DATA COLLECTION SURVEY ON PROMOTION OF SOLUTION BUSINESS WITH ADVANCED ICT (IN SOUTH ASIA AND CENTRAL ASIA)

FINAL REPORT FOR SRI LANKA

AUGUST 2021

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

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TABLE OF ABBREVIATED WORDS

Abbreviation	Definition
ADB	Asian Development Bank
AWS	Amazon Web Service
BPM	Business Process Management
BPO	Business Process Outsourcing
CAGR	Compound Annual Growth Rate
CICC	Center for International Cooperation in Computerization
DFR	Draft Final Report
EDB	Export Development Board
EU	European Union
FDI	Foreign Direct Investment
FR	Final Report
HR	Human Resource
ICR	Inception Report
ICTA	Information and Communication Technology Agency of Sri Lanka
JISA	Japan Information Technology Services Industry Association
JITW	Japan IT Week
KGI	Key Goal Indicator
KPI	Key Performance Indicator
KPM	Knowledge Process Management
KPO	Knowledge Process Outsourcing
LGII	Lanka Government Information Infrastructure
LGN	Lanka Government Network
LKR	Sri Lanka Rupee (Currency)
LPWA	Low Power Wide Area
METI	Ministry of Economy, Trade and Industry
MoDSIT	Ministry of Development Strategies & International Trade Sri Lanka
NES	National Export Strategy of Sri Lanka
NLP	Natural Language Processing
PoC	Proof of Concept
VC	Venture Capital
SLASSCOM	Sri Lanka Association for Software and Services Companies
SLCERT/CC	Sri Lanka Computer Emergency Readiness Team/Coordination Center
SMRJ	Small & Medium Enterprises and Regional Innovation, JAPAN (SME Support Japan)

1 Outline of the Survey

1.1 Executive Summary of the Survey (for Sri Lanka)

Sri Lanka has been developing as a destination for global companies to outsource their ICT processes (2.). The Sri Lankan government has also been promoting IT infrastructure and industry, mainly through ICTA (2.1.5), and has promoted the expansion of ICT service business overseas, mainly through EDB (2.1.5) and SLASSCOM (2.2.5). In particular, Sri Lanka has adopted a strategy to establish competitiveness on the basis of quality rather than quantity of IT solutions (2.1), since there are emerging IT countries with populations in the hundreds of millions in the vicinity, such as India, Bangladesh and Pakistan. As a result, the country has already established itself as an excellent outsourcing destination in the US and European markets (2.), and in the advanced IT field, it has clear advantages over other developing countries, such as in FinTech (2.3.3). In Japan, EDB has already taken the lead in entering the ICT/BPO market since around 2014 (2.4.2), but the branding is still weak and not well known by Japanese user companies (2.4.3). In order to succeed in the Japanese market in the future, Sri Lanka needs to focus on providing ICT solutions in specific areas where it has a clear advantage, such as FinTech and IoT, rather than in the general system development and BPO markets to improve its brand (4.2.3). In the pilot project for trial business collaboration with Japanese companies conducted in the Survey, half of the selected pairs of companies were with Sri Lankan companies (5.5.2), and the Japanese companies gave high marks to the collaboration performance and its results (5.5.4). So, it would be necessary to establish a mechanism to continuously match Sri Lankan IT companies with Japanese companies (4.2.1, 4.2.4). With reference to the successful cases of the Global IT Park in Minami Uonuma City (4.2.4), there are multiple possibilities to implement projects by utilizing the rich network of highly educated Sri Lankan human resources who knows Japan (7.1, 7.2). It is recommended to start with dispatching an ICT industry business collaboration advisor (7.1) for the purpose of coordination, planning and implementation of such potential projects.

1.2 Background of the Survey

Today, we live in an era witnessing the biggest information and communication revolution in human history. Over 50% of the world's population now has access to the Internet, and new users are increasing every day. The world's data traffic is expanding year by year, and the ICT market is continuously active thanks to the rapid progress of AI/IoT in the world as well as the emergence of new markets.

Under such circumstances, the export value and human resources of the ICT industry are growing year by year in emerging countries in South Asia and Central Asia. In addition, some IT companies in emerging countries are already actively engaged in advanced technology development such as AI, Data Science, IoT, and Fintech, and are actively penetrating overseas markets mainly in Europe and America. In order to further develop the ICT industry, these countries recognize the necessity of developing and expanding new markets in addition to the current Western markets, and Japan is one of the candidates

for new market development. Such needs for entry into the Japanese market have been confirmed in several countries (Sri Lanka, Armenia, Pakistan).

However, partnerships between Japanese companies and emerging countries have not been fully realized due to such factors as language barriers, differences in business practices, and lack of branding. Some efforts are already being made especially for the offshore development market through Japanese ICT solution providers, but advanced ICT companies in the target countries do not usually opt for offshore business with intermediate companies but prefer direct business matching with Japanese client companies.

For this reason, it is considered important to establish a mechanism to develop human resources that directly connects emerging countries and Japanese companies and promotes bilateral cooperation between countries. At present, however, there are many things that have not been clarified such as the degree of interest of companies in the respective countries, the number of interested companies, specific barriers for entering the Japanese market, building partnerships, and attracting investment, and the content of training to promote bilateral collaboration.

In the Survey, based on the above-mentioned current situation, the issues in promoting direct collaboration between ICT companies in emerging countries and Japanese companies who seek ICT solutions will be sorted, and an appropriate branding/marketing strategy will be created for emerging countries to enter the Japanese market, to collaborate with Japanese enterprises, and to attract investment in the target countries all without need for intermediate companies. In addition, the purpose is to clarify the activities and human resources necessary for implementing the strategy that are lacking in the emerging countries, and to collect the information necessary to consider future support contents.

1.3 Purpose of the Survey

The purpose of the Survey is to clarify possibilities and issues involved in direct business collaboration between advanced ICT companies in each target country and potential Japanese client companies with advanced needs, and to create a branding/marketing strategy (draft) of each target country aiming at the Japanese market. The implementation body of the said branding/marketing strategy would be the government or industry associations in each target country, but we will also seek possible candidates through the Survey. In addition, necessary systems, activities, human resources, etc. for implementing the strategy that are lacking in each target country will be clarified, and information will be collected to examine the direction of future support.

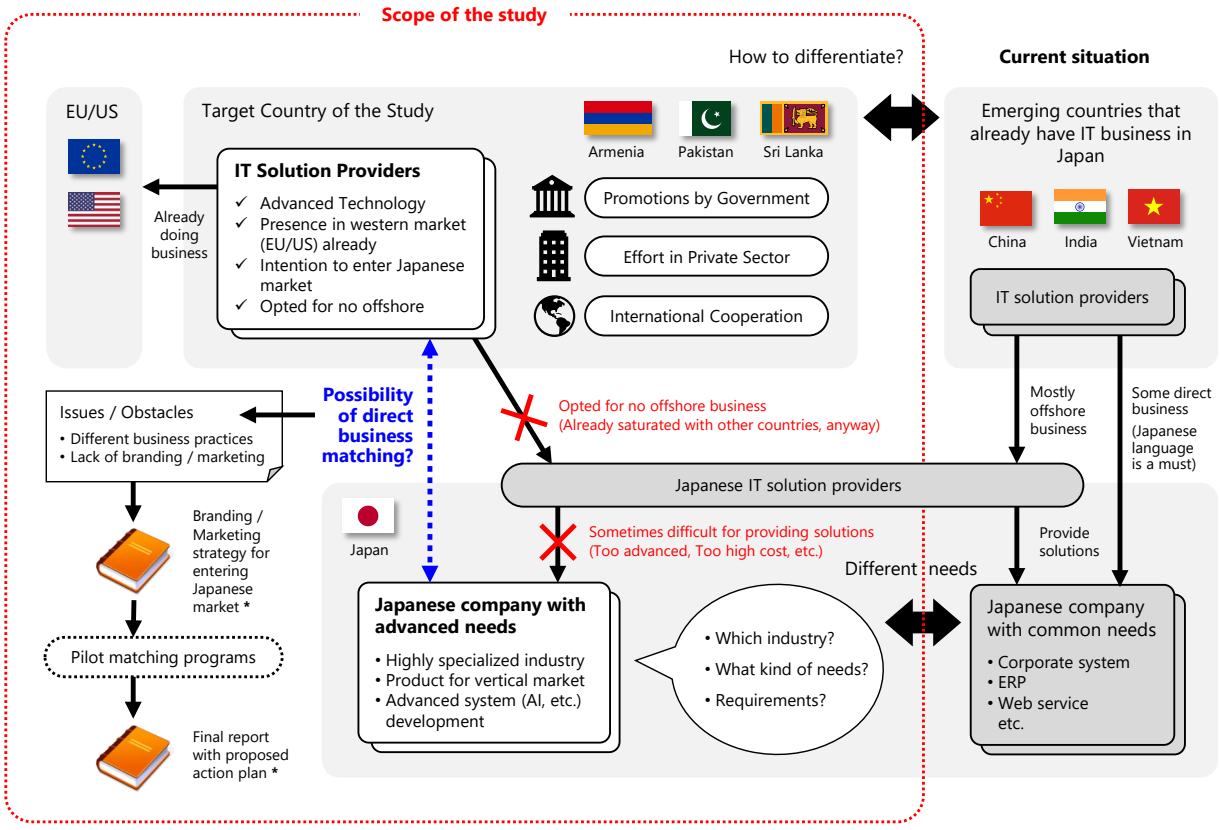
1.4 Target Countries and Areas

- Armenia (Yerevan)
- Sri Lanka (Colombo)
- Pakistan (Islamabad, Karachi, Lahore)
- Japan

1.5 Implementation Strategy of the Survey

As a matter of fact, the three target countries of the Survey are not widely known in Japan for having good IT solution industries. Many emerging countries around Japan have already penetrated into the Japanese IT solution market (including China, India, Vietnam, Philippines, Indonesia, Bangladesh, and Myanmar) mostly by offshore outsourcing businesses through Japanese IT solution providers. Therefore, the offshore development market in Japan is now nearly saturated, and it is now a matter of cost competition. Some advanced IT solution providers in China, India, and Vietnam are now beginning to provide direct solution business to Japanese clients without going through intermediate Japanese IT solution providers, however, this strategy requires very good communication with Japanese clients in Japanese language (because Japan is known for very low English proficiency among non-English speaking countries[1]) as well as full understanding of Japanese business practices.

In this current situation in Japan, we must clarify differences and distinguished competitive edges from other countries that are already doing business in Japan so that we can give clear brand image of the IT solution industry in the target countries to potential Japanese clients who don't know these countries well. This current situation and our survey strategy are summarized and illustrated in the figure below.



* ... Strategy / Reports will be created separately for 3 target countries

Figure-1 Overview and scope of the Survey (with current situation in Japan)

[1] https://www.nippon.com/en/japan-data/h00594/japan%E2%80%99s-english-proficiency-drops-among-non-english-speaking-countries.html

The competitive edges of target country should be clarified by the following factors, prioritized from (1) to (3).

(1) Among the numerous IT fields, identify specific IT fields in which the IT industry of each target country has clear competitive edge over other emerging countries, then formulate branding strategy that leads to business with Japanese companies that require the specific IT fields.

(2) Examine comparative advantages of each target country in the geographical aspect (such as market access to other areas of the world that Japanese companies may find attractive as a base for business expansion in those areas) or in the cultural aspect (such as in case Japanese companies plan to develop products suited for specific cultural aspect, etc.), then formulate branding strategy based on combination of technological advantages and geographical/ cultural advantages.

(3) If a sufficient comparative advantage in terms of technology, geography, or culture cannot be identified, there will be no other choice but to differentiate each target country by other factors (especially by economic factors like labor cost, economic scale, etc.). Effort will be made to not simply appeal the comparative cost, but to combine the high added value of technological advantage with economic advantage of each target country.

1.6 Survey Schedule

The latest overall schedule of the Survey is shown in the figure below. The schedule has been revised three times in June 2020, September 2020, and May 2021 due to COVID-19 pandemic situation in the world and other reasons.

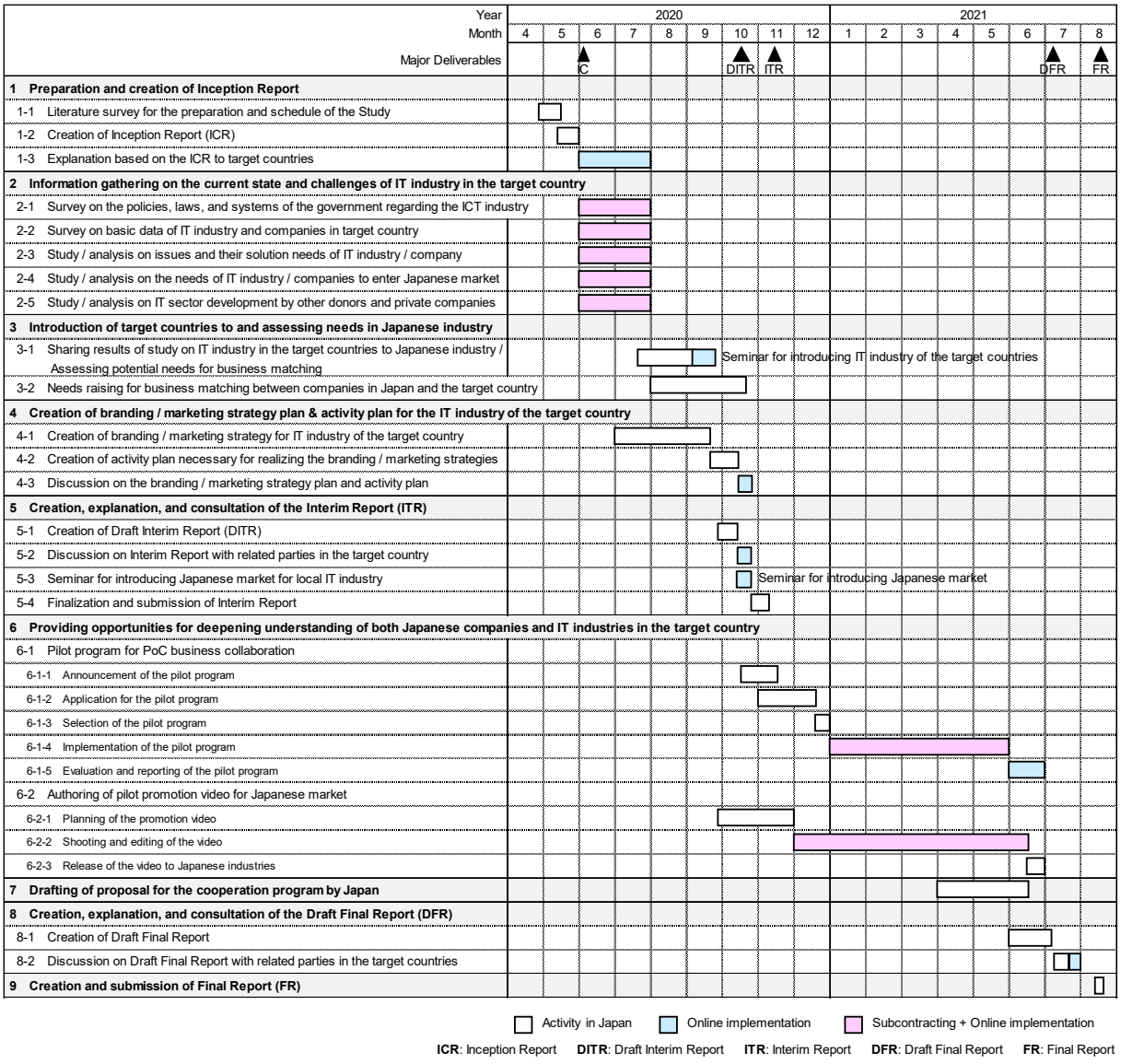


Figure-2 Overall schedule of the Survey

1.7 Survey Content

This section describes the contents of each work indicated in the schedule in Figure-2. The Survey is explained in terms of the primary category "Work" and secondary category "Process".

