

The Conditions for Development Cooperation for the Digital Transformation in ASEAN Member States¹

Lim Soyoung

1. Digital Transformation in Developing Countries

It is recognized by governments, industry and academia that the digital transformation will dramatically change the growth paradigm around the world, but this change will not be uniform across countries and among individuals. Differences in the benefits derived from digital technologies and the conditions of their use vary considerably depending on a country's income level. So what might the digital transformation look like in developing countries? And how to respond? As the issue of global development through the digital transformation has arisen, it is necessary to find ways to cooperate that acknowledge the conditions faced by developing countries.

1 This article draws heavily on the author's research report "Development Cooperation for Digital Transformation of ASEAN Countries" (original in Korean).

Developing countries face conditions that are quite different from those of developed countries in realizing the digital transformation, which requires a different approach. First of all, there is still a wide gap between advanced and developing countries in terms of digital technology consumption, but developing countries can experience leapfrogging, unlike advanced countries. This occurs especially in areas where large-scale infrastructure investments are required, including the ICT or digital sectors. As a result, many developing countries are able to skip directly to mobile communications without building infrastructure for landlines. In addition, unlike advanced countries, in which digital technology markets are mature, markets in developing countries are rapidly expanding, and the prospects for digital technology utilization projects in developing countries are bright.

The digital transformation is widely expected to boost economic growth and productivity in developing countries and lower transaction costs to enhance developing countries access to the global market. Specific benefits from the digital economy have been reported, including rising wages for digital workers, the formation of a market targeting digital startups in developing countries and the emergence of digital platforms that can enhance efficiency and transparency in markets and labor. In addition, digital technology promotes financial inclusion through innovative financial services. In other words, by facilitating small business' access to financial and business information, thereby enhancing access to export markets, it can contribute to achieving inclusive growth, especially in developing countries, by promoting their participation in the global value chain. In addition, it can provide women with opportunities to build their own capacities by providing information that has not been easily accessible for women and has alienated them from major economic activities.

There are also challenges that need to be addressed that run contrary to the more optimistic outlook for the digital transformation described above. The most representative risk factor is the exclusion of opportunities from the digital transformation. This is largely due to a lack of digital skills and difficulties in adopting technology, wherein developing country workers are left out of the global digital labor force. There is also a high risk of unfavorable integration of developing countries into the digital economy result-

ing from their lack of resources, capabilities, and institutions and frequent failures of digital companies in developing countries.

The greater the use of digital technology, the greater the digital gap between countries and/or individuals due to differences in economic conditions and capabilities. The digital divide tends to deepen, with infrastructure, accessibility, financial differences in whether or not digital technology is used, differences in the benefits derived from digital technology and differences in digital skill levels. The digital divide can be caused by regional differences between urban and rural areas in developing countries, and by income levels based on education and gender. The gap between the rich and the poor will intensify as automation is realized in accordance with the development of digital technology, eliminating jobs and work for low-skilled workers. Increased vulnerabilities related to digital security and the invasion of privacy, such as consumer and personal information leaks and cyber crimes, are also a side effect of the digital economy.

A possible digital disadvantage in relations with developed countries is the return of production bases to developed countries (reshoring) due to the development of digital technology. Recently, as much of the production process has been automated, wages account for less and less of total production costs, but as wages in developing countries have risen, production bases in advanced countries that have moved overseas have been reshoring. This has a profound impact on the developing country's role as a manufacturing hub in the global value chain, which in turn undermines employment and growth. Although it has been empirically demonstrated that overseas relocation remains the predominant production paradigm, and not reshoring, it has been found that job losses in developing countries due to reshoring have been significant. It indicates that automation and reshoring are worsening the employment situation in developing countries. As the concentration of labor in manufacturing industries is gradually decreasing, there is a growing concern over premature deindustrialization; that manufacturing in developing countries will decline or the proportion of manufacturing industries will no longer increase. The proportion of employment in manufacturing, which has emerged over the 20th century, is gradually decreasing, especially in developing countries.

2. An Analysis Framework of National Conditions for Digital Transformation Cooperation

This study has developed an analysis framework for national digital transformation needs, conditions for implementing them, and conditions for determining potential impacts. The developed framework could provide guidance on how much cooperation partner countries need in the digital transformation. Prior to the development of the analysis framework, the tools and indicators related to the digital transformation developed for similar purposes were investigated and compared.

