Chinese Firms Driving Digitalization in the ASEAN Region

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Summary

1. In the ASEAN region (below, "ASEAN"), digitalization is progressing in a broad range of fields within society. Alongside local startups and U.S. tech firms, Chinese IT companies are driving this trend. Japanese IT firms rarely appear in the digital arena, and this is probably one of the reasons for the declining presence of Japanese companies, and indeed Japan itself, in the region. Conversely, the remarkable success of Chinese IT firms is helping to grow China's presence there.

2. The strength of Chinese IT companies in ASEAN lies in their financial clout, technological capabilities, and know-how. Acquisition of and investment in local startups, as well as proactive technological cooperation with governments in the region, are a result of the rapid growth of Chinese IT firms in their home market and the ample cash they have available to invest. They also possess technological capabilities and know-how developed amid the fierce competition in their home market, and have become more competitive not just on price but also in terms of quality.

3. Chinese IT companies are focusing on ASEAN not only because they see huge business opportunities in the region, but also because they are looking overseas for new paths as their home market matures and their potential for further growth there shrinks. While the U.S.-China and India-China tensions have narrowed down their options in terms of countries that they can easily expand into, ASEAN countries are trying to keep their distance from these rivalries, and this is a factor that is impossible to ignore as a reason Chinese IT firms are giving the region so much attention. Given these circumstances, more and more Chinese IT companies are expected to expand their operations in ASEAN going forward.

4. Japanese companies have been unable to fully respond to the wave of digitalization in ASEAN because Japan has failed to produce any leading IT firms that rank among the world's top tech companies in terms of market capitalization, the sorts of firms that would be expected to lead the charge. However, with the proliferation of digital technology, even non-IT companies are now able to leverage digital technology. This means that there is more potential for Japanese non-IT firms to do business in ASEAN utilizing digital technology than there was in the past.

5. A promising area for Japan's non-IT firms is the problem-solving business. Despite ASEAN's rapid economic development, the region still faces many challenges, some of which could be overcome by combining Japanese experience and know-how with digital technology. Local subsidiaries of Japanese companies operating in ASEAN would likely be the key players in such ventures. However, for this scheme to work, these local units will need to take on the additional role of creating new businesses, and change their corporate structures in accordance to their new role.

Introduction

Recently, the term "digital defeat" has been heard frequently as a symbolic reference to Japan's lagging behind in digitalization. When the COVID-19 pandemic erupted in 2020, the "analog" response by the government triggered confusion in various areas, and even in the corporate sector, employees had to come into work to stamp their seals on documents, even under a state of emergency. As a result, many citizens suddenly awoke to the fact that their country had fallen behind in digitalization.

Might the impact of Japan's "digital defeat" be being felt not just domestically, but overseas as well? Notably, as digitalization progresses rapidly in ASEAN, Japanese companies have been slow to respond, and this may have led to a further decline in their presence in the region. Conversely, could the growing presence of Chinese firms in the region as they take the place of Japanese companies be because the former have been able to ride the wave of digitalization there?

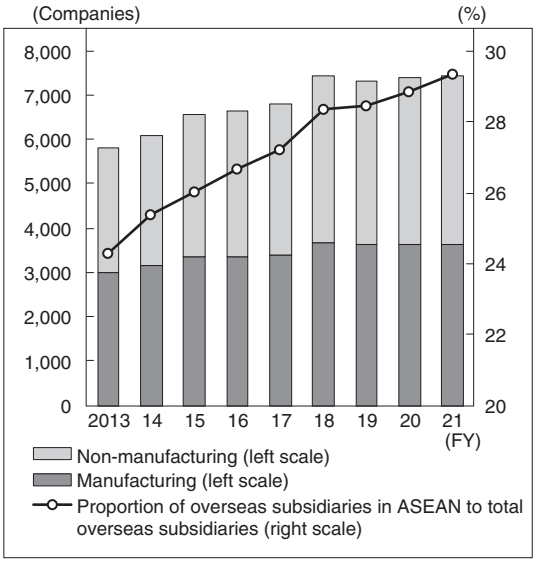
This paper seeks to answer these questions by examining how Chinese IT companies are actively contributing to the digitalization of ASEAN. In section 1, I will discuss the declining presence of Japanese firms in ASEAN, and explain that one of the reasons for this has been their inability to adequately respond to digitalization in the region. In section 2, I will look at how Chinese firms, which are increasing their presence in place of Japanese firms, are driving digitalization in the region. And in section 3, I will point out that local subsidiaries of Japanese companies can help recover from this situation by addressing local issues through the use of digital technology, but that, for this to occur, the roles and structures of these local units will need to be radically overhauled.

1. The declining presence of Japanese companies in ASEAN

(1) Changing attitudes toward Japan and Japanese firms

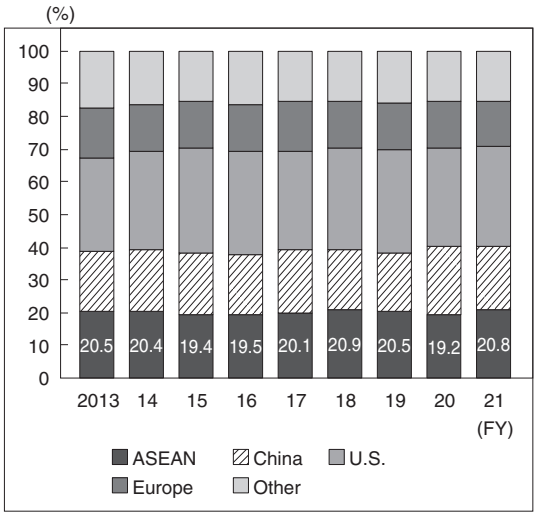
In recent years, ASEAN has become increasingly important in the overseas operations of Japanese companies. Among the total number of overseas subsidiaries of Japanese firms[(1)], those in the ten ASEAN countries increased by five percentage points from 24.3% in FY2013 to 29.4% in FY2021 (Fig. 1). The share of sales in the ten ASEAN countries in the total sales of overseas subsidiaries has remained flat at around 20% for nearly a decade (Fig. 2). However, a look at the breakdown of these sales shows that the share of local sales has been increasing, with sales to local and other companies (non-Japanese overseas companies) the driver (Fig. 3). It can be seen that Japanese companies are repositioning ASEAN from a base for exporting to Japan and the rest of the world to a base for capturing demand in the local markets.

Fig. 1 Overseas Subsidiaries of Japanese Companies in ASEAN



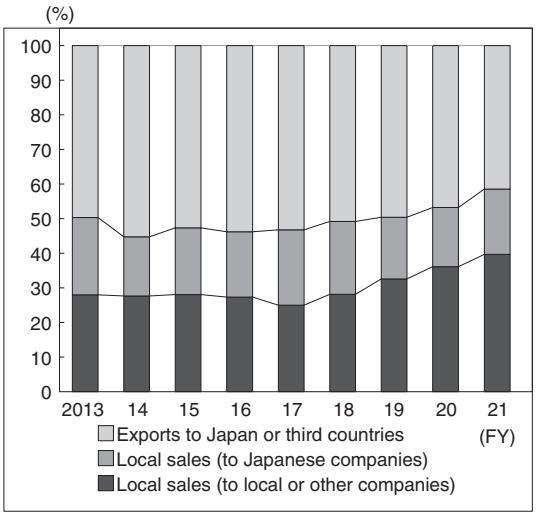
Notes: Total for the ten ASEAN member countries.
Source: Ministry of Economy, Trade and Industry, Basic Survey on Overseas Business Activities (annual)

Fig. 2 Sales of Overseas Subsidiaries of Japanese Companies: Share by country / region



Notes: Total for the ten ASEAN member countries.
Source: Ministry of Economy, Trade and Industry, Basic Survey on Overseas Business Activities (annual)

Fig. 3 Breakdown of Sales by Japanese Companies in ASEAN



Notes: Shares in total sales by Japanese companies in the ten ASEAN member countries.
Source: Ministry of Economy, Trade and Industry, Basic Survey on Overseas Business Activities (annual)

However, the relative position of Japanese firms is actually declining, as not only Japanese companies but also other foreign firms are focusing on ASEAN. A look at the share of goods imports by exporting country for the ten ASEAN nations reveals that Japan's share has dropped from 8.9% in 2014 to 6.7% in 2020[(2)]. In addition to increasing local production by Japanese firms, this likely also reflects the declining competitiveness of Japanese products. Expanding shares have been seen from China (including Hong Kong, from 21.6% to 27.4%) and the U.S. (from 10.5% to 15.7%). And regarding inward direct investment in six Southeast Asian countries[(3)], Japan's share decreased slightly from 11.2% in 2016 to 9.9% in 2021[(4)].

Under these circumstances, people in ASEAN are becoming less and less aware of Japan. This can be confirmed from the results of two surveys conducted in the region.

First, let us examine the results of a long-running public opinion poll[(5)] targeting ordinary people in ASEAN conducted by Japan's Ministry of Foreign Affairs. With this survey participants are asked, "Which of the following countries / organizations do you consider an important partner to [Your Country] currently?" Japan had been the top answer until the 2019 survey, but in the 2022 survey it dropped to second place, with China moving into first place (Table 1). As for the question, "Which of the following countries / organizations would you consider an important partner to [Your Country] in the future?" China also took the top place from Japan in the 2022 survey. Moreover, looking at the responses from each country in the 2022 survey, Japan did not come first for the above two questions in any of the countries polled (Table 2).

In response to the question, "Which of the following countries / organizations is most reliable to [Your Country]?" in the 2022 survey, first place was taken by "ASEAN," which had been newly added to the choices. Second was China, and Japan, which had previously held top position, slipped to third. By country, Japan maintained first position in Vietnam and Thailand. In Vietnam, Japan's 33% share of the votes was far ahead of ASEAN's second-place 17%, but in Thailand, Japan's 24% share was only just ahead of China's 23%.

In response to the question, "Why do you think [Response from Q3] is the most reliable country / organization?" the top answer was "good relations" (74%), which was followed by "good economic ties (investments, trade relation-

Table 1 Results of Public Opinion Poll Conducted in ASEAN

(%)

Q1 : Which of the following countries / organizations do you consider an important partner to [Your Country] currently?					
2014	2015	2017	2018	2019	2022
①Japan 65	①Japan 52	①Japan 60	①Japan 58	①China 59	①China 56
②China 48	②China 50	①China 60	②China 54	②Japan 57	②Japan 50
③U.S. 47	③U.S. 46	③U.S. 42	③U.S. 44	③U.S. 40	③U.S. 45
Q2 : Which of the following countries / organizations would you consider an important partner to [Your Country] in the future?					
2014	2015	2017	2018	2019	2022
①Japan 60	①Japan 44	①Japan 46	①Japan 47	①Japan 51	①China 48
②China 43	②China 40	②China 40	②China 43	②China 48	②Japan 43
③U.S. 40	③U.S. 39	③U.S. 38	③U.S. 38	③U.S. 37	③U.S. 41
Q3 : Which of the following countries / organizations is most reliable to [Your Country]?					
2014	2015	2017	2018	2019	2022
①Japan 33	①Japan 22	①Japan 25	①Japan 30	①Japan 28	①ASEAN 20
②U.S. 16	②U.S. 21	②China 14	②China 14	②China 15	②China 19
③China 5	③China 18	③U.S. 13	③U.S. 13	③U.S. 11	③Japan 16

Notes 1: The 2014 survey targeted persons aged 18 or over in seven ASEAN countries (Singapore, Malaysia, Thailand, Indonesia, the Philippines, Vietnam, and Myanmar), while the 2015-2019 surveys targeted persons aged 18-59 in all ten ASEAN countries.
The 2022 survey targeted persons aged 18-59 in nine countries (Myanmar was excluded).
Notes 2: For Q1 and Q2, multiple answers are possible.
Notes 3: For Q3, "ASEAN" was newly added to the choices available in the 2022 survey.
Notes 4: Shaded areas indicate Japan.
Source: Ministry of Foreign Affairs, Opinion Poll on Japan (each edition)

ship)" (60%). From this, it can be inferred that the strengthening of economic ties with China in ASEAN has been a factor in Japan's declining position.

