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Japan as a Co-creation Partner

- The Role and Challenges in a Digital Age -

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With the spread of information devices in emerging and developing nations, the economies and societies of these nations are rapidly becoming digitalized. Their governments are also embarking on new development initiatives, and the expectations on foreign companies are changing dramatically. What role can the Japanese government and Japanese companies play against this background? In this report, I first summarize the main trends in the digitalization of emerging countries since 2020, following which I focus on the role of Japan as co-creation partner in the latter half of the report. In particular, I will examine five channels of economic involvement: (1) Participation in development initiatives; (2) Research and development; (3) Market development; (4) Investment in local companies and strategic alliances; and (5) Return of investment to Japan.

Japanese companies are beginning to invest in start-up companies in emerging and developing nations and making efforts to create local businesses. In particular, it is suggested that aspects of "Japan as a forerunner of issues facing advanced nations," such as problems of nursing care and medical care, may become more salient in the age of digitalization. At the same time, however, taking Southeast Asia and India as examples, there are concerns that Japan's efforts may not be sufficient to meet rapidly expanding needs, and that the nation's presence may decline*.

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Introduction - Questioning Japan's Role in the Era of Digitalization

In recent years, the digital economy has made significant strides, as symbolized by the rise of platform companies. In the midst of the COVID-19 crisis, there has been further digitalization of administrative procedures, corporate activities, and consumer activities as measures to control the spread of the disease[1]. In Japan, the delay in the social implementation of digital technology was widely recognized against the background of the delay in COVID-19 countermeasures in 2020, and a policy-based shoring-up of the situation, as symbolized by the launch of the Digital Agency on September 1, 2021, has begun[2].

The issue I would like to consider in this report is what role Japan can play as digitalization progresses in other nations, in particular in emerging and developing nations[3].

Historically speaking, Japan revitalized its external economic activities, in particular in Asia, from the 1960s onwards as the nation entered a period of economic recovery. Initially, these activities were re-launched with Japan taking the role of "Japan as a provider of official development assistance" (Figure 1). Later, in the 1980s and beyond, when the yen appreciated due to the Plaza Accord and Asian nations took advantage of the wave of industrialization, Japan began to play the role of an "advanced industrialized nation." It invested directly in Asian nations, established factories, created jobs, and transferred its expertise to manufacturing sites. From the 2000s onwards, as it has faced the transformation of social issues represented by problems such as the necessity for environmental measures and the transition to an aging society with a declining birthrate in advance of other nations, Japan has played a role that may be termed "Japan as a forerunner of issues facing advanced nations."

Given this, the time has come for Japan to consider what position the nation can adopt in the era of digitalization.

Figure 1　Genealogy of discussion of emerging countries and Japan's approach

Time period	Main issues	Japan's approach
1960s - 1970s	**Era of the north-south problem**: postwar reconstruction, reduction of poverty / developing nations, Colombo Plan	**Japan as a provider of official development assistance**: postwar reparations and development aid to developing nations
1980s - 1990s	**Era of industrialization**: discussion of industrializing emerging countries, cold war and developmental dictatorship, Plaza Accord, flying geese pattern	**Japan as an advanced industrialized nation**: Expansion of official development assistance (ODA), factory construction through foreign direct investment (FDI)
2000s - First half of 2010s	**Era of market**: Millennium Development Goals (MDGs), BRICs, resources, focus on consumer markets, expansion of global value chains	**Japan as a forerunner of issues facing advanced nations**: Expansion of production networks, trade in resources, infrastructure investment, marketing to the middle class
Late 2010s and beyond	**Era of digitalization**: Sustainable Development Goals (SDGs), rise of protectionism, adjustment of global value chains, populism, COVID-19 pandemic	**Japan as a co-creation partner**: Venture investment, market development, cyber security cooperation, participation in international rules (artificial intelligence, cross-border data transfer)

(Source)　Adapted from my book, Dijitaru-ka suru shinkoukoku ("Digital Emerging Countries") Figure 1.3

In international comparisons, it has been widely pointed out that the social implementation of digital technology in Japan is lagging behind[4]. In light of this fact, what approaches can Japan take toward emerging countries? One possible approach is to consider both the positive and negative aspects of digitalization for emerging and developing nations, and to strengthen and realize the role of Japan as a co-creation partner[5]. On the positive side, we can use digital technology to solve various problems in emerging countries and seize business opportunities, and at the same time, we can learn from the trial and error of emerging countries and return the results to Japan, which is lagging behind in digitalization. On the other hand, if we look at the negative side, digitalization will, for example, increase the number of jobs in the labor market that are not covered by social security systems. To address this issue, the provision of support for skills training could be considered. In emerging countries, the problem of fake news is even more serious than elsewhere, and we cannot ignore the problem of the development of "surveillance societies" from the convergence of authoritarian regimes and digital technology. Furthermore, international rules are still in the process of being formulated in areas including principles for the development and military use of AI (artificial intelligence) and cross-border data transfer, and Japan is expected to actively contribute to international discussions.

In the first half of this report, I will summarize recent changes in relation to the digitalization of emerging countries. In the second half of the report, I will focus on the positive aspects of digitalization that will expand the potential of emerging countries, and examine the type of initiatives Japanese companies and the Japanese government are pursuing, considering the nature of their potential, their implications, and the challenges they face.