The methodology for measuring the degree of and conditions for the digital transformation around the world has been developed and utilized by various international associations and organizations. Among them, the ICT Development Index of the International Telecommunications Union (ITU), which has long carried out activities to enhance global connectivity and the digital economy, divided the evolutionary process to realize an information society into three stages: readiness, use and impact of ICT, and then subdivided them again into detailed factors before aggregating them into composite indices. The Network Readiness Index developed by the World Economic Forum (WEF) consists of four major categories (environment, readiness, utilization and impact), 10 subcategories and 53 indicators.

The analysis framework developed and applied in this study differs from existing analysis tools in that it is intended to diagnose specific national conditions in and among ASEAN partner countries for strengthening development cooperation. The basic direction of the ASEAN countries' digital transformation analysis framework derived by this study follows the principles of People, Prosperity and Peace outlined in the Korean government's New Southern Policy, and values inclusiveness and sustainability. It also considers the intent of the government's policy, the private sector's potential and the status of digital international cooperation initiatives as well as our partner countries' digital transformation capabilities and infrastructure, in line with research to explore ASEAN's digital transformation through official development assistance (ODA).

The framework of the analysis is divided into four main categories, in-

Table 1. Composition of an Analysis Framework of National Conditions for Digital Transformation Cooperation

Category	Subcategory	Indicator
Readiness	Infrastructure	Access to electricity, fixed-broadband internet subscriptions, mobile broadband subscriptions, population covered by at least a 3G mobile network, population covered by at least an LTE/WiMAX mobile network
	Human resources and skills	Full-time workers in ICT-related sectors, digital skill level of working population
Policy Compliance	Institutions and policies	Importance of digital transformation in national development strategies or policies, ICT-related laws, ICT importance in government vision
	ICT use within government	Public sector online-service levels, public participation in policy decisions online
Private Sector Opportunities	Individual use	Individuals using the internet, households with computers, mobile-cellular telephone subscriptions
	Business use	ICT use in B-B, internet use in B-C, enterprise-level technology adoption
International Cooperation	Official Development Assistance (ODA)	Size of ICT-related ODA, weight of ICT-related ODA

Source: Lim (2020).

cluding digital transformation readiness, policy compliance, private sector opportunities and the status of international cooperation. The subcategories of these four categories are those related to infrastructure, capabilities and skills that enable each country’s digital transformation, partner governments’ policies that can be inferred from ICT-related institutions and policies and ICT usage status within governments and private sector opportunities that can be identified through individuals and businesses’ digital usage. The status of international cooperation on the digital transformation is estimated by a proxy index of the size and weight of ICT-related ODA.

3. Conditions for Cooperation in ASEAN’s Digital Transformation

Southeast Asia, one of the most dynamic economic regions in the world, is rapidly transitioning to a digital economy. Developing countries in Southeast Asia, which have shown lower economic performance compared to other regions, have recently grown economically, drawing attention as emerging markets and production sites. Technological leapfrogging is remarkable in this process, and the use of mobile products and the improvement of infrastructure also stand out.

