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Bridging the Digital Divide: Innovation Policy and Implementation in Malaysia

Noor Hadzlida Ayob
Department of Malaysian Studies, Faculty of Human Sciences, Universiti Pendidikan Sultan Idris (UPSI)
Corresponding Author's Email: hadzlida@fsk.upsi.edu.my

Mohd Amar Aziz
Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UiTM) Pahang, Raub Campus
Email: amaraziz@uitm.edu.my

Nor Azira Ayob
Faculty of Administrative Science and Policy Studies, Universiti Teknologi MARA (UiTM) Negeri Sembilan, Seremban 3 Campus
Email: norazira@uitm.edu.my

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Abstract

Digital innovation is now the primary economic driver. In the era of Industrial Revolution 4.0 and the Internet of Things (IoT), digital skills are becoming increasingly important. A paradigm shift from manufacturing to the digital economy brings opportunities and challenges to Malaysia. To prepare society and the workforce for this shift, Malaysia must put in place appropriate policies to enhance productivity and economic growth. However, if the digital divide remains widespread in the country, all of these digital development agendas will be viewed as mere rhetorical statements. In the face of such challenges, the government has already committed significant effort to promoting digital skills through a number of initiatives. However, it appears that the pace of the effort is still slow. Hence, the purpose of this concept paper is to examine the efforts and implementation of digital development in Malaysia as well as the digital divide that exists within the country. In light of the discussion generated by this concept paper, it is recommended that additional research be conducted into the most effective means of closing the digital divide in the country.

Keywords: Digital Divide, Innovation Policy, Digital Technology, Implementation, Malaysia

Introduction

In terms of the adoption and utilisation of ICTs, there is a significant gap between developed and developing countries. The phenomenon also occurs within countries, such as between urban and rural areas (Genus & Ali, 2007; Reuben et al., 2020). This disparity can be explained partly by the uneven development of digital information infrastructure as well as of applications of these technologies (Wang et al., 2021). In Malaysia, the rate of Internet usage in urban areas is approximately 75.6%, whereas the rate in rural areas is only 24.4% (MCMC, 2020). To address these issues, the Malaysian government has developed the National Broadband Plan (NBP) and Rural Connectivity Programmes to connect all Malaysians to the broadband network, improve ICT infrastructure in rural areas, and increase ICT literacy. Even though the government has taken steps to speed up the development of digital technology, it is still considered to be a slow process. The slow progress can be attributed to a number of different factors, including insufficient ICT infrastructure in rural areas, a lack of awareness and skills among ICT users and professionals in rural areas, and an absence of economic incentives.

Apart from the development of digital infrastructure, digital education, such as the digital learning process, is also being introduced and accelerated, particularly in light of the COVID-19 pandemic affecting the country. Despite the fact that the COVID-19 pandemic has accelerated the implementation of digital development, it has also widened the digital divide in the country, particularly for low-income groups and rural communities. In order to address this issue, the digital innovation policy must include two key components: digital infrastructure and digital education, which will enable optimal digital use in both urban and rural areas. Nonetheless, when discussing this digital development, there are two distinct perspectives, resulting in divergent digital educational emphasis. From one perspective, given that the current generation is a digital native that was exposed to digital devices and technology at a young age, the development of digital education is not seen as the primary focus that needs to be emphasised. This generation has grown accustomed to and mastered digital skills naturally as the nation's digital technology has advanced. Therefore, management from the perspective of providing facilities and digital infrastructure should be emphasised more than the development of digital skills, which can be acquired naturally through experience and are easily adaptable to the newest digital technologies (Margaryan et al., 2011; Prensky, 2009).

Regardless of the fact that the statement is viewed as a logical argument for prioritising the development of digital infrastructure, it cannot be generalised to the current context as a whole. In the second perspective, this viewpoint asserts that various factors, including urban and rural areas, gender differences, parental occupation, and financial status, must be considered. In fact, there are still numerous people who lack access to digital devices, the internet, and the most advanced technology. In addition, this generation of digital natives' level of mastery depends on their skill level. Although this generation is exposed to digital technology, the skills acquired are limited to accessing websites, navigating social media, and playing online games; these are not digital skills that are complex and high enough to produce more productive output (Bennet et al., 2008; Jackson, 2019, Margaryan et al., 2011; Smith et al., 2020; Tran et al., 2020). This lack of skills is an indication of the digital divide. This is evidenced by the COVID-19 outbreak, which affected numerous students due to their digital skills, geographic location, and socioeconomic status (Bojovic et al., 2020; Bonal & González,

2020; Dwivedi et al., 2020; Radu et al., 2020). Therefore, even though the current generation is considered to be digitally native, digital skills that can boost productivity are still viewed as less appealing, indicating a lack of emphasis on building digital capital through digital education.