1. Digitalization in Emerging Countries following the COVID-19 Pandemic

1-1. The Rise of Leading Companies emerging from ASEAN and India

With the further acceleration of digitalization since the COVID-19 crisis, new trends have manifested in emerging countries. One point at issue is the tightening of regulations on global platform companies and moves by companies in these nations to list on the stock market and engage in mergers.

In July 2021, the G20 Finance Ministers and Central Bank Governors Meeting reached a broad agreement regarding the taxation of giant multinational corporations, including GAFA (Google, Apple, Facebook, and Amazon)[6]. In the original proposal, the line was drawn at 20 billion euros (approximately 2.6 trillion yen) in sales and a 10% profit margin, and the market/user country would have the right to levy taxes on the excess profit portion. This could provide a new tax base for emerging countries that do not have home-grown local platform companies but have a large number of platform users[7].

At the same time, the number of unicorn companies is increasing in emerging countries, and the pace at which local companies are listing their stocks and merging with each other is accelerating. In May 2021, it was announced that leading Indonesian start-ups Gojek and Tokopedia would form a business alliance, creating a new company, the GoTo Group[8]. Combined, the two companies will have a 2020 enterprise value of approximately 2 trillion yen, 100 million monthly active users (MAUs), and 1.8 billion payments per year[9]. The company is reportedly aiming for an overlapping listing on the New York Stock Exchange and the Indonesia Stock Exchange[10]. The number of unicorn companies has also surged in India since 2020, reaching 57 as of September 2021. Local food delivery giant Zomato listed on the country's stock exchange in July 2021, and payment service provider Paytm is reportedly preparing to do the same. In terms of industry distribution, rather than the business-to-consumer (B to C) businesses of the

past, business-to-business transactions (B to B) with small and medium-sized businesses and traders as customers are now on the rise[11].

In contrast to Southeast Asia and India, China, where the digital economy has matured in terms of the rise of platform companies and growth in areas including B to B business, has seen increased regulation of platform companies. In addition to the postponement of Ant Financial's listing in the fall of 2020, immediately following Didi's listing on the New York Stock Exchange in June 2021, new downloads from app stores in China were suspended after the company was investigated by the Chinese government in relation to data security[12]. The Xi Jinping administration is making "common prosperity" its new slogan, and is taking a tougher stance against platform companies, which grew steadily in the 2010s.

1-2. The Operation of Digital Technology as seen in Myanmar and Azerbaijan

Digitalization also has negative aspects that deepen the vulnerability of emerging countries. Negative aspects such as the fluidization of labor markets, the spread of fake news, and the emergence of a surveillance society are becoming increasingly serious. Looking back over the past year, in addition to growing concern over the working environment of food delivery couriers, we have also seen the threats that digitalization entails in the political and military domains.

In the midst of the COVID-19 crisis, there is a sense that food delivery has become a part of life, especially in urban areas. Against this background, at the end of August 2021, Singapore's Prime Minister Lee Hsien Loong announced a policy to enhance social security coverage for gig workers who take one-off jobs from platform companie[13]. Mandatory injury compensation and pension contributions by platform companies are expected to be considered. The intention is to bring employment outside the social security system, which has increased due to the expansion of the digital economy, into the framework of public social security. Attention will be focused on this initiative to determine whether this is a sign that informal employment in the digital economy is shifting to more formal employment.

On the political front, immediately following the military coup in Myanmar on February 1, 2021, protests by the public were shared on social networking services (SNS), particularly Facebook. The sight of people marching and singing protest songs was encouraging to many in the country. However, the army ordered providers to shut down Facebook and other

social media on February 4, and connections have been unstable since then[14]. This was an example of the rawness of Internet management under an authoritarian regime.

The military use of digital technology has also advanced. In September and October 2020, drones equipped with AI technology were deployed in military clashes between Azerbaijan and Armenia in the disputed region of Nagorno-Karabakh. The Azerbaijani military, which actively utilized the new weapons, won the battle and retook the region, which it had long been unable to effectively control. Analysis suggests that the introduction of Turkish-made military drones by the Azerbaijani military neutralized the Armenian military's anti-aircraft defense network, which had been provided by Russia. It has been pointed out that the military balance in the disputed territories has shifted and that there may be an increasing number of military conflicts between smaller nations in the future[15]. This news will also lead to concerns regarding the introduction and proliferation of lethal autonomous weapons systems (LAWS) into actual military conflicts.

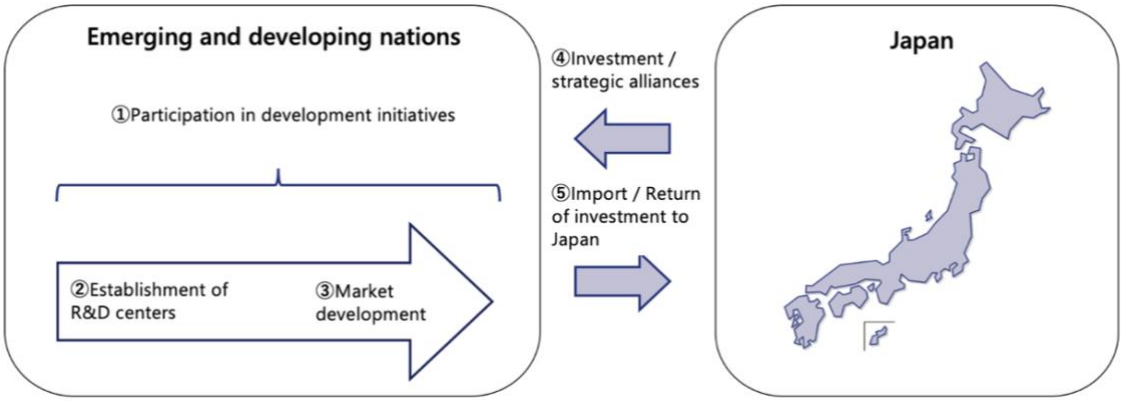
Against this background, it would be desirable for the Japanese government and Japanese companies to play the role of Japan as a co-creation partner, focusing directly on both the positive and the negative aspects of digitalization for emerging countries.