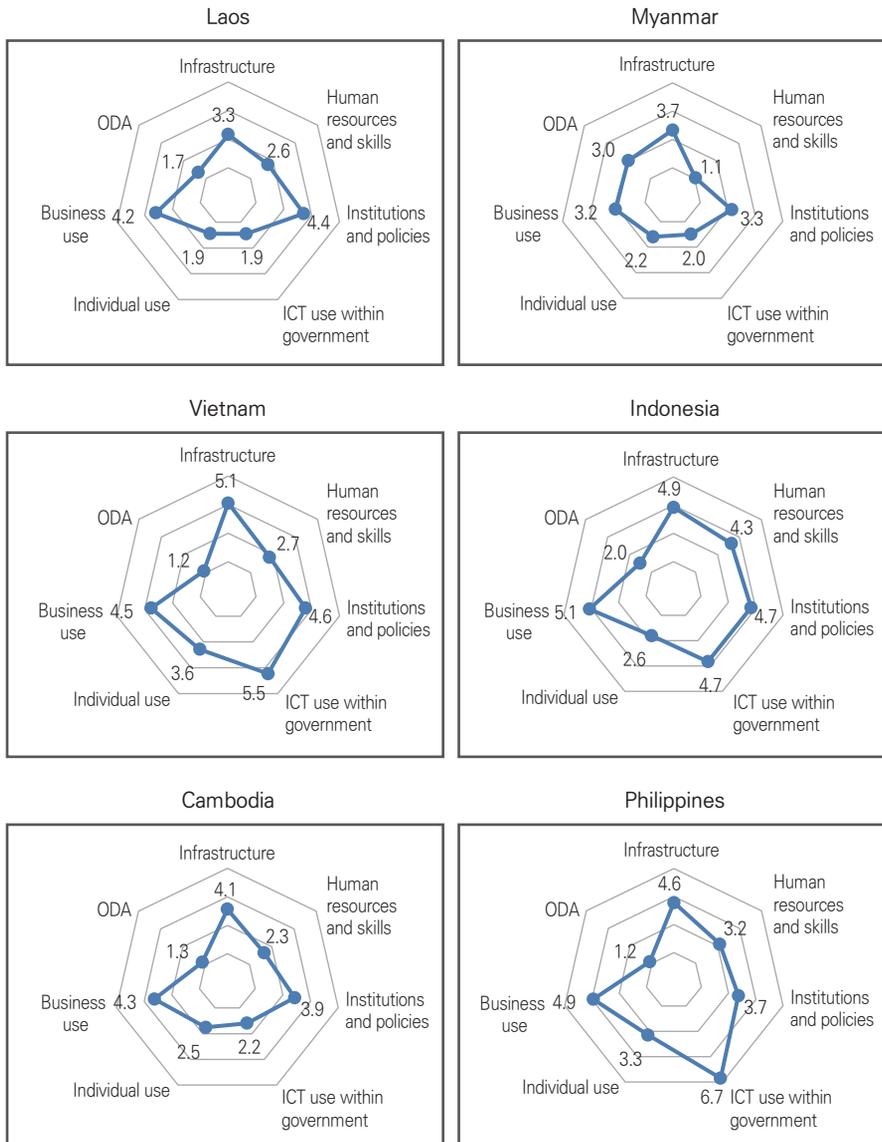
Southeast Asian countries, represented by the Association of South-East Asian Nations (ASEAN), are rapidly shifting to a digital economy, despite

being in different stages of economic development. High-level officials in those countries value digital innovation as a way to enhance regional connectivity. When they adopted the Master Plan on ASEAN Connectivity (MPAC) 2010 at the 17th ASEAN Summit in 2010, they began high-level discussions on enhancing connectivity, including digital links, and thus regional integration. MPAC 2025, which includes more concrete plans than MPAC 2010 did, was later adopted at the 2016 ASEAN Summit. MPAC 2025 confirms ASEAN's commitment to focusing on the digital transformation in enhancing regional connectivity by placing the digital sector as a major strategic area.

Based on the analysis framework derived from this study, ASEAN countries' digital transformation preparedness was analyzed and compared on a country-by-country basis. It analyzed the conditions for digital transformation cooperation among the six countries of Laos, Myanmar, Vietnam, Indonesia, Cambodia and the Philippines, which are Korea's key partners in development cooperation among the 10 ASEAN member states. The indicators with the biggest difference among countries are ICT use within the government, human resources and skills, and infrastructure. In addition, both the absolute size and relative weight of information and communication-related ODAs were not significant considering rapid changes in the digital environment in the ASEAN region.

Laos and Cambodia show similar conditions for digital transformation cooperation, which are generally poor. In particular, their governments exhibit very low levels of ICT utilization, and low levels of ICT utilization by individuals. Myanmar, similar to Laos and Cambodia, is poorly-equipped for the digital transformation, especially as it pertains to digital labor and skills, which it greatly lacks. However, ODA in the information and communication sector was found to be highly valued, indicating that there is a demand for international cooperation in the field by Myanmar. Meanwhile, Vietnam, Indonesia and the Philippines are similar in that they are better prepared for digital transformation cooperation. They were found to have high ICT utilization in both the public and private sectors. In the case of Indonesia, the use of digital technology at the individual level is relatively limited compared to use at the enterprise level.

Figure 1. Profile of the Conditions for Digital Transformation Cooperation in Six ASEAN Countries



Source: Lim (2020).

Laos is in a situation where its digital environment lags far behind in terms of accessibility, quality and price of internet services. Laos has the worst digital infrastructure among the six ASEAN countries. Poor internet infrastructure is linked to excessive broadband prices compared to neighboring countries. Improving accessibility to quality, affordable broadband services is the most urgent challenge for Laos' digital transformation and

international competitiveness. Such a digital infrastructure requires a large investment. The government should focus on improving policies, laws and systems to create a favorable investment environment, but also consider cooperation between the public and the private sector through public-private partnerships (PPP).