Work 1 Preparation and creation of Inception Report

Process 1-1 Literature study for the preparation and schedule of the Survey

Existing information available online will be collected, examined, and analyzed for preparing detailed contents of the fieldwork in each target country.

When creating Survey items and processes, rather than creating the same content for all target countries, hypotheses will be made regarding the characteristics of each target country and the comparative advantage among the target countries and emerging countries that have already

entered the Japanese market. After that, the Survey items and processes will be formulated by prioritizing the topics that can verify the hypothesis.

Process 1-2 Creation of Inception Report (ICR)

An Inception Report (draft) will be created based on the above analysis. The composition of the Inception Report will be clearly divided into content common to the three target countries and content specific to each country, and the content to be submitted to each country will be the common part plus the part specific to each country.

Before the fieldwork, a questionnaire and presentation materials will be prepared for the target country. Based on the discussion of the content with JICA, the report will be finalized.

Process 1-3 Explanation based on the ICR to target countries

The Inception Report will be provided to the target organizations/companies of the Survey along with the official letter from JICA during the first fieldwork by the local subcontractor, and the contents of ICR will be explained during the online meeting with the target organizations/companies.

Work 2 Information gathering on the current state and challenges of IT industry in the target country

This is the first fieldwork in each target country. Due to the COVID-19 pandemic, the first fieldwork will be implemented by utilizing local subcontractors in each target country as well as by online questionnaire/interviews. The overall procedures for implementing the fieldwork are illustrated in the figure below.

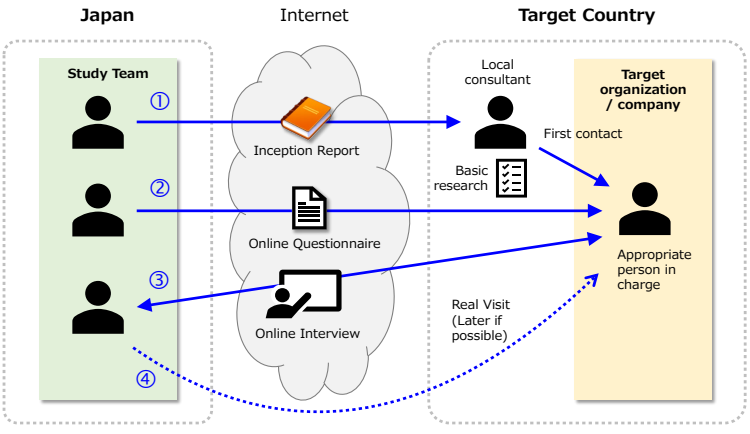


Figure-3 Implementation procedures of the fieldwork in each target country

① The Inception Report will be sent to subcontracted local consultant in each target country, and the local consultant will perform basic research on IT industry there. Then, the local consultant

will make the first contact to the target organization or company for the Survey and confirm who will be the appropriate person to talk to.

② The Survey Team will send online questionnaire to the person in charge of the target organization and request response to the questionnaire.

③ Based on the result of online questionnaire, if further clarification is required, the Survey Team will ask for an online interview/meeting with the person in charge of the target organization.

The list of surveyed organization/companies is shown in Appendix 1.

Work 3 Introduction of target countries to and assessing needs in Japanese industry

Process 3-1 Sharing results of the Survey on IT industry in the target country to Japanese industry/Assessing potential needs for business matching

The results of fieldwork in the target country will be disseminated to Japanese industries/companies including the information on IT industry/companies, needs and challenges of business matching, etc. Opinions will also be heard from the Japanese side on their needs and issues regarding the possibility of business matching. For these purposes, online seminars (Webinar) have been organized, emphasizing that the content of the seminar is not just an introduction of the target countries, but will lead to the development of speedy and strategic products and services in cutting-edge technology fields that could never be achieved by typical offshore development through Japanese IT solution providers. The detail of this Webinar is described in 5.2/5.3.

Process 3-2 Needs raising for business matching between companies in Japan and the target country

For Japanese companies that expressed interest in IT companies in the target countries through the seminar, Japanese companies that were unable to attend the seminar but expressed interest, or Japanese companies that had previously approached the target countries but had not been able to collaborate with them, the Survey Team will examine the possibility of individual business matching between local IT companies and Japanese companies as revealed through the fieldwork, and conduct individual visits and interviews with those Japanese companies through online meetings, etc.

Work 4 Creation of branding/marketing strategy plan & activity plan for the IT industry of the target country

Process 4-1 Creation of branding/marketing strategy for IT industry of the target country

The branding/marketing strategy for each target country's entry into the Japanese market will be created based on the following processes, i.e., setting of priority target industry in Japan, design of

the value image to be evoked, design of customer contact points, finalization of the marketing mix, design of KGI/KPI, and creation of action plan to enter the Japanese market.

Figure-4 Process for creating branding/marketing strategy and activity plan for entry to Japan

The draft branding/marketing strategy for IT industry of the target country is shown in Appendix 4.

Process 4-2 Creation of activity plan necessary for realizing the branding/marketing strategies

Based on the draft strategy developed in the previous section, the draft activity plan will be developed along a timeline that specifies the key milestones and their timing. In order to realize branding and marketing strategies based on the premise of entering the Japanese market, the draft activity plan should assign more resources to items that are particularly lacking from the current situation in each country. In addition, the proposed activities should have sufficient feasibility for entering the Japanese market by taking into account the current situation and prospects of demand in the Japanese industry for the technology area to be promoted, as well as the market environment and needs of governments and local suppliers in each country.

Process 4-3 Discussion on the branding/marketing strategy plan and activity plan

The content of the draft branding/marketing strategy and draft activity plan will be discussed with the relevant organizations in each target country through online meeting (to be held at the same time with Process 5-2).

Work 5 Creation, explanation, and consultation of the Interim Report (ITR)

Process 5-1 Creation of Draft Interim Report (DITR)

The above findings (up to Process 4-1) will be summarized in the Draft Interim Report (DITR). As in the case of the Inception Report, the structure of the DITR should be clearly divided into common content for the three target countries and country-specific content so that there will be dedicated version of the report for each of the three target countries.

Process 5-2 Discussion on Interim Report with related parties in the target country

The content of the Draft Interim Report will be discussed with the relevant organizations of each target country through online meetings.

Process 5-3 Seminar for introducing Japanese market for local IT industry

In addition to the discussion on the Draft Interim Report and proposed branding/marketing strategies and activities, an online seminar (webinar) will be held to introduce the Japanese market to the local IT industry, to introduce Japanese industries that are promising for business matching as well as necessary knowledge to enter the Japanese market. The seminar will also encourage participation in the business matching-related events described below. The result of this seminar is described in 5.3.

Process 5-4 Finalization and submission of Interim Report

The Interim Report will be finalized and submitted based on the results of discussions (Process 4-3/5-2) as well as the results of the above seminar (Process 5-3).

Work 6 Providing opportunities for deepening understanding of both Japanese companies and IT industries in the target country

Process 6-1 Pilot Program for PoC business collaboration

In order to facilitate real business matching between Japanese industries and the ICT companies in the target countries, a pilot program to support PoC business collaboration will be implemented where Japanese companies are encouraged to “try” the collaboration by raising ideas or plans to do small-scale PoC or prototype development with ICT solution companies of the target countries , and the Survey Team will provide support for the implementation of those PoC/prototyping in the form of subcontracting with the target ICT companies. This activity is designed as an alternative to the invitation program to Japan that had to be canceled due to the COVID-19 pandemic. The result of this program is described in 5.4.

Process 6-2 Authoring of pilot promotion video for Japanese market

Based on the branding/marketing strategy plan created in Process 4-1, a pilot promotion video of each target country will be created for Japanese market. Since these videos will be directly targeted at Japanese market, the content of the video will be carefully designed to match the needs of Japanese industry and to answer typical questions that Japanese companies have with the ICT industry of the target countries. The video is planned to have introduction to the ICT industry of target country as well as interviews, and discussions with ICT industry representatives of each country with Japanese subtitle and /or narration. This activity is designed as an alternative to visiting program to the target country by Japanese companies that must have been canceled due to COVID-19 pandemic.

Work 7 Drafting of proposal for the cooperation program by Japan

The possibility of cooperation by JICA in this area will be discussed, and if there is a possibility for cooperation, the cooperation scheme, activities, target counterpart organizations, companies, etc. will be examined and proposed in the final report.

Work 8 Creation, explanation, and consultation of the Draft Final Report (DFR)

Process 8-1 Creation of Draft Final Report

A draft final report (DFR) will be prepared based on the results of the research and activities. Branding and marketing strategy proposals and activity plan will also be finalized based on the results of the activities to date. In particular, the proposed activities should clearly describe the specific content and timing of the activities, as well as the Japanese counterparts involved in each activity, so that the governments and companies of the target countries can immediately participate in the activities.

Process 8-2 Discussion on Draft Final Report with related parties in the target countries

After receiving confirmation on the content of DFR from JICA, the report will be explained and reported to the relevant target country representatives via an online meeting to discuss the content of the report.

Work 9 Creation and submission of Final Report (FR)

The final report will be completed and submitted to JICA, reflecting the comments of the relevant organizations of each target country and JICA on the DFR.

2 Current Status of Advanced IT Solution Providers in Sri Lanka

There are many IT-related multi-national corporations (MNCs) that have been operating in Sri Lanka for decades. Notable ones include USA's Hewlett-Packard (HP), the UK's Unilever, India's Indian Oil Corporation, and Japan's Nippon Telegraph and Telephone (NTT)[2]. There are several reasons why Sri Lanka attracts these MNCs. First, its location in the Indian Ocean, which is very close to India, is ideal for setting up base for IT business to connect to rest of the world, be it physically or digitally across time-zones[3]. From Sri Lanka, you can access to huge potential markets not only in India and South Asia, but also in South-East Asia/East Asia to the east, and in Middle East and Europe to the west. Second, Sri Lanka has many important FTAs that act as gateways to other regions including Indo-Sri Lanka Free Trade Agreement (ISFTA), Pakistan-Sri Lanka Free Trade Agreement (PSFTA), and the Agreement on the South Asian Free Trade Area (SAFTA)[4]. Third, Sri Lanka has long been open to IT and business

[2] https://outsourcing-journal.org/emerging-sri-lankas-itbpo-industry-an-overview/
[3] https://www.jetro.go.jp/ext_images/en/reports/survey/pdf/2013_10_14_biz.pdf
[4] http://www.doc.gov.lk/index.php?option=com_content&view=article&id=8&Itemid=136&lang=en

innovations. It was the first South Asian country to liberalize its economy in 1977[5], first to introduce mobile phones in 1989, and first to launch both 3G and 4G in 2004 and 2013 respectively[6]. Fourth, it has good legislation support for foreign investors. Sri Lanka's investment laws permit total foreign ownership, with no restrictions on repatriation of earnings, fees, capital, or forex transactions relating to current account payments[7]. These factors result in a foreigner-friendly business environment in Sri Lanka.

More specifically, Sri Lanka has been emerging as a popular destination for global companies to outsource ICT processes to. One major reason is the relative competitiveness of rapidly growing Sri Lankan ICT workforce, which is well educated and English speaking while having competitive wages relative to the South Asian region. Sri Lanka is more competitive than many other offshore markets in terms of labor costs. The average wage for an IT programmer in Sri Lanka is similar to Bangladesh and Pakistan, and less than in India, Vietnam, and Malaysia[8], as seen in Figure-5. Similarly, wages for a Sri Lanka BPM analyst are only higher than in Vietnam.

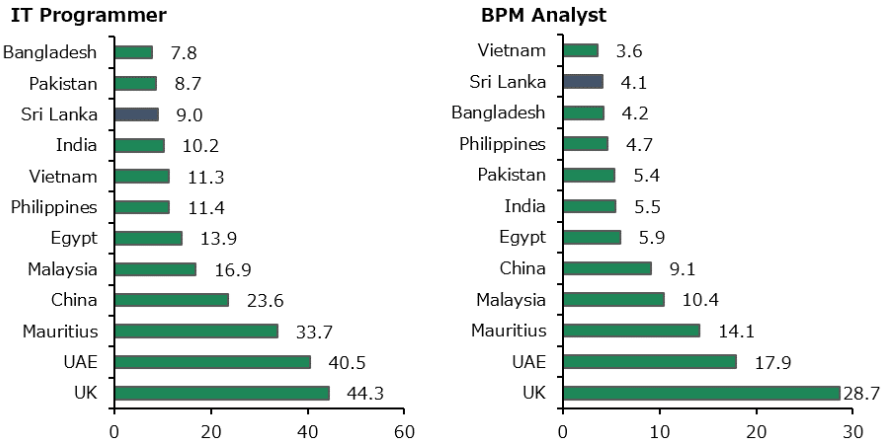


Figure-5 National annual average wage by occupation (USD Th)[9]

This seems to be due to Sri Lankan students starting work early while still schooling, resulting in lower wages for the entire workforce. It also leads to younger and more tech-savvy work force. Yet quality of the workforce remains high due to policies such as free education up to the secondary level. The secondary enrollment rate was at 91% in 2018, while the literacy rate was also high at 92%[10]. In terms of higher education, nearly 50% of graduates were trained in technical and business disciplines[11]. The number of graduates in IT fields also almost doubled from 3,800 in 2007 to 7,000 in 2014[12]. Courses in

5 http://www.treasury.gov.lk/towards-an-open-economy-1977-2005
6 https://phys.org/news/2013-03-sri-lanka-auctions-airwaves-4g.html#:~:text=Sri%20Lanka%20became%20the%20first,a%203G%20network%20in%202004.
7 https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
8 https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
9 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lankan-IT-BPM-Industry-Review-2014.pdf
10 World Bank World Development Indicators.
11 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lankan-IT-BPM-Industry-Review-2014.pdf
12 https://www.srilankabusiness.com/blog/it-bpo-industry-in-sri-lanka.html

such fields are readily provided by public and private universities and educational institutions. With English being the primary business language in Colombo, the Sri Lankan workforce is easily adaptable to international business environments as well.

2.1 Government Policy and Relevant Organization for ICT Sector Development

2.1.1 Overview of Government Initiatives

The Sri Lanka Export Development Board (EDB: See 2.1.5 for detail) has identified ICT as amongst the top ten export generators for Sri Lanka since as early as 2009[13]. Active efforts and initiatives have been undertaken since then to encourage further growth of the industry. These efforts are done in partnership with other supporting bodies such as Sri Lanka Association of Software and Service Companies (SLASSCOM: See 2.2.5 for detail), the national chamber for the IT-BPM sector formed in 2008, and the Information and Communication Technology Agency of Sri Lanka (ICTA: See 2.1.5 for detail) which is the head ICT agency for all ICT projects initiated by the government.

With the above reasons, Sri Lanka has demonstrated its international competitiveness as an outsourcing destination by being included on a myriad of rankings. Most notably, it was named 'Outsourcing Destination of the Year' in 2013 and 2014, and 'Delivery Destination of the Year' in 2019 by Global Sourcing Association of UK[14], and was ranked among the top 25 Global Outsourcing Locations by AT Kearney since 2016[15].