Next, let us look at the results from a questionnaire survey conducted by the ISEAS-Yusof Ishak Institute, a research organization under the purview of the Ministry of Education of Singapore. This survey targets people employed by the government, universities, research organizations, corporations, and financial institutions, so it is reasonable to assume that they are knowledgeable to a certain degree. In addition, the survey is conducted annually, and 60-70% of respondents are aged 21-45[(6)]. In response to the question asking which country / regional organization is the most influential economic power in ASEAN, the percentage of respondents answering "China" stayed at the incredibly high level of 70-80% in all of the four years from 2019 to 2022 (Fig. 4). In 2023 this percentage declined significantly to 55.9%, which is assumed to be due to China's strict maintenance of its zero-COVID policy even as other countries relaxed their virus control measures[(7)]. During this period, the percentage of respondents answering "Japan" remained at around 5%, indicating that Japan failed to gain from the sharp drop in "China" responses in 2023.

In response to the question, "How confident are you that (country / region) will 'do the right thing' to contribute to global peace, security, prosperity, and governance?" in the same survey, Japan, at 60-70%, was way ahead of other countries in 2019-2021, but in 2022 and 2023 its score slipped to the 50-60% range. In contrast, positive responses toward the U.S., the EU, and China all climbed, closing the gap with Japan (Fig. 5). This suggests that even non-economic

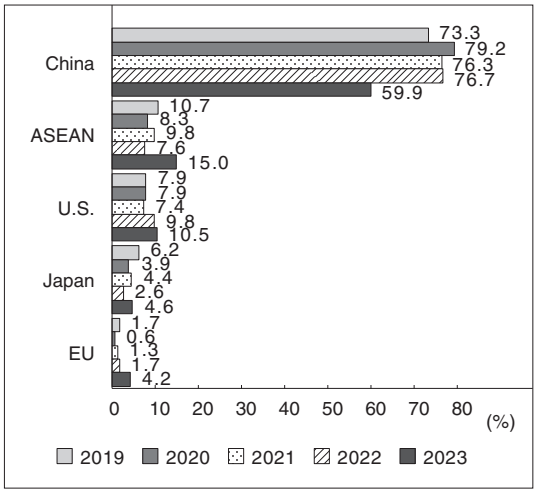
Table 2 Public Opinion Poll Conducted in ASEAN: By Country

(%)

Q1 : Which of the following countries / organizations do you consider an important partner to [Your Country] currently?										
	Overall for nine ASEAN countries									
		Brunei	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam
China	56	69	77	54	39	63	33	65	59	49
Japan	**50**	**59**	**64**	**59**	**17**	**42**	**52**	**39**	**45**	**70**
U.S.	45	23	52	46	12	37	68	58	39	71
ASEAN	43	87	17	61	14	41	48	53	26	42
Q2 : Which of the following countries / organizations would you consider an important partner to [Your Country] in the future?										
	Overall for nine ASEAN countries									
		Brunei	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam
China	48	61	71	48	33	55	27	58	46	32
Japan	**43**	**54**	**52**	**53**	**23**	**33**	**50**	**33**	**37**	**54**
U.S.	41	41	44	45	15	28	57	49	32	57
ASEAN	40	73	14	60	18	39	42	45	27	42
Q3 : Which of the following countries / organizations is most reliable to [Your Country]?										
	Overall for nine ASEAN countries									
		Brunei	Cambodia	Indonesia	Laos	Malaysia	Philippines	Singapore	Thailand	Vietnam
ASEAN	20	52	4	25	13	20	18	26	7	17
China	19	9	37	19	32	28	10	12	23	1
Japan	**16**	**7**	**26**	**18**	**5**	**5**	**21**	**2**	**24**	**33**
U.S.	14	1	19	9	6	5	39	14	15	16

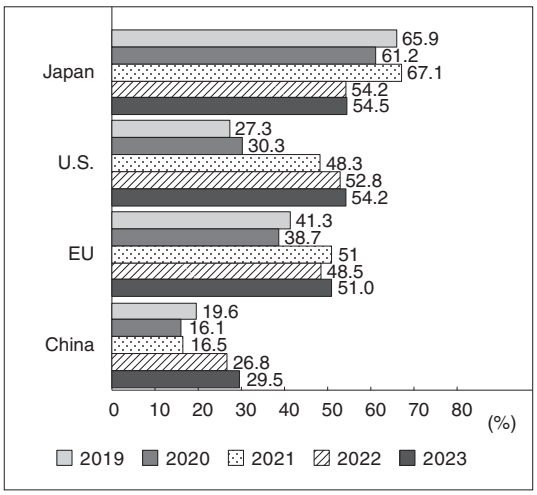
Notes 1: The survey targeted persons aged 18-59 in nine of the ten ASEAN countries (Myanmar was excluded). It was conducted in January 2022, and targeted 2,700 persons (300 in each country).
Notes 2: Shaded areas indicate the top country / organization.
Source: Ministry of Foreign Affairs, Opinion Poll on Japan in FY2021 (2022)

Fig. 4 Country / Regional Organization That Is the Most Influential Economic Power in ASEAN (Questionnaire survey results)



Notes 1: The survey targeted 1,008 persons affiliated with universities, think tanks, governments, government organizations, international organizations, corporations, etc., in the ten ASEAN member countries.
Notes 2: Figures are the percentage of responses to the question, "In your view, which country / regional organisation is the most influential economic power in Southeast Asia?"
Source: The ASEAN Studies Centre at ISEAS-Yusof Ishak Institute, "State of Southeast Asia" (annual)

Fig. 5 ASEAN's Confidence in Each Country / Region (Questionnaire survey results)



Notes 1: The survey targeted 1,008 persons affiliated with universities, think tanks, governments, government organizations, international organizations, corporations, etc., in the ten ASEAN member countries.
Notes 2: Figures are the total of those responding "very confident" or "confident" to the question, "How confident are you that (country) will 'do the right thing' to contribute to global peace, security, prosperity, and governance?"
Source: The ASEAN Studies Centre at ISEAS-Yusof Ishak Institute, "State of Southeast Asia" (annual)

confidence in Japan may be declining as its economic influence has remained low for a prolonged period of time[8].

(2) Factors behind Japan's declining presence

The first factor contributing to Japan's declining presence in ASEAN is the aforementioned drop in Japan's share of imports and direct investment. In addition, it can be pointed out that 1) Japan has been in economic stagnation for a long period of time, and the level of attention paid to Japan in the economic sphere has declined, 2) Japanese brands, especially in consumer electronics, are not such a common sight as before, having been pushed out by Chinese and South Korean brands, and 3) there are few Japanese brands in digital-related products and services, sales of which have been booming in recent years.

With the rise of the Internet and smartphones, digital-related products and services utilizing these technologies have emerged in ASEAN one after another, and digitalization has advanced in a wide range of social spheres, from shopping to payments and communications. And this trend has been accelerating, spurred by the spread of COVID-19 in 2020. According to estimates by Google and others, the market for consumer digital-related services (total for e-commerce, online travel booking, food delivery and mobility, and online media) in the six major Southeast Asian countries[9] has grown six-fold from $32 billion in 2015 to $194 billion in 2022[10]. E-commerce, in particular, has seen a remarkable expansion, from only $5 billion in 2015 to $131 billion in 2022. Digitalization has been driven by products and services for individuals, but is now spreading to businesses, with business-to-business marketplaces and tools for improving business efficiency proliferating.

Alongside local startups, IT companies from the U.S. and China are leading the digital shift. Local startups initially got going in business by copying services and business models that had been successful in the U.S., but later they made repeated tweaks to their offerings to develop their businesses in unique ways, and some of them now have joined the ranks of large companies[11]. At the same time, as part of their global expansion, major U.S. IT firms have also become deeply entrenched in ASEAN. Like many consumers around the world, consumers in ASEAN now search the Internet with Google, post on Facebook and YouTube, and watch movies and drama series on Netflix without really being conscious that these services originated in the U.S..

What sets ASEAN apart compared to other regions of the world is the success there of Chinese IT companies. As well as providing their own digital products and services, Chinese IT firms have been fueling digitalization in ASEAN by investing in startups and collaborating with large local corporations and national governments in the region. Chinese IT companies now have a presence equal to or even greater than that of their American counterparts.

On the other hand, Japanese companies are practically invisible in the digitalization of ASEAN. This is partly because Japan has failed to produce prominent IT firms that rank among the world's top tech players by market capitalization, namely America's GAFA (Google, Apple, Facebook, and Amazon) and China's BATH (Baidu, Alibaba, Tencent, and Huawei).

Even the market cap of SoftBank Group, the largest Japanese company in this field by market capitalization, is only $63.4 billion, less than 20% of Tencent's ($383.2 billion) and below 30% of Alibaba's ($225.9 billion) (as of September 21, 2023; Table 3). In addition, the market capitalization of Sea ($20.4 billion), which originated as a Singapore startup and went public in the U.S., is now tied with that of Z Holdings ($21.2 billion).

Besides SoftBank and Z Holdings, there are a number of relatively new digital-related companies in Japan, such as CyberAgent (established in 1998), Rakuten (established in 1997), DeNA (established in 1999), and Mercari (established in 2013). However, many of them have not expanded into ASEAN, which is partly why Japanese companies in this field are not well known there. One exception is LINE in Thailand[12][13].