In addition to the issue of the digital divide due to geographical and socioeconomic factors and a focus on what must be applied to the digital native generation, there is the question of whether this issue can be completely eradicated. According to van Deursen and van Dijk (2019), the majority of policymakers believe that the digital divide will diminish as internet coverage expands throughout the country. In order to solve the problem, a recent study emphasises the importance of formulating policies that can expand internet coverage (Quaglione et al., 2020; Reddick et al., 2020). Nevertheless, according to the findings of van Deursen and van Dijk's (2019) study, the digital divide will continue to exist as a result of the development of technology from a material access standpoint. This is due to the fact that internet technology is also evolving, from 3G to 4G and now to 5G. Such outdated technologies as 3G are being phased out and eliminated. This change has necessitated the purchase of new devices that are compatible with the most up-to-date internet technology in order to obtain faster internet access. Although van Deursen and van Dijk have explained this phenomenon, there is a gap in the conceptual framework of how the digital divide continues to occur from the perspective of the policy cycle. With this framework, a clearer understanding of the digital divide issue and how the policy cycle process causes the digital divide to persist can be observed. Hence, policymakers can use it as a planning guide for a continuous innovation policy process.

In addition to the gap from the perspective of the policy framework that can explain the repetition of the digital divide, there is also a gap from the perspective of explaining the consequences or outcomes of digitalisation. According to Scheerder et al. (2017), most scholars focus primarily on the first and second levels of the digital divide, but the third level of the digital divide in terms of its impact or implications remains understudied. In order to fill this gap, this paper examines the implications of digital innovation policy in Malaysia in addition to discussing the government's efforts in addressing the digital divide and how the policy cycle occurs. Hence, in order to address these issues, this concept paper will discuss the policy and implementation of digital innovation in the country and emphasise the digital divide that exists.

In order to make this concept paper's discussion more systematic, it is divided into several sections. Following the introduction, this concept paper will elaborate on the concept of the digital divide and its evolution. This is important because it will allow readers to have a better understanding of the level of the digital divide before highlighting discussions related to policy and the implementation of digital innovation. Next, the history of the implemented digital innovation policy will be discussed to illustrate the government's efforts toward digital development. The discussion will proceed from the policies to implementation issues and the implications of digital innovation for the country. The concluding section of this concept paper discussed recommendations for future studies on how to implement sustainability in terms of digital innovation development and inequality reduction, thus bringing the article to a close.

Conceptualization and Evolution of the Digital Divide

In general, the digital divide refers to the gap or disparity between groups with digital ownership and digital use skills and those without such capabilities. The term "digital divide" was coined for the first time in 1995 in the United States when the majority of newspapers reported on those who use and do not use technological media. Although the term "digital divide" was not widely used at the time, it has become increasingly popular as a way to describe the gap between those who have access to digital technology and those who do not (Van Dijk, 2020). According to Hilbert (2011), in discussing this issue, initial analysis of the digital divide focuses on four primary criteria:

(1) What technologies are utilised?
(2) Who is the subject (person, organization, or country)?
(3) What characteristics or factors (income, education, geography, family size) play a role? and;
(4) how to interact with digital technology (such as access, use, and production)?

For the first aspect, which is about the technologies utilised, it describes the digital technology that is available and widely used by the general public, such as smart phones, the internet, computers, printers, and data storage, or a combination of these digital technologies (Hilbert, 2011). All of these technologies are commonly used by the community to perform daily tasks, so the existence of individuals who do not use them indicates a digital divide between the two entities. For example, the difference in the use of technology and types of technology, such as the use of typewriters (old technology) and computers (new technology) in performing daily tasks, demonstrates the existence of a digital divide in terms of the technology utilised.

Next is the criteria related to the subject at hand, that is, whether from individuals, organisations such as schools, universities, or companies, or a country in implementing digital technology (Hilbert, 2011). This shows that the digital divide can be discussed from a micro or macro perspective, including the digital divide between individuals, between universities and companies, and between developed and developing countries. Thus, the subject can be compared to determine the digital divide between the studied subjects from either a micro or macro perspective. Hence, depending on the subject under consideration, the scope of the digital divide can be broad or narrow.

The third criterion is the nature or factors that contribute to the formation of the digital divide, such as household income, individual education level, geographic area such as urban or rural, household size, gender differences, and others (Hilbert, 2011). This shows that income disparity can also play a role in the occurrence of the digital divide. In addition, the area of residence that has and does not have Internet access is frequently the topic of discussion regarding the digital divide. The large number of households with few digital devices also contributes to the digital divide issue. Therefore, discussions about the digital divide are also centred on factors that contribute to the digital divide, such as socioeconomic, infrastructure, and geographical user characteristics.

The final point in the discussion of the digital divide is how to interact with digital technology, including website access, the efficient use of digital technology, social media browsing, and others. The subject's relationship with digital technology is discussed in terms of digital skills that differentiate between users who are skilled in using digital technology for productive activities, those who are less skilled, such as those who use digital technology primarily for communication and social media, and those who are digitally illiterate (Hilbert, 2011). Therefore, human interaction with digital technology is discussed in terms of a person's digital knowledge and digital skills, which allow him to interact with the technology. Without digital knowledge and skills, the digital divide can be exacerbated.