Domestically, since its emergence from the 30-year civil war in 2009, Sri Lanka's economy has been experiencing steady growth. This has led to increasing purchasing power of consumers to purchase hardware IT products such as computers and smartphones, while the growth of traditional domestic businesses and enterprises calls for the need to digitalize and adopt IT products and solutions. Financial services is an example of a high-spending vertical in the Sri Lankan economy, with growth from other industries such as tourism potentially spilling over to IT spending too.

The former Digital Infrastructure and Information Technology Division (Ministry of Defense), also the main authority for formulating ICT policies in Sri Lanka, established the National Digital Policy for Sri Lanka in 2019[16]. There are several important policies related to ICT industry. The first policy is Vision 2025[17] announced in 2017. It is the principal policy outlining Sri Lanka's digital agenda for 2020 to 2025. It sets out two main pillars of focus, firstly encouraging digital and innovative business solutions in the private sphere, and secondly adopting digital solutions to increase efficiency of government systems. Common focus areas between both pillars include Fintech and digital payment solutions, as

13 https://slasscom.lk/ict-export-value-survey-2010-final-report/
14 https://www.gsa-uk.com/
15 https://oxfordbusinessgroup.com/analysis/hidden-jewel-low-costs-and-qualified-workforce-make-attractive-destination-bpo-services
16 http://www.mdiit.gov.lk/index.php/en/component/jdownloads/send/6-legislation/76-national-digital-policy
17 https://www.news.lk/images/pdf/2017/sep/Vision_2025_English.pdf

well as Research and Development (R&D) efforts particularly in the AI sector. The two pillars will be supported by initiatives to improve digital infrastructure in the country, such as increasing connectivity and network coverage with Wi-Fi, 4G and beyond, and creating laws and policies to enhance data protection systems and cybersecurity.

The second and the latest policy is the National Policy Framework called "Vistas for prosperity and splendour" announced in 2019[18]. It sets out 10 key policies aimed at achieving the fourfold outcome of a productive citizenry, a contented family, a disciplined and just society, and a prosperous nation. Among 10 key policies, there is one key policy "Technology Based Society" that is directly related to ICT. In this particular key policy, four strategies are mentioned. The first strategy is to "Establish Sri Lanka as a Global Innovation Hub" by maximizing the use of the latest technologies explicitly listed in the framework as shown below.

- Internet of Things (IoT), Artificial Intelligence (AI)
- Biotechnology, Robotics, Augmented Reality
- Cloud Computing, Nanotechnology, 3D printing

The second strategy is to "Set up a Citizen Centric Digital Government for the convenience of citizens" by three actions listed below:

- Establish nine Citizen Service Centres to adopt new technologies for public service delivery (ID cards, passports, driving license etc.)
- Introduce a digital & electronic payment system to pay traffic fines
- Establish an e-procurement system to eliminate bribery & corruption

The third strategy is to "Establish Digitally Inclusive Sri Lanka" through the following actions.

- Establish a countrywide high-speed optical data transmission system and a highspeed 5G Mobile Broadband System to facilitate data transmission
- Establish digital cities with digital administration & monitoring
- Introduce a mobile & digital payment system to handle all financial transactions
- Place a cross border e-commerce and international e-payment system
- Introduce new legislation to ensure data protection, cyber security and intellectual property rights

The fourth strategy is to "Promote IT Entrepreneurship" through the following actions.

- Make a USD 3 million export industry by 2025 by developing Business Process Outsourcing (BPO) & Knowledge Process outsourcing (KPO)
- Set up IT centres and BPO centres in connecting cities.

[18] https://lki.lk/publication/national-policy-framework-vistas-of-prosperity-and-splendour-summary-2019/

- Increase the number of software engineers and programmers to 300,000 by 2025
- Encourage local software engineers and IT designers to develop software locally instead of importing
- Support local entrepreneurs to develop software for international market

Other than this particular key policy, there are several mentions of the utilization of IT in the framework, including the introduction of e-technology system to receive public complaints, modernization of school education system, converting all universities to "Smart Learning Universities", High-tech agriculture, introducing digital technology to improve coordination between the judicial system and related agencies, developing information technology institutes in regional areas, etc.

The third prominent policy is the National Export Strategy (NES) of Sri Lanka developed by the Ministry of Development Strategies and International Trade (MoDSIT), and the Sri Lanka Export Development Board in 2018. It is also aligned with Vision 2025, defining a detailed road map to encourage faster export growth and transform the export sector[19]. IT-BPM was identified as one of the six focus sectors due to its great potential to increase export revenue with related Sri Lankan companies demonstrating international competitiveness. It aims to become a global IT-BPM destination and for the sector to become five times bigger[20]. The "USD 2 billion plan" is also another focus, where successful ICT companies will be identified and further invested upon by the government to improve marketing and visibility for the Sri Lanka ICT sector. Moreover, during the same year, MoDSIT and EDB also launched a national branding effort for the ICT-BPM sector named 'IOI - Island of Ingenuity' to boost its credibility amongst its international competitors[21].

Under the NES, Electrical and Electronic Components (EEC) were also identified as one of the six focus sectors. While the EDB acknowledges Sri Lanka's limited participation in this sector, it sees potential due to it skilled labor, relatively well-developed infrastructure and key access to important destinations involved in the EEC value chain. Sri Lanka hopes to capture future growth in this industry by integrating emerging technology trends like automation and miniaturization with EEC products. Even though EEC are not only considered as part of the IT sector but also for others like automotive and home appliances, they will serve as an enabler for Sri Lanka to transit into a digital smart nation across all industries[22].

2.1.2 Promoting FDI in ICT Sector

In recent years, several improvements have been put into place to further increase the ease of starting and doing business in Sri Lanka. This includes making the process for paying taxes and property registration easier with the introduction of online systems. Such efforts have paid off, with Sri Lanka

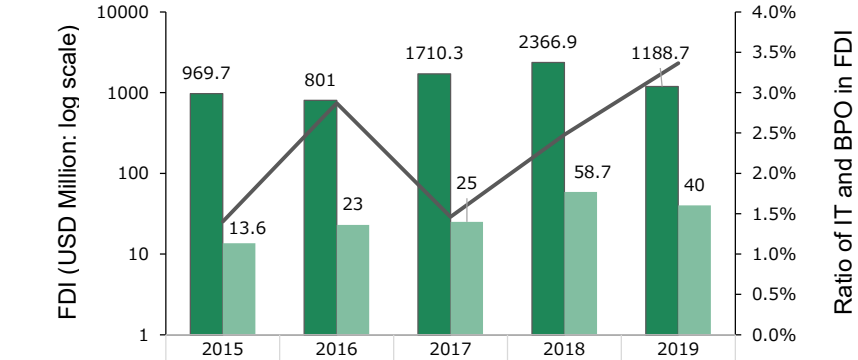
[19] https://www.srilankabusiness.com/pdf/nes/sri-lanka-nes-4-3-web.pdf
[20] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[21] http://www.ft.lk/front-page/Island-of-Ingenuity-national-brand-for-ICT-BPM-launched/44-649571
[22] https://www.srilankabusiness.com/pdf/nes/sri-lanka-eec-6-web.pdf

rising 15 places since 2016 to rank 83rd among 190 economies in 2019 for the ease of starting a business according to the World Bank. It also ranked 100 for ease of doing business, up from 107 in 2016[23].

Table-1 below shows a comparison of Sri Lanka's rankings with nine countries – the three largest South Asian economies and the ASEAN six. In terms of ease of starting a business, it has the third highest ranking among all 10 countries. Though Sri Lanka does not do as well in terms of ease of doing business, it still achieves an average placement by having the seventh highest ranking among all 10 countries.

Table-1 Ranking of countries for ease of doing and starting business

Country	Ease of starting a business rank	Ease of doing business rank
Singapore	3	2
Thailand	39	27
Sri Lanka	**83**	**100**
Vietnam	104	69
Malaysia	122	15
Pakistan	130	136
Indonesia	134	73
India	137	77
Bangladesh	138	176
Philippines	166	125



	2015	2016	2017	2018	2019
Total FDI	969.7	801	1710.3	2366.9	1188.7
IT and BPO	13.6	23	25	58.7	40
% of total FDI	1.4%	2.9%	1.5%	2.5%	3.4%

Figure-6 IT and BPO FDI in Sri Lanka and share of total FDI (USD million) [24]

Figure-6 shows rising Foreign Direct Investment (FDI) values between 2015 and 2019 at a CAGR 5.2% for total FDI value and a far higher CAGR of 31% for the IT and BPO sector. Share of total FDI has also almost doubled from 1.4% in 2015 to 3.4% in 2019.

With regards to the ICT sector in specific, there has been rising digitalization and modernization efforts across the economy for both private and public sectors. This is in part due to the consistent and focused policies put forward by the Sri Lanka government in encouraging such efforts. In 2017, the Sri Lanka

[23] https://www.worldbank.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2019-report_web-version.pdf, https://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB16-Full-Report.pdf

[24] https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/publications/annual_report/2019/en/15_Appendix.pdf

government released a development Vision 2025 which aims to transform the country into a rich country, and a "hub of the Indian Ocean, with a knowledge-based, highly competitive, social-market economy". Technology and digitalization were identified as focus areas to drive the nation's progress as well, with key strategies to promote disruptive technologies such as Artificial Intelligence (AI) and data mining on top of the current ICT services Sri Lanka specializes in. Other plans include those to encourage transfer of appropriate foreign technologies into Sri Lanka and to integrate ICT literacy into school curricula[25].

2.1.3 Supporting Programs for Startups

In the startup scene, Sri Lanka is now ranked #2 in global ecosystem for affordable talent in 2020[26]. Examples of government initiatives include the "Enterprise Sri Lanka" program by the EDB which provides subsidized loans to youths to encourage entrepreneurship, while examples of industry developments include some of Sri Lanka's largest companies John Keells and Dialog Axiata launching accelerator programs and innovation funds. Hackathons and competitions are also held by universities and firms to encourage innovations in a relatively safer space[27]. A notable startup incubator / accelerator is "hatch"[28] that runs coworking spaces as well as provides incubation/acceleration service.

These initiatives saw Sri Lanka starts to improve its ranking in the Global Innovation Index (GII) from 91 out of 128 in 2016 to 89 out of 129 in 2019[29]. Sri Lanka startups are also doing well in international awards such as the annual Asia Pacific ICT Alliance (APICTA) Awards, which recognizes the best ICT startups across 16 member economies including Singapore, China and India. In the 2018 APICTA Awards, Sri Lanka won 10 medals in various categories[30], and in 2019, Sri Lanka placed overall second among 16 member countries, winning a total of 11 medals across commercial and student categories[31].

2.1.4 Effort for Country Branding in ICT Sector

With the cooperation from ADB and EU, a branding campaign called "Island of Ingenuity"[32] for Sri Lankan knowledge service industry especially ICT/BPM sector towards overseas market has been conducted since 2018, and its marketing strategy has been made. There are three core areas that are highlighted in the branding as follows.

25 https://www.news.lk/images/pdf/2017/sep/Vision_2025_English.pdf
26 https://startupgenome.com/report/gser2020
27 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf
28 https://hatch.lk/
29 https://www.globalinnovationindex.org/gii-2019-report, https://www.globalinnovationindex.org/userfiles/file/reportpdf/gii-full-report-2016-v1.pdf
30 https://apicta.org/apicta-2018-guangzhou/
31 http://bizenglish.adaderana.lk/sri-lanka-secures-2nd-place-at-asia-pacific-ict-awards-2019/
32 https://islandofingenuity.com/

(1) Captive Innovation Center

Promote foreign entities to setup their Captive Innovation Center in Sri Lanka to help accelerate their digital transformation and own disruption in their industry.

(2) Digital Gateway to Asia

Promote Sri Lanka as the Digital Gateway to Asia so that global entrepreneurs are using Sri Lanka as an effective test bed and entry into fast growing emerging markets in Asia.

(3) Digital Disruptors

Promote foreign investment in Sri Lankan digital disruptors/startups that are developing domain-specific transformative IP and business products.

2.1.5 Relevant Government Organizations

(1) Information and Communication Technology Agency (ICTA)[33]

ICTA is the lead agency for implementation of information and communications technology (ICT) initiatives by the Government of Sri Lanka. It was established in 2003 through Information and Communication Technology Act No. 27[34] to develop the economy of Sri Lanka through ICT. There are the following major activities ICTA has been implementing, among others.

- Digital infrastructure – Implemented e-Sri Lanka Development Project[35] funded by the World Bank from 2004 to 2011, and established "Lanka Government Information Infrastructure" (LGII)[36] responsible for the operation and development of "Lanka Government Network" (LGN)[37] which is a highly available, high-speed, secure, reliable and centrally managed dedicated government network to link all government institutions to a single digital infrastructure.
- Industry development – Set up various industry development programs[38] such as LEAP (Learn, Engage, Aim, Prosper) export readiness program for regional technology SMEs[39] and "Spiralation" tech startup support program[40].

[33] https://www.icta.lk/
[34] http://www.mlwkandy.com/wp-content/uploads/2017/08/Information-and-Communication-Technology-Act-No.-27-of-2003.pdf
[35] https://documents.worldbank.org/en/publication/documents-reports/documentdetail/960831468776074259/sri-lanka-e-sri-lanka-development-project
[36] http://lgii.gov.lk/lgii.html
[37] https://www.icta.lk/projects/lanka-government-network-lgn-1-0/
[38] https://www.icta.lk/industry-development/
[39] https://www.icta.lk/projects/leap-learn-engage-aim-prosper-sri-lanka-export-readiness-program-for-regional-technology-smes/
[40] https://spiralation.com/

- Citizen empowerment and human resource capacity building – Involving many projects[41] such as "Nenasala" project[42], which aims to introduce several models of telecenters (knowledge centers) in all parts of Sri-Lanka to spread ICT services to the rural and semi-urban population.
- Legal framework development – Prepared "Electronic Transactions Act"[43] No. 19 of 2006 and digital signature infrastructure.
- Policy framework development – Prepares a formal ICT Policy for Government setting standards for implementation and management of ICT within government entities.
- Cyber security – Set up the Sri Lanka Computer Emergency Readiness Team/Coordination Center (SLCERT/CC)[44] in 2006 to proactively protect the information infrastructure of Sri Lanka.

(2) Export Development Board (EDB)[45]

Sri Lanka Export Development Board (EDB) is Sri Lanka's premier organization for the development and promotion of exports, established in 1979 under the Sri Lanka Export Development Act No. 40, under the guidance of the International Trade Center (ITC) and the United Nations Conference on Development of Trade & Tariffs (UNCTAD). EDB plays several roles including the followings.

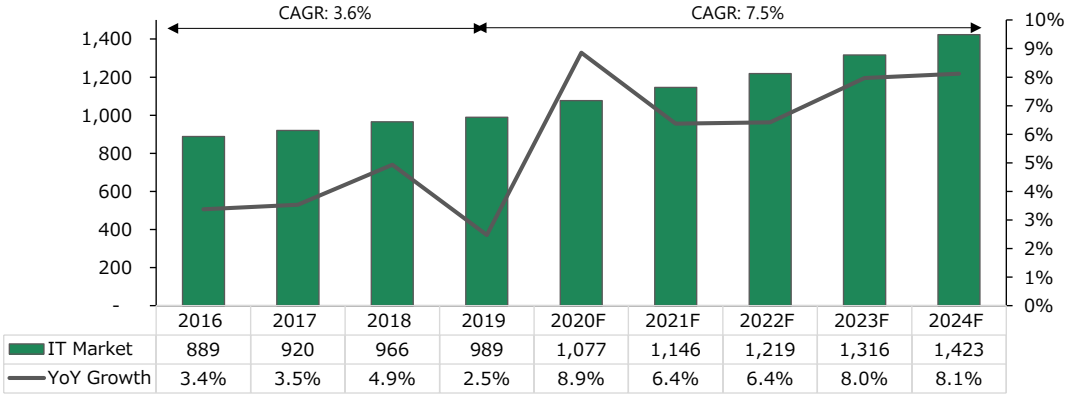
- Policy Adviser - Advising the Government on national export development policies to create a conducive environment for exports.
- Monitor - Monitoring the performance and function of the export sector.
- Promoter - Implementing product, design, market and other development programs to promote Sri Lanka's products and services.
- Facilitator - Serving as the focal point of export development, facilitating and co-coordinating export development activities with all stakeholders.
- Knowledge Provider - Providing advisory services and information with regard to all aspects of the export business and advisory assistance to the exporters.