Table 3 Large IT Companies from Four Countries (Top Two by Market Capitalization)

		Original business	Established	Headquarters	Net sales (USD million)	Net income (USD million)	Market listing (year listed)	Market cap (USD billion)
U.S.								
	Apple	PCs	1976	California	394,328	99,803	NASDAQ (1980)	2,732
	Microsoft	Software	1975	Washington (state)	211,915	72,361	NASDAQ (1986)	2,355
China								
	Tencent	Social media	1998	Shenzhen	82,484	28,068	HKEX (2004)	383
	Alibaba Group	E-commerce	1999	Hangzhou	126,491	9,548	NYSE (2014)	225
Japan								
	SoftBank Group	PC software	1981	Tokyo	49,966	−6,006	TSE (1994)	63
	Z Holdings	Search	1996 (Notes 4)	Tokyo	12,727	1,440	TSE (1997) (Notes 5)	21
Singapore								
	Sea	Gaming	2009	-	12,450	−1,658	NYSE (2017)	20
	Grab Holdings	Ride-share	2012	-	1,433	−1,740	NASDAQ (2021)	13

Notes 1: Figures for net sales and net income are for one year (Apple: to September 2022; Microsoft: to June 2023; Tencent, Sea, and Grab: to December 2022; SoftBank and Z Holdings: to March 2023).
Notes 2: Figures for market capitalization are as of September 21, 2023.
Notes 3: Figures for net sales and net income for Tencent, SoftBank Group, and Z Holdings were converted into USD at the average exchange rates for 2022 (USD1 = CNY6.72, JPY131.4, while those for the Alibaba Group were converted into USD at the rate published by the company.
Notes 4: Year of establishment of Yahoo Japan Corporation.
Notes 5: Year of OTC market listing.
Source: Companies' websites

Note that Rakuten entered the ASEAN e-commerce market relatively early, in 2009, and at one point had operations in four countries[14], before withdrawing in 2016. The company's president Hiroshi Mikitani gave "not developed the appropriate scale" as the reason for this[15].

The following three main factors can be pointed to as contributing to Japan's failure to produce major IT companies:

First, living in Japan was, overall, already very convenient, and it took a long time for digitalization needs to emerge, which delayed the establishment and growth of Japanese IT firms. In contrast, life in China was inconvenient in many ways, which caused the need for digitalization to rise and spurred the establishment and growth of Chinese IT companies.

Second, Japanese IT firms have generally targeted only their domestic market. Since the Japanese market is sizable, they can achieve a certain degree of growth even if they only operate in Japan. As a result, they were not motivated to take on the challenge of overseas expansion, which is much more difficult than domestic expansion, and thus missed opportunities for significant growth. Chinese IT companies, on the other hand, were able to grow substantially simply by targeting their huge domestic market.

Third, Japanese startups have failed to follow the "winning pattern" exhibited by successful startups in recent years. The startups that have managed to achieve significant global growth have three things in common: 1) they have a high-level vision and conceptual ability, 2) they are backed by ample investment funding, and 3) they are committed to rapid business expansion with speed as their top priority. By following this pattern, they have quickly seized market share and created conditions that make them unrivaled by other companies. Japanese startups have not been able to follow this winning pattern and dominate global markets because they have fallen short in these

three elements and, as a backdrop to this, there are few people willing to take on the challenge of starting a business, and even if there were, support systems for them remain underdeveloped.

(3) Absence of popular digital brands from Japan

ASEAN's consumers increasingly use digital-related products and services in their daily lives, yet Japanese companies offering them are few and far between in the region. This is likely to be another factor in the overall decline in the presence of Japanese companies. The results of a survey of popular brands for consumers in ASEAN also point to this. In a list of the top 50 corporate brands for customer experience[16] that was compiled based on a questionnaire survey of consumers in six major Southeast Asian countries[17] (published by advertising industry magazine *Campaign Asia-Pacific*), 16 were digital-related (Table 4 and 5). And out of the top 10, six are digital-related.

Of the five brands from ASEAN, four are digital-related, with the exception being Singapore Airlines (ranked 22nd)[18]. All four were established in the 2010s, which is also indicative of the rise of digital-related startups.

Six Chinese (including Hong Kong) brands made the top 50, which is less than the number of American (17) and European (13) ones. It should be noted, however, that five of the six companies, with the exception of Watsons (6th, drugstores, Hong Kong), are digital-related. All five companies, which are listed below, were established in the 2000s or later, have expanded into the rapidly-digitalizing ASEAN region, and have succeeded in achieving popularity among consumers.

- Lazada (4th): e-commerce site under the control of Alibaba; founded by German company Rocket Internet in 2012, acquired by Alibaba in 2016
- TikTok (26th): social media app operated by ByteDance, established in 2016
- Xiaomi (36th): smartphones, established in 2010
- Oppo (45th): smartphones, established in 2004
- Vivo (48th): smartphones, established in 2009

The large number of American and European firms reflects their long history of activity in ASEAN. There are five U.S.-based digital-related companies, the oldest being Apple, which was established in 1976, and the newest being Google (brand: YouTube) and Priceline (brand: Agoda), which were both established in 2005. This range in ages attests to the strength and depth of U.S. companies in this field. However, none of the U.S. firms were established in the 2010s or later, meaning that no new American startups that have been able to achieve success in ASEAN have emerged recently. Meanwhile, Europe, like Japan, has been unable to produce companies in the same league as GAFA and BATH, and only one European digital-related firm, Delivery Hero (headquartered in Germany), which operates the food delivery service foodpanda[19], managed to make the list.

There are four Japanese firms in the top 50[20], but none of them are digital-related. The four companies are Fast Retailing (13th, established in 1974), which operates the Uniqlo brand, Panasonic (23rd, established in 1918), Sony (24th, established in 1949)[21], and Mitsubishi Electric (46th, established in 1921), and they were all founded before the 1980s. This is because, as was the case with European firms, Japanese companies missed the wave of digitalization in ASEAN. However, Japanese firms compare unfavorably overall with European ones, as 12 non-digital-related European companies make the list.

2. Trends with Chinese IT companies in ASEAN

(1) Standout fields

What kinds of activities are Chinese IT companies conducting in ASEAN? I will discuss this below with respect to each of their main fields of

Table 4 50 Most Popular Consumer Brands in ASEAN

Ranking	Brand	Main business	Company / parent company	Headquarters	Established
1	Samsung	Consumer electronics, smartphones	Samsung Electronics	South Korea	1938
2	Shopee	E-commerce	Sea	Singapore	2015
3	Grab	Ride-share app	Grab	Singapore	2012
4	Lazada	E-commerce	Alibaba	China	2012
5	McDonald's	Food service	McDonald's Corporation	U.S.	1955
6	Watsons	Drugstores	Watsons	Hong Kong	1828
7	foodpanda	Food delivery	Delivery Hero	Germany	2014
8	Apple	IT devices, smartphones	Apple	U.S.	1976
9	Adidas	Sportswear	Adidas	Germany	1949
10	KFC	Food service	KFC Corporation	U.S.	1952
11	Nike	Sportswear	Nike	U.S.	1964
12	YouTube	Social media	Google	U.S.	2005
13	Uniqlo	Fashion	Fast Retailing	Japan	1974
14	Gojek	Ride-share app	GoTo	Indonesia	2010
15	Starbucks	Coffee chain	Starbucks Coffee Company	U.S.	1971
16	Netflix	Streaming media	Netflix	U.S.	1997
17	Dove	Toiletries	Unilever	U.K.	1957
18	The Guardian	Media	Guardian News & Media	U.K.	1821
19	Pizza Hut	Food service	Yum! Brands	U.S.	1958
20	Nivea	Toiletries	Biersdorf	Germany	1882
21	Burger King	Food service	Burger King	U.S.	1954
22	Singapore Airlines	Airline	Singapore Airlines	Singapore	1972
23	Panasonic	Consumer electronics	Panasonic	Japan	1918
24	Sony	Consumer electronics	Sony	Japan	1949
25	Levi's	Jeans	Levi Strauss	U.S.	1853
26	TikTok	Social media	ByteDance	China	2016
27	Garnier	Toiletries	Garnier	France	1904
28	H&M	Fashion	Hennes & Mauritz	Sweden	1947
29	Domino's Pizza	Pizza delivery	Domino's Pizza	U.S.	1960
30	Traveloka	Online travel booking	Traveloka	Indonesia	2012
31	LG	Consumer electronics	LG Electronics	South Korea	1947
32	Sharp	Consumer electronics	Foxconn	Taiwan	1912
33	The Body Shop	Cosmetics	Natura &Co	Brazil	1976
34	Texas Chicken	Food service	Tex's Chicken and Burgers	U.S.	1952
35	Pond's	Toiletries	Unilever	U.K.	1846
36	Xiaomi	Smartphones	Xiaomi Corporation	China	2010
37	Booking.com	Online travel booking	Booking Holdings	U.S.	1996
38	Gucci	Fashion	Kering Group	Italy	1921
39	Popeyes	Food service	Popeyes Louisiana Kitchen	U.S.	1972
40	Agoda	Online travel booking	Priceline.com	U.S.	2005
41	Philips	Consumer electronics	Koninklijke Philips	Netherlands	1891
42	L'Oreal	Cosmetics	L'Oreal	France	1909
43	Disney	Entertainment	Walt Disney Company	U.S.	1923
44	Innisfree	Cosmetics	Amore Pacific	South Korea	2000
45	Oppo	Smartphones	Oppo Electronics	China	2004
46	Mitsubishi Electric	Consumer electronics	Mitsubishi Electric	Japan	1921
47	Maybelline	Cosmetics	L'Oreal	France	1915
48	Vivo	Smartphones	Vivo	China	2009
49	Olay	Toiletries	Procter & Gamble	U.S.	1952
50	Chanel	Fashion	Chanel	France	1910

Notes 1: The survey targeted consumers aged 16 or over in Singapore, Malaysia, Thailand, Indonesia, the Philippines, and Vietnam. The brands were ranked after a process comprising three stages: 1) Consumers were asked to name a brand they believe offers the best customer experience (CX). 2) From the names that came up, brands operating in at least three of the six countries surveyed were selected. 3) Consumers were asked to rate the brands selected based on five dimensions of CX: quality, buying experience, customer service, advocacy (support / protection), and brand touchpoints.
Notes 2: Shaded areas indicate brands for digital-related products and services.
Source: Prepared by JRI based on Campaign Asia-Pacific, Milieu Insight, "Top 50 Brands for Customer Experience," 2023

activity:

(a) Smartphones

Chinese-branded budget smartphones began to be sold in ASEAN in the 2010s, and this contributed to the proliferation of smartphones in the region. As smartphones came into the hands of broader segments of society, this spurred the emergence of various Internet services, such as e-commerce, that were designed specifically with smartphones in mind. According to a 2014 article in *The Straits Times* newspaper, Xiaomi's lowest-end model was selling for 40% the price of a similar Samsung handset, while its highest-end model was selling for 30% of the comparable Samsung phone[(22)].

TAble 5 Breakdown of 50 Most Popular Consumer Brands in ASEAN by Headquarters Location

Date of foundation	No. of companies	U.S.	Europe	China	Southeast Asia	Japan	South Korea	Other
Total <of which digital>	50 <16>	17 < 5>	13 < 1>	6 < 5>	5 < 4>	4 < 0>	3 < 1>	2 < 0>
1980s or earlier <of which digital>	35 < 2>	13 < 1>	12 < 0>	1 < 0>	1 < 0>	4 < 0>	2 < 1>	2 < 0>
1990s <of which digital>	2 < 2>	2 < 2>	0 < 0>	0 < 0>	0 < 0>	0 < 0>	0 < 0>	0 < 0>
2000s <of which digital>	5 < 4>	2 < 2>	0 < 0>	2 < 2>	0 < 0>	0 < 0>	1 < 0>	0 < 0>
2010s <of which digital>	8 < 8>	0 < 0>	1 < 1>	3 < 3>	4 < 4>	0 < 0>	0 < 0>	0 < 0>

Notes 1: Sorted out the brands by headquarters location of the company / parent company.
Notes 2: <of which digital> refers to companies providing digital-related product / service brands.
Notes 3: China includes Hong Kong.
Source: Prepared by JRI based on Campaign Asia-Pacific, Milieu Insight, "Top 50 Brands for Customer Experience," 2023

Chinese-branded smartphones were initially inferior to those from developed countries. Around that time, JETRO (Japan External Trade Organization) interviewed consumers in Yangon, Myanmar, and found that many had a negative perception of Chinese-made cellphones. While high-income consumers did not want to use them, many low-income earners said that they would buy them, but for the sole reason that only Chinese phones were in a price range that they could afford[23]. However, Chinese manufacturers gradually improved their performance and functionality while keeping their prices low, and they were able to shed their "cheap and nasty" reputation.

