civil society organizations can play a role in improving ICT awareness by people with disabilities and their parents (Khetarpal, 2014). 2) Mavrou and friends (2017) wrote about Opportunities and

Challenges Related to ICT and ICT-Assistive Technology (ICT-AT) Use by People Disabilities using explorative study on factors that impact the digital divide. This research focused on the work of the European Network for Technology-enhanced Learning in an Inclusive Society (ENTELIS) to cope with digital divided. It said ICT-AT has an essential role in providing independence, social integration, educational success, employment opportunities for people with disabilities. Challenges were identified, including underutilization of ICT-AT. This research recommended overcoming the difficulties by proper approaches to ICT-AT learning, increasing the ICT-AT awareness, and fighting prejudice. It also needs the role of policymaker and public. The government should establish collaboration with private and other stakeholders to provide practical ICT-AT training for end-users. Moreover, the language issue was also the additional barrier impacting ICT-AT competence development and ICT usage. Localization and translation were

proposed to deal with this issue (Mavrou, Meletiou-Mavrotheris, Kärki, Sallinen, & Hoogerwerf, 2017).



Figure 2. ENTELIS Conceptual Framework (Mavrou et al., 2017)

ICT must be obtained and utilized by all people, including people with disability, without discrimination. The use of ICT is expected to encourage skills and productivity and open employment opportunities. The responsibility to fulfill the rights of people with a disability does not only belong to the government but also all sectors, including private and community. Although there are numerous policies to fulfill the disabilities rights, the implementation mechanism is still lacking, causing the efforts that have been designed to be ineffective. There are many obstacles involving in various programs of government. One of the impacts is the low number of disabled workers in the public and private sectors. This research aims to review the legal aspects related to disabilities and analyze the implementation of Indonesian regulations or policies to fulfill the rights of people with disabilities in accessing and using ICT. Thus, it can be followed by other stakeholders. Based on these objectives the questions are formulated:

1. What efforts have been made by the Indonesian Government to reduce the digital divide of the disabled?
2. What are the problems in implementing the efforts?
3. How to overcome the problems?

This research is categorized as qualitative research using the explorative

method. It discusses the government's efforts to reduce the digital divide of people with disabilities, focused on two key terms: 1) Access, causing differences in the information acquisition or distribution, 2) Ability, causing different abilities to utilize ICT access. Data are collected through literature studies, including journals, books, news, previous researches, international documents, and other sources. According to the critical terms mentioned, this research explores specific problem themes:

1. ICT Access, mainly talking about ICT Infrastructure.
2. ICT Ability, divided into two focus: Website Accessibility and Literacy and Competence.

Problems are identified using the method. The thematic issues are evolved from literature review and observation by the researcher. Thematic analysis is used in analyzing qualitatively the sets of collected data.

Besides, providing analysis on each issue, at the end of each point in the result and discussion part, this research proposes some effort to solve it, for instance, what kind of legal aspects that should be followed by the government websites. The benchmark enriches it in similar cases that implemented in other countries.

The last part of this research is conclusion and recommendation, thus describe the advice that can be made by the government to overcome the obstacles in implementing the program to reduce the digital divide.

RESULT AND DISCUSSION

ICT Access

Regulation of the Minister of Communications and Informatics (MCI) No. 10/2018 concerning the Implementation of Telecommunications and Informatics Services Obligations mandates the availability of telecommunications and information technology infrastructure and ecosystem to meet the sustainability of people's needs. Through the Universal Service Obligation

(USO) program, the Indonesia government builds the Palapa Ring (the telecommunications network backbone), Base Transceiver Station (BTS) in border area, and multifunctional satellites. The broadband deployments commitment to increase the telecommunications services penetration has also been compiled in Presidential Regulation No. 96/2014 concerning Indonesia's Broadband Plan.

These programs are implemented to provide general public access. The data absence on the number of Indonesia disability households which do not have access to ICTs has made special assistance for people with disability challenging to be distributed. Besides, there is also no data on the factors that cause they do not access the ICT, for instance, the need of ICT, affordability, digital literacy, alternative access, or even the unavailability of significant telecommunications networks or infrastructure such as electricity.

Therefore, it is necessary to map the number of disability households as a reference for preparing the aid programs, such as computer or internet. Will it be given per household or in information access center scheme? Furthermore, it is also necessary to collect data about the inhibiting factors for ICT access thus the right program can be determined.

To collect and obtain accurate data, the central government can cooperate with the local/smallest government structure. It can also involve researchers from academia or the community to analyze the barrier factors in ICT penetration. The data obtained must be consistent from the lowest (village) to the highest level (national).