Most government efforts to export ICT sector services to overseas have been conducted and promoted by EDB (See 2.4.2 for details). There is also a dedicated page on the EDB Web site for ICT sector[46].

41 https://www.icta.lk/citizen-empowerment/
42 https://www.icta.lk/projects/nenasala-project-national-telecenter-project/
43 https://www.casrilanka.com/casl/images/stories/EDBA/electronic%20transactions%20act%20no.%2019%20of%202006.pdf
44 https://www.cert.gov.lk/
45 https://www.srilankabusiness.com/
46 https://www.srilankabusiness.com/ict-services/

2.2 Efforts in Private Sector and Relevant Organizations

2.2.1 ICT Market Overview



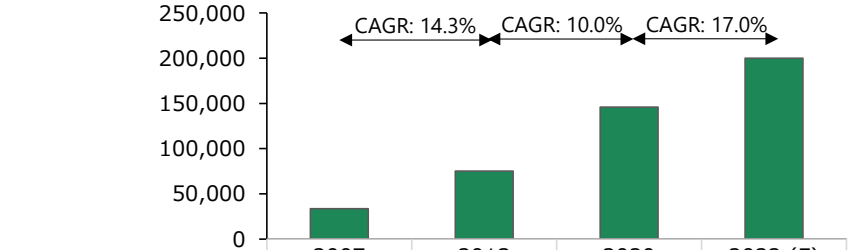
	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F
IT Market	889	920	966	989	1,077	1,146	1,219	1,316	1,423
YoY Growth	3.4%	3.5%	4.9%	2.5%	8.9%	6.4%	6.4%	8.0%	8.1%

Figure-7 Sri Lanka IT Spending (USD million)[47]

As shown in Figure-7, the IT market in Sri Lanka was sized at 989 US million in 2019 with a growth rate of 4.9% in 2018 and 2.5% in 2019 from the previous year. It had been growing steadily since its emergence from the Civil War. Since 2016, Sri Lanka has achieved an average CAGR of 3.6%.

From 2019, however, Sri Lanka's IT industry is anticipated to experience an increased CAGR of 7.5% till 2024. This is driven by factors such as an even stronger economic outlook with increased demand for IT products and solutions both in the private and public sector. As the government pledges to increase digitalization efforts in the public sector, and outlines concretes steps for the public sector to do so as well in the country's first Digital Policy in 2019, this demand is likely to sustain into the future.

As a share of GDP, Sri Lanka's ICT expenditure (including all ICT-related hardware, software, and services) was 1.0% in 2017. It is expected to increase till 1.2% in 2023[48].



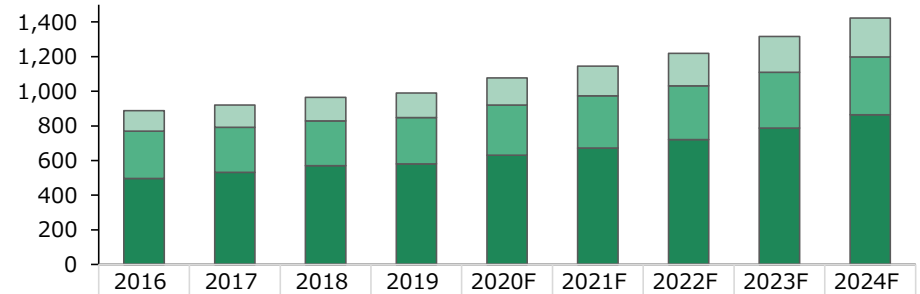
	2007	2013	2020	2022 (F)
Number of Employees	33,700	75,100	146,000	200,000

Figure-8 Number and Growth of Employees in ICT Sector[49]

[47] Fitch Solutions "Sri Lanka Information Technology Report 2020"
[48] Fitch Solutions "Sri Lanka Information Technology Report 2020"
[49] https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lankan-IT-BPM-Industry-Review-2014.pdf, https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf

The number of workers employed in the IT sector has been growing more rapidly than the growth in IT spending, doubling every 5-6 years since 2007 as seen from Figure-8. Approximately 5,000 students graduate annually with IT diplomas from universities or technical institutes. By 2022, the government plans to achieve employment of 200,000 in the IT sector[50].

2.2.2 ICT Market Segments



	2016	2017	2018	2019	2020F	2021F	2022F	2023F	2024F	CAGR
Software	119	128	136	141	157	172	187	207	225	6.6%
Hardware	274	260	259	267	289	302	310	322	334	2.9%
Services	496	531	571	581	631	672	722	788	864	7.2%

Figure-9 Breakdown by IT services, hardware and software (USD million)[51]

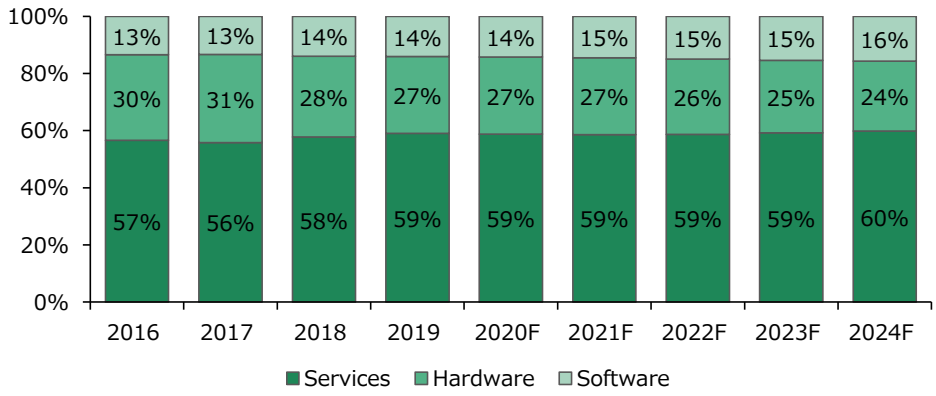


Figure-10 Breakdown by IT services, hardware and software (%)[52]

Looking at Figure-9, while all three segments of services, software and hardware are increasing, services and software see the highest CAGRs of 7.2% and 6.6% respectively. This is translated to a steady increase in share for services from 57% to 2016 to 60% in 2024, and software from 13% in 2016 to 16% in 2024 as seen in Figure-10. These increases come at the expense of hardware which falls steadily from 30% in 2016 to 24% in 2024.

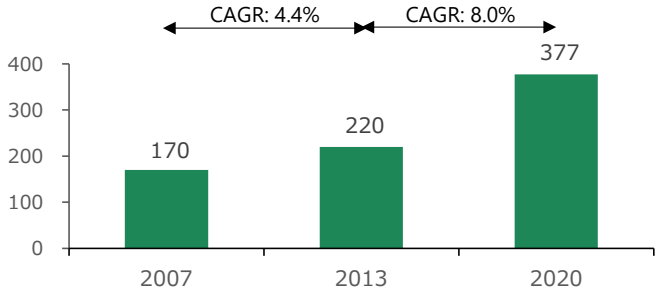
Such changes are due to the relatively stronger demand for services and software relative to hardware. As mentioned in section 2, the expansion of the private sector generates demand for software solutions

[50] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[51] Fitch Solutions "Sri Lanka Information Technology Report 2020"
[52] Fitch Solutions "Sri Lanka Information Technology Report 2020"

in order to support such expansion. The financial services sector is an example of such a vertical with high digitalization potential from banking platforms to CRM services and data analytics. The tourism industry is also another example, where booking systems for hotels and hospitality providers are being rolled out. On top of private sector demand, the government has also demonstrated commitment to digitalize their processes as outlined in the National Digital Policy 2019.

The rising importance of software and services naturally causes that for hardware to decline. On top of that, growth in retail PC spending in Sri Lanka is seeing a stagnation due to the cannibalization of sales from lower costing smartphones.

2.2.3 ICT Companies



Note: Number in 2007 and 2013 are from official government sources, but number of ICT companies in 2020 is derived from Factiva database as official government sources state range of 300+

Figure-11 Number of ICT companies[53]

Figure-11 above shows a proliferation of companies in the Sri Lankan ICT sector in the recent years. This has been due to a vibrant startup ecosystem (more in section 3.4) with several angel funding initiatives and major mentor network led by SLASSCOM member companies which nurture local tech startups in the industry. Moreover, Sri Lanka boasts a strong pro-business environment of Sri Lanka, with rigorous IP regimes and lax regulations on foreign companies, which incentivizes international players such as Microsoft, Oracle and IFS to set up companies in Sri Lanka and contributing to the high growth in company numbers[54].

In the future, we expect matched growth in the number of ICT companies, contributed by the growth in local tech startups in an increasingly vibrant tech startup ecosystem. This can be attributed to the government's aim to nurture 600 more startups by 2022, paying particular attention to tech startups by providing them with grants, incubators, and access to mentors to nurture fresh and innovative tech solutions.

[53] Dow Jones Factiva database
[54] Fitch Solutions "Sri Lanka Information Technology Report 2020"

Breakdown by Segments

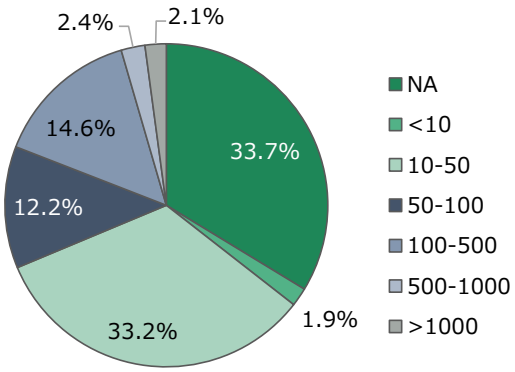


Figure-12 Breakdown by number of employees[55]

From Figure-12, most ICT companies in Sri Lanka are small to medium sized companies, with few large companies. With Factiva being the source used for this breakdown, it can be assumed that companies which do not indicate their number of employees, and are hence counted under "NA", are predominantly small companies as well. This gives a combined percentage of 35.6% for "NA" companies and companies with lesser than 10 people. It reflects the Sri Lankan ICT landscape, which is primarily made up of start-ups that often operate on leaner manpower resources. There are only a small number of large-scale ICT companies in Sri Lanka, with some notable local examples being John Keells Holdings and Sri Lanka Telecom, the rest being international multi-national corporations such as IFS, Intel, Motorola, and Accenture.

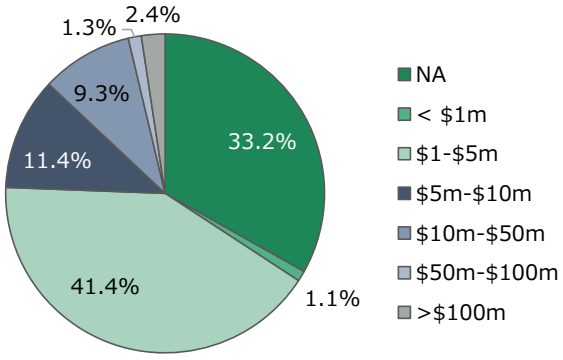
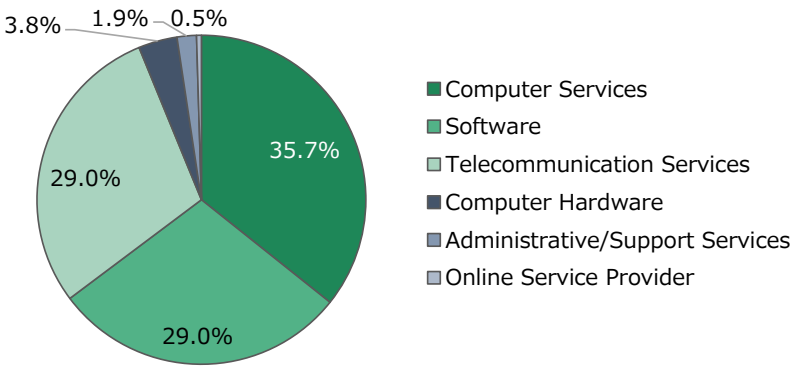


Figure-13 Breakdown by revenue[56]

Referring to Figure-13, most companies are also small to medium sized with revenue below USD 5 million, which is proportional to the level of manpower employed across the companies.

[55] Dow Jones Factiva database
[56] Dow Jones Factiva database



Note: Of the 220 companies originally included in the breakdown, there was no segment data for 100 companies

Figure-14 Breakdown by business segment[57]

In Figure-14, the most prominent ICT segments are computer services, software, and telecommunication services. This corresponds to our earlier findings of Sri Lanka exporting a higher share of IT services and software relative to hardware.

2.2.4 Startup Sector

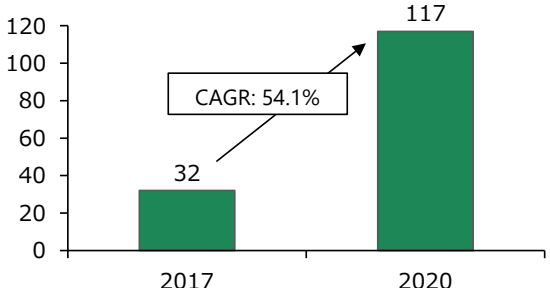


Figure-15 Value of Sri Lanka's Startup Ecosystem (USD million)[58]

The value of the Sri Lankan startup ecosystem has quadrupled from USD 32 million in 2017 to USD 117 million in 2020 with a CAGR of 54.1%, as seen in Figure-15. Sri Lanka achieved a significant milestone of more than 550 startups in 2020[59], and is aiming to have 1,000 startups as outlined in their 2022 vision. Most startups are technology driven and focus on growth unconstrained by geography with the help of technology. Sri Lankan startup ecosystem is also ranked #2 in the world for "Affordable Talent" according to 2020 report by Global Entrepreneurship Network[60]

The expansion of the startup landscape is due to joint efforts from the government and private sector in recent years. Some initiatives include government-funded programs such as "Spiralation" and "DisruptAsia" which provide startups with seed funding, market access and capacity building. The

[57] Dow Jones Factiva database
[58] https://startupgenome.com/reports/global-startup-ecosystem-report-2017, https://startupgenome.com/reports/gser2020
[59] https://www.startupsl.lk/
[60] https://www.lankabusinessonline.com/global-startup-ecosystem-report-ranks-sri-lanka-as-2-global-ecosystem-for-affordable-talent/

private sector is also committed to developing startups, with large Sri-Lankan companies such as John Keells Holdings PLC and Dialog Axiata PLC launching accelerators and innovation funding for them. In particular, many efforts are targeted at the youth, with hackathons and competitions organized by universities and firms providing a space for student-led innovation, and programs such as "Enterprise Sri Lanka" which provides youth with subsidized loans for business ventures.