As many as four of the top five companies in terms of share of smartphone shipments in ASEAN are Chinese brands (Table 6). Note that realme (headquartered in Shenzhen), the fifth-ranked firm, is an emerging force that began its expansion into ASEAN just six months after its establishment in May 2018.

Table 6 Share of Smartphone Shipments in Five ASEAN Countries (January-March 2023)

Brand	Headquarters	Share (%)
Samsung	S. Korea	21
Oppo	China	20
Vivo	China	14
Xiaomi	China	14
realme	China	12
Apple	U.S.	7
Other	-	12

Notes: Total units shipped in five countries (Malaysia, Thailand, Indonesia, the Philippines, and Vietnam).
Source: "Apple shines in a declining Southeast Asia smartphone market", Counterpoint Technology Market Research (press release), May 15, 2023

(b) E-commerce

In the e-commerce space, Alibaba acquired Lazada[24], a startup with a leading market share at the time, in 2016, keeping the brand name intact. Although numerous domestic and foreign companies have entered the ASEAN e-commerce market and competition is fierce, Lazada has maintained its top market share thanks to multiple capital infusions from its parent company (Fig. 6). In 2021, ByteDance added an e-commerce feature called TikTok Shop to TikTok, and started rolling it out across ASEAN. The service quickly expanded its market share.

Alibaba succeeded in China by adopting an "iron triangle" strategy, i.e., focusing on three areas: e-commerce, payments, and logistics. When the company was founded in 1999, e-commerce was in its infancy in China, and in addition, systems for payments and logistics were not well developed, which created problems. Online sellers could neither receive payments smoothly from

Fig. 6 Top Companies for Share of the E-Commerce Market in (2022) Six ASEAN Countries

Notes 1: Based on GMV (gross merchandise volume)
Notes 2: Shopee: online services for consumers, under the control of Sea (headquartered in Singapore).
Lazada: under the control of Alibaba (headquartered in China).
TikTok Shop: e-commerce feature integrated into TikTok, operated by ByteDance (headquartered in China).
Bukalapak: headquartered in Indonesia. Listed on the Indonesia Stock Exchange in 2021.
Blibli: operated by Global Digital Niaga, a subsidiary of the Djarum Group (headquartered in Indonesia), a conglomerate with a focus on tobacco products.
Tiki: headquartered in Vietnam. Independent platform founded in 2010.
Sendo: major IT company, under the control of FPT (headquartered in Vietnam).
Notes 3: Shadowed names (Lazada and TikTok Shop) are run by Chinese companies.
Source: Momentum Works, "Ecommerce in Southeast Asia 2023" 2023 (https://momentum.asia/product/ecommerce-in-southeast-asia-2023/)

buyers nor deliver goods smoothly to buyers, and it was these problems that inspired the iron triangle strategy. Alibaba pursued the same strategy when it entered the ASEAN market because the region was grappling with similar payment- and logistics-related problems to those experienced in China, and the firm now has a strong presence in these three areas. More recently, Alibaba has leveraged the cloud computing and AI technologies it has developed in the course of processing the vast volume of transactions in its e-commerce business to launch cloud services and AI businesses, and it is also focusing on these in ASEAN.

Among large investments and construction contracts worth $100 million or more by Chinese companies (list compiled by the American Enterprise Institute and the Heritage Foundation), Alibaba accounted for the largest number of digital-related deals in ASEAN. And the investments are not limited to e-commerce, but also encompass payments, logistics, and AI (Table 7).

(c) Startup investment

In addition to operating their own digital-related businesses in ASEAN, Chinese IT firms have also been enthusiastic investors in local startups. Local startups also perceive advantages from accepting investments from Chinese IT firms, as they benefit not only from the funding, but also from the provision of various technologies and know-how. Of the eight unicorns for which exits have been completed in ASEAN so far, as many as six, if Alibaba's acquisition of Lazada is included, have received investment funding from Chinese IT companies (Table 8). Investment in these eight companies by Japanese firms (excluding investment companies) is limited to investments in Grab by Mitsubishi UFJ Financial Group and Toyota Motor.

Investment money from Chinese IT companies is also flowing into local enterprises that are already unicorns. Alibaba has made major investments of over $100 million in each of Ninja Van (logistics, headquartered in Singapore), DANA (digital payments, headquartered in Indonesia), and Mynt (digital payments, headquartered in the Philippines), while Tencent has also made a big investment of more than $100 million in PatSnap (SaaS for patent search and analysis, headquartered in Singapore) (see Table 7 above).

(d) Involvement in 5G network development

Since 5G (5th generation mobile communication systems) started to become available for com-

Table 7 Overview of Digital-related Large-Scale Investments and Construction Contracts by Chinese Companies in Major ASEAN Countries

Target country	Year	Field	Chinese companies	Amount (USD million)	Investee or partner	Startup
Singapore	2009	Communications	Huawei Technologies	490	Nucleus Connect	
	2014	Logistics	Alibaba	210	Singapore Post	
	2015	Semiconductors	Jiangsu Changjiang, Semiconductor Manufacturing International, National IC Fund	1,660	STATS ChipPAC	
	2015	Logistics	Alibaba	150	Singapore Post	
	2016	E-commerce	Alibaba	1,000	Lazada	Yes
	2017	E-commerce	Alibaba	1,000	Lazada	
	2017	Ride-share	Didi Chuxing	500	Grab Taxi	Yes
	2017	Entertainment	Tencent	470	Sea	Yes
	2018	Electronic devices	DCP Capital	190	MFS Technology	
	2018	AI	Alibaba	2,000	Alibaba-NTU Singapore Joint Research Institute	
	2019	IT	China Mobile Communications	120	(Data center)	
	2020	Real estate	Alibaba	600	AXA Tower	
	2021	SaaS	Tencent-led consortium	140	PatSnap	Yes
	2021	Logistics	Alibaba	200	Ninja Van	Yes
	2022	E-commerce	Alibaba	380	Lazada	
	2022	E-commerce	Alibaba	610	Lazada	
	2022	E-commerce	Alibaba	340	Lazada	
Malaysia	2015	Semiconductors	Nantong Fujitsu Microelectronics	370	AMD	
	2018	Semiconductors	Tianshui Huatian Technology	440	Unisem	
	2022	IT	GDS	320	(Data center)	
	2022	Commuter IC cards	Alibaba	100	Touch'n Go	
Thailand	2014	Communications	China Mobile Communications	880	True Corp	
	2016	Communications	China Aerospace Science and Technology	210	-	
	2017	E-commerce	JD.com	230	Central Group, Provident	
	2018	Logistics	Alibaba	320	(Logistics information processing center)	
Indonesia	2017	Ride-share	Tencent	150	Go-Jek	Yes
	2017	Ride-share	JD.com	100	Go-Jek	Yes
	2017	E-commerce	Alibaba	500	Tokopedia	Yes
	2019	Ride-share	Tencent, JD.com	340	Go-Jek	Yes
	2022	Communications	Alibaba	100	Smartfren Telecom	
	2022	Digital payments	Alibaba	300	DANA	Yes
Philippines	2012	Communications	Huawei Technologies	350	Globe Telecom	
	2017	Digital payments	Alibaba	190	Mynt	Yes
	2019	Communications	China Telecom	760	Mislatel	
	2020	Communications	Huawei Technologies	190	(Communication line equipment)	
Vietnam	2013	Communications	CDH	110	Mobile World	
	2019	Electronics / communications equipment	GoerTek Precision Industry	260	(Factory construction)	
	2021	E-commerce	Alibaba	210	Masan	
	2022	Electronics / communications equipment	BYD	270	(Factory construction)	
Cambodia	2010	Communications	Huawei Technologies	200	Mobitel	
Myanmar	2018	Communications	China National Machinery Industry (Sinomach), Shanghai Electric	380	Eco Friendly Tower Company	

Notes 1: Of investments / construction worth $100 million or more by Chinese companies in the period 2005-2022, those related to digital products / services, or investments / construction worth $100 million or more by Chinese IT companies.
Notes 2: Lazada ceased to be a startup following its acquisition by Alibaba in 2016.
Source: American Enterprise Institute and the Heritage Foundation, "China Global Investment Tracker" (https://www.aei.org/china-global-investment-tracker/)

mercial services worldwide in the late 2010s, Chinese communications giants have been involved in the development of base stations and networks in ASEAN, with Western companies also taking part in the projects. In Cambodia, which has close ties with China, the Ministry of Post and Telecom-

Table 8 ASEAN Unicorns for Which Exits Completed

Company	Headquarters	Original business	Established	Became unicorn	Exit year (method)	Investment by Chinese IT firms
Razer	Singapore	Online gaming	2005	2014	2017 (IPO, Hong Kong)	-
Lazada	Singapore	E-commerce	2012	2014	2016 (acquired by Alibaba)	(Alibaba)
Grab	Singapore	Ride-share service	2012	2014	2021 (IPO as SPAC, U.S.)	Didi Chuxing, Tencent
Garena (now Sea Limited)	Singapore	Online gaming	2009	2015	2017 (IPO, U.S.)	Tencent
Gojek (now GoTo Group)	Indonesia	Ride-share service	2010	2016	2021 (merged with Tokopedia)	Tencent
Bukalapak	Indonesia	E-commerce	2010	2017	2021 (IPO, Indonesia)	Ant Financial
Tokopedia (now GoTo Group)	Indonesia	E-commerce	2009	2018	2021 (merged with Gojek)	Alibaba
OVO	Indonesia	Digital payments	2017	2019	2021 (acquired by Grab)	-

Notes 1: Unicorn: unlisted company with an estimated value of over $1 billion.
Notes 2: GoTo Group listed on the Indonesia Stock Exchange in 2022.
Source: Prepared by JRI based on data from CB Insights (https://www.cbinsights.com/research-unicorn-companies), information from various websites, etc.

munications and Huawei concluded an agreement that would see the firm help develop a 5G network there (2019)[25]. Based on this deal, Cambodia's top three telecom operators in terms of domestic market share are now working with Huawei on the 5G rollout in the country.

In other countries, too, Chinese companies such as ZTE and Huawei can count themselves among the suppliers of 5G products and services offered by major telecom operators working on the development of 5G networks, alongside Nordic firms like Ericsson and Nokia and U.S. players such as Qualcomm[26] (Table 9). Against the backdrop of the intensifying rivalry between the U.S. and China, there is a growing trend among developed countries to exclude Chinese companies in the development of 5G networks, but the only ASEAN country that has clearly articulated support for this is Vietnam.