All four of these criteria are methods for early analysis of the digital divide, and they are also frequently discussed in studies on the digital divide. Nowadays, however, the majority of academics no longer examine the digital divide based on these four criteria; rather, they combine all four criteria and differentiate them based on the level of the digital divide. This is due to a review of the digital divide literature revealed a variety of terms used to describe similar concepts. It will be difficult to create a universal, fixed terminology for the digital divide due to its multiplicity. Adopting consistent terminology and classification would make the literature easier to comprehend and manage (Scheerder et al., 2017). In order to more systematically discuss the topic of the digital divide, the evolution of the concept of the digital divide is now differentiated based on the level at which the digital divide occurs.

Five aspects are discussed and categorised into three levels of the digital divide. The first aspect is digital technology utilisation motivation, and the second is physical and material access. Both of these aspects are classified as "first-level digital divides." As for the second stage, it covers digital skills and digital usage. The third stage, meanwhile, examines the implications of digital use in terms of providing benefits and productivity. According to Scheerder et al. (2017), scholars have conducted numerous discussions and studies regarding the digital divide at the first and second levels, but very little research has been conducted regarding the digital divide at the third level. This is due to the fact that the third-level digital divide is a result of digital use, and this issue is viewed as an intangible aspect, making it less discussed.

First-Level Digital Divides

In the first stage, this model explains the gap in terms of motivation for technology access as well as physical and material aspects of digital technology access. The level of motivational access is derived from the diffusion innovation theory and the technology acceptance model (Ayinla & Adamu, 2018; Lebenicnik & Starcic, 2020; van Deursen & van Dijk, 2019; van Dijk, 2017b). This stage describes the factors such as age, gender, race, level of thought, personality, and ability that influence the motivation of individuals to use technology (van Dijk, 2017a). These are the most influential factors in determining a person's motivation to use technology. From the perspective of the technology acceptance model, it is comprised of those who view the developed technology as advantageous and easy to use prior to being motivated to adopt it (Lebenicnik & Starcic, 2020).

The second factor at this stage is access to physical and material digital technology, such as having a digital device or Internet access. This issue appears to depend on a person's resources, geographic location, or economic capacity. If a person has sufficient income, they

will be able to subscribe to the internet, purchase high-quality digital devices, and acquire peripheral devices such as printers, webcams, speakers, and other peripheral devices. Today, with free wifi coverage, cheaper internet subscriptions, and inexpensive digital devices, scholars have begun to assert that the majority of individuals, institutions, and countries have crossed the first stage of the digital divide. Policymakers are also of the opinion that expanding access to the internet will reduce the digital divide at this level (Quaglione et al., 2020; Reddick et al., 2020). Figure 1 depicts the attributes and levels of the digital divide.

However, this perspective is deemed to depart from actuality. This is because, despite widespread internet access and falling prices for digital devices, this first level digital divide is viewed as persisting (Van Deursen et al., 2021; Van Deursen & Van Dijk, 2019). As digital technology continues to advance, more and more applications are being used, causing older devices to be upgraded. There is a need for digital software and hardware, such as larger data storage facilities, to accommodate technological advances. Additional peripheral devices such as printers, web cameras, and other tools are also necessary for the advancement of technology. The maintenance of damaged and problematic digital devices and peripheral hardware must also be considered, as it depends on an individual's financial resources. Therefore, the continuous development of technology and economic factors causes the digital gap at this level to persist, and the government must implement a mechanism to address the issue of the divide at this level in a more creative and comprehensive manner in order to implement the sustainability of digital development (Ayob et al., 2021; Van Deursen & Van Dijk, 2019; Van Dijk, 2017b).