Breakdown by Segments

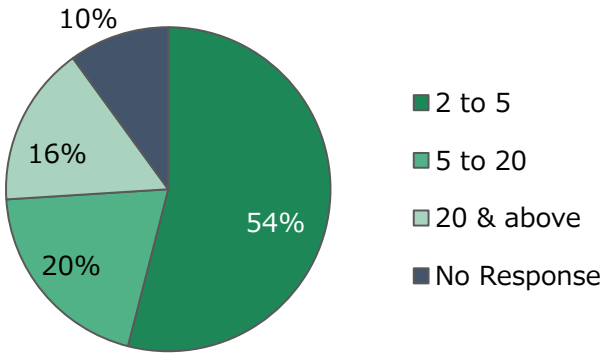


Figure-16 Breakdown of start-ups by number of employees[61]

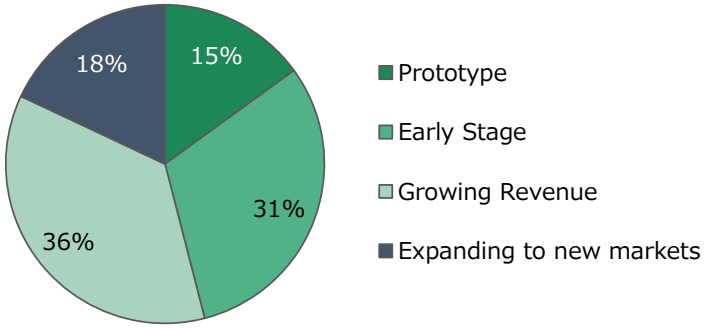


Figure-17 Breakdown of start-ups by growth stage[62]

According to Figure-16, most start-ups in Sri Lanka are small in size, with 54% of them operating with 2-5 employees. In Figure-17, the combined percentages of startups in the prototype and early stage is at 46%, highlighting that there remains huge potential for Sri Lankan startups to grow and flourish locally.

Due to the government's new focus on start-ups, accompanied by the sprouting of start-up accelerators and tech grants, we expect more companies to enter the prototyping and early stages in the near future. With increased efforts in branding the ICT market in the international market as well, we foresee a rise in the number of companies expanding to new markets, potentially skewing the percentages of companies across various stages like shown in Figure-17.

61 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf
62 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf

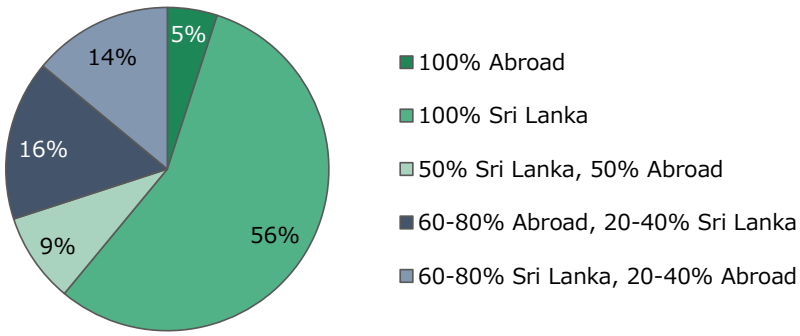


Figure-18 Breakdown by geographic revenue[63]

Corresponding to Figure-17 which shows that only 18% of companies expanding to new markets, Figure-18 reveals that 56% of Sri-Lankan based startups are based entirely in Sri Lanka. This highlights the need to communicate with startups at a deeper level to understand if the situation is by choice, or if there are barriers to overseas expansion plans.

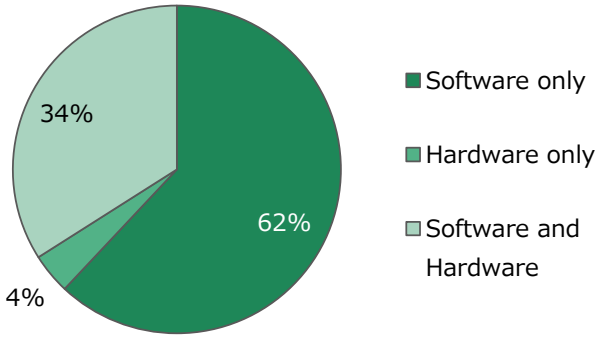


Figure-19 Breakdown by product type[64]

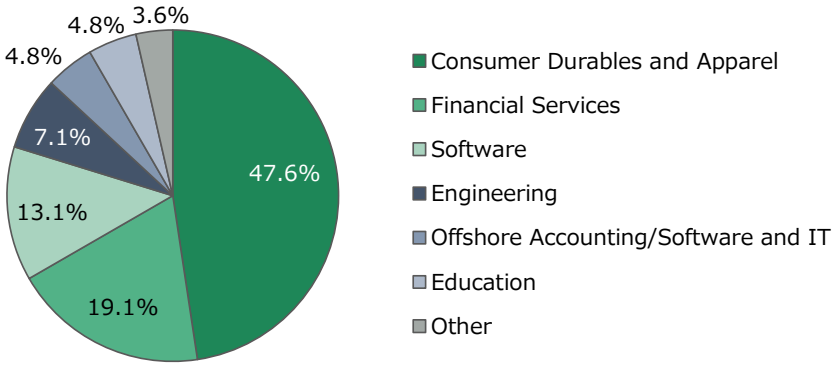


Figure-20 Breakdown of start-ups by business segment[65]

According to Figure-19, a large majority of 62% of Sri Lankan startups provide software solutions, or a combination of software and hardware solutions at 43%. Only a small minority of 4% have solely hardware solutions, which is in line with Sri Lanka's national vision of software-centric growth in the

63 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf
64 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf
65 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lanka-Startup-Report-2019.pdf

ICT sector. From Figure-20, the three business segments with the largest number of local start-ups are consumer durables and apparel (47.6%), financial services (19.1%) and software services (13.1%).

2.2.5 Relevant Non-government Organizations

(1) SLASSCOM[66]

Established in 2008, SLASSCOM (Sri Lanka Association for Software and Services Companies) is the national chamber for the IT/BPM industry in Sri Lanka. It acts as the catalyst of growth for the Sri Lankan IT and BPO industry by facilitating trade and business, propagation of education and employment, encouragement of research and innovation, and by supporting the creation of a progressive national policy framework. SLASSCOM is the biggest IT/BPM industry association in Sri Lanka with over 350 member companies and a total of 30,000+ employee base.

SLASSCOM's key strategic initiatives are run by nine different forums: Marketing, Capacity, Regional Development, Entrepreneurship, Technology, Quality, Business Process Management, Innovation, and Human Resources. Each forum is comprised of industry leaders and volunteers.

2.3 Export Status of ICT Sector

As we will mention in section 2.3.2 and as shown in Table-2, the top markets for ICT exports are to USA and Europe. The sector is planning to expand its offerings to its existing consumer base, especially in IT software in both traditional and emerging technology sectors, as well as KPO and BPM uses.

Table-2 Current and Future IT exports by region/country[67]

Region	Country	Products		
		IT	BPM and technical support	KPO
Asia-Pacific	Japan	▲	○	▲
	Emerging Markets (Bangladesh, Myanmar, Cambodia)	○	-	-
	Australia	▲	-	○
	New Zealand	-	▲	▲
	Others	-	○	○
America	US	○	○	○
	Canada	-	▲	▲
Europe	UK	○	○	○
	EU	○	-	-
	Scandinavia	▲	-	▲
Rest of the World	Africa	-	▲	○
	Middle East	-	-	▲

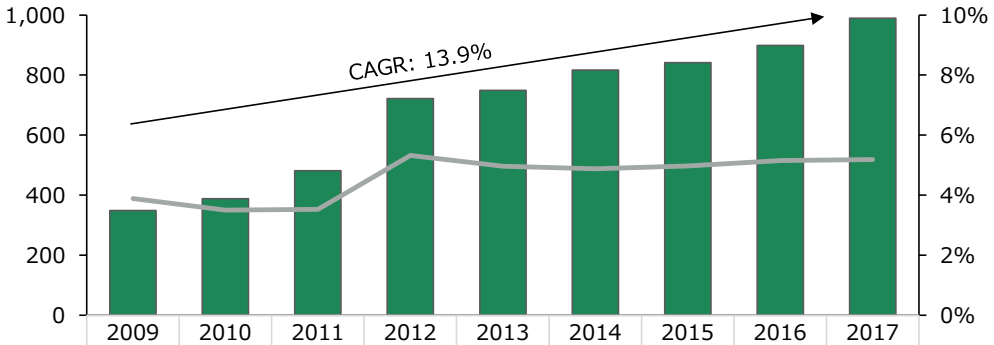
Note 1: ○ represents existing markets in which said services are present, and ▲ represents new markets which Sri Lanka is planning to develop in that service area
Note 2: For IT, existing products refers to software and solutions, applications, and IT consulting. New products refer to mixed reality, augmented reality and IoT solutions.
Note 3: BPM and technical support refers to contact centre operations, medical and financial transcriptions, sales and marketing, R&D
Note 4: KPO refers to finance and accounting outsourcing, data, and document conversion.

[66] https://slasscom.lk/
[67] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf

Currently, the Sri Lankan IT services market is segmented into IT, KPO and BPM. The country is planning to ride on the growing market demand in all three areas to expand globally through promotion of Sri Lankan products in the said countries. Based on the result of online questionnaire to Sri Lankan ICT solution enterprises implemented by the Survey Team, most of them have strong desire to expand into the Japanese market, especially in IT and KPO, which we believe still have room for market entry and have strong potential for collaboration with Japanese companies. The government plans to expand into new markets by conducting business tours and publishing successful case studies and success stories in the business areas. In the KPO and BPM sectors, the specific target market stated is the B2B market[68].

The country is also open to collaborate within the ICT sector on an international level. In August 2019, SLASSCOM, together with ICT Norway (IKT-Norge), kicked off a fresh initiative to empower startups in the country, including encouraging entrepreneurship and knowledge exchange. This increased visibility on AI and the TechKids (Kids Can Code) program to build future tech leaders[69]. Many multinational corporations have also invested in Sri Lanka's ICT sector or have had large-scale collaborations with Sri Lankan companies. For example, Microsoft is partnering with AI Academy Sri Lanka[70], providing the academy with cloud-enabled tools and software. SLASSCOM also recently announced a partnership with AWS Educate[71] to skill Sri Lanka's workforce to compete both locally and globally in an emerging tech frontier[72]. Other collaborations in the private sector include that between IBM and Lanka Bell, a Sri Lankan telecommunications service provider, to provide cloud services to enterprises, start-ups, developers and government. bodies via the IBM Cloud, amidst others.[73]

2.3.1 Achievements



	2009	2010	2011	2012	2013	2014	2015	2016	2017
ICT Exports	348	388	481	721	749	817	842	899	989
% of total X	3.9%	3.5%	3.5%	5.3%	5.0%	4.9%	5.0%	5.2%	5.2%

Figure-21 ICT Exports in Sri Lanka (USD million) and its share of total exports[74]

[68] Government of Sri Lanka "National Exports Strategy of Sri Lanka Information Technology Strategy 2018-2022"

[69] http://www.ft.lk/front-page/SLASSCOM-and-Norway-sign-2-year-agreement-to-collaborate-on-ICT-development-and-entrepreneurship/44-684251

[70] https://news.microsoft.com/apac/2020/06/09/microsoft-partners-with-sri-lankas-first-education-institute-dedicated-to-the-field-of-applied-ai-ai-academy/)

[71] https://aws.amazon.com/education/awseducate/

[72] https://lmd.lk/slasscom-and-aws/

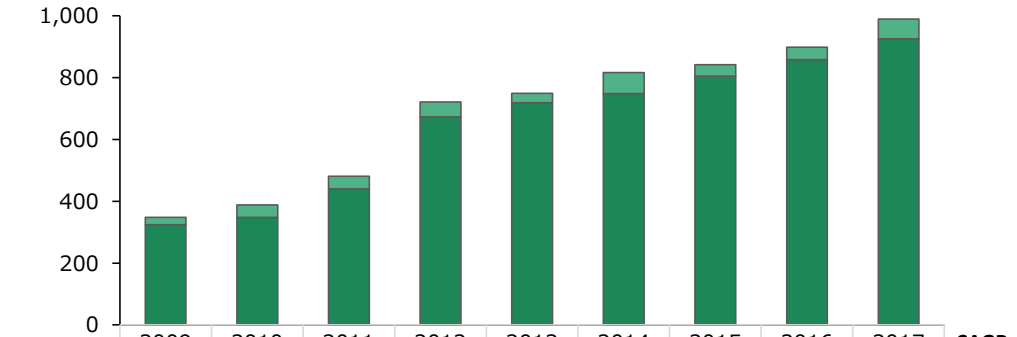
[73] https://www.lankabusinessonline.com/lanka-bell-ibm-to-accelerate-cloud-adoption-in-sri-lanka/

[74] World Bank World Development Indicators

The ICT export market in Sri Lanka was sized at 989 US million in 2017 with a growth rate of 10% from the previous year, as shown in Figure-21. Since 2009, Sri Lanka achieved a CAGR of 13.9% in its ICT exports. The ICT sector has also maintained a consistent percentage of total exports of 5.2% in both 2016 and 2017, with an increase from 3.5% in 2010. The reason for this growth includes an increased global demand of IT-BPM services, which was channeled to the growth of the sector due to the Sri Lanka's strengths as outlined in the introduction (cost advantages for example)[75].

As a percentage of total exports, ICT exports have increased from 3.9% in 2009 to 5.2% in 2017. The rising importance of ICT exports to Sri Lanka's exports have been identified by the government, with the Export Development Board (EDB) pointing it out as one of the six focus sectors in the National Export Strategy in 2018. Together with the SLASSCOM, they have unleashed a large number of initiatives to promote the sector further and achieve USD 5 billion in export revenue by 2022[76]. As such, Sri Lanka's ICT exports are anticipated to grow at an even faster rate in the future.