Win-win-solution cooperation scheme, for instance, public-private partnership, is needed to encourage the contribution of the private sector (vendors, operators, and telecommunications service providers) to provide access, particularly in the area with low density, non-economy, rural, frontier, outermost, and disadvantaged. Another scheme is cooperation between local and

central government in providing access, such as land provision or infrastructure maintenance. Therefore, collaboration among local government, central government, and private sector are needed in the formulation of the cooperation scheme.

Website Accessibility

Relating to the ICT, the growth of digital era marked by the extensive use of ICT triggers the increased number of the internet user. International Telecommunication Union reported more than 32% of Indonesia people used the internet in 2017. From different sources in the same year, the survey of ICT usage and its implications for the community social and cultural aspects conducted by Indonesia Ministry of Communications and Informatics (Indonesia MCI) even noted that internet users in Indonesia had reached 45% (Kemenkominfo, 2017).

One of the digital divides experienced by disabilities is the low quality of website accessibility. Besides, this access can improve the participation in e-learning, e-government, e-health, and improving the productivity for people with disability.

As a mandate of Law No. 14/2008, several Indonesia government websites have adopted the World Content Accessibility Guidelines (WCAG) 2.0 aimed at facilitating access by people with disabilities. This guide was published by the World Wide Web Consortium (W3C) in 2008 containing basic principles, general guidelines, tested success criteria, recommended techniques, and general failures documentation, for examples, resource links, and code. Guidelines are grouped into 4 basic principles: 1) Perceivable. Web content is made available to the senses - sight, hearing, and/or touch, consisting of text alternatives, time-based media, content that can be presented in different ways without losing information/structure, and make it easier for users to see and hear content including separating foreground from background; 2) Operable, consisting of accessible keyboards, enough time, security and physical reactions, navigable, input beyond keyboard; 3)

Understandable, consisting of readable, predictable, input assistance; and 4) Robust. The content must be interpreted by a wide variety of user agents, including assistive technology (WebAIM, 2018).

To meet this standard, some websites use ScreenReader helping the contents of articles written on a computer screen or device to be read by blind people or dyslexia people. As a reader software, Microsoft Windows has Microsoft Narrator, Apple has VoiceOver, Android has Google-Text-to-Speech. There are also web-based as Spoken-web, Readspeaker, and Browse Aloud (Kompasiana, 2017).

Using the standard guide WCAG 2.0, Masyhur (2015) conducted testing of 40 websites of state ministries and institutions in Indonesia. The result showed some websites still have high errors. This condition indicated the low-quality of disable accessibility. The critical problem is not only the absence of policies that regulate the website's accessibility by disabilities but also the lack of implementation mechanism of disabilities policies to fulfill the their rights, causing the efforts that have been designed to be ineffective. If this issue is not immediately addressed, the rights of people with disabilities to obtain information through online media will be difficult to realize (Masyhur, 2015).

Therefore, it is necessary to issue a regulation or policy that requires websites to adopt WCAG 2.0 standards, especially for government websites (support for e-government). This regulation or policy needs to be made from the center until local level. Political will and commitment must be built to ensure consistent implementation. Also, it is necessary to carry out periodic evaluations using measurement standards to meet the website quality needed by person with disability. Measurement of website can be conducted by a special body formed by the government. It can consist of a combination of web developers and designers, policymakers, educators, or communities that focus on this field.

To solve this problem, the Indonesia government, through Indonesia MCI should make websites are more "user-friendly" for people with disability (Republik Indonesia, 2008). This term means all kind of disabilities; blindness, low vision, deafness, hard of hearing, physical disabilities, and cognitive disabilities, have access to information providing in the websites. It is evidenced by their ability to interact and visit any site; thus they can acquire a complete understanding of information from the website. The accessibility includes layout, readability, color choice, et cetera (Abanumy, Al-badi, & Mayhew, 2005).

The key point in improving website accessibility for disabled people is the policy. Public policy is needed to support innovation and control of future activities (Wilson & Kirman, 2016). It also can be done in regulation form. The regulation or policy that formulated to improve the website accessibility by disabilities related to several things:

1. Website Accessibility Guidelines

A website should implement the website accessibility guidelines, for instance, the Web Content Accessibility Guidelines (WCAG) published by The Worldwide Web Consortium (W3C). It provides series of checkpoint for web content development, containing basic principles, general guidelines, tested success criteria, recommended techniques, and general failures documentation, for examples, resource links, and code (WebAIM, 2018). Guideline made by universities (such as The MIT's Web Accessibility Principles) or companies (such as IBM Guidelines for Writing Accessible Applications) are can also be used (Abanumy et al., 2005).