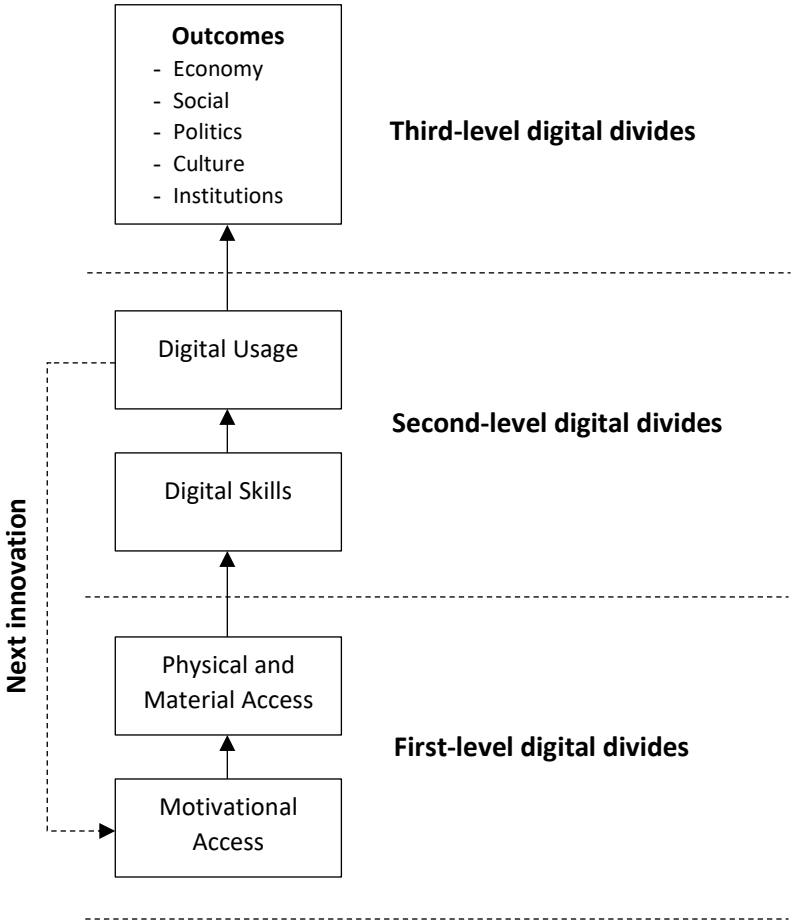

Figure 1: The Level of Digital Divides

Second-Level Digital Divides

The subsequent phase involves digital skills and digital usage. This level does not consider the external aspect, which is the need to access digital technology, but rather the individual's internal skills to use digital technology (Scheerderet al., 2017; Van Deursen & Van Dijk, 2019; Van Dijk, 2017b). This ability must be developed and enhanced. Access to websites, use of e-mail, and use of basic software, such as writing in digital documents, purchasing goods through e-commerce systems, or making payments or digital transactions, are regarded as fundamental digital technology skills.

To achieve optimal productivity, however, more complex software skills are required, such as content development skills, access to e-commerce systems for selling goods, building websites to promote products, and complex analysis software skills. This advantage in digital skills creates a digital divide between individuals with and without digital expertise. Personal factors such as age, gender, level of education, personality, and others also influence the difference in the gap at this level (Van Dijk, 2017b). It is also impacted by resources, financial capacity, and location. Individuals in urban areas are more exposed to digital technology and have the financial means to purchase or subscribe to software for digital skill development (Van Deursen & Van Dijk, 2019).

Next, from the aspect of digital usage, the frequency and diversity of digital use are emphasised. At this point, the issue of the digital usage gap is discussed in terms of sociology, culture, anthropology, or media and communication theories. The discussion focuses more on the appropriateness of digital software, the suitability of to-be-used technology, and the diversity of digital technology access (Scheerder et al., 2017; Van Dijk, 2017a, 2017b). It focuses more on the concept of the internet of things and the use of digital technology in a variety of daily activities, such as education, health care, sports, and work processes, among others. To ensure that digital technology can be utilised, research is conducted using sociology, culture, anthropology, and communication and media theory (van Dijk, 2017a). Therefore, at this stage, the implementation and policy strategy must emphasise the formation and improvement of digital skills in accordance with the field, followed by the search for an effective mechanism to encourage users to utilise the developed application or digital technology. For example, the government is encouraging people to use technology and digital transactions by offering financial incentives in e-wallets.

Third-Level Digital Divides

In the third stage, the digital divide is examined from the perspective of the outcomes or effects of digital use in a variety of domains, including economic, social, geographical, cultural, political, and institutional. It views the digital divide in society as a result of digital technology usage (Scheerder et al., 2017; Van Dijk, 2017a). For instance, the results of digital use and their economic impact. Differences in inequality can be distinguished on the basis of the system adopted. For instance, the use of digital technology by institutions can increase domestic economic outcomes, whereas regions that employ less technology do not achieve encouraging results. Among obvious examples, such as e-commerce, this digital use has increased the number of customers on the market, which has the potential to boost the national economy and personal income.

According to van Dijk (2017a), in this third stage, the entire chain of digital divides from the first and second stages provides clear and comprehensive evidence of inequality. Nevertheless, according to Scheerder et al (2017), the majority of research on the digital divide focuses on the first and second level digital divides, with less research on the benefits, outcomes, and effects of technology use, as well as differences in the digital divide based on the outcomes of its overall use. Therefore, if the results are less than optimistic, it will be necessary to investigate the areas of the digital divide that require improvement.

Based on the entire discussion regarding the concept and evolution of the digital divide, the digital divide theory can be compared and linked to the government-implemented policies and strategies that have increased the results and effects of digital use in the country. This is consistent with the government's efforts to promote digital development as outlined in its policy on digital innovation. The following section will discuss the digital policy implemented in Malaysia and its analysis based on the level of the digital divide.

Digital Innovation Policy in Malaysia

The passage of time and the advancement of technology make it necessary to develop methods of labor that are both faster and more efficient in order to foster economic growth. The advent of digital technology is one of the driving forces behind the fourth industrial revolution, which is changing the way that industries operate. The government has implemented a range of digital innovation development policies in order to ensure that the country is always ahead of the curve and not left behind by the current changes (EPU, 2020). With the establishment of the Multimedia Super Corridor (MSC) in 1996, the government has initiated preliminary planning to harness the potential of technology. Therefore, in this section, the government's policies are examined in light of the theory of the digital divide discussed earlier. From 1996 to 2010, this can be viewed as the first phase of digital development in the country, aimed at bridging the "first-level digital divide." 2011 to 2015 is considered the second phase of digital development targeted directly at bridging the "second-level digital divide." From 2016 onwards, the policies that have been developed are clearly aimed at bridging the "third-level digital divide." Figure 2 illustrates the policy timeline and phases based on the digital divide theory analysis.