2.3.2 Breakdown by Segments



	2009	2010	2011	2012	2013	2014	2015	2016	2017	CAGR
Goods	24	40	41	49	31	69	37	40	63	14.0%
Services	325	348	440	673	719	748	805	858	926	13.1%

Figure-22 Breakdown of ICT Exports by Goods and Services (USD million)[77]

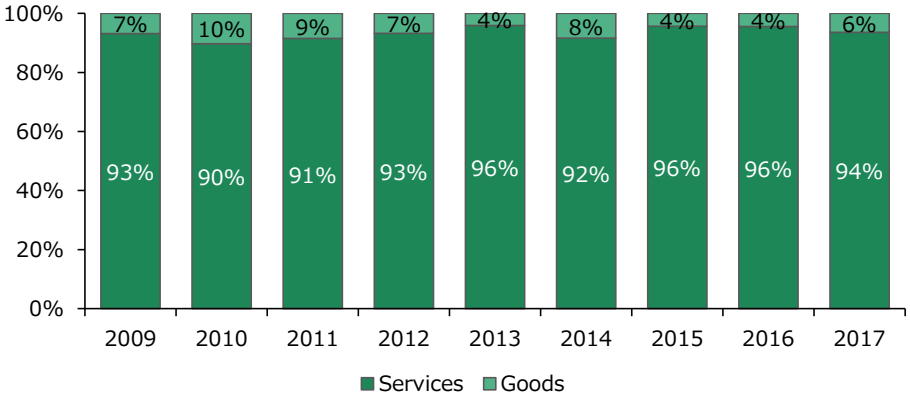
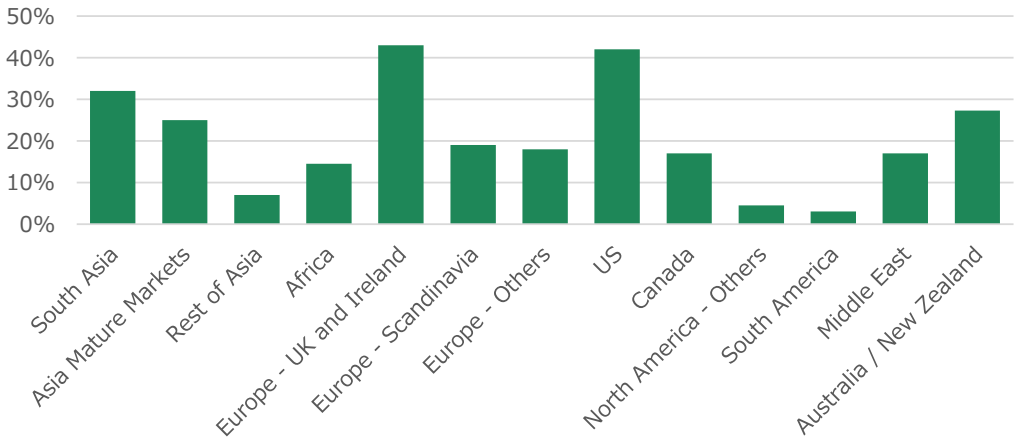


Figure-23 Breakdown of ICT Exports by Goods and Services (%)[78]

[75] https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lankan-IT-BPM-Industry-Review-2014.pdf
[76] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[77] World Bank World Development Indicators
[78] World Bank World Development Indicators

As seen in Figure-22, both goods (or hardware) and services (including software) have seen similarly rapid export growth rates between 2009 and 2017 at 14.0% and 13.1% respectively. In Figure-23, services (including software) take up a large portion of Sri Lanka's ICT exports at more than 90% between 2009 and 2017. In developing IT software and services, Sri Lanka has an advantage over other offshore destinations due to its cheaper wages as explained earlier. Regionally, it outperforms its South Asian peers in terms of technological infrastructure. For example, Sri Lanka was the first South Asian country to develop advanced cellular networks such as 3G, 4G and 5G[79] and introduction of wide-area IoT networks using new technologies such as LPWA. On the other hand, while it is equipped with low labor costs in manufacturing, Sri Lanka has lesser ability to compete with other internationally recognized regional manufacturing bases such as China, Bangladesh and Vietnam in terms of economies of scale[80].

Yet the breakdown has also remained fairly consistent over the years, with goods taking up less than 10% and services taking up more than 90% accordingly. This is likely due to the equal focus placed on both types of exports by the government. In fact, in the 2018 National Export Strategy, the government identified both IT-BPM and the Electronic and Electrical Components as 2 out of the 6 focus sectors for innovation and export diversification[81]. Hence this breakdown is expected to remain the same even in future years.



Note 1: Data is taken from year 2010 due to lack of data in recent years.
Note 2: Percentages describe percentage of total companies interviewed that export to a certain destination. Since one company can export to multiple locations, the percentages do not add up to 100%.

Figure-24 Percentage of ICT companies in Sri Lanka exporting to selected destinations[82]

[79] https://iesl.lk/SLEN/50/5G%20Evolution.php
[80] https://oxfordbusinessgroup.com/overview/efforts-are-ongoing-foster-innovation-and-promote-sri-lanka-alternative-destination-manufacturing
[81] https://www.srilankabusiness.com/pdf/nes/sri-lanka-nes-4-3-web.pdf
[82] https://slasscom.lk/wp-content/uploads/2019/10/ICT-Export-Value-Survey-2010_Final-Report_v1-0.pdf

Breaking down exports by destination in Figure-24 above, the top three markets that Sri Lankan companies export to were Europe – UK and Ireland, US and South Asia in 2010. This reveals the sector's significant market presence in these three regions, primarily due to the many multinational corporations based in the former two regions such as Microsoft, Lenovo and JP Morgan, which source IT-BPM services from Sri Lanka[83].

Currently, main export markets for Sri Lanka include European countries such as UK, France, Germany and Netherlands, along with US and India. According to National Export Strategy (NES) for IT/BPM sector[84], Japan is considered as a new addition to the top export targets for IT/KPM sector mainly because Japan is the world's sixth largest ICT service importing country, and there have already been successful IT service business cases with Sri Lankan IT companies in Japan[85]. In the future, the breakdown proportions are expected to remain relatively unchanged as the outlined National Export Strategy is not focused on targeting specific regions, but rather on increasing exports worldwide.

2.3.3 Core Competence of ICT Sector

The areas of strength presented below were chosen based on the following criteria: firstly the market size, and secondly the number of startups in that sector. When applicable, the number of startups that have won awards at international startup awards such as the Asian Pacific ICT Alliance (APICTA) Awards were also considered. Finally, related recent developments were focused upon as well. This includes government policies, notable private sector developments and education strategies within the sector. Specifically, of the fields introduced in this section, health tech and AI/data science are expected to grow in the future, while the others are fields where the industry is already established and has strengths.

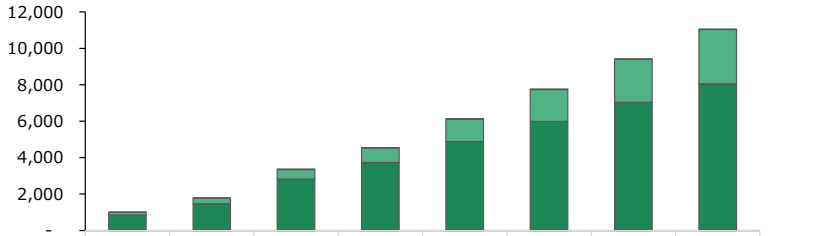
(1) Fintech

Fintech is an area where Sri Lanka has a clear advantage over other countries. Led by MillenniumIT[86], which is famous for developing the digital trading system for the London Stock Exchange, one of the world's three largest stock exchanges, this is an area that has been well established and is still growing worldwide, with companies present in all segments such as e-payment solutions, P2P lending platforms and internet banking. Fintech companies in Sri Lanka have also been winning many prestigious awards in international startup competitions such as the APICTA Awards. It also takes up one of the largest percentages by sector of startups in Sri Lanka as illustrated in Figure-20.

In particular, there is strong emphasis on digital payments and personal finance, as seen in Figure-25 where both make up the bulk of total Fintech transaction values. Alternate lending/financing,

83 https://slasscom.lk/wp-content/uploads/2019/10/Sri-Lankan-IT-BPM-Industry-Review-2014.pdf
84 https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
85 http://gitmu.jp/en_US/
86 https://www.mitesp.com/

on the other hand, contributes marginally to total transaction values, but is expected to show potential with high CAGR rates of 37.8% between 2017 and 2024. Digital payments refer to online e-payment methods, ecommerce transactions and mobile wallets or mobile point-of-sale payments. Personal finance refers to Robo-advising solutions for automated investment portfolios, as well as cross-border payments between individuals (e.g., Transferwise, Worldremit). Alternative lending/financing includes crowd-investing, crowd-funding and P2P lending platforms.



	2017	2018	2019	2020 (F)	2021 (F)	2022 (F)	2023 (F)	2024 (F)	CAGR
Alternative Lending/Financing	11	12	13	14	15	16	17	18	37.9%
Personal Finance	152	299	531	805	1,232	1,756	2,349	2,979	53.0%
Digital Payments	847	1,467	2,821	3,729	4,884	5,988	7,047	8,055	7.1%

Figure-25 Fintech Transaction Value (USD million) by segment[87]

On the policy front, efforts by the Central Bank to nurture Fintech startups include the recent launch of a "Fintech Regulatory Sandbox"[88] in February 2020, providing selected Fintech innovators to test their products and services for 9 months in a controlled environment before launching their products into the market, and without the risk of infringing on regulatory requirements. Other initiatives include awareness campaigns to promote usage of digital payment amongst the general public. Private company-led initiatives include HatchX Fintech Chapter, a startup accelerator initiative launched by startup incubator Hatch in partnership with Lankan Angel Network, and endorsed by the Central Bank and Fintech Association of Sri Lanka. From April 2020, it provided seven selected Fintech startups, with functions ranging from e-payments to P2P lending, with a four-month intensive curriculum providing tailored advisory with mentors from the industry completely free-of-charge[89].

(2) Internet of Things (IoT)

Sri Lanka has always been ahead of other South Asian nations in setting up connectivity networks – it was the first South Asian nation to launch both 3G and 4G in 2004 and 2013 respectively[90]. The first 5G network in South Asia has also been launched, with a collaboration between leading telecommunication service provider Dialog Axiata PLC and Ericsson. This is just one of many

87 Statista Fintech Report 2020

88 https://www.cbsl.gov.lk/sites/default/files/cbslweb_documents/about/20200214-FinTech-Regulatory-Sandbox-of-CBSL-Framework-e.pdf

89 https://medium.com/hatchworks/hatch-and-lan-launches-hatchx-sri-lanka-s-first-fintech-accelerator-60db88820af7

90 https://phys.org/news/2013-03-sri-lanka-auctions-airwaves-4g.html#:~:text=Sri%20Lanka%20became%20the%20first,a%203G%20network%20in%202004.

examples of partnerships between local IoT firms and global corporations. Announcements to launch this massive IoT network was first made in 2018, and its service has already started.

The government is also embarking on an IoT Roadmap for 2019-2024 which aims to create an IoT supportive industrial ecosystem and position Sri Lanka as a global supplier of IoT[91]. Furthermore, under Sri Lanka's Digital Economy Strategy launched in 2018, there have been initiatives to increase the adoption of IoT networks and systems into various economic sectors. For example, to digitalize the agriculture sector, the government plans to build an "Agri Nerve Centre", compiling historical and real-time data through remote sensors to make recommendations specific to individual farms regarding soil condition and expected crop yields[92]. Particularly in the agricultural sector, companies such as SenzAgro are already providing not only agricultural IoT, but also cloud platforms designed for IoT as a total solution.

Sri Lankan IoT companies offer solutions in different areas, including agriculture, logistics, manufacturing, and smart offices solutions, which have won APICTA awards too. With ample government interest and support, coupled with private market initiatives, the IoT market in Sri Lanka has huge potential for growth.

(3) Health Tech

The healthcare industry has been highlighted as a promising strategic sector for digitalization in Sri Lanka[93]. One of the e-Government initiatives outlined in the 2019 National Digital Policy will see the establishment of an open-sourced medical record software to be shares across hospitals. Public-private partnerships are also prevalent. In particular, the Ministry of Health announced a partnership with REDtone MEX Sdn Bhd and Hinacom Software and Technology, healthtech companies specializing in medical imaging technology and based in Malaysia and China, respectively. This landmark project, pioneered in 2019 to introduce cutting edge, Artificial Intelligence-based technology to 20 main government hospitals island wide will cost the government approximately Rs5.9 billion (USD 78 million), showcasing the government's strong will to introduce technology into the healthcare sector[94].

One further example of prominent private sector developments is the tie-up between Dialog Axiata PLC and the Health Informatics Society of Sri Lanka, a professional association for medical, health and IT professionals and in 2019. This collaboration aims to establish a 'Digital Health Innovation Laboratory' to incubate and develop healthcare technology solutions, as well as a Centre of

91 http://www.mdiit.gov.lk/index.php/en/component/jdownloads/send/6-legislation/76-national-digital-policy
92 http://www.mdiit.gov.lk/index.php/en/component/jdownloads/send/2-policies/77-sri-lanka-digital-economy-strategy
93 http://www.mdiit.gov.lk/index.php/en/component/jdownloads/send/6-legislation/76-national-digital-policy
94 http://www.ft.lk/healthcare/A-new-era-of-digital-healthcare-to-Sri-Lanka/45-687508

Excellence and an Innovation Hub to share knowledge on digital health and facilitate discussion between academia and the private sector.

Currently, there are now 36 startups in the Sri Lankan Healthtech industry, with functions spanning across telemedicine, medical record software and clinical workflow systems, some of which are expanding into neighboring regions such as India[95].

(4) AI/Data Science

Sri Lanka's first AI policy framework was launched in June 2019. It aims to encourage the use of AI to various economic and social sectors such as education, healthcare, and agriculture. This will be done by establishing initiatives that address current shortfalls in the ecosystem, including incentivizing research in AI and increasing its adaption in both public and private sectors[96]. There are also plans to export AI/Data Science solutions once successful, and to turn it into the third pillar of Sri Lanka's IT-BPM sector[97].

In more concrete steps to address the shortage of graduates specialized in AI/Data Science, SLASSCOM collaborated with AWS Educate (described above) to train 50,000 students in this domain over the next two years from 2019[98]. Similarly, SLASSCOM and EDB partnered with the University of Colombo to offer a 'Training Program in Fundamentals of Data Science' through the newly formed Centre for Data Science[99]. An institute dedicated to AI and data analytics was also launched in 2020. Asides from providing a foundation in these emerging technologies, the institute will also provide opportunities for students to engage in hands-on projects with actual businesses and internships. This will further bridge the gap between what is demanded in the workforce and what is taught in schools[100].

(5) Embedded systems/Robotics

Embedded systems/Robotics is the only area of strength identified that involves IT hardware products. As such, it benefits from the fact that both IT-BPM and Electrical and Electronic Components (EEC) were identified as focus sectors in the 2018 National Export Strategy. For the EEC sector, the government plans to catch on with global trends such as automation and miniaturization which will allow embedded technologies to continue delivering disruptive solutions. Some suggested initiatives include streamlining and strengthening the Intellectual

95 https://tracxn.com/explore/HealthTech-Startups-in-Sri-Lanka

96 http://www.ft.lk/front-page/SLASSCOM-launches-Sri-Lanka-s-first-AI-policy-framework/44-680805

97 http://www.ft.lk/front-page/IT-industry-seeks-more-support-from-Govt--to-drive-SL-s-start-up-ecosystem--SLASSCOM-Chairman/44-671908

98 https://www.lankabusinessonline.com/slasscom-and-aws-collaborate-to-position-sri-lanka-as-hub-for-data-science-and-ai/

99 http://bizenglish.adaderana.lk/slasscom-launches-joint-program-with-university-of-colombo-for-data-science-and-ai/

100 http://www.ft.lk/it-telecom-tech/AI-Academy-Sri-Lanka-s-first-dedicated-Artificial-Intelligence-Educational-Institute-opens/50-697175

Property regime and spending USD 500 thousand to establish an incubation center for advanced electronic design that can support 20 startups a year[101].

At the same time, under the National Export Strategy's "IT Initiative", the government will invest in their own angel fund of USD 1.5 million to support emerging fields such as robotics and AI. Higher-education institutions such as the University of Colombo, University of Moratuwa and the Sri Lanka Institute of Information Technology (SLIIT) will conduct training courses in these areas. The courses will be held in collaboration with the private industry, and will provide direct opportunities for graduates to be employed by the related companies[102].

In terms of education, students are also given opportunities to delve into the field. Sri Lanka does well in global robotics competitions such as the FIRST Global Challenge, which is the largest annual Robotics Olympiad in the world for school students. In 2019, the Sri Lanka team won the Judges' Award for Technical Excellence for the best designed robot for the second consecutive year due to the robot's innovative and advanced designs. They were also awarded Bronze medals[103].

(6) Business Process Management (BPM)

The BPM sector is an established and mature sector within the Sri Lanka economy. Sri Lanka has demonstrated its international competitiveness by earning the named 'Offshore Destination of the Year" by National Outsourcing Association (GSA-UK) in 2013 and 2014.[104] It was also 11th in the A.T. Kearney's Global Services Location Index (GSLI) in 2017.[105] Though BPM is not considered as an advanced technology in the scope of the Survey and is more suited for offshore development, it is still possible to combine BPM with advanced technologies such as AI, IoT, Fintech, etc.