Myanmar has experienced one of the world's leading digital transformations since it introduced significant political and economic reforms in 2011, and is a country where technology leapfrogging is clearly realized. In addition, Myanmar actively utilizes development cooperation projects for the development of the information and communication sectors compared to other neighboring countries that lack international cooperation in the information and communication sectors through ODA. Myanmar's digital infrastructure levels has risen considerably thanks to overseas support and investment in the information and communication sector, but related human capital and skills are still very scarce and there is much room for improvement in terms of related policy. In particular, Myanmar, which has faced democratization challenges in the process of opening up and rapid digitalization, should focus on establishing policies and regulations that ensure a transparent and safe digital transition.

Among the six ASEAN countries, Vietnam shows even digital development patterns and good digital transition conditions in infrastructure, the use of ICT by businesses and individuals, and the use of digital technology within the government. In particular, attention needs to be paid to the growth of local digital companies in Vietnam. The Vietnamese government is also strongly determined to support and nurture its digital companies. Even if projects related to digital transformation are supported from abroad, there is a strong demand to transfer technology from donor agencies and to formulate project elements in a way that Vietnamese companies develop systems for themselves using the transferred technology. Also, strengthening cybersecurity, now understood as one of the biggest challenges for sustainable transition and development in Vietnam's digital transformation, is urgently needed.

Indonesia has great potential for a digital economy as Southeast Asia's largest economy, on the back of its vast territory and large population.

Indonesia has four unicorn companies representing Southeast Asia, which are related to the high digital use of Indonesian companies and to the high level of digital manpower and skills compared to neighboring countries. In addition, a government friendly to the digital business, increased domestic consumption, its peoples' high acceptance of digital technology and brisk overseas investment are driving the digital transformation in Indonesia. On the other hand, there are challenges such as strengthening, maintaining and managing digital transformation-related infrastructure and resolving conflicts with existing companies for the lasting development of Indonesia's digital economy. The digital divide between cities and other regions is large part due to the traffic and digital infrastructure gap, and the use of digital technology by individuals is significantly lower in Indonesia. It may also consider ways to find out whether social and political conflicts between innovative digital unicorn companies and start-ups and workers engaged in existing businesses can be resolved through development cooperation.

Cambodia has a competitive mobile market and has been able to increase mobile accessibility rapidly by setting very realistic mobile broadband prices. Demand for digital products is gradually increasing due to the increase of educated young and middle-class people, and the demand for digital services such as digital payments, online games, and e-commerce has also surged, making it an area with great potential in the digital market. Despite the potential of such a digital market, Cambodia's digital infrastructure is still very scarce and its applicability to government and business activities is poor. In particular, Cambodia's digital workforce and skill levels are very low. It is necessary to actively introduce projects for training human resources specialized with digital skills.

The Philippines has long been realizing the digital transformation in terms of digital media and hardware. In particular, the young and dynamic people (with a median age of 22) are friendly and active in the digital transformation, fluent in English and inexpensive. Developed mobile markets and individuals' digital capabilities and friendly attitudes will serve as key factors in the digital transformation of the Philippines. On the other hand, there is a high risk of exposure to cybercrimes such as personal informa-

tion leakage and hacking due to low awareness of cyber security, which makes it urgent to establish a network security system, including a firewall. The fact that the digital gap between large cities and rural remote areas is very large and digital service prices are the highest among ASEAN member states is another problem to be solved. It should explore development cooperation measures for the establishment and effective implementation of sophisticated government policies, laws and regulations that can overcome these limitations.

4. Policy Direction

It is urgently necessary to ensure that the digital transformation is included as a key issue in Korea's third Country Partnership Strategy (CPS), which is expected to begin in 2020. Thus, this study proposes the following development cooperation directions to be considered in the promotion of cooperation for the digital transformation of ASEAN countries.