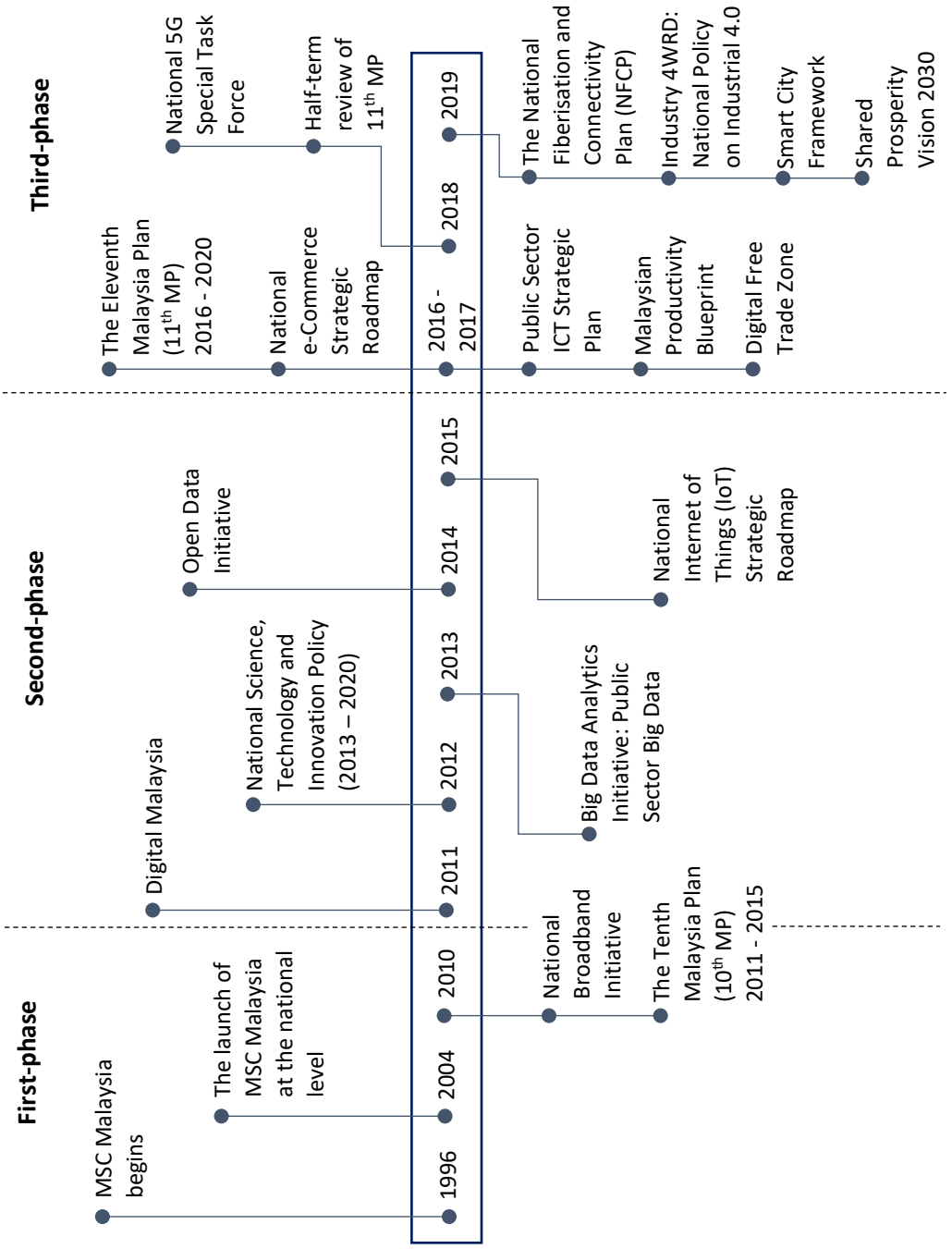

Figure 2: Innovation Policy Timeline (EPU, 2020)

Although MSC was established in Malaysia in 1996, its focus is primarily on campaigns and community awareness of digital technology. At this point, the planning and infrastructure are both beginning to be developed. In 2004, following eight years of infrastructure and campaigning, the national MSC was launched. MSC activities are structured to allow people of all ages and all backgrounds to take part in digital developments, through learning opportunities and community initiatives that enable public, private, and civil society to become more digitally literate. In 2010, a national broadband initiative was implemented to motivate and encourage the transition of society to digital literacy by expanding internet

access. All of these processes can be considered the first phase of addressing the first level of the digital divide, which is to increase motivation and physical access to digital technologies.

Next, digital Malaysia was introduced in the tenth Malaysia plan, which began in 2011. Then comes the science, technology, and innovation policy, which promotes innovation policy from 2013 to 2020. Implementation of the Big Data Initiative involving big data in the public sector took place in 2013, followed by the Open Data Initiative in 2014 and the National Internet of Things (IoT) Strategic Roadmap in 2015. All of these efforts are aimed at bridging the second-level digital divide in Malaysia by enhancing digital skills and digital usage. This period can therefore be considered the second phase of digital development in Malaysia.