2. Five Pathways to Expanding Possibilities

Of the positive and negative impacts of digitalization on emerging countries, the following section will focus on the positive aspects that contribute to solving local problems and stimulating economic development, and consider the ways in which Japanese companies and the Japanese government should be involved[16].

Looking at methods of launching businesses, there are a number of initiatives that are already underway. These developments can be organized into the following five patterns of approaches to emerging digital markets: (1) Participation in government development projects; (2) Research and development; (3) Market development; (4) Investment in local companies and strategic alliances; and (5) Return of investment to Japan (see Figure 2).

Figure 2　Approaches to economic involvement in digitalization in emerging countries



（Source） Prepared by the author.

The first approach is working to promote participation in digital development initiatives through channels such as policy dialogue and cooperation agreements with governments and economic organizations in emerging countries, and to strengthen information gathering[17]. From this perspective, the Japanese government has been taking the initiative in opening channels, in particular via Southeast Asian nations and the Association of Southeast Asian Nations (ASEAN). Thailand was the advance staging post for these efforts, given that it has been one of the most important bases for Japanese companies to advance into the region. The Thai government has been seeking to promote smart manufacturing and the digital economy under the slogan "Thailand 4.0"[18], and in response to these policy trends, the two governments signed a "Memorandum of Intent on Eastern Economic Corridor and Cooperation on Upgrading Industrial Structure" on June 7, 2017[19]. The Japanese business community is also highly interested in the EEC, which the Thai government has made a priority project; a memorandum on investment promotion was signed between the Japan External Trade Organization (JETRO) and the EEC Secretariat in October 2018[20], and Mitsubishi Electric Corporation has been proceeding with the establishment of a factory automation demonstration facility in the EEC[21]. With the dense concentration of Japanese companies in Bangkok, events for Japanese start-ups, as described below, have been launched here in advance of other countries, and the region can be seen as an advance experimental area for Japan's digitalization strategy in emerging countries[22].

The Japanese government is also involved in a number of partnerships with the Indian government, including the October 2018 Japan-India Digital Partnership, which, among other things, seeks to establish a Japan-India Startup Hub in Bangalore and invite Indian startups to the Japanese technology exhibition CEATEC[23]. Forums for exchange, such as the "Japan-India Digital Partnership Symposium" which was held in January 2021, seek to provide opportunities to share business information even amid the pandemic, and these are expected to assist in promoting new business opportunities.

A related initiative is the Dialogue for Innovative and Sustainable Growth (DISG), which is being promoted mainly by the AEM-METI Economic and Industrial Cooperation Committee[24]. This is a framework for dialogue between representatives of industry, academia, and government from Japan and ASEAN concerning what can be done to further enhance growth potential and realize sustainable economic growth through the promotion of innovation using digital technology, with cooperation between ASEAN and Japan. In view of the fact that the situation in ASEAN nations differs from one to another, it will be important to establish this type of dialogue for each nation.

The second approach is for Japanese companies to establish R&D centers in emerging countries, focusing on the digital and innovation fields. Between 2017 and 2019, Japanese companies were particularly active in establishing bases in Chinese cities that were centers of innovation. For example, the AEON Group established a development base in Hangzhou[25], and Kyocera established the Kyocera China Innovation Center in Shenzhen[26].

The third approach is to develop the market: NEC has provided fingerprint and face recognition technologies for India's biometric authentication system, Aadhaar[27]; this is a representative example of Japanese companies working behind the scenes to support the digitalization of emerging countries. Market development includes not only the provision of element technologies, but also the establishment of bases for social implementation and the conducting of local demonstration trials of services that have already been developed in Japan. Fujifilm has established health checkup centers in India focusing on cancer screening, which represents an example of an attempt to test new services that have been difficult to implement in Japan due to regulatory issues in emerging countries[28]. Japan's Ministry of Economy, Trade and Industry (METI) has launched a project to support demonstration trials by companies in Southeast Asia and India, which will be discussed in detail in the next section. In the area of provision of support for startup companies to participate in overseas trade exhibitions and their

matching with major local companies (conglomerates), in addition to an interesting initiative called Embassy Pitch at the Embassy of Japan in Thailand, in Bangkok[29], the Japan External Trade Organization (JETRO) is attempting to deepen ties with innovation hubs by utilizing its offices around the world as part of a global acceleration hub project[30].