2. Assistive Technology

The website should be supported by assistive technology or haptic devices. Assistive technology (software and hardware) is specifically designed to assist disabilities in daily activities (Abanumy et al., 2005). Common software-based assistive technologies include screen

reader helping the contents of articles written on a computer screen or device to be read by blind people or dyslexia people, and on-screen keyboards replace physical keyboards, head-mounted pointers replace mice, speech synthesizers, screen magnifiers, and voice input. As a reader software, Microsoft Windows has Microsoft Narrator, Apple has VoiceOver, Android has Google-Text-to-Speech. There are also web-based as Spoken-web, Readspeaker, and Browse Aloud (Kompasiana, 2017).

3. Website Accessibility Evaluation Tools

There are numerous tools exist to evaluate the web accessibility. The tools consist of attributes on the context of websites. Among them are A-Tester (making a report that can serve as a broad and easily confirms WCAG 2.0), A11Y Color Contrast Accessibility Validator (a free website compliance tool that displays the color contrast issues of a web page per WCAG guideline), et cetera. The results of these evaluation tools can be used as feedback to web designer and maintainers, helping designers and maintainers to identify a more significant number of potential problems.

Based on that, several efforts can be done by the government:

1. Issuing Website Accessibility Standard Regulation or Policy

It is necessary to issue a regulation or policy that requires websites to comply checklist adopting website accessibility guideline standard, for instance, WCAG 2.0. It is primarily implemented for government websites (supporting e-government). To expand the implementation, improve the collaboration central-local government, and improve the efficiency of regulation or policy implementation, this regulation or policy needs to implement the transnational feature of governance. The Indonesia central government should make the regulation or policy and followed up by Indonesia local government regulation.

This condition encourages the participation and responsibility of Indonesia local government in ensuring the fulfillment of disabilities right in accessing the website information.

2. Conducting Regular and Multistage Evaluation

One of the policy-making process stages mentioned in governance stage approach is evaluation. This stage is important to examine the achievement of policy to solve the goal (problem) or objective. In this case, it is necessary to carry out periodic evaluation using the issued website accessibility standard regulation or policy to meet the website quality needed by people with disability. The evaluation process includes testing each website manually and automatically using well-known accessibility evaluation tools, for instances, A-Tester and A11Y.

Stage 1: Checking website manually for compliance with the website accessibility standard regulation or policy.

Stage 2: Using some website accessibility evaluation tools to verify the manual test results.

3. Forming Special Evaluation Workforce

As mentioned above, governance also talks about transnational and plurality which requiring the collaboration between many actors in regulation or policy implementation. Moreover, the responsibility to fulfill the rights of people with disability does not only belong to the Indonesia government but also all actors included Indonesia private or non-governmental organizations, academics, community, and society. To improve the website accessibility for disabilities, the Indonesia government can form a special workforce to conduct periodic evaluations of website accessibility. As an implementation of bottom-up governance and participatory evaluation approach, the evaluation process can involve various elements 1) Academics, by conducting direct evaluation under Indonesia government supervision, 2) Society or

community, by providing a report button so that the society or community can participate in reporting websites that do not meet the standard of website accessibility regulation or policy.

From the Indonesia government side, Pengelola Nama Domain Internet Indonesia who handle the provision of domain names in Indonesia can take part in evaluation by requiring the fulfillment of website accessibility standard regulation or policy in the selection process of domain name registration in Indonesia. Besides, the Indonesia MCIT can play a role by including a list of websites indicated to not meet the standards from the results of evaluation conducted by academics and the society or community into the Indonesia Whitelist system. The Indonesia Whitelist system is a Domain Name System (DNS)-based system providing a list of websites with positive content.

4. Providing the Public Infrastructure Access Website with Assisted Technology or Haptic Devices

New public governance mandates responsiveness to citizen needs. One of the applications that should be done by the Indonesia government is equipping the internet access infrastructure for the public with assisted technology or haptic devices to increase access for people with disability to website content. Through this policy, disabilities can enhance their experience in visiting and interacting with the website. They can acquire more understanding and information from the website. Thus, they can improve their participation in e-learning, e-government, e-health, and use the information to increase their productivity.