In particular, with the largest pool of UK-certified accountants globally outside of the UK, the BPM sector enjoys a niche in financial and accounting outsourcing services. In fact, Colombo ranked as the 5th most attractive destination globally for F&A by Tholons. Though the current BPM industry in Sri Lanka is specialized in providing lower-end products such as financial accounting and website/mobile application development, Sri Lanka's National Export Strategy is to move into higher-end products like data analytics, market intelligence and legal services. Numerous companies within the financial and accounting sector are also increasingly stepping up digitalization and automation processes in the services they offer as well.

101 https://www.srilankabusiness.com/pdf/nes/sri-lanka-eec-6-web.pdf
102 https://www.srilankabusiness.com/pdf/nes/sri-lanka-nes-4-3-web.pdf
103 http://www.ft.lk/it-telecom-tech/Sri-Lanka-wins-Bronze-Medal-and-Judges--Award-in-Robotics-Olympiad/50-688665
104 https://www.mfa.gov.lk/the-high-commission-of-sri-lanka-in-london-hosts-event-on-promoting-the-rural-business-process-outsourcing-bpo-sector-in-sri-lanka/
105 https://www.srilankabusiness.com/bpm-services/

(7) E-Commerce

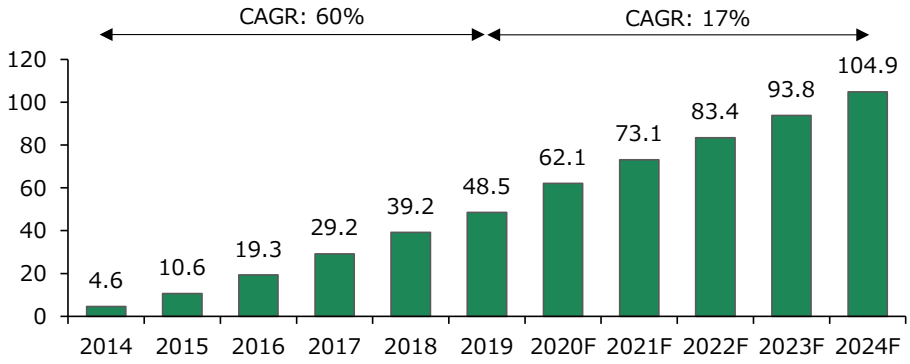


Figure-26 Sri Lanka E-Commerce Market Size (USD million)[106]

As seen inFigure-26, the Sri Lanka E-commerce market has been growing at a high CAGR of 60% between 2014 and 2019. This growth rate is expected to remain high at 17% from 2019 to 2024 despite slowing down. Reasons for the growth include increasing usage of mobile phones, especially smartphones, and high internet connectivity.

In terms of national policy, the Sri Lanka government updated consumer protection laws to establish a more modern and mature framework for E-commerce. Priority areas including access, payments and data protection had been identified for such updates, and will help to foster trust between Sri Lankan consumers and related businesses[107].

Developments in the E-commerce sector have been exciting as well. 2015 saw the consolidation of two top E-commerce players – Alibaba's Daraz and Dialog Axiata's Wow.lk. On the other hand, top local players Takas and Kapruka have launched backend E-commerce services to support similar players and competitors in the market[108].

2.4 Export Status to Japan

2.4.1 Achievements

Japan is one of Sri Lanka's most important trading partners, accounting for 3.8% of Sri Lanka's total trade in 2016 and absorbing 1.9% of Sri Lanka's total exports. In 2016, Japan was Sri Lanka's 9th biggest export destination and 5th largest import source. In 2016, Sri Lanka's exports to Japan is dominated by apparel (22%), tea (20%), fish (7%), coir textile fiber (7%), insulated cables (3%), table and kitchenware (3%). In 2016, Sri Lanka's imports from Japan are mainly comprised of motor vehicles and transport equipment (56%), medical or surgical equipment (5%), self-propelled mechanical shovels, excavators, and shovel loaders (3%) as well as parts of motor vehicles (2%). As most Sri Lankan exports to Japan

[106] Euromonitor International
[107] https://economynext.com/sri-lanka-updating-e-commerce-consumer-protection-laws-11436/
[108] https://startupgenome.com/reports/gser2020

are low-cost and manually produced, time and effort must be invested to establish relationships between companies from both and induce collaboration. However, both governments have mutually agreed to focus on promoting investment and trade relations, with software and IT within the discussed scope of expansion of trade under a Comprehensive Partnership[109]. This also includes organized events such as the Sri Lanka-Japan Business Forum in Colombo in 2014[110] and meetings between delegations from the Japanese Chamber of Commerce and Industry with the leaders of Sri Lanka in 2018.[111]

2.4.2 Efforts for Joining Japanese ICT Market by EDB and SLASSCOM

In a joint statement issued after a Japan-Sri Lanka summit in 2014, both the Governments identified the potential of collaborations for ICT sector[112]. Hence, EDB analyzed the potential of Japanese ICT market and initiated some activities to explore the opportunities. Japan is the third largest developed economy in the world with US$ 4.73 trillion GDP in 2016. Japan's Ministry of Internal Affairs and Communications projected the sector performance to be US$ 2.4 trillion by 2020. This is to be forecasted a CAGR of 3% throughout 2016-2020 and the main growth driver will be software services, cloud computing with Internet of Things. EDB received the assistance of Sri Lankan Embassy in Japan, JETRO, SLASSCOM and other relevant Associations in fact findings and organizing the events. The table below shows all efforts up to now for entering Japanese ICT market by EDB and SLASSCOM in chronological order.

Table-3 Efforts for joining Japanese ICT market by EDB and SLASSCOM[113]

Year/Month	Efforts and Events
May 2014	ICT sector fact finding mission to Japan IT week 2014 organized by EDB with four interested ICT companies from the membership of SLASSCOM. The delegation identified the importance of participation for Japan IT week in the future and showcase the Sri Lankan ICT sector capabilities. During the visit, the Sri Lankan Embassy in Japan arranged meetings with Japan Information Technology Service Industry Association (JISA), Tokyo Chamber of Commerce and Industry (TCCI), Japan Users Association of Information Systems (JUAS), FUJITSU, CANON IT Solutions Inc. and JETRO Japan.
September 2014	As a follow up of the above fact finding mission, EDB and JETRO-Colombo arranged an awareness meeting between Japanese media personal and Sri Lankan ICT companies. With the idea of promoting Sri Lanka as an ICT destination to Japan, it has invited a Japanese newspaper journalist and arranged a meeting with ICT companies interested in Japanese market. After the successful meeting, the journalist published an article on Sri Lankan ICT sector in Japanese Newspaper.
May 2015	EDB organized the participation at Japan IT Week (at Tokyo Big sight) with six ICT companies. This participation was followed by networking events with JISA and JETRO. This was also organized with the collaboration of JETRO and the Sri Lanka Embassy in Japan.

[109] http://www.slembassyjapan.org/japan_sri_lanka_tarde_relations
[110] https://www.jetro.go.jp/en/jetro/topics/1409_topics3.html
[111] http://www.colombopage.com/archive_18A/Jan25_1516901755CH.php
[112] https://www.mofa.go.jp/mofaj/files/000051001.pdf
[113] Based on the result of questionnaire to EDB

Year/Month	Efforts and Events
October 2015	As a part of a JETRO assistance program, EDB organized the participation of CEATEC in October 2015 in Makuhari Messe in Chiba Prefecture. Six Sri Lankan ICT companies located at the JETRO stall. JETRO has also organized an IT seminar on 6th October at JETRO Headquarters followed by investment seminar. Sri Lankan delegation had successful meetings with Japan Information Technology Services Industry Association (JISA) and Japan Users Association of Information Systems (JUAS) facilitated by JETRO and the Sri Lankan Embassy in Japan.
November 2015	As a result of continuous meetings arranged with JISA officials at all these occasions, JISA signed an MOU with SLASSCOM, Colombo for mutual cooperation in ICT industry of both countries.
January 2016	A business delegation from Minami Uonuma City, Niigata Prefecture visited Sri Lanka and Japan investment promotion event organized by Adam-i Consulting, Japan. They met SLASSCOM and other leading IT companies. They have presented the infrastructure facilities at Global IT Park at Minami Uonuma City and invited Sri Lankan ICT companies to invest at the GIT Park.
May 2016	EDB organized the participation at Japan IT week with nine Sri Lankan IT companies. The delegation had series of networking meetings with the support of the Sri Lankan Embassy in Japan and JETRO Colombo. EDB organized an awareness seminar on Sri Lankan ICT sector at the JITW venue and attracted around 30 Japanese companies.
July 2016	As the Japanese language is one of the major barrier for entering into this market, the participants raised this matter with EDB and the Association during the follow-up meetings. Therefore Metatechno Lanka, a Japanese IT collaboration in Sri Lanka ventured with hSenid Software International, another leading IT company in Sri Lanka opened the Lanka Nippon Biztech Institute (LNBTI) in July 2016 with the objective of creating IT professionals with Japanese language literacy. This institute creates internship opportunities in Sri Lankan as well as Japanese IT companies.
August 2016	Five Sri Lankan ICT companies (Epic Technologies, Informatics, Effective Solutions, Debug Creative Labs and Fortunaglobal) set up their offices in GIT Park in Minami Uonuma City in Niigata Prefecture. Now they are operating successfully in Japan with some major collaborations with Japanese IT companies.
January 2017	Companies who could not participated JITW requested EDB leadership for introduction to Japanese IT companies. EDB therefore organized a B2B matchmaking program with the assistance of a Japanese consulting company. This outward mission to Japan held in January 2017 with leading five ICT companies, and each company profile matched with 10 Japanese companies. As a result of this B2B program, one company tied up with a Japanese company to invest in Global IT park with the assistance of EDB.
2017-2019	EDB is continuing the presence of Sri Lanka at the Japan IT Week with leading 8-10 ICT companies. Also organized a seminar ("Sri Lanka – your next ICT sourcing destination") to Japan ICT sector with the assistance of JISA and JETRO.

As a result of these efforts, some Sri Lankan ICT companies (Such as Essential Solutions[114] and Epic Technology[115]) have already setup Japanese subsidiaries and established the business presence in Japanese ICT solution market. And the reputation of Sri Lankan ICT companies in Japan is slowly but steadily improving as reliable business partners coupled with the country's general intimate image of Sri Lanka. However, based on the result of interviews to Japanese companies implemented by the Survey Team, Sri Lanka is still largely considered as "just another option" for IT outsourcing destinations, and it lacks clear branding of ICT solution capabilities to differentiate from other competing countries.

[114] https://effectivesolutions.xyz/automatic-eye-screening/

[115] https://www.epictechnology.lk/epic-technology-group-partners-japanese-software-integrator-technobrave/

2.4.3 Issues on Export Promotion

(1) Competition with India

To establish itself as a prime destination for IT collaboration, Sri Lanka also has to distinguish itself from neighboring India, equipped with a large market, huge pool of manpower and a strong reputation in ICT services and outsourcing activities. For example, India's ICT service exports made up 67.3% of its total service exports in 2015, amounting to USD $104Bn, as compared to 13.2% in Sri Lanka's, or USD $0.8Bn, showing the large gap between Sri Lanka and India's ICT sector[116]. Moreover, Sri Lanka's population is 50 times smaller than India's, with a smaller pool of resources to tap on[117]. Therefore, Sri Lanka has to boost its cost advantages, and come up with new and innovative solutions to compete with India.

Naturally, Sri Lanka should not compete with India (and China) in terms of quantity or scale of business. In ICT industry, BPM & outsourcing are the areas that scale matter, and its Japanese market is already occupied with Indian, Chinese, and Vietnamese solution providers. Sri Lanka, therefore, should rather consider focusing on specific target industry with distinct technology edge. This strategy will be described more in detail in 4.2.3.

(2) Limitation of labor

Other barriers to expanding collaboration between Japanese and Sri Lankan companies are the inflexible labor regulations and limited supply of human resources with advanced IT skills such as AI and IoT. There is a scarcity of high- to middle-end IT professionals, attributed to the lack of graduates with relevant degrees and brain drain. The EDB estimates that the industry will require at least twice the current workforce to satisfy the growing demand for ICT and to fulfil Vision 2025, with 18,000 new graduates needed annually[118]. However, there are limited IT career awareness campaigns targeted at pre-tertiary students, leading to less awareness of the industry. To tackle this, the government is making efforts to increase IT literacy at the national level through public campaigns and by attracting private universities to establish branches in Sri Lanka. The lack of industry-education sector collaboration is expected to lead to a skill shortage, serving as a bottleneck to BPO expansion. Even for new IT graduates, there is a problem of brain drain, as wages in Sri Lanka's graduate salary is low and on par with Bangladesh and Pakistan, but lower than other countries in the region, which draws IT graduates away from the Sri Lankan job market and further adds to the shortage of skilled workers.

Another hindering factor to the job market is the inflexible and outdated labor regulations, which lead to lower work force participation. In particular, the female labor force participation is only at 35% due to cultural factors and the restriction of working hours for women, which prohibit working

[116] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf, World Bank Development Indicators
[117] World Bank Development Indicators
[118] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf

after 10pm[119]. With the IT-BPM industry also traditionally perceived as male-dominated, there is untapped potential for women in the workforce due to socially constructed gender stereotypes, which, if realized, could help alleviate the skill shortage. Besides, students are not allowed to have full-time occupations while studying, and visa procedures for foreigners are often complex, which further limits the workforce.

(3) Lack of branding

Additionally, Sri-Lanka is not well-known in Japan as an IT-BPM destination despite big international companies such as eBay[120] and Expedia[121] using services of Sri Lankan ICT industry as there persists inadequate industry branding on an international scale by the government and relevant associations[122]. As a result of the low international exposure, local startups often receive limited information about global trends and client demands, with insufficient knowledge on global computing standards. This also leads to low networking capacities, as there is low participation of SMEs in going abroad to align their interests with potential investors[123].

(4) Inconsistent policies

Though the existence of many roadmaps and government strategy documents by different ministries and associations proves the country's will to expand the ICT market, it simultaneously causes a potential problem of inconsistent and confusing policies, especially when they are not fully integrated together. For example, according to the results of a survey of Japanese companies based in Sri Lanka conducted by JETRO[124], local Japanese companies cited the lack of a consistent industrial policy (unclear policy management, undeveloped legal system, complicated/time-consuming tax system and tax procedures) as an issue that Sri Lanka needs to solve on a priority basis. Although these opinions are biased toward the field of Japanese companies that operate in the country (especially the manufacturing industry), they are not irrelevant issues for companies that make various products that incorporate IT rather than pure IT-BPM. There is also a lack of efforts/organizations specializing in providing support for Japanese collaboration in the industry.

3 Needs for Advanced IT Solution Services in Japanese Industries

3.1 Needs in Major Japanese Industries

It is expected that there are many Japanese industries that have the needs for advanced ICT solutions. In order to grab those potential needs, the Survey Team has picked up 91 industry associations in 20 industries/sectors in Japan (see Appendix 2 for the list) that may have the potential for business matching

[119] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[120] https://wso2.com/about/customers/ebay/
[121] https://eyepax.com/showcase/expedia/
[122] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[123] https://www.srilankabusiness.com/pdf/nes/sri-lanka-it-bpm-5-web.pdf
[124] https://www.jetro.go.jp/ext_images/en/reports/survey/pdf/2013_10_14_biz.pdf

with the advanced ICT solution company of the target countries. Then the Survey Team made contacts with all these associations by providing information on the Survey as well as the strength and characteristics of ICT industry in the target countries, and ask them to distribute the information to member companies of the association and to participate in the Webinar for introducing ICT companies of the target countries (See 5.3 for the detail of the Webinar).