The fourth approach is to invest in or deepen strategic alliances with leading start-ups. Investments in venture companies do not only seek capital gains; it is also important for the investing party to make strategic investments in companies that can be expected to generate a synergistic effect. The SoftBank Vision Fund (SBVF) is actively conducting large-scale investments in Japan and throughout the world. This initiative has thus far invested approximately 200 billion yen each in unlisted emerging companies that are attracting attention around the world. Softbank Chairman Masayoshi Son calls this a "Cluster of No. 1 Strategy"[31].

Strategic alliances with local companies have also been developed. In China, Shionogi has formed a strategic alliance with Ping An Insurance[32], and Toyota Motor Corporation has formed an alliance with a self-driving start-up company[33]. In Southeast Asia, strategic alliances with local start-up platform companies are in the works; Toyota Motor Corporation and Mitsubishi UFJ Financial Group, in addition to SoftBank, have invested in the ride-sharing application Grab. Toyota has also entered into a strategic alliance with Grab to detect abnormalities in vehicles based on driving data, allowing optimization of the frequency of maintenance[34]. Mitsubishi UFJ is also aiming to provide financial services to Grab users and drivers[35], an initiative that seeks to realize market development through collaboration and alliances with local platform companies.

The fifth approach is an attempt to channel the dynamism of emerging countries back to Japan. For example, there are moves to have overseas start-ups list on the Tokyo Stock Exchange Mothers Index[36]. In addition to direct listing as a foreign company and listing through the establishment of a Japanese corporation, companies can also be listed using Japanese Depositary Receipts (JDR), a system based on the increasingly common scheme in the U.S. of listing by first depositing shares with a trust bank or similar financial institution and listing securities issued based on this, rather than directly listing a foreign company. In terms of return to Japan, one of the stated aims of the SoftBank Vision Fund has been to support the entry of foreign unicorn companies into Japan. In a sense, this is an approach that seeks to promote social implementation in Japan by attracting foreign startups to the country as "black ships."

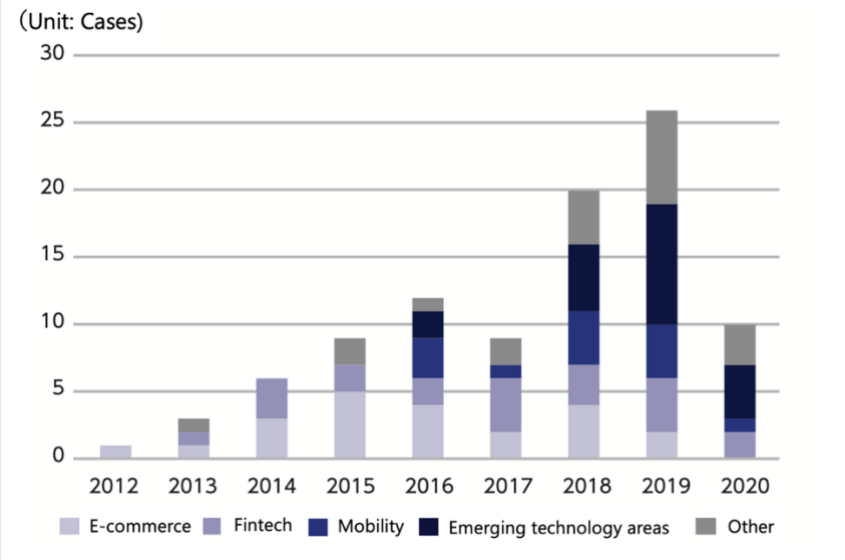
3. Tentative Evaluation and Points at Issue

3-1. Increase in Number of Corporate Partnerships and Lack of Absolute Value

How, then, can we evaluate the progress of these approaches? What will be offered here is of course only a tentative assessment, given that the global outbreak of COVID-19 can be considered to have created difficulties in promoting new projects.

Figure 3 shows the number of collaborations in a broad sense (including investment, capital and business alliances, joint development, etc.) being conducted by Japanese companies with Southeast Asian start-ups, using information compiled by Kaori Iwasaki of the Japan Research Institute based on company press releases and other publicly-available information. A total of 86 projects were listed from 2012 to 2019; 10 projects are listed for 2020, during the pandemic. This data demonstrates that there was an increase in the number of projects in the fintech, mobility, and emerging technology areas, including artificial intelligence, up to the outbreak of COVID-19.

Figure 3: Japanese companies: Investment in and collaboration with Southeast Asian startups