Literacy and Competence for People with Disability

Law No. 8/2016 concerning people with disabilities requires the central and local governments to organize and/or facilitate education for people with disabilities. They need to be given opportunities and/provided

access to channel potential in all aspects of state and community administration. One of the government's efforts to reduce the digital divide on aspects of disability abilities is improving literacy and competency programs. Since 2016, MCIT as the ICT leading sector had carried out ICT Literacy Guidance for People with Disabilities. Participants come from adolescents consisting of blind, disabled, and deaf people. The material provided varies such as e-Excellent Life Map (browsing), e-Design (powerpoint), e-Tool (excel), Scratch Programming (visual programming), or Envidia (application for the blind). This activity captures collaboration with organizations concerned with disabilities such as Yayasan Pembinaan Anak Cacat (YPAC) and ICT activists such as Asosiasi Profesional Desain Komunikasi Visual Indonesia (AIDIA). In the local implementation scale, MCIT also involves the district or city government and the Social Service (Hutabarat, 2016).

Furthermore, the government also implements the Jambore TIK for Youth and Adult Disabilities. Participants come from Special Schools, Orphanages, Communities and Foundations that house disabled people. Training materials provided include Microsoft Office, Internet, Graphic Design, and Public Speaking. This program aims to encourage increased productivity through increasing information and understanding of families about ICT opportunities for young people and adults with disabilities in the inclusion of social and cultural activities, as well as development inclusiveness and increasing public awareness of the importance of inclusiveness in development. With this ability, they are not only targeted to be absorbed in working field but also have the opportunity to create jobs with the use of ICT (Biro Humas Kemkominfo, 2017). The government's commitment to providing employment opportunities for people with disabilities under Law No. 8/2016 is to regulate the proportion of disabilities employment. As much as 2% of the total

workforce for state enterprises and 1% for private companies.

Even though the government has intensified its literacy improvement program, in fact, the lack of assistance and uneven education for people with disabilities is still an obstacle. The small number of educated disabilities is still founded. It is due to the fact that there are still educational institutions that survive with the idea that their physical inadequacies affect intelligence and abilities. In this condition, educational institutions minimize the chances of receiving students from disabilities because of the fear of effect on their institution's credibility (Nugraheny, 2016).

To improve literacy and competition, the government can collaborate with disability activist organizations. For instance, holding digital literacy certification that is recognized nationally or internationally, for example, IC3 for the deaf, speechless and disabled with the YPAC and International Test Center. This certification can encourage the understanding of people with disabilities on the importance of ICT. Moreover, it can also increase their confidence to compete on a national to an international scale, including for the working life.

Cross-sectoral cooperation, for example by compiling inter-ministerial affirmative regulations or policies such as collaboration between MCI, Ministry of Social Affairs, and Ministry of Manpower to ensure that people with disabilities can be absorbed and even create employment through the use of ICT. It is also necessary to evaluate the implementation of the regulation or policy on the proportion of employment of people with disabilities.

In the formal education sector, educational institutions at all levels must be encouraged to accept students from disabilities. Commitment can be demonstrated by providing educational institution facilities that accommodate the needs of people with disabilities. Thus it can provide ease of learning in the long term and produce educated

and skilled people with disabilities (Nugraheny, 2016).

CONCLUSION AND RECOMMENDATION

Conclusion

The Indonesian government has formulated regulations, policies, and made various programs to reduce the digital divide in Indonesia. However, implementation still has not shown the expected results. This condition is an obstacle to the acquisition of information as a basic need for people with disabilities for self-development, social environment, and participation in national resilience and development of the country. From the aspect of access, it is found that even though the deployment of ICT infrastructure has been carried out, it is predicted that there are some disabilities that cannot obtain the ICT infrastructures. The database as a basis for mapping the number of disabilities that have not yet been reached by infrastructure and the factors that do not allow access to ICT by people with disabilities does not yet exist. It causes the difficulties in planning the aid allocation and distribution. The challenge of people with disabilities in accessing the government web is due to the inconsistent implementation of policies. It takes a commitment to implement e-government and periodic evaluations to maintain the quality of government web accessibility to meet the standards.

From the ability aspect, technical guidance to improve literacy and competence of people with disabilities is not enough to encourage productivity, absorption in the workforce, or open employment opportunities. The stigma of discrimination that is still developing in educational institutions and the private sector are an inseparable obstacle. Thus, even the rule of proportion is implemented, the target of fulfilling the proportion of people with disabilities in employment cannot be achieved without supervision and evaluation.