Although both of Singapore's major telecom operators, Singtel and Antina, did not choose Chinese companies as network equipment suppliers, Information and Communications Minister Iswaran said in an interview that they "never explicitly excluded any vendor[27]." Meanwhile, the Malaysian government established the state-owned enterprise Digital Nasional Berhad (DNB) in 2021 to develop a 5G network, and had given the new company a monopoly. However, there are now plans to change this policy and shift to a two-company structure starting in 2024. The U.S. and EU governments have reportedly sent a letter to the Malaysian government warning that if Huawei wins the bid for this second network development round, it could have a negative impact on the country's security and inward investment[28]. In response, the Malaysian government announced that it would not prohibit Chinese involvement[29].

(e) Cooperation with ASEAN governments

More and more governments in ASEAN are seeking the cooperation of Chinese IT companies to advance digitalization in their countries. Huawei, for example, besides working with the Cambodian government on the development of a 5G network, is also doing deals with various other countries to help construct data centers, build smart cities, and develop IT human resources. Its partners are not only governments but also telecom operators, universities, and other quasi-public organizations, and its expanding ties in Malaysia, Thailand, and Indonesia are particularly noteworthy (Table 10). For example, in the area of IT human resource development, it is collaborating with a non-governmental organization in Malaysia, several universities in Thailand, and a government organization in Indonesia.

Alibaba also frequently works with ASEAN governments, with cooperation encompassing such areas as the promotion of cross-border e-commerce and IT human resource development (Table 11). To give one example, Alibaba signed

Table 9 Main Telecom Operators and Equipment Suppliers Working to Develop 5G Networks in Major ASEAN Countries

	Telecom operator	Remarks	Suppliers of 5G-related products / services
Singapore	Singtel	1st for market share	Ericsson, Qualcomm
	Antina	Joint venture for 5G development by StarHub (2nd for market share) and M1 (3rd for market share)	Nokia
Malaysia	Digital Nasional Berhad (DNB)	State-owned enterprise established for 5G infrastructure development	Ericsson
Thailand	TRUE	1st for market share; China Mobile has 18% stake	Ericsson, Nokia, ZTE
	AIS	2nd for market share	Qualcomm, ZTE
Indonesia	Telkomsel	1st for market share	Ericsson, ZTE
	Indosat Ooredoo Hutchison	2nd for market share	Ericsson, Huawei, IBM, Nokia, ZTE
	XL Axiata	3rd for market share	Ericsson, Huawei
Philippines	Globe Telecom	1st for market share	Hewlett Packard Enterprise, Huawei, Nokia
	PLDT	2nd for market share	Cisco Systems, Huawei
Vietnam	Viettel	1st for market share	AMD, Infinera, Samsung, Qualcomm
	VinaPhone	2nd for market share	Casa Systems, Nokia
	MobiFone	3rd for market share	Nokia, Samsung
Cambodia	Smart Axiata	1st for market share, under the control of Axiata Group (Malaysia)	Huawei
	Metfone	2nd for market share, under the control of Viettel (Vietnam)	Huawei
	Cellcard	3rd for market share	Huawei, Nokia, ZTE

Notes 1: Where abbreviated names of telecom operators are used, their official names are shown below.
Singtel: Singapore Telecommunications, TRUE: True Corporation, AIS: Advanced Info Service, Telkomsel: Telekomunikasi Selular, PLDT: Philippine Long Distance Telephone, Viettel: Viettel Telecom Corporation, VinaPhone: Vietnam Telecom Services Company, Mobifone: Mobifone Telecommunications Corporation, Cellcard: CamGSM
Notes 2: Headquarter locations of 5G-related product / service suppliers are as shown below.
Ericsson: Sweden, Qualcomm: U.S., Nokia: Finland, ZTE: China, Huawei: China, IBM: U.S., Hewlett Packard Enterprise: U.S., Cisco Systems: U.S., AMD: U.S., Infinera: U.S., Samsung: South Korea, Casa Systems: U.S.
Source: Prepared by JRI based on various news articles

an MOU with the Thai government in April 2018 for a strategic partnership to support the government's long-term vision, "Thailand 4.0." The key aspects of the partnership are as follows[30]:

- Establishment of a "smart digital hub" within the Eastern Economic Corridor (EEC) to stimulate cross-border trade of goods between Thailand and China and other countries
- Collaboration by Alibaba Business School (established jointly by Alibaba and Hangzhou Normal University) with the Department of Industrial Promotion (DIP) of the Thai Ministry of Industry and the Department of International Trade Promotion (DITP) of the Thai Ministry of Commerce to provide digital human resources education in Thailand
- Collaboration by Alibaba Business School with DIP and DITP to provide education to SMEs to improve their e-commerce skills
- Collaboration by Fliggy, an online travel service platform operated by Alibaba, with the Tourism Authority of Thailand to promote smart tourism (i.e., tourism using digital technology); Promotion of exports of Thai agricultural products such as rice and fruits to China

For Chinese IT companies, such technological cooperation is a strategy both for gaining acceptance in the country concerned and for exploring business opportunities. For ASEAN countries, on the other hand, such collaboration means that a foreign, private-sector company is involved to a large extent in the development of their national industries and human resources in the digital field. For the governments, the digitalization of their societies and economies is advancing rapidly and it is not easy for them to keep up in terms of policy, so cooperation from Chinese IT companies has generally been favorably received, and in many cases, governments have proactively requested cooperation from them.

(2) Strengths of Chinese IT companies

The moves by Chinese IT firms in ASEAN demonstrate that they have strong financial clout, technological capabilities, and know-how. Their acquisitions of and investments in local startups, as well as their provision of technological assistance, in ASEAN have been made possible because their success in the Chinese domestic market has given them plenty of money to spend. In addition to this, Chinese IT companies have improved their competitiveness not only in terms of price but also in terms of quality by honing their technological capabilities and know-how in the face of fierce competition in their home market. And the development of IT human resources in ASEAN by Huawei and Alibaba has been made possible because they possess advanced technology in the IT space. In ASEAN, the quality requirements for smartphones and data centers have risen as income levels increase. If Chinese IT companies had relied solely on low prices as their strength, it is unlikely that they would have been able to adapt to this shift.

Even so, why are Chinese IT firms investing

TAble 10 Huawei's Key Partnerships with Governments and Government Related Orginizations in Three ASEAN Countries

<Malaysia>

Announced	Partners in Malaysia		Details
2014	Ministry of Higher Education	Government organization	Launched the "Seeds for the Future" program to improve the digital skills of university students
2017	Sarawak (state)	Local government	Signed an MOU to provide support with digital transformation (DX)
2019	Malaysia Airports Holdings	Airport operator	Signed an MOU to provide support with DX at airports
	Maxis	Telecom operator	Agreed to provide 5G equipment and services
2020	Maxis	Telecom operator	Signed an MOU on cooperation with the TechCity project to construct a 5G network in Kuala Lumpur
	Telekom Malaysia	Telecom operator	Formed a partnership for interoperability testing of 5G network in Langkawi
	Telekom Malaysia	Telecom operator	Signed an MOA to provide cloud services and AI
	Sunway, Celcom Axiata	Real-estate construction, telecom operator	Signed an MOU to help build a smart town, "Sunway City Kuala Lumpur"
	SME Association of Malaysia	Industry organization	Signed an MOU to deploy "eService Hub," a platform for promoting DX among members
2021	Asia-Europe Institute of Universiti Malaya	University	Agreed on a partnership to create an advanced digital economy by 2030
	SME Association of Malaysia, Malaysian National Technology Association	Industry organization	Agreed to provide training to improve digital skills at 10,000 SMEs over a period of one year
	Sarawak Multimedia Authority, Sarawak Information Systems, Sarawak Digital Economy Corporation, Centre of Technical Excellence Sarawak	Local government organization	Signed four MOUs based on the "Kuching Smart City Masterplan" to promote digitalization in Kuching, Sarawak
	Women Leadership Foundation	Non-governmental organization	Signed an MOU to improve the digital skills of women
	Celcom Axiata, CyberSecurity Malaysia	Telecom operator, government organization	Established the "5G Cyber Security Test Lab (My5G)" to strengthen cybersecurity
2022	Maxis	Telecom operator	Formed a partnership for the deployment of Massive-MIMO (Notes 2)
	Celcom Axiata	Telecom operator	Signed an MOU for the establishment of the "Digital Service Experience Center" to enhance customer experience on the digital front
2023	CelcomDigi	Telecom operator	Formed a partnership for integrating and improving the functionality of 4G networks in conjunction with the merger of Celcom and Digi (December 2022)

Notes 1: MOU (Memorandum of Understanding), MOA (Memorandum of Agreement)
Notes 2: Elemental technologies for next-generation communications
Source: Prepared by JRI based on various news articles

<Thailand>

Announced	Partners in Thailand		Details
2017	—	—	Opened the world's seventh "OpenLab" in Bangkok with the aim of developing new products and IT human resources
	Ministry of Digital Economy and Society, Ministry of Science and Technology	Government organization	Published "Insights on Digitalization of Thailand Industry," a white paper calling for the utilization of digital technology in agriculture and tourism as well as for dealing with the aging of society
	National Science and Technology Development Agency, National Innovation Agency	Government organization	Signed an MOU for joint research and the establishment of a startup ecosystem to promote the Thailand 4.0 concept
2018	—	—	Began providing a public cloud service within the EEC (Notes 2)
2019	Ministry of Digital Economy and Society, Digital Economy Promotion Agency	Government organization	Published "Smart City Framework and Guidance for Thailand," a white paper calling for a smart city to be established in Phuket
	—	—	Established the "Huawei ASEAN Digital Academy (Thailand)" to train over 100,000 IT personnel in five years
2020	AIS	Telecom operator	Partnered with AIS to launch the first commercial 5G service by a mobile carrier in Thailand
	Digital Economy Promotion Agency	Government organization	Opened the "5G Ecosystem Innovation Center" within the Digital Economy Promotion Agency
	Siriraj Hospital	Hospital	Signed an MOU concerning the smartification of the hospital using 5G systems
	Chiang Mai University	University	Signed an MOU to establish an ICT course for students
2021	Chiang Mai University	University	Signed an MOU for utilizing 5G and other cutting-edge digital technologies to create a smart university over five years
	Department of Medical Services	Government organization	Signed a two-year MOU to promote medical services utilizing 5G, AI, Big Data, and cloud computing at two hospitals: the National Cancer Institute and Rajavithi Hospital
	National Broadcasting and Telecommunications Commission, Siriraj Hospital	Government organization, hospital	Launched the "Siriraj World Class 5G Smart Hospital" project to deploy technologies such as 5G, cloud computing, and AI at the hospital
2022	Khon Kaen University	University	Signed an MOU to improve the digital skills of students and teaching staff
	Banpu	Coal production / mining company	Huawei supplied equipment and provided technical assistance during the construction of an offshore floating solar power generation facility in Rayong province
	National Cyber Security Agency	Government organization	Signed an MOU to improve the cybersecurity skills of IT personnel in Thailand
	Digital Economy Promotion Agency	Government organization	Organized "Spark Ignite 2022," an accelerator contest for startups
	Ministry of Digital Economy and Society, Ministry of Higher Education, Science, Research and Innovation	Government organization	Published "Thailand Digital Talent Development," a white paper on developing digital human resources
	Several government ministries, agencies, universities, and industrial companies	—	Formed a partnership for the formulation of policies for developing IT human resources
2023	UBP Energy Development	Electric power	Signed an MOU for the complete digitalization of PV systems (Notes 3)
	Khon Kaen University	University	Signed an MOU to establish the "Huawei ICT Academy Support Center" to develop IT human resources