First, digital integration at a regional level is needed to enhance connectivity in the ASEAN region. While country-specific development cooperation projects that meet the needs of each country are the most basic form of support, the digital transformation of the ASEAN region requires not only a country-specific approach but also a regional one. Through MPAC 2025, adopted in 2016, ASEAN highlights its strategic emphasis on digital connectivity and integration, particularly among ASEAN regional connectivity, stressing that ASEAN's digital economy should be discussed at the regional level. This is because digital integration in the region is effective in making ASEAN more competitive in the global market as an integrated economy by reducing the physical distance between companies and individuals, increasing efficiency. An integrated and coordinated approach between ASEAN countries is needed to enhance digital connectivity in the ASEAN region. Further from the achievement of the digital transformation at a national level, to enhance digital connectivity in the ASEAN region, problems such as poor logistics services and infrastructure (i.e., logistics network does not function properly), the complexity of cross-border trade due to numerous non-tariff barriers among ASEAN countries, and a lack of convenient

and cheap digital payment instruments should be addressed. In addition, a single organization is needed to enable unified and consistent action across various ministerial-level consultative bodies and coordination committees related to the digital transformation.

Second, integrated development taking into account the digital ecosystem should be conducted. Due to the nature of the digital transformation, where convergence that breaks boundaries between industries is key, digital ecosystems such as information producers, distributors, and consumers should work harmoniously. To this end, efforts should be made to intentionally discover and bring in platform or content producers in the early stages of digital ecosystem development. Meanwhile, higher education plays a major role in developing the digital ecosystem. Those who complete higher education in digital-related fields are likely to directly contribute to technological changes and the discovery of business models that can respond to the digital transformation. The importance of higher education in the ICT sector should be highlighted in developing countries. In addition to separating ICT into independent sectors in development cooperation projects, ICT should be integrated into existing higher education and vocational training projects.

Third, cooperation should be sought by economic sector. Each sector undergoing a digital transformation exhibits slightly different types of transition patterns and its ripple effects and obstacles to diffusion are also different. Therefore, it is necessary to analyze expected patterns, effects, and obstacles of digital transformation in major sectors that will undergo innovative digital changes, and to present customized cooperative measures to enhance effectiveness. The possibility of utilizing digital technology was examined by economic sector, focusing on the manufacturing, agriculture and retail industries, which account for a high proportion of ASEAN GDP. For ASEAN manufacturing SMEs, only about 20 percent have automated production lines. As for the six ASEAN countries that are Korea's partners in development cooperation, the portion is lower still, with only about 10 percent of the average applying automation. The digital transformation in manufacturing is possible by automating production lines, enterprise resource planning (ERP), manufacturing execution sys-

tems (MES), radio frequency identification systems (RFID), and connecting consumers and suppliers through e-commerce platforms. It is expected that by using digital technology to increase agricultural productivity in the agricultural sector, which is ASEAN's traditional major economic sector with the largest number of workers, it will be able to overcome difficulties such as population growth in the region, poor arable land area per capita and low grain productivity. For example, farmers can seek automation of irrigation, reduction of waste residues and increase in cultivation through sensors, while smoothly accessing market information through smartphone applications. In addition, the advantages of a market-place platform enables direct sales to regional or global high value-added markets and exploits high-quality/low-cost inputs. In the meantime, offline retail can be converted to digital retail mainly through the spread of e-commerce. The digital transformation of the ASEAN retail business should be accompanied by the digital transformation of logistics, transportation and finance to maximize its effectiveness.

Fourth, we need to consider cooperation that fits the stage of the digital transformation of each country. Building digital infrastructure, which is mainly required in the entry stage of the digital transformation, is difficult to carry out with ODA projects alone because of the considerable scale of the required infrastructure, even though Korea has a comparative advantage in terms of digital infrastructure technically. As ASEAN countries tend to provide local companies in their own countries with opportunities to take the initiative in building infrastructure, Korea may consider ways to contribute to strengthening their digital base, which is focused on training human resources.

Lastly, the rapid socioeconomic impact of the digital transformation should be considered. The main focus of the discussion on the digital transformation in developing countries has evolved in recent years, from ensuring access to digital technologies and services to utilizing those technologies to maximize their economic and social benefits. Cooperation that reflects the unique national characteristics of developing countries and meets the Sustainable Development Goals (SDGs) is needed to effectively realize the digital transformation. Instead of using digital technology on a

piecemeal basis in individual projects, it should be mainstreamed systematically through the digital transformation. It should not be limited to the development of digital technology and the distribution of products itself, but should also consider infrastructure, human capacity and institutional development so that the digital transformation can be felt throughout society.

Lim Soyung | Research Fellow | Center for International Industry and Trade | sylim@kiet.re.kr