The 11th Malaysia Plan (2016–2020) is projected to initiate the third phase. During this time period, the use of digital begins to flourish and produce a variety of impacts. Strategic planning is required in order for digital productivity to continue to rise. As a result, the National e-Commerce Strategic Roadmap, the Public Sector ICT Strategic Plan, the Malaysian Productivity Blueprint, and the Digital Free Trade Zone were launched in order to facilitate the further increase of all produced productivity through an organised support system. However, technological innovation is not a static phenomenon and continues to evolve as time passes. The next innovation is always imminent and must be supported by a digital infrastructure. As a necessary consequence, the National 5G Special Task Force, the National Fiberisation and Connectivity Plan (NFCP), Industry 4WRD, and the Smart City Framework were established to construct infrastructure to support the country's digital development.

On the basis of the process, it can be inferred that all efforts and policies implemented will follow a cyclical pattern based on changes and technological advancements. Changes in the norms of human interaction with digital technology will result in the development of new technology, and this new technology or system will return to the initial cycle, where the need for motivational as well as physical and material factors results in the initial stage of the digital divide. This is consistent with the views of van Deursen et al (2021) and van Deursen and van Djik (2019), who assert that the expansion of digital technology increases digital needs and continues to cause the "first-level digital divide."

To shed some light on the situation, the concept of the policy cycle is combined with the concept of the digital divide to explain how the policy cycle process is developed to address the digital divide issue and the development of digital technology in the country. Figure 3 illustrates the policy cycle concept in addressing the digital divide.

A rise in the number of digital device users is a sign that people are becoming more open to the idea of using technology. It is at this point that technology and technological know-how become more widely available. It is therefore important to emphasise education in this phase to improve skills and optimise digital use. It serves no useful purpose for a society to possess digital devices if those devices are not utilised for the purpose of increasing daily productivity. The government's role in the implementation of innovation policy is not limited to the provision of facilities; in this phase, it provides a more comprehensive education by promoting the use of digital technologies, particularly in government services. By implementing a focus on educational aspects to improve digital skills among the community, it will increase digital usage and decrease the "second-level digital divide."

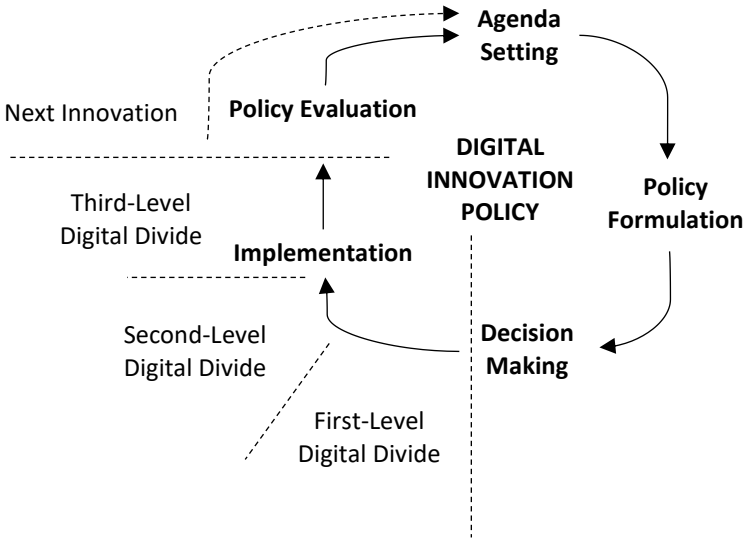

Figure 3: Policy Cycles and the Digital Divide

During the implementation period as well, the country will actually realise productivity gains from the use of digital technology. It can be viewed from the perspective of transforming traditional work processes into digital ones. A decrease in the amount of paper used, greater work flexibility, an emphasis on performance rather than time spent in the office, and improved communication on a wider and more rapid scale. Countries that seize this digital opportunity quickly will have a competitive advantage and be able to implement faster productivity. On the other hand, countries that are slow to implement digital solutions will face challenges arising from inefficiencies, particularly since half of the world's economies already operate with a high level of digitisation. Thus, the comparison of productivity due to this digital use is the "third-level digital divide," which can be viewed from the perspective of organizations, institutions, or countries. This result also leads to the policy evaluation process, which determines whether the policy requires improvement, modification, or the introduction of new technology.

Therefore, it can be said that discussing the digital divide and how to implement policies to reduce it in the country is a cyclical, ongoing process. New technologies will continue to emerge as a result of ongoing innovation. The process then returns to the early stages of the digital divide. The combination of the policy cycle and the concept of the digital divide provides a clearer picture of how the first-level digital divide will continue to occur, and what the government can do to address it is adequately provide basic technologies, such as wide and stable internet coverage, relative to technological advancements in digital systems and devices.