Notes 1: MOU (Memorandum of Understanding)
Notes 2: EEC (Eastern Economic Corridor): Economic zone focused on the promotion of investment in specific industries such as next-generation automobiles, healthcare, aviation, and high-tech sectors (e.g., robots), and the development of land, sea, and air infrastructure.
Notes 3: PV systems: solar power generation systems.
Source: Prepared by JRI based on various news articles

<Indonesia>

Announced	Partners in Indonesia		Details
2019	National Cyber and Crypto Agency	Government organization	Signed an MOU to develop human resources to strengthen cybersecurity
2020	Directorate General of Higher Education, Research, and Technology	Government organization	Signed an MOU to provide e-learning platforms for universities
	Agency for the Assessment and Application of Technology	Government organization	Signed an MOU for technology transfer in three fields: AI, cloud computing, and 5G networks
	Indosat Ooredoo	Telecom operator	Formed a partnership for the construction of a 5G transport network
	—	—	Announced "I Do Contribute," a program for developing 100,000 digital personnel within five years (Notes 2)
2021	—	—	Established the "Huawei ASEAN Academy Engineering Institute" in Jakarta to develop ICT human resources
	National Cyber and Crypto Agency	Government organization	Renewed the MOU signed in 2019 to develop cybersecurity personnel
2022	XL Axiata (mobile communications)	Telecom operator	Signed an MOU for a project called "5G City" in Bandung and Bali
2023	Indosat Ooredoo Hutchison (Notes 3)	Telecom operator	Signed an MOU for SRv6 verification and commercialization (Notes 4)
	Ministry of Education, Culture, Research and Technology	Government organization	Collaborating to promote the use of AI and cloud services in education

Notes 1: MOU (Memorandum of Understanding)
Notes 2: Part of the "I Do" campaign that Huawei announced it would be conducting in Indonesia in response to the COVID pandemic in 2020. Other components are "I Do Care," which aids those who suffered during the COVID pandemic, "I Do Collaborate," which drives digital transformation through collaboration with government and business, and "I Do Create," which promotes the use of AI, Big Data, and cloud computing by governments and corporations.
Notes 3: In January 2022, Indosat, which conducted business as Indosat Ooredoo, merged with Hutchison 3 Indonesia, with the newly formed company named Indosat Ooredoo Hutchison.
Notes 4: SRv6 (Segment Routing over IPv6): segment routing using IPv6 extension headers, making networks more efficient and increasing functionality.
Source: Prepared by JRI based on various news articles

so much money and effort to focus on ASEAN? It is likely that they not only expect to see further expansion of digital-related industries and business opportunities in the region, but also are looking overseas for new pathways as their domestic market matures and their potential for further growth there shrinks. While the U.S.-China and India-China tensions have narrowed down their options in terms of countries that they can easily expand into, ASEAN countries are trying to keep their distance from these rivalries, and this is one reason Chinese IT firms are giving the region so much attention. Given these circumstances, more and more Chinese IT companies are expected to expand their operations in ASEAN going forward.

(3) Recent developments: establishment and success of J&T Express[31]

As a recent development involving Chinese companies in ASEAN, it is worth mentioning the example of a new company that was born locally, deriving from a Chinese IT firm. That new company is J&T Express, a logistics startup launched by the head of a local subsidiary of Oppo.

Oppo is a Chinese smartphone brand that is popular in ASEAN, being ranked 45th in the aforementioned top 50 most popular brands. Jet Jie Li, also known as Jet Lee, the Chinese-born former CEO of Oppo's Indonesian subsidiary, left Oppo in 2015 to establish and become CEO of J&T Express, a home delivery business for the e-commerce sector, with the aim of resolving logistical issues[32] he had encountered in the course of his work. The cofounder is Tony Chen, founder and CEO of Oppo, and they used the initials of their first names for the name of the new company. After rapidly growing its business in Indonesia, J&T Express expanded into six ASEAN countries, starting with the opening of a Vietnam office in 2018, and has now seized the highest share, at 20%, of the parcel delivery market in the region (Fig. 7). Customers include major e-commerce

Table 11 Alibaba Group's Key Partnerships with Governments in Six ASEAN Countries

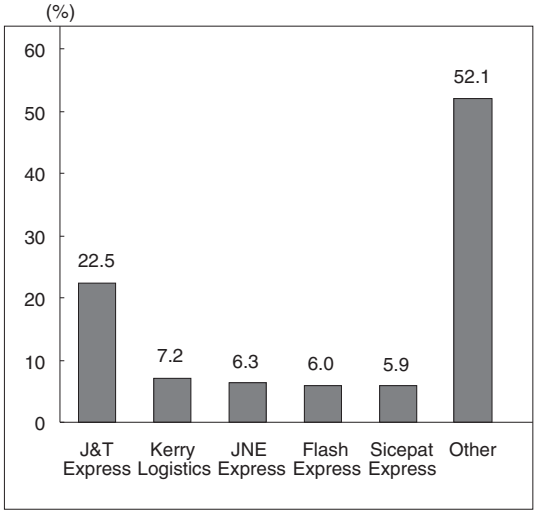
Singapore	Jun. 2016	Temasek and GIC invested a total of $1 billion in Alibaba.
	Sep. 2017	Alipay signed an MOU with the Singapore Tourism Board to promote visits by Chinese tourists.
	Apr. 2019	Alibaba signed an MOU with the Singapore Tourism Board to promote visits by Chinese tourists.
	May 2019	Alibaba Cloud launched the "China Gateway Program" in collaboration with the Infocomm Media Development Authority and Enterprise Singapore to help Singaporean and neighboring-country businesses expand into China.
	Jun. 2023	Alibaba signed an MOU with the Infocomm Media Development Authority and Enterprise Singapore to assist Singaporean SMEs with cross-border e-commerce.
	Jun. 2023	Alibaba Cloud formed a partnership with the Urban Redevelopment Authority (URA) at "i Light Singapore," an event organized by the URA, to measure and analyze carbon emissions.
Malaysia	Oct. 2014	Alibaba and the Malaysia External Trade Development Corporation (MATRADE) launched the "eTrade Programme" to promote cross-border e-commerce by SMEs.
	Nov. 2016	Chairman Jack Ma assumed the role of an advisor to the Malaysian government (focusing on the digital economy).
	Mar. 2017	Prime Minister Najib announced the establishment of the Digital Free Trade Zone (DFTZ) with Chairman Jack Ma. Alibaba and the Malaysia Digital Economy Corporation (MDEC) signed four DFTZ-related MOUs.
	May 2017	Alibaba, the MDEC, and the City of Hangzhou signed an MOU to promote cross-border e-commerce between Malaysia and Hangzhou.
	Jan. 2018	Alibaba Cloud formed a partnership with the MDEC and the city of Kuala Lumpur to initiate the "Malaysia City Brain" project using Alibaba Cloud's "City Brain" smart city solution.
	Oct. 2021	Alibaba Cloud was designated as a cloud service provider by the Malaysian government.
Thailand	Dec. 2016	Alibaba and the Thai Ministry of Commerce signed a letter of intent to work together to develop e-commerce in Thailand.
	Apr. 2018	Alibaba and the Thai government signed an MOU for a strategic partnership to support "Thailand 4.0" by establishing a "Smart Digital Hub" in the Eastern Economic Corridor (EEC) to enhance cross-border trade in goods, providing education to develop digital human resources and improve the e-commerce skills of SMEs, promoting smart tourism and the export of Thai agricultural products to China, etc.
	Dec. 2022	The "Digital Free Trade Hub" being jointly developed in the EEC by Alibaba and the Thai government began trial operations.
Indonesia	Jul. 2016	Alibaba and the Ministry of Trade jointly launched "Inamall" on Alibaba's "Tmall Global" to sell products from Indonesian SMEs directly to Chinese consumers.
	Sep. 2016	Chairman Jack Ma assumed the role of an advisor to the Indonesian government (focusing on e-commerce).
Philippines	Oct. 2017	Chairman Jack Ma paid a courtesy visit to President Duterte, who instructed his government to explore potential areas of collaboration with Alibaba.
	Jan. to Feb. 2018	A delegation of government officials and private-sector executives from the Philippines underwent a program at Alibaba Business School in Hangzhou to deepen their understanding of digital technology.
	Feb. 2018	The Philippine government requested assistance from Alibaba to strengthen governance capabilities through enhanced technology and to build an inclusive financial system to support SMEs.
Vietnam	Nov. 2017	Chairman Jack Ma met with Prime Minister Phuc, who requested Alibaba's cooperation in improving the e-commerce skills of Vietnamese businesses and increasing access to e-commerce for the nation's citizens.
	Mar. 2022	Working with Alibaba, the Vietnam Trade Promotion Agency announced the opening of the "Vietnam Pavilion," a booth dedicated to Vietnamese products, on Alibaba's e-commerce platform (March 2022).

Notes: MOU (Memorandum of Understanding)
Source: Prepared by JRI based on various news sources

companies such as Shopee, Lazada, and Tokopedia. The company has also expanded into China, Latin America, and the Middle East. It joined the ranks of unicorns in 2021 and went public in Hong Kong in October 2023.

J&T Express entered China in 2020 and successfully re-drew the landscape of the country's parcel delivery market, which had been regarded as having no space for new entrants. In addition to pursuing a low-cost strategy, J&T Express acquired local parcel delivery business operators[33] and secured a deal with e-commerce giant Pinduoduo[34], which became the main factors behind its success. By 2022, the company had captured 10% of the domestic parcel market in China, putting it in sixth place. Today, the Chinese market (56.4%) has surpassed ASEAN (32.8%) in the company's sales[35]. However, while its ASEAN business is profitable, its Chinese business has been unable to get out of the red.

Fig. 7 Market Shares of Parcel Delivery Companies in ASEAN6 (2022, based on no. of deliveries)



Notes: J&T Express: headquartered in Indonesia, established in 2015
Kerry Logistics: headquartered in Hong Kong, established in 1981
JNE Express: headquartered in Indonesia, established in 1990
Flash Express: headquartered in Thailand, established in 2017
Sicepat Express: headquartered in Indonesia, established in 2014
Source: Momentum Works, "J&T Express: highlights of draft IPO prospectus", June 19, 2023

J&T Express was successful in ASEAN thanks to its thorough knowledge of local issues and its use of cutting-edge technology to improve efficiency, and also because it was able to leverage support from Oppo and the network it had developed through its Oppo business. Specifically, it was able to handle Oppo products from its inception and hence did not start with zero customers, and it obviously also benefitted from financial support and enhanced credibility by getting the Oppo founder on board[(36)]. In addition, during his time at Oppo, CEO Li had established a relationship of trust with the management of major e-commerce companies in ASEAN countries as they handled Oppo's products, and this made it easier for him to build a customer base.