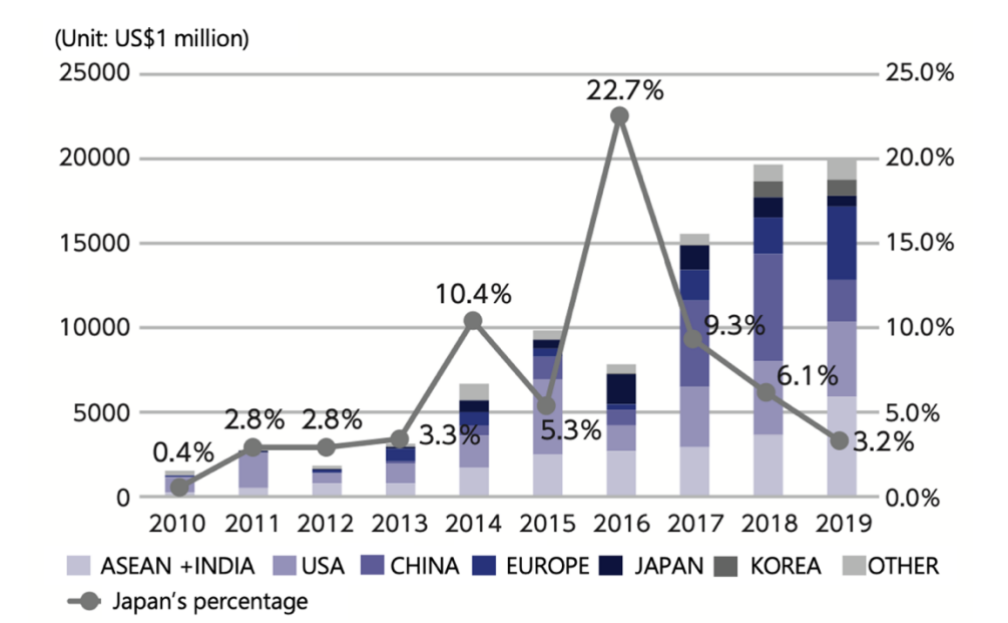
(Source) Compiled from data provided by Kaori Iwasaki, Japan Research Institute. For data concerning the 86 cases through 2019, see Kaori Iwasaki, "Partnership between Southeast Asian Startups and Japanese Companies and Possibilities of Listing on the TSE Mothers Board," RIM Pacific Business and Industries, Vol. 20, No. 76, pp. 1-37, 2020.

While the number of initiatives themselves has increased, in terms of venture investment trends, it is also the case that the number is insufficient in absolute terms.

Investment in ASEAN and Indian startups expanded in total through 2019, but Japan's share of this investment peaked in 2016 and has since been declining (Figure 4). Overall, Japanese companies have increased the number of new initiatives in which they are engaged, but in terms of volume, these efforts can be seen to be insufficient relative to the scale of growth of emerging markets. Venture investment information differs depending on the data source, but a comparison of the ratio of venture investment in Southeast Asia and India using separate data (Crunchbase) shows that Japan's share is declining[37].

Of course, it is not always enough to simply increase financial input. While numerous corporate venture capital (CVC) firms have been established in Japan, it should be noted that what is demanded of them is not only to invest, but also to select investment projects with a purpose and strategy, and to accumulate expertise over time[38]. However, based on aggregates in Crunchbase data, Japan's share in 2020 was 6.1%, and although Japanese companies have continued to launch initiatives even since the advent of the COVID-19 pandemic, there are concerns that the gap between Japan and other nations will widen further[39].

Figure 4: Trends in investment amounts in ASEAN and Indian start-ups by major nations and regions



(Source) Prepared by the author from data in Ernst & Young ShinNihon, "*Tounan ajia-tou/indo chiiki wo taishou ni shita ajia DX gutaika ni muketa jittai chousa*" ("Fact-Finding Survey regarding realization of Asia DX for Southeast Asia and India Region"), p.49, Figure 23. Original data sourced from Preqin database.

Progress in terms of the return of funds to Japan can also be said to be limited. With regard to the deployment in Japan of technology and expertise originating overseas as specifically supported by the SoftBank Group, one can cite the example of the popularization of the PayPay payment application. On the other hand, Didi, a ride-share application in which SoftBank has a stake, launched its service in Japan in September 2018 and expanded its service area to 25 prefectures, but later reduced this number to 14. OYO, a major budget hotel company in India, is also struggling to develop its business in the Japanese market[40]. Past examples suggest that it is difficult for foreign start-ups to directly enter the Japanese market, and that localization through the intervention of Japanese companies may be relatively effective. Looking at listings on the TSE, as of May 2021, only two companies have listed using Japanese Depositary Receipts (JDRs): TechPoint, a U.S. semiconductor design company, and Omni-Plus System Limited, a Singapore-based plastics manufacturer and distributor[41]. As of 2021, it is reported that there are around 30 potential companies in waiting, but the "return to Japan" remains limited[42].

3-2. The "China Problem" and Economic Security

Another point at issue is the stance of strengthening economic security in various nations due to the intensifying confrontation between the US and China. Currently, the United States, China, and Japan are all seeking to bolster their economic security. As a result, stricter regulations are beginning to be applied to direct investment in emerging technology areas, technology exports, and cross-border data transfers. With regard to the issue of data management, it can be pointed out that in recent years, regulations have been strengthened not only in the US and China, but also in emerging and developing nations, based on considerations of the protection of privacy[43].

The issue here is China's digital economy and its relationship with the domain of emerging technology. To put it simply, "Is China a co-creation partner?" China is clearly pushing forward with pioneering initiatives in the digital economy, and has become, in the true sense of the phrase, a digital superpower. In terms of the unique business ecosystems created by platform companies, and the active establishment of venture companies and creation of new businesses, there are numerous business opportunities that Japanese companies should grasp through collaboration, and many lessons that they should learn from business practices in China. As an example of return to Japan, in the case of PayPay, a mobile payment application, it is considered that technical expertise provided by Alibaba in China to Paytm in India was

then transferred from India to Japan[44]. Cooperation with leading Chinese companies is moving ahead, with the strategic alliance between Shionogi and Ping An Insurance, which has already been mentioned, just one example.