Digital Innovation Implications

After gaining an understanding of how the digital innovation policy is implemented and the role it plays in bridging the digital divide, the discussion then continued on the country's implications of implementing the digital innovation policy. In order to structure the discussion

of these implications, the discussion will centre on several significant repercussions, such as from the perspectives of economics, education, society, and politics.

Digital technologies are driving a major transformation. The paradigms of economics are shifting. New technologies are reshaping product and factor markets and significantly altering business and employment. From an economic perspective, digital innovation provides disruptive impacts that transcend products, business models, sectors, and geographic markets. The changes brought about by this innovation are known as "creative destruction" (Schumpeter, 2018) Old technologies are being marginalised, and consumers are beginning to shift to new technologies, including in industries that are in a constant state of competition to incorporate new digital technologies into their products. Techfin companies entered the market by offering a variety of new solutions in the technology market, thereby causing the old business model to become increasingly marginalised and subject to creative destruction. Lazada, Shopee, Zalora, Food Panda, Grab, and others, are examples of techfins in Malaysia that are expanding and transforming the working environment and the market. Buyers in the domestic market are increasingly turning to techfin companies due to the availability of more options and price competition.

Based on this development, the economy of Malaysia is changing, and it is anticipated that digital productivity will contribute 22.6% to the gross domestic product (GDP) and create approximately 500,000 new jobs by 2025 (Ahmad, 2022). Despite the fact that this has a positive implication. However, when viewed from the perspective of the digital divide, if it is not effectively managed, it will cause the digital divide to widen, particularly at the "first-level digital divide." Looking at the micro perspective, there are still many areas in Malaysia, particularly rural areas, that lack stable and fast internet coverage. Consequently, it is essential that all people, regardless of location, have access to the internet and digital devices. Having access to faster and more reliable connections will allow the country to increase its productivity and innovation to even greater heights. A substantial amount of talent and digital capital will be marginalised and lost in the absence of viable digital infrastructure opportunities. Therefore, this aspect must be scrutinised so that the country can generate more talent and productivity.

In addition to building infrastructure and facilities to stimulate the economy through increased participation in digital technology, the role of education cannot be overlooked. Education is viewed as a catalyst in digital technology due to the fact that digital innovation is based on the knowledge-economy. In order to hone the skills of the native digital generation, education with a well-structured curriculum must begin at an early age. Aspects of the digital curriculum must not only emphasize digital skills such as computer language knowledge, website design, and new technology development, but also emphasize digital management. An imbalance between digital technology and digital management will result in an inefficient use of technology. For instance, smart classrooms cannot be utilised optimally if digital management cannot be implemented effectively.

So is managing technology in the workplace. When available technology cannot be utilised optimally in certain industries, work management will be implemented in a rigid and conventional manner. Employees must travel to an office far from home, through traffic, vehicle fuel costs, and long travel times just to accomplish work that can be done on a computer. Due to the fatigue caused by commuting alone, employees are less productive than

if they had access to a more flexible work arrangement. This is due to the fact that the use of technology places a greater emphasis on performance and work outcomes than on how to work. Therefore, in the age of digital innovation and the internet of things (IoT), the educational curriculum must also emphasize aspects of digital management. Hence, norms and ideas regarding the implementation of work are increasingly centred on innovative methods of technology management that are more flexible and make the most efficient use of technology. Therefore, with a more planned education curriculum, it will be possible to reduce the digital divide in terms of skills and technology usage. On this subject, Malaysia is seen as requiring more attention than is currently being given.

For society, the implications of digital policy drive an increase in the number of individuals who make use of digital technology. This is evidenced by the growing use of digital transactions by the general public via digital applications or digital devices provided by Fintech companies. Among the Fintech companies that offer financial transactions are iPay88, Razer, bigpay, MP@y, PayPal, Touch & Go e-wallet, Google Pay, Grab Pay, Apple Pay, and many others that provide payment facilities for a cashless society. Market conditions have shifted dramatically, and people now spend and transact more quickly without carrying as much cash. Stores that do not accept cashless transactions are seen as falling behind as the public begins to reduce cash withdrawals and prefer stores that accept digital payments.

In 2020, according to the Malaysia Fintech Report (2021), online and mobile banking penetration reached 112.5 percent and 61.8 percent, respectively, and RM 460 million worth of mobile banking transactions were conducted, a 125 percent increase over the previous year. Thus, this is evidently the impact of digital on the transformation of society, particularly through digital market transactions. From a geographical perspective, however, it is clear that there is a digital divide in terms of e-commerce usage and broadband penetration between urban and rural areas, as well as between states with high Gross Domestic Product (GDP) and those with low GDP. According to the SKMM report (2021), states with a higher GDP, such as the Federal Territory, Selangor, and Penang, have a higher broadband penetration rate than states with a lower GDP, such as Kelantan, Sabah, Pahang, Perak, Terengganu, and Kedah. Similarly, urban areas with a variety of large and diverse supermarkets have a higher rate of e-commerce usage (55.7% vs. 33.1%) than rural areas. This demonstrates how the digital divide in society varies geographically throughout the country. Therefore, emphasis must be placed on rural areas in order to increase productivity and optimise digital usage in the country.