(4) Relevance of the Digital Silk Road concept

How do the activities of Chinese IT companies in ASEAN relate to the Digital Silk Road (DSR) concept currently being promoted by the Chinese government?

The DSR concept is part of China's Belt and Road Initiative (BRI), China's vision for a geographically broad economic zone, and is designed to have China lead digitalization in other countries, particularly those participating in the BRI (below, "BRI countries"). Its goals are to promote exports of Chinese digital products and services and secure China's leadership in the international standardization of next-generation digital technologies such as 5G, AI, and quantum computing. By pursuing this concept, China hopes to build a cross-border digital network with itself at the core and increase its influence as social and economic digitalization sweeps the world. DSR-related projects are wide-ranging in nature, but they can be divided into three categories: 1) development of digital infrastructure, 2) promotion of digital services, and 3) both of these simultaneously.

The DSR (or more precisely, its predecessor, the Information Silk Road) was first proposed in 2015, but since then the Chinese government has been gradually raising its profile. This is because various issues[(37)] have made it difficult to actively promote large-scale infrastructure projects related to the BRI, while at the same time digital technology needs have increased in BRI countries, and Chinese IT companies now possess the technological capabilities to meet these needs. Furthermore, DSR-related projects can be implemented in a shorter period of time, at lower cost, and with less risk than conventional large-scale infrastructure projects, and this has also worked in favor of the DSR. The COVID pandemic has increased the need for non-face-to-face and contactless services, which has spurred promotion of the DSR concept.

Some DSR-related projects are being implemented with support from the Chinese government, such as low-interest loans and subsidies, based on intergovernmental agreements, while

others are being implemented without such support. Currently, it appears that many of the projects in ASEAN by Chinese IT firms are being implemented without Chinese government support, and reflect the companies' focus on the wealth of business opportunities in the region.

However, it is difficult to draw a line between the extent to which the actions of Chinese companies, even private-sector ones, are purely business and the extent to which they reflect the wishes of the Chinese government. Even if they are not receiving support from the Chinese government, it is conceivable that they are giving a nod to the government's wishes, and carrying out projects to show deference. Moreover, even if they are acting voluntarily, their actions will still advance the digitalization of ASEAN and, as a result, contribute to the realization of the DSR concept.

Therefore, regardless of the presence or absence of Chinese government support, all activities by Chinese IT firms in BRI countries can be viewed as DSR-related projects. In that sense, it can be said that the aims of the Chinese government are beginning to be realized to a certain degree in ASEAN. However, Chinese companies are by no means the only ones doing well. Local startups in ASEAN are emerging, while Ericsson and Nokia have a lot of influence overall in the construction of 5G networks.

From the end of 2020 and into 2022, the Chinese government drastically tightened regulations, with one of its aims being to weaken the influence of Chinese IT firms. Companies found themselves accused of antitrust violations or saw their IPOs suspended. They struggled to deal with the situation[38], and their financial performance took a hit. Since the beginning of 2023, the controls have been gradually eased in an effort to boost the IT industry, which is a burgeoning sector in China, amid the economic slump. However, in light of the series of measures taken recently, Chinese IT companies are expected to follow the government's wishes more than ever before, and to strengthen their ASEAN operations so as to keep in line with the government's promotion of the DSR concept.

3. Direction that Japanese companies should take

(1) Addressing local issues

Alongside U.S. companies, Chinese firms have moved aggressively into the digital space in ASEAN, becoming a significant presence there. The rise of local players also stands out. Are there any opportunities for Japanese companies, which have fallen behind in this trend, to make a comeback?

The most prominent players in ASEAN's digital sector to date have been IT companies, both local and foreign, that have established giant online platforms[39]. What they all have in common is that they have expanded their operations on the back of ample cash resources. Grab is believed to have raised a total of $10.4 billion in 32 rounds of financing[40], though another estimate puts the figures at $16.5 billion over 34 rounds[41][42]. Alibaba, meanwhile, has invested a total of $2.33 billion in four rounds of major investments alone since acquiring Lazada for $1 billion in 2016 (see Table 7 above). Japan, which has yet to produce a major global IT company, would likely stand no chance of succeeding in any new attempt to enter the platform business. As mentioned above, Rakuten explained that it withdrew from the e-commerce business in the region because it could not develop the appropriate scale, and it can be inferred that this was because it lacked funds.

On the other hand, with the diffusion of digital technology, even non-IT firms have begun to utilize it, and the line between IT and non-IT companies is becoming increasingly difficult to draw. For example, Komatsu has developed an unmanned dump truck operation system and a machine operation management system, and is seen as being much like an IT firm[43]. There is therefore more potential than in the past for Japanese non-IT companies to do business in ASEAN utilizing digital technology.

A promising area for Japan's non-IT firms is the problem-solving business. Although ASEAN has seen rapid economic development, it is still grap-

pling with a multitude of issues. Some of them could be addressed by combining Japanese experience and know-how with digital technology, and this is where Japanese companies can find business opportunities. While there might not be large markets for each of these businesses individually, when taken together, they could raise the profile of Japanese companies as a whole.

(2) A mountain of issues

What sorts of problem-solving could be offered commercially in ASEAN?

As an example, the Indonesian government is aiming to get the country into the top ten countries in the world for GDP by 2030. To achieve this goal, it needs to nurture the country's weak manufacturing sector, and in 2018 it launched "Making Indonesia 4.0," a plan to strengthen manufacturing through the use of digital technology. It announced a raft of measures, implementation of which is still in progress. They include improving the productivity of SMEs, developing human resources, and ensuring sustainability in five key sectors: 1) food / beverages, 2) textiles / clothing, 3) automotive, 4) electronics, and 5) chemical. In the case of food and beverages, measures include the introduction of automated monitoring systems and unmanned drones in agriculture and fisheries, the deployment of technology to help small and medium-sized farmers and manufacturers increase production, and the strengthening of processed food production (Chen et al. 2023).

In the Philippines, Ferdinand Marcos Jr., who took office as president in 2022, has also declared ten priority policies for economic revitalization and long-term growth[(44)]. In the area of human resource education, he aims to improve education quality and workers' skills, while in healthcare, his goals are to provide basic medical care in low-income areas and build specialized hospitals in rural areas. As for food, he aims to increase productivity in agriculture and fisheries.

In Japan, meanwhile, 60% of agricultural collectives now utilize data[(45)], and Japan also has overwhelming strength in production technology for artificial rearing[(46)], which is important for fish aquaculture. Japan's food processing technologies are also world-class, and manufacturing sites are cost and energy efficient. As for healthcare, Japan offers some of the highest quality medical services in the developed world, and these are accessible to everyone regardless of where they live. There is huge potential to utilize these Japanese technologies and systems, as well as the experience and know-how behind them, in Indonesia, the Philippines, and other countries.

ASEAN also faces a wide range of other issues, from reducing traffic congestion to enhancing the efficiency and sophistication of logistics. And more recently, achieving decarbonization has emerged as a new challenge. There are therefore significant opportunities for Japanese companies to help bring about solutions. While digital technology is not essential to resolving these issues, it can be deployed to lower costs and improve accessibility. It can also make business viable in domains that have posed difficulties in the past. When bringing Japanese technology to ASEAN and developing human resources to manage it locally, Japan could take the lead in steadily promoting digitalization by providing online training and videos, as well as offering and managing services through smartphone apps.

(3) Utilizing local subsidiaries

The local units of Japanese companies in the region can play a key role in developing the problem-solving business in ASEAN. There are already more than 7,400 local subsidiaries of Japanese companies located there (see Fig. 1 above). Moreover, the numbers of manufacturing and non-manufacturing subsidiaries are almost equal, making it possible to respond to a wide variety of local issues. Effective utilization of these assets can serve as a weapon for Japanese companies to make a comeback in the digital field.

A look at the founders of startups that were established in around 2010, when the ASEAN

startup boom began, reveals that a fair number of them had studied in the U.S. such as at Harvard University (two Grab co-founders and one Gojek co-founder), Purdue University (one Traveloka co-founder), and Stanford University (one Traveloka co-founder). During their time abroad, they were exposed to new services and business models utilizing digital technology that had not yet become widespread in their own countries, and they launched startups after returning home with the desire to address local issues with these new services and business models[47]. Turning this around, one idea would be for the executives and employees of Japanese local subsidiaries, who are aware of local issues, to put Japanese products and services and the experience and know-how behind them to use, augment them with digital technology, and launch new businesses.

In the problem-solving business, it is necessary to 1) accurately grasp the problem, 2) develop an effective solution to the problem, and 3) have the market recognize the value of the product as a solution, i.e., get a lot of people to buy the product.

For foreign companies without a local presence, performing step 1) above, i.e., identifying local issues, is not easy. There have been cases of companies entering a local market and starting a business there in order to solve a problem, only to find that the problem was less serious there than they had thought, or that there were deeper-rooted issues behind the surface-level problem. There have also been numerous cases where the solution developed at step 2) was inappropriate. There have also been many instances of failure at step 3), where the solution was appropriate but market acceptance could not be gained due to lack of resources or networks, marketing failures, etc.

In contrast, a local subsidiary can 1) identify issues that it or its business partners actually face in their daily operations, and 2) find appropriate solutions because it is familiar with local conditions and able to mobilize its Japanese experience and know-how. In addition, it can determine to some extent what it needs to do to be accepted in the local market, allowing it to complete step 3). In other words, the company can leverage its strengths as a local subsidiary, namely the resources and networks it has built up in the local market, such as partners, human networks, and customer information. For the same reason, it will find it relatively easy to locate partners to fill areas where it itself is lacking, such as adopting specific digital technologies. While local startups are also aggressively entering the problem-solving business, Japanese companies enjoy an advantage in that they can leverage Japanese experience and know-how.

Japanese companies already have a track record with problem-solving projects in ASEAN. In addition to their involvement in large-scale infrastructure projects such as the construction of power plants and port facilities, including those carried out as part of official development assistance (ODA), Japanese companies have engaged in projects that contribute to improving the quality of healthcare, increasing productivity in agriculture, and developing sustainable aquaculture. Fundamentally, these projects constitute the rollout in ASEAN of businesses devised and developed in Japan. Besides these, Japanese companies will be able to greatly expand the scope of their operations going forward by launching and growing new businesses from ASEAN.

In addition to doing business on their own, local subsidiaries of Japanese companies can also approach the solutions business through new companies they establish through carve-outs. It is also possible for individuals to leave local subsidiaries and set up new companies on their own. This is how J&T Express came into being. As mentioned above, Jet Jie Li, CEO of Oppo Indonesia, established J&T Express to resolve issues he had encountered while running the Oppo business. And just as Oppo's backing enabled J&T Express to quickly get its business on a growth trajectory, so too can a new business born from a Japanese company's local subsidiary increase its chances of success with support from the subsidiary as well as from headquarters in Japan.