Recommendation

To overcome the problems, both access and ability aspect, those require collaboration and cooperation between the central government sector, local and central government, central government and private, and other stakeholders, such as educational institutions, observers to disabilities, and confidence from people with disabilities themselves to fulfill their rights and be able to compete in local, national, and international scale. Furthermore, a joint commitment is required in the form of regulation, policy, or affirmative policy accompanied by evaluation with clear standards that encourage the fulfillment of the rights of people with disabilities to ICT.

ACKNOWLEDGEMENT

I express my thank you to Mrs. Sara Bice from School of Public Policy and Management – Tsinghua University for the lectures and the thought used as the basis of this research.

REFERENCES

- Abanumy, A., Al-badi, A., & Mayhew, P. (2005). e-Government Website Accessibility: In-Depth Evaluation of Saudi Arabia and Oman. *The Electronic Journal of E-Government*, 3(3), 99–106.
- Biro Humas Kemkominfo. (2017). Jambore TIK bagi Remaja dan Dewasa dengan Disabilitas Tingkat Nasional Tahun 2017. Retrieved from https://www.kominfo.go.id/content/detail/11547/siaran-pers-no-229hmkominfo102017-tentang-jambore-tik-bagi-remaja-dan-dewasa-dengan-disabilitas-tingkat-nasional-tahun-2017/0/siaran_pers
- Hutabarat, D. (2016). Tingkatkan Literasi dan Pemanfaatan TIK Penyandang Disabilitas. Retrieved from https://www.kominfo.go.id/content/detail/7022/tingkatkan-literasi-dan-pemanfaatan-tik-penyandang-disabilitas/0/berita_satker
- Kemenkominfo. (2017). *Survey Penggunaan TIK Serta Implikasinya Terhadap Aspek Sosial Budaya Masyarakat*.
- Khetarpal, A. (2014). Information and Communication Technology (ICT) and Disability. *Review of Market Integration*, 6(1), 96–113. <https://doi.org/10.1177/0974929214560117>
- Kompasiana. (2017). Screen Reader, Teknologi Pembantu Tunanetra untuk Membaca Layar Gawai. Retrieved from <https://www.kompasiana.com/ronaldwan/595d93b693513530d600b532/screen-reader-teknologi-pembantu-tunanetra-untuk-membaca-layar-gawai>
- Masyhur, F. (2015). Evaluasi Aksesibilitas Website Resmi Kementerian dan Lembaga Menggunakan Pedoman WCAG 2.0 Ministries and Institutions Official Website Accessibility Evaluation Using WCAG 2.0. In *Temu Ilmiah Peneliti Kominfo* (pp. 1–10).
- Mavrou, K., Meletiou-Mavrotheris, M., Kärki, A., Sallinen, M., & Hoogerwerf, E. J. (2017). Opportunities and challenges related to ICT and ICT-AT use by people with disabilities: An explorative study into factors that impact on the digital divide. *Technology and Disability*, 29, 63–75. <https://doi.org/10.3233/TAD-170174>
- Nugraheny, D. E. (2016). Kemenaker: Penyerapan Tenaga Kerja Penyandang Disabilitas Proporsional. Retrieved from <https://www.republika.co.id/berita/nasional/umum/16/10/27/0fpdeq335-kemenaker-penyserapan-tenaga-kerja-penyandang-disabilitas-proporsional>
- Nursyamsi, F., Arifianti, E. D., Aziz, M. F., Bilqish, P., & Marutama, A. (2015). *Kerangka Hukum: Disabilitas di Indonesia: Menuju Indonesia Ramah Disabilitas*. Jakarta.
- Prestianta, A. M., Mardjianto, F. L. D., & Ignatius, H. T. N. (2018). Meta Analisis Platform Media Digital Ramah Penyandang Disabilitas. *LUGAS Jurnal Komunikasi*, 2(2), 69–80. <https://doi.org/10.31334/ljk.v2i2.264>
- Republik Indonesia. (2008). Undang-Undang No. 14 Tahun 2008 Tentang Keterbukaan Informasi Publik.
- Satu Data Indonesia. (2017). *Perlindungan dan Pemberdayaan Penyandang Disabilitas*. Jakarta.
- WebAIM. (2018). WebAIM's WCAG 2 Checklist. Retrieved from <https://webaim.org/standards/wcag/checklist>
- Wilson, D. S., & Kirman, A. (2016). *Complexity and Evolution: Toward a New Synthesis for Economics*.
- Windasari, I. P., Surendro, K., & Digital, A. K. (2011). Pengukuran Kesenjangan Digital di Institusi Pemerintah Daerah (Studi Kasus : Pemerintah Kota Semarang). *Jurnal Sistem Komputer*, 1(2), 71–76.