The first and most direct response demanded by increasingly stringent regulations is compliance with those laws and regulations. The response will depend on the location of the algorithms (technology) (on the Japanese side or the foreign side), the location of the data (once again, on the Japanese side or the foreign side), and whether or not these are transferred across borders. In particular in the case of sensitive technologies and data that are subject to technology export control or the cybersecurity regulations of the nations concerned, it will be necessary to avoid cross-border transfers as much as possible unless essential.

Another issue that must be considered is the selection of partners. As the U.S.-China conflict intensifies, Chinese high-tech companies, led by Huawei Technologies, have been placed on the U.S. Department of Commerce's Entity List (EL). The background to this is the deep relationship between companies, the government and the Communist Party in China, but one of the specific issues is the policy of "military-civil fusion" promoted by the Chinese government[45]. Many emerging technologies are dual-use technologies (i.e., technologies that can be used for both civilian and military purposes). To take one example, numerous prominent start-ups have emerged in China in the area of image recognition using AI and surveillance camera solutions that utilize this technology. Many companies in these areas are also on the Entity List[46]. The U.S. government has taken issue with the fact that the facial recognition technology provided by these companies is also being used as a surveillance tool in the Xinjiang Uyghur Autonomous Region, and is therefore closely associated with human rights issues.

Given this, how Japanese companies should position their relationships with Chinese companies and their local subsidiaries' R&D centers in the area of innovation represents a difficult issue.

4. Attempting to develop Markets under Pandemic Conditions

4-1. Example of ADX program by METI

In order to study attempts to develop markets under pandemic conditions, below I will consider the potential of Japanese companies based on projects supported by the Ministry of Economy, Trade and Industry (METI). To date, the Ministry has supported projects under two

frameworks, "ASEAN-Japan" and "Japan-India"; a total of 40 projects were selected for the ASEAN region in FY2020 and FY2021, and it has been decided to provide support for eight projects in India which will contribute to solving social issues[47]. The following section will focus on the "Asia Digital Transformation (ADX) Projects" (referred to as "ADX Projects" below) and provide an overview based on publicly available information.

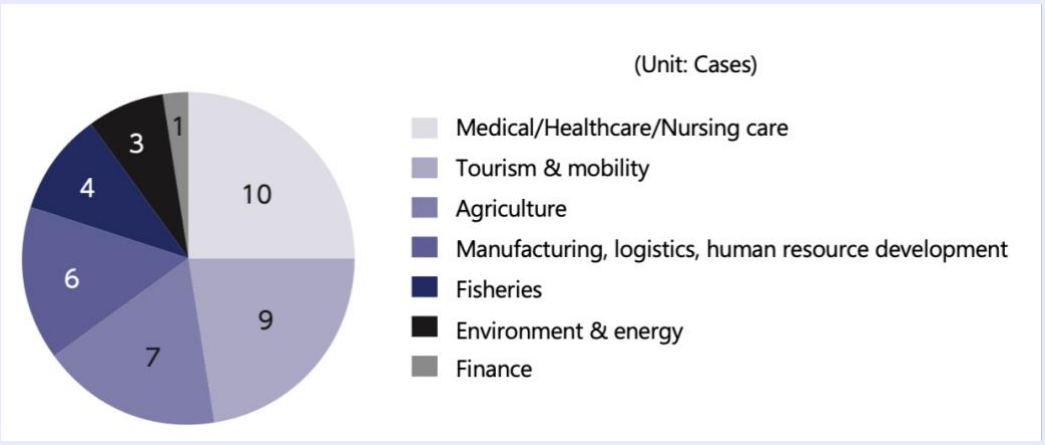
Figure 5 shows a breakdown of the 40 projects being supported by METI in ASEAN by country. Thailand, which has already been mentioned, has the largest number of projects, followed by Malaysia, Indonesia, Cambodia, Vietnam, and Myanmar. Singapore, which is considered to be a hub in Southeast Asia, has become a center for venture investment, but in terms of market development, the number of projects being conducted is relatively small, due to some extent to the progress of digitalization in the country and the limitations of its market. Figure 6 shows the composition of industries being focused on (the author reorganized the data based on JETRO data). Medical/healthcare/nursing care accounts for the greatest number of projects, followed by tourism/mobility, agriculture, and manufacturing. Considering that the manufacturing sector accounts for approximately half of Southeast Asian subsidiaries of Japanese companies, the percentage represented by the service sector here is high[48].

Figure 5: Breakdown of Asia Digital Transformation ADX Projects by Country

Target Nations	Number of projects
Thailand	9
Malaysia	5
Indonesia	4
Cambodia	4
Vietnam	4
Myanmar	4
Singapore	3
Philippines	3
Brunei	2
Singapore/Malaysia	1
Laos	1

(Source) Calculations by the author based on JETRO website, "Projects selected as Asia Digital Transformation (ADX) Projects (General and Special Frameworks)," (article published October 14, 2020; in Japanese) and "Projects selected as a result of the 2nd Call for Asia Digital Transformation (ADX) Projects" (article published August 3, 2021; in Japanese).