However, for such schemes to be realized, the role of local subsidiaries must be fundamentally reevaluated. Until now, the main function of local subsidiaries has been to transfer and bring to the local market businesses already conducted in Japan. As mentioned earlier, in recent years Japa-

nese companies have been shifting their focus from viewing ASEAN as a base for production to viewing it as a market, but even so, the emphasis has been on how to expand local market shares for their existing products. In the future, they should augment this approach by also emphasizing the creation of new businesses in ASEAN.

To that end, headquarters in Japan will need to lead a reorganization of local subsidiaries into a structure that facilitates the creation of new businesses. Organizational reform will be important. For example, the powers and budgets of local subsidiaries should be expanded to give them more freedom in their activities, while maintaining close contact with Japanese headquarters. They should be equipped with personnel from Japan as well as local hires who are enthusiastic about taking on challenges. At the same time, the personnel evaluation system should reward those taking on challenges, and in areas in which the company is lacking, help from outsiders should be actively sought, such as local or Japanese startups. While this will entail significant changes at the local subsidiaries and even at headquarters in Japan, such bold initiatives will be vital for catching up in the digital domain in the ASEAN region.

End Notes

1. Total of manufacturing and non-manufacturing, excluding finance, insurance, and real estate.

2. Figures from IMF, "Direction of Trade."

3. Singapore, Malaysia, Thailand, Indonesia, Cambodia, and Myanmar.

4. Figures from ASEAN StatsDataPortal.

5. The 2022 survey (conducted in January 2022) polled 2,700 men and women aged 18-59 (300 in each country) via the Internet and in-person interviews.

6. In each year's survey, the percentages of respondents from relatively young age groups were as follows:
   2023 survey: 40.4% for ages 21-35, 26.7% for ages 36-45
   2022 survey: 36.7% for ages 21-35, 28.0% for ages 36-45
   2021 survey: 34.9% for ages 21-35, 30.6% for ages 36-45
   2020 survey: 46.6% for ages 24-39, 34.4% for ages 40-55
   2019 survey: Age composition data not published

7. The Chinese government scrapped its zero-COVID policy in December 2022, but since the 2023 survey was conducted from November 2022 to January 2023, it can be assumed that the zero-COVID policy and its negative impacts were at the forefront of respondents' minds.

8. In response to the question, "Why do you distrust Japan?" in the 2023 survey, the most popular answer was "I am concerned that Japan is distracted with its internal affairs and thus cannot focus on global concerns and issues." This accounted for 38.6% of the total. It can be inferred that one of the reasons for the decline in trust is that the respondents perceive Japan as too preoccupied with domestic issues to pay attention to what is happening overseas.

9. Singapore, Malaysia, Thailand, Indonesia, the Philippines, and Vietnam.

10. Google et al. (2020, 2023)

11. Sea and Grab Holdings are prime examples. Sea (established in 2009) launched as an online gaming startup (then called Garena), grew to offer a variety of Internet services to consumers, and was listed on the NYSE in 2017. Grab (established in 2012) started out as a cab-hailing app, but now also offers delivery and financial services. In 2021, it was listed as a SPAC on Nasdaq. In the top 10 Singaporean companies by market capitalization, Sea and Grab are ranked 5th and 8th, respectively (as of September 21, 2023).
(CompaniesMarketCap.com, "Largest companies by market cap", https://companiesmarketcap.com)

12. LINE was founded in Japan as a subsidiary of South Korean internet giant NAVER, but became a Japanese company in 2021 when it came under the control of Z Holdings.

13. LINE is the second most popular social media app in Thailand, after Facebook, but is not as popular in other countries. It was ranked 10th in Indonesia, 14th in Singapore, and outside the rankings in Malaysia, the Philippines, and Vietnam. (We Are Social, Metawater, "Digital 2023" for each country)

14. In addition to acquiring a 67% stake in Tarad.com (established in 1999), Thailand's then largest e-commerce site, for US$3.35 million in 2009, and making it a subsidiary, Rakuten had opened a series of e-commerce malls in Indonesia, Malaysia, and Singapore, starting in 2011.

15. Hiroshi "Mickey" Mikitani, Chairman and CEO, Rakuten, Inc., "Mickey's Voice: Vision 2020," March 2, 2016 (https://rakuten.today/mickeysvoice/vision2020.html)

16. This refers to "the experience that customers have at various points of contact with a company (customer touchpoints) from the stage of considering the purchase of a product/service to the stage of using the product/service." (Hideyuki Kobayashi, "What is CX (customer experience): Points for improving CX, which is becoming increasingly important with DX," May 9, 2022,https://www.jpc-net.jp/consulting/report/detail/cx.html)

17. Singapore, Malaysia, Thailand, Indonesia, the Philippines, and Vietnam.

18. These are the four companies:
· Shopee (2nd): under the control of Sea; e-commerce; established in 2015
· Grab (3rd): ride-sharing, delivery, finance; established in 2012
· Gojek (14th): ride-share app under the control of GoTo; established in 2010
· Traveloka (30th): online travel booking; established in 2012

19. foodpanda was originally a startup founded by Rocket Internet (headquartered in Germany), but it was acquired by Delivery Hero in 2016.

20. Sharp (32nd) is classified here as a Taiwanese company because it was acquired by Hon Hai Precision Industry (Foxconn) in 2016.

21. Although Sony sells smartphones in ASEAN, it is not included in the digital-related companies because of its small market share and low visibility as a smartphone brand.

22. "China's Xiaomi leads Asia's low-cost smartphone drive", The Strait Times, May 11, 2014 (https://www.straitstimes.com/business/companies-markets/chinas-xiaomi-leads-asias-low-cost-smartphone-drive)

23. Japan External Trade Organization, "Chinese corporate brands in the Myanmar market," March 2012. According to the survey results, many middle-income consumers expressed some desire to use Chinese-made cell phones because they were inexpensive.

24. Lazada was founded in Singapore in 2012 by Germany's Rocket Internet, and has since expanded its operations to other ASEAN countries.

25. "Cambodia signs 5G development deal with China's Huawei", The Strait Times, April 29, 2019 (https://www.straitstimes.com/asia/se-asia/cambodia-signs-5g-development-deal-with-chinas-huawei)

26. Japanese companies have only a 2.5% share of the global market for 5G mobile base station equipment (as of 2021), and their international competitiveness in this field is low. ("NEC and Fujitsu open the door to the base station equipment market - open RAN to the world," Nikkei Business, April 27, 2023, https://business.nikkei.com/atcl/gen/19/00550/042600008/)

27. "Singapore's major telecom operators reject Huawei for 5G telecom equipment," Bloomberg, June 25, 2020 (https://www.bloomberg.co.jp/news/articles/2020-06-25/QCGKFMDWRGG401)

28. "EU and US warn Malaysia of 'national security' risk in Huawei's bid for 5G role", Financial Times, May 2, 2023

29. "Malaysia stays open to Chinese firms in 5G network rollout", Bloomberg, June 2, 2023 (https://www.bloomberg.com/news/articles/2023-06-02/malaysia-stays-open-to-chinese-firms-in-5g-network-rollout#xj4y7vzkg)

30. Thailand commits to 'long-term partnership' with Alibaba", The Nation, September 19, 2023 (https://www.nationthailand.com/tech/30343690)

31. For this section, I mainly referred to the prospectus filed by J&T Express with the Hong Kong Stock Exchange for its IPO, as well as the following sources:
· "How J&T Express became one of Indonesia's largest logistics companies in just four years," 36Kr Japan, December 17, 2019 (https://36kr.jp/41656/)
· "How Indonesia's J&T Express pushes the limits of its Chinese competitors", PingWest, November 5, 2021 (https://en.pingwest.com/a/9460)
· "Boom or bust? The story of J&T Express in China", KrASIA, December 31, 2021 (https://kr-asia.com/boom-or-bust-the-story-of-jt-express-in-china)
· "Chinese logistics entrepreneur becomes a billionaire as his J&T Express gears up for Hong Kong IPO", Forbes, June 20, 2023 (https://www.forbes.com/sites/ywang/2023/06/20/chinese-logistics-entrepreneur-becomes-a-billionaire-as-his-jt-express-gears-up-for-hong-kong-ipo/?sh=99eabb251cca)

32. At that time, there was no parcel delivery business operator covering all of Indonesia, and problems such as late deliveries and goods going missing occurred on a daily basis.

33. Specifically, it acquired BEST Express China, a major parcel delivery company (2021), and Shenzhen Fengwang Express, a major parcel delivery company under the control of S. F. Holding, a leading logistics company (2023).

34. Although the company was only established in 2015, it quickly grew its market share to become China's third largest e-commerce company after Alibaba and Jingdong (JD.com).

35. According to the prospectus filed by J&T Express with the Hong Kong Stock Exchange. (https://www1.hkexnews.hk/app/sehk/2023/105469/documents/sehk23061601571.pdf)

36. Tony Chen's wife, Liang Xiaojing, invested in J&T Express through her own company Starlight Hero and became a shareholder. Tony Chen has since stepped back from the management of J&T Express.

37. Many projects have been cancelled or modified due to such factors as failure to repay debt incurred for infrastructure construction (due to the so-called "debt trap"), questions about project transparency and financing terms, friction with local residents, heightened environmental awareness, and the COVID pandemic.

38. Alibaba's announcement in March 2023 that it will split its group's operations into six separate units is believed to be partly aimed at alleviating the government's concerns. ("Alibaba, China's e-commerce giant, will split into 6 units", The New York Times, March 28, 2023)

39. Although Huawei is a telecommunications equipment manufacturer, it is also a platform company. It operates the AppGallery app distribution platform, and in 2023 launched Huawei eKit, a platform that connects SMEs with each other and with large companies.

40. Tracxn database (https://tracxn.com/d/companies/grab/__hBaWZ3sVg8_WdVlbKQsr7CMhkgrPE8YtqCtFMLF0ev0)

41. Crunchbase database (https://www.crunchbase.com/organization/grabtaxi/company_financials)

42. When the company was still unlisted, it was not required to disclose financing rounds, so the figure had to be estimated because some rounds were not disclosed.

43. "20 years after the construction equipment revolution, Komatsu pursues DX/open innovation to create the construction sites of the future," Impress "IT Leaders," April 15, 2021 (https://it.impress.co.jp/articles/-/21368)

44. The ten policies are 1) economic reopening following the COVID pandemic, 2) public-private partnerships, 3) digital infrastructure development, 4) fiscal discipline, 5) transparent and efficient governance, 6) promotion of wireless LAN connectivity, 7) energy security, 8) human resources education, 9) affordable healthcare, and 10) food for all. (Website of the President of the Republic of the Philippines,https://pbbm.com.ph/priorities/)

45. Ministry of Agriculture, Forestry and Fisheries, "Results of the 2023 Agricultural Structural Dynamics Survey," June 30, 2023. This ratio drops to 25% for individual farmers.

46. Technology for artificially raising fry and juveniles from eggs. From the perspective of natural resource conservation, it is superior to raising captured fry and juveniles (natural rearing).

47. For example, the two Malaysian co-founders of Grab, Anthony Tan and Hooi Ling Tan, founded the company upon returning to Malaysia after studying at Harvard Business School, where they had found out about ride-hailing apps. They wanted to help improve the poor situation with taxis in Malaysia, where, for example, it was not safe for women to ride in cabs alone at night.

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