In addition to the positive effects of digital use on society, there are also complaints such as security issues and crime related to digital use. As people become increasingly reliant on digital technologies, issues of safety and cybercrime become more pressing. According to a statement from the Malaysian Department of Statistics (2021), the rate of physical crime in Malaysia is decreasing in 2020, but the number of complaints about digital crime is increasing to 99.5 percent. The received complaint contains elements that are obscene, false, offensive, indecent, and threatening. The most significant increase in complaints was 117.6% for false elements. This shows that false information is becoming a serious problem in Malaysia. The major cause of this increase in false information is the use of digital platforms, such as social networking sites, blogs, and forums. Without good digital skills, users will be easily influenced by fake news and find it difficult to verify the authenticity of the information they obtain. The

ability to discern between reliable and false information is also seen as a digital divide. Therefore, it is necessary to return to the aspect of education and awareness campaigns in order for the public to be able to identify and verify whether the information they have received is true or false.

In terms of politics, digital technologies may alter how political groups and politicians conduct election campaigns, maintain contact with constituents, and forge alliances with other groups or individuals. Nonetheless, the digital realm is currently utilised more for political marketing purposes via digital media than for the advancement of democracy as a whole. One example is the use of blockchain technology in the development of digital voting. With the rise of digital users in society, the implementation of e-voting will be able to increase citizen participation in the democratic process. This is due to the fact that voters do not need to return to their polling location to complete the conventional voting process; instead, they can vote at nearby polling stations or on their mobile devices. Several countries, including the United States, Sierra Leone, Japan, and Russia, have implemented blockchain technology in their e-voting systems. There are also countries in the process of developing blockchain-based electronic voting systems, including South Korea, Thailand, India, and a number of European nations. Malaysia should therefore not be left behind in this digital competition, and it is also necessary to demonstrate political seriousness in bringing the democratic process more in line with the digital current of technology.

Despite the fact that this e-voting blockchain technology is more secure, stable, and capable of mitigating digital voting fraud, as explained in the concept of the policy cycle and the digital divide, the introduction of new technology will result in a process of technological confidence. The motivation for utilising digital technology through the blockchain system for e-voting may be questionable. Therefore, convincing voters to use the technology will require time. Before a system is implemented on a larger scale, such as in a general election, a pilot test must be conducted in a local or state election to determine the system's efficacy and increase voter confidence. From this perspective, Malaysia is considered to be quite behind in the development of digital democracy. Malaysia's ability to move in this direction will increase its potential as a Southeast Asian digital hub development country.

Recommendations and Conclusion

Based on the discussion pertaining to the concept of the digital divide, the digital policy cycle, as well as the implications of digital technology for Malaysia and its impact in shaping the re-cycle of the digital divide, several recommendations were made for the continuous improvement process of digital technology management in the country. Digital development and digital infrastructure must be accelerated from an economic standpoint, particularly in rural areas. Although it is common knowledge, the population density in rural areas is typically lower than in urban areas, which may contribute to low Internet and digital infrastructure usage.

From the perspective of continuous development, however, the provision of digital facilities such as the Internet may increase the area's productivity. Stable and fast Internet access is now considered a necessity. By providing good internet coverage in rural areas, it is likely to be possible to develop rural areas as hubs for the tourism, food, and traditional goods industries, as well as many other industries. Travelers from other countries require internet

access for many reasons, including research, booking e-hailing services, and working remotely. When viewed from a population rate perspective, the provision of internet coverage in rural areas is not a priority. However, when viewed from a long-term investment perspective, these areas have the potential to increase economic productivity. This is seen as having the potential to bridge the digital divide between urban and rural areas.

In addition, digital education must be empowered to develop a curriculum that incorporates all digital aspects. Digital skills are not only focused on the use and development of digital applications or systems, but also on the management of changing work norms to optimise the use of technology. As part of the process of continuous improvement, the innovation management aspect needs to be applied more thoroughly so that it is comprehended. More research into the creation of digital curricula in schools is needed urgently so that the country can reap the benefits of a larger pool of skilled digital workers.

In addition, the research and development of blockchain technology needs to be bolstered so that it can more effectively address security concerns. This can increase the public's trust in digital technology. Using blockchain technology, it will be possible to create a digital ID card identity that can prevent ID card forgery in the country. In addition, this technology is able to make the democratic process in the country more progressive by providing a robust and secure electronic voting system. As a consequence of this, the study recommends that further research be carried out into the development of blockchain technology towards the achievement of digital democracy in the country.

Therefore, it can be concluded from this paper that digital technology is continuing to expand over time. Policies must be continuously revised to accommodate technological advancements. Due to this, the policy cycle occurs and simultaneously leads to a repetition of the first-level digital divide. To ensure the smooth operation of the innovation policy cycle, policy formulation must be planned with an eye toward future technology, and the community must benefit from the innovation policy implemented regardless of socioeconomic status or geographic location. As a result of all of the efforts that have been put forth, Malaysia is regarded as having the potential to emerge as a leading competitor in Southeast Asia's digital development.

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