Figure 6: Breakdown of Asia Digital Transformation (ADX) Projects by Industry (FY2020 and FY2021, 40 projects in total)



(Source) As for Figure 5

What, precisely, are the projects that are being proposed in this context? Here, we will focus on three types of projects from among those published on the JETRO website: those involving large companies, those involving start-ups, and those involving small and medium-sized companies. A representative case of a project involving a large company, in terms of overall structure, is Paramount Bed Co., Ltd.'s initiative to provide IoT solutions to nursing care facilities in Indonesia[49]. This project seeks to deploy, in Indonesia, a device developed in Japan that records the status of a patient's sleep. As an example of a start-up company, we could point as one example to Ssgri Co.,Ltd..[50], which uses artificial intelligence to analyze satellite data and create digital maps, and aims to apply these maps to rice farmland in Thailand. As an example of a small- to medium-sized company, one could cite ELM Inc.[51]. The goal of this company is to develop a container-based vegetable cultivation system in Brunei, which relies on imports for the majority of its fresh vegetables.

4-2. Can Japan's Expertise be Utilized?

These initiatives are still in the commencement phase, and it is therefore too early to evaluate them at this time. However, they do provide some suggestions for Japanese companies considering the attempt to develop businesses in the digital sector in emerging countries.

The first question is how Japanese companies should differentiate themselves from local companies, and in addition from platform companies. In areas in which platform companies with a global reach have a competitive advantage (e.g., fundamental development of artificial intelligence, matching with a large number of users, etc.) and, conversely, in areas in

which only local companies have an advantage (e.g., areas requiring permits and approvals, areas in which end users are decentralized and sales are costly, etc.), Japanese companies, as foreign companies, may experience limitations. One possible solution would be to develop industry- and application-specific solutions that have already been deployed in Japan.

The second question is how to devise ways to incorporate businesses in local environments. In order to incorporate DX/IoT solutions in the field in emerging countries, it will be essential to market solutions to on-site entities, for example hospitals in the case of medical care, nursing care facilities in the case of welfare, repair shops in the case of used parts, fishermen and fishing businesses in the case of fisheries, and transportation agencies in the case of mobility. It will also be essential to collaborate with these companies and institutions. It will be necessary to consider how to effectively reach out to these entities.

A great many suggestions can be gleaned from the initiatives mounted by Japanese companies in ASEAN nations. One particularly important focus will be the possibility of leveraging the expertise accumulated by Japanese companies over the course of their histories when considering the nation's role as Japan as a co-creation partner. There is room for Japanese companies to leverage their superior production management capabilities in the manufacturing industry, extending their initiatives in the area of "Japan as an advanced industrialized nation experiencing DX." At the same time, numerous business proposals are emerging from what we might term the "multiplication" of "Japan as a forerunner of issues facing advanced nations x DX" in areas such as healthcare, nursing care, and agriculture. Not only large companies, but also start-ups, will be able to flexibly expand their businesses globally; small and medium-sized enterprises (SMEs) also have the potential to expand overseas[52].

Conclusion: Three Challenges to becoming a Co-Creation Partner

As discussed above, Japanese companies have increased their efforts in becoming co-creation partners in emerging and developing nations in the digital era. Although such efforts are still in the exploratory stage and this must therefore be a tentative assessment, the following issues remain salient at this point.

First, while Japanese companies are increasing the number of new initiatives that they mount in response to the rapidly expanding digital economies of emerging countries, the absolute amount of money invested and the number of projects being conducted remain

insufficient. As a result, there is a risk that there will be a further decline in the relative presence of Japanese companies in this arena. In creating a position as a co-creation partner, it is desirable that a specific number of business partnerships continue to be formed.

Second, in order to increase and deepen various forms of partnership, it will be necessary to share examples of effective application of each approach in Figure 2 in the future. This means the sharing of "best practices." In this report, I have presented five pathways, and initiatives are moving forward in each of them. In future, it will be important to identify successful examples in each pathway and examine the factors behind them, based on the results of the initiatives undertaken. At the same time, it may also be pointed out that while initiatives undertaken by the Japanese government and Japanese corporations in Bangkok, as one example, can be seen as pioneering, this does not mean that the experience and expertise garnered as a result have necessarily been horizontally deployed in other emerging hub cities.

Third, Japanese companies themselves will ultimately need to undergo organizational reform. They will need to consider organizational reforms in line with the path taken by their new initiatives, such as increasing the sensitivity of information in relation to development initiatives undertaken by national governments, considering the establishment of R&D centers, and establishing open innovation systems linked to their head offices by granting local units a certain level of authority when making investments[53]. With regard to market development, marketing companies related to local subsidiaries should be required to identify industry-specific demand. In the matter of returning solutions to Japan, it is possible that it will be necessary to align practices with Japanese business practices, rather than simply importing them. Taking into consideration the examples discussed above, it will be necessary to devise ways in which to incorporate new solutions into the Japanese context without reducing their efficiency.

The trend which sees emerging and developing nations becoming increasingly digitalized will be irreversible. In the midst of this trend, Japanese companies are undertaking specific initiatives in a variety of areas, but they are still in the trial-and-error stage. It will be desirable in future to examine the effects of these initiatives at a time when they can be evaluated in terms of market development.

Note

* This paper is based on the discussion in Chapter 6 of *Dejitaru-ka suru shinkoukoku - senshinkoku wo koeru ka, kanshi shakai no tourai ka* ("The Digital Emerging Countries: Transcending the Advanced Nations or the Advent of the Surveillance Society?"; in Japanese) (Chuko Shinsho, 2020), and is a substantially expanded version of "The New Phase of Digitalization in Emerging Markets: Can Japan be a Co-Creation Partner?" which the author contributed to the September 25, 2021 issue of Shukan Toyo Keizai (published in Japanese). I would like to thank Ms. Kaori Iwasaki of the Japan Research Institute for providing data on collaboration projects being conducted by Japanese companies. I would also like to thank Keiichiro Oizumi (Asia University), Kota Takaguchi (KINBRICKS NOW), and Ririna Yamamoto (Japan External Trade Organization (JETRO)) for their comments on the draft of this report.

[1] As representative examples, for a general overview see World Bank, "World Development Report 2016: The Benefits of Digitalization," Ittosha (2016); for indicators, see OECD, *Measuring the Digital Transformation: A Roadmap for the Future* (Paris: OECD Publishing (2019)); for trends in the Asia-Pacific region, see OECD, *Economic Outlook for Southeast Asia, China and India 2021: Reallocating Resources for Digitalisation*, (OECD Publishing (2021)).

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(In Japanese).

[3] My book Dejitaru-ka suru shinkoukoku: senshinkoku wo koeru ka, kanshi shakai no tourai ka ("The Digital Emerging Countries: Transcending the Advanced Nations or the Advent of the Surveillance Society?"; in Japanese) (Chuko Shinsho, 2020), published in October 2020, focused on the fact that emerging and developing nations significantly advanced their level of digitalization in the 2010s.

[4] The 2021 edition of the "White Paper on Information and Communications in Japan" includes a section titled "Causes of Japan's Delay in Digitalization" and points out that Japan's ranking in international indicators of digitalization, including that offered by the United Nations Department of Economic and Social Affairs (UNDESA), has been declining. As factors behind this decline, it points to: (1) sluggish investment in information and communication technology, (2) ICT investment without operational reform, (3) lack of ICT human resources and their uneven distribution, (4) past successful experiences, (5) a sense of anxiety regarding and resistance to digitalization, and (6) insufficient digital literacy. See the introduction to the 2021 edition of the Ministry of Internal Affairs and Communications' "White Paper on Information and Communications in Japan 2021."
(https://www.soumu.go.jp/johotsusintokei/whitepaper/ja/r03/pdf/index.html)
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[5] See Ito, A., Dejitaru-ka suru shinkoukoku: senshinkoku wo koeru ka, kanshi shakai no tourai ka ("The Digital Emerging Countries: Transcending the Advanced Nations or the Advent of the Surveillance Society?"; in Japanese) (Chuko Shinsho, 2020), Chapter 6.

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(In Japanese).

[7] In this regard, the IMF research team estimated that tax revenues would decline by up to a maximum of 0.15% against GDP in areas such as Singapore and Hong Kong (i.e., "taxation hubs"), and that the effect of increased tax revenues on nations with larger domestic markets would be negligible.

See Dabla-Norris, Era, Ruud de Mooij, Andrew Hodge, Jan Loeprick, Dinar Prihardini, Alpa Shah,

Sebastian Beer, Sonja Davidovic, Arbind Modi, and Fan Qi, "Digitalization and Taxation in Asia," International Monetary Fund (IMF) Asia-Pacific and Fiscal Affairs Departments, Discussion Paper No. 2021-017.

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[14] Reuters, February 4, 2021, "Myanmar cuts off connection to Facebook," (https://jp.reuters.com/article/myanmar-politics-facebook-idJPKBN2A33BO) (In Japanese).

[15] Yomiuri Shimbun, December 21, 2020, "Drones wreak havoc in Battle over Autonomous Region, Russia in Shock... 'Flagship Product' Missile Air Defense Network breached," (https://www.yomiuri.co.jp/world/20201221-OYT1T50050/) (In Japanese).

[16] Regarding the negative aspects of digitalization, the following issues can be raised: cooperation in skills education, contribution to the fight against fake news, cooperation with regard to cybersecurity, and contribution to the formulation of international rules. Because governments have a greater role in these areas than companies, I will not consider them in this paper, but I intend to examine them in detail at another time.

[17] Multilateral economic agreements such as the Trans-Pacific Partnership (TPP) and the Regional Comprehensive Economic Partnership (RCEP) include chapters concerning e-commerce, but their main focus is on rule-making; from the perspective of mutual business creation, it will be necessary to focus on cooperation that is more closely allied to specific business projects.

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[37] The original data for Figure 3 is taken from the Preqin database, but details regarding investments conducted through third nations, the registered locations of large-scale venture investment institutions, and investment amounts are not publicly available, and this has affected the total to a certain extent. However, even when the amount is calculated from Crunchbase, which offers different data, Japan's share of investment still displays a declining trend. For the CrunchBase data for India and major ASEAN nations, see "Survey on Startup Investment to strengthen Competitiveness in Emerging Asian Nations" (April 2021), DX Promotion Team, Invest Japan Department, Invest Japan Division, Japan External Trade Organization (JETRO)
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For information on venture investment in the Southeast Asian region, see data published by Cento Ventures, which ranks Japan sixth ($822 million) after China, Singapore, Australia, the U.S., and Indonesia in terms of the value of investment and third after Singapore and Indonesia in terms of the number of investments (45) in a cumulative total from 2013 to 2020. See Cento Ventures, "Southeast Asia Tech Investment - FY 2020,"
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