There are, however, very few meaningful responses from these industry associations so far. Among 91 industry associations, 30 of them have responded that they acknowledged our contact, but only two of them had actually responded that they have circulated the information to member companies. There is no concrete progress for the business matching with these industry associations and their members up to now. However, some companies have come to attend our Webinar for introducing target country's ICT companies (see 5.3 for detail) as well as to join our Pilot Program for trial business collaboration (See 5.5 for detail).

3.2 Current Status/Issues/Needs in Collaboration with Overseas IT Companies

Based on these circumstances, the Survey Team have picked up the most probable industries that should have needs for advanced ICT solutions, i.e., Medical equipment, Smart Agriculture, and Manufacturing industry, and tried to contact individual companies in those industries directly in order to get information on current status, issues, and needs in collaboration with overseas IT companies.

3.2.1 Medical Equipment

In the implementation plan document of the Survey, we proposed 1) "Medical Equipment", 2) "Biochemical Analysis", and 3) "Pharmaceutical Development" as the priority fields in the health and medical-related industries in Japan, which have the possibility of collaboration with ICT industry in the three target countries. In addition, 4) "Health-Tech" utilizing big data has been greatly developed in recent years in the health and medical sector, and 5) advanced "Medical ICT System" including telemedicine, which has become increasingly significant amidst the pandemic of COVID-19, are also regarded as growing industries. So, we added those two fields to the above-mentioned three fields.

Of the five fields mentioned above, we conducted interview sessions with the following Japanese enterprises who responded our contact: one enterprise in "Medical Equipment"; one enterprise in "Biochemical Analysis"; one enterprise in "Health Tech"; and two enterprises in "Medical ICT System".

Concerning "Pharmaceutical Development", in particular, it is "drug discovery" that requires sophisticated ICT technology. Since "drug discovery" is the most important technology field for pharmaceutical manufacturers, in most cases, those related technologies such as advanced pharmacological substance screening, chemical modification, various simulation techniques, etc., are regarded as protected technologies by pharmaceutical manufacturers. Having said that, as pharmaceutical manufacturers sometimes incorporate enterprises with special technologies related to

drug discovery through acquisition, etc., we only approached pharmaceutical manufacturers through industry groups.

The table below provides a summary of the contents of the interviews for the five Japanese enterprises with which we actually conducted the interview survey. Note that the company names are not shown for their privacy.

Table-4 List of interviewed companies in medical sector

Company	Industry/Sector	Needs for advanced ICT solution
A	Medical equipment	The company itself does not require advanced technology development at this time (assuming the level that can be developed in-house). However, they did not eliminate the possibility of collaboration with overseas enterprises with high ICT technology in future, and they indicated their intention to participate in the event.
B	Biochemical Analysis	They have been taking approaches mainly based on the Health-Tech data business using biochemical analyzers developed by them, but it has stopped due to the effects of COVID-19 pandemic. Currently, they have developed and published a number of SARS-Cov-2 antibody-detecting and antigen-detecting methods using ELISA and immuno-chromatography, by utilizing their special expertise. They restructured their organization in the situation described above, they also mentioned the possibility of outsourcing the system development and so on.
C	Health tech	At present, the CIO does not indicate any needs for product development through collaboration with overseas enterprises. On the other hand, he also set up an enterprise that specifically matches with American Silicon Valley-based enterprises and is working as a mentor to Japanese start-up enterprises, recognized as an influencer in the entrepreneurial community.
D	Medical ICT system	The president of the company demonstrated that the possibility of collaboration with overseas companies can be considered given that they are ICT enterprises with high technologies. As they have some ideas, they would like to consult with the Survey Team once they could make it a practical plan for product development.
E	Medical ICT system	The company participates in joint research on AI-based detection of oral cancer biomarkers with a certain hospital to develop detection devices after biomarkers have been identified, but there is currently no urgent need for direct collaboration with overseas enterprises.
F	Electronics	Major manufacturer and distributor of precision machinery and equipment. Also engaged in medical products and solutions business. Needs in enhancing DX related to medical image related solutions utilizing AI, etc.

All interviewed companies were those who have responded to the contact from the Survey team, but none were originally supposed to cooperate with overseas enterprises. Naturally, only one out of five enterprises showed the possibility of future collaboration with ICT enterprises in the three target countries at this moment. Other enterprises said they had no knowledge about the existence of companies with high ICT technology in the three target countries; in particular, two companies asked us to distribute related information through social media, etc. Through such collaboration, it is believed that a certain level of positive impact could be made to improving awareness of Japanese companies of the target three countries, which is one of the objectives of the Survey.

Apart from individual contacts described above, we found eight health and medical related enterprises in the list of 193 Japanese enterprises participated in the Morning Pitch seminar featuring Armenian/Pakistani/Sri Lankan ICT enterprises held on the 8th and 23rd of September 2020 (see 5.3 for the detail). Breaking this down, two were enterprises that Survey Team offered consultation through individual interviews (one is Medical Equipment/Medical ICT and the other is Medical ICT), two were pharmaceutical manufacturers, one was a pharmaceutical and medical device trading company that also conducts in-house development, and one was a medical management consulting and pharmacy management company. These companies were continuously invited to seminars and other events, and follow-up activities (e.g., request for interviews) have been conducted to achieve matching with ICT enterprises in the three target countries.

3.2.2 Smart Agriculture

For the technical field of smart agriculture, we contacted five agricultural machinery manufactures (three agro-machinery companies and two post-harvest machinery companies), nine agriculture-related companies (food companies, horticultural company, software companies, etc.), and five agriculture-related organizations (including Japan Agricultural Cooperatives). Also, we contacted drone-related companies as a link to smart agriculture (see 3.2.4 for the detail). As a result, two companies accepted our request for interview as shown in the table below. Of these, company I and company J applied for trial business collaboration program.

Table-5 List of interviewed companies in smart agriculture sector

Company	Industry/Sector	Needs for advanced ICT solution
G	Agricultural machinery	Currently, several agricultural machinery development projects are underway. Current issues include cost reduction in the development of harvesting robots and rice sowing machinery and insufficient budget. They are planning to apply for a smart agricultural subsidy from the Ministry of Agriculture, Forestry and Fisheries Japan, and if they get it, they would like to cooperate with overseas companies for the purpose of cost reduction. There is also a desire to expand overseas through drone surveying and pesticide spraying, so they seem to be interested in the PoC scheme of the Survey.
H	Smart Agriculture	Currently, we are training IT human resources in Nepal and Myanmar in Japan (in collaboration with Ritsumeikan Asia Pacific University). They visited Latvia last year and think that there is a possibility of developing technologies that are not yet available in Japan, such as forestry IT solutions that are being advanced locally.
I	Software	A system development company which also has a Sri Lankan corporation. There is a need for new business development related to smart agriculture solutions for farmers utilizing AI/IoT. Specifically, there is a need for digitizing agricultural know-how and building a soil and environment evaluation system related to organic farming.
J	Agriculture IoT solutions	SME which provides various ICT solutions towards the farming industry in Japan. Looking for a partner who can develop a mobile solution which enables recording of daily activities which can lead to enhanced productivity by the farmer without too much cost and effective training and knowledge transfer for new employees during busy times

Also, one large agro-machinery manufacturer and one agriculture-related organization participated in the pitch event held in September 2020. Also, one Japanese leading automotive supplier and one Japanese automotive finance company participated in this event.

3.2.3 Manufacturing

We contacted total of seven automotive manufacturers and automotive suppliers for potential business collaboration in the field of sensing, autonomous driving, etc. However, they told us that these advanced ICT fields are mostly developed inhouse or through collaboration with high-tech ICT companies in Japan and US, thus there is no immediate needs for the business collaboration with ICT companies of the three target countries. We also contacted several other manufacturing companies and had interviewed two of them so far as listed in the table below. Of these, the Survey Team tried to match Company L, which develops biometric devices, with several companies in the target countries, but could not find any company in the target countries that were interested in collaboration because the content of the match was joint development and sales of a system incorporating Company L's products.

Table-6 List of interviewed companies in manufacturing sector

Company	Industry/Sector	Needs for advanced ICT solution
K	Tea manufacturing machinery	The company develops and sells machinery for tea manufacturing and is considering whether to upgrade their machinery by advanced ICT such as AI image recognition or not. But there are no immediate needs yet. Communication in English would be the biggest problem.
L	Biometrics device	The company develops and sells vein-based biometrics devices and is seeking partners in other countries to jointly develop security system that utilizes their biometrics devices.

Our initial assumption was that SMEs in manufacturing industry might also have needs for advanced ICT solutions for digitalizing manufacturing processes and KAIZEN activities according to the global trend of Industry 4.0 movement. Through several interviews with manufacturing SME representatives and SME consultants, however, most of SME manufacturers are still in the early stage of DX that their current typical needs are for general office digitalization, not the needs for advanced ICT solutions. Another serious obstacle for SMEs is language barrier because typical SMEs have very limited human resources who are fluent in English.

Still, there should be some leading SMEs who are more determined to implement advanced digitalization as well as more active for collaborating with overseas companies. In order to find such SMEs, the Survey Team contacted southern branch of Tokyo Small and Medium Enterprise management Consultant Association where there are many manufacturing SMEs. The association explained that their client SMEs also include many ICT solution providers that would compete with those from the target countries, so it is not possible to introduce manufacturing SMEs to the Survey Team. But the association allowed the Survey Team to have a seminar for members of the association to introduce the ICT industry of target countries.

The Survey Team also contacted SME Support Japan (SMRJ)[125] who runs Web business matching portal called J-GoodTech[126] for Japanese SMEs who wish to collaborate with overseas industries and export their products. SMRJ explained that there are several possibilities to find good SMEs for collaborating with ICT solution providers of the target countries. The first one is to use J-GoodTech matching portal by ICT solution providers, though it requires to get recommendation letter form the government of the target countries. The second possibility is to ask some experts in SMRJ for overseas business matching since they know companies who want to have relationship with foreign partners (but they are not limited to IT companies). The third possibility is to ask experts of domestic IT support in SMRJ who know companies who want to develop information systems, but because of their limited resources it was not possible. Based on further discussions with SMRJ experts, however, we came to know that it might be difficult to find Japanese SMEs who are willing to cooperate with foreign ICT companies due to their lack of English proficiency.

3.2.4 Drone

During the course of contacting agriculture and manufacturing industry, we have found that Drone industry also has specific needs for advanced ICT solutions especially for semiconductor design of FPGA or ASIC, so we have done further survey on this industry. We have contacted 23 drone-related companies. Six of them are companies that have drone-related business, 11 of them are companies that provide customized drone hardware to specific industries such as agriculture, and 6 of them are startups that design and develop drone hardware/software.

Among 23 companies, seven showed interest in the Survey and two of them accepted interview by the Survey Team as summarized in the table below.

Table-7 List of interviewed companies in drone sector

Company	Industry/Sector	Needs for advanced ICT solution
M	Drone software	Mainly engaging in the development of spatial recognition, AI, etc. using drones. Proposing the use of drones to local governments such as Osaka Prefecture and Kobe City. In specific, now considering demonstration the use of drones to manage the condition of landfills in Kobe City using temperature sensors and are interested in developing new software. Although there is no immediate idea of collaboration, the drone industry is looking for collaboration with the third countries as China plus one.
N	Agriculture/ civil engineering using drones	Working on the development of agricultural drones (surveying, civil engineering, 3D). They are interested in visualizing semiconductor design data and are looking for a collaborator, hoping that there is something that can be made 3D in real time. When they heard of the Survey, they wanted to know companies who make good use of the technology of the other party in Japan through licensing and loyalty business, rather than collaborating on consignment. There is also a Fintech department, so if there is useful information, he wants to share it internally. I'm also interested in PoC, but it's usually tens of millions of yen, so is it too small?

[125] https://www.smrj.go.jp/english/index.html
[126] https://jgoodtech.jp/pub/en/

3.2.5 Others

The Survey Team also interviewed following Japanese companies from other sectors for the needs of advanced ICT solutions.

Table-8 List of interviewed companies in other sectors

Company	Industry/Sector	Needs for advanced ICT solution
O	Food	Company providing end to end supply chain services in the food sector is looking for ICT company to co-develop new solutions in agriculture and food supply value chain utilizing AI, IoT and Blockchain.
P	Wholesale food distributor	A company that supplies fresh produce to supermarket chains and grocery stores. There is a need to develop a system to understand the freshness of vegetables, fruits and fish using AI and IoT technologies.
Q	Mobility	Major automobile company. The company is currently considering next generation mobility business in developing countries combining mobility and healthcare. The company seeks a smart healthcare solution partner that can co-create the new business towards the South Asia region.
R	Wireless device	SME that is developing hardware and software for wireless communication systems and driver's driving aptitude testing machines in Japan. As a solution for Sri Lanka's increasing road accidents, this company launched a pilot project with Sri Lankan road safety authorities to collect sample data from Sri Lankan drivers regarding their driving aptitude. There is a need to analyze this data to identify driving patterns of Sri Lankan drivers and customize the aptitude test in a way to mitigate accident risks in Sri Lanka.
S	Food and beverage	A technology product startup that develops mobile solutions to support restaurant users to find recommended restaurants in a specified location. This solution also helps small to medium size restaurants to promote themselves on this platform. The company needs to improve iOS apps and develop new Android apps at a low cost.
T	Human resource services	A startup that engages in connecting IT engineers in foreign countries with the Japanese companies to work remotely. In order to facilitate this business, they want to develop an online smart contract solution and online payment system.

4 Potential of Business Matching between Advanced IT Solution Companies in Sri Lanka and Japanese Industry

4.1 Analysis of Matching Possibility

Based on the core competence of Sri Lankan ICT industry described in 2.3.3, result of needs in Japanese industries described in Chapter 3, and the past effort for approaching to Japanese ICT market described in 2.4, we analyzed and summarized the matching possibility into the matrix shown in the table below.

Table-9 Matching possibility matrix

(Core competence of Sri Lankan ICT industry vs. Japanese industry in needs)

Core Cp. / J. Ind.	Fintech	IoT	Health Tech	AI/Data Science	Embedded systems/ Robotics	BPM*	E-commerce*
Finance	◎					⊙	○
Securities	◎					⊙	○
Insurance	⊙					⊙	○
Medical		⊙	⊙	⊙	⊙	○	
Healthcare			⊙	⊙		○	○
Machine tools				○	⊙	○	○
Automobile				○			
Manufacturing		◎		○	⊙	⊙	
Distribution		⊙		⊙		⊙	⊙
Aerospace							
Material science							
Biochemical analysis							
Drug discovery/ pharmaceutical							
Resource exploration				○			
Plant control		⊙		○	⊙		
Information security/ Physical security							
Agriculture		◎		⊙		○	○
Tourism						⊙	⊙
Education/Training						○	○
Research							
Clothing/Fashion							
Environment							
Others							

* BPM and E-commerce are not considered as advanced ICT and are rather for offshore development, so they are out of the scope of the Survey unless combined with advanced ICT topics such as AI, IoT, Block chain, etc.

◎: High possibility of matching with clear technological advantage from other emerging countries in the world.

⊙: Rather high possibility of matching with on a par technological advantage with other emerging countries in the world.

○: Has possibility of matching in a certain condition such as needs for geographical position of Sri Lanka

4.2 Hypothesis on Promoting Business Collaboration

There are the following hypotheses for promoting business collaboration between advanced Sri Lankan ICT industry and Japanese industry with advanced ICT needs.

4.2.1 A “Technology” Oriented Business Matching System/Platform

It is observed that for most Japanese companies, Sri Lanka is still only an option for outsourcing destination, and those Japanese companies who have clear needs for specific advanced ICT solutions cannot think of Sri Lanka as the “only” option for the collaboration because there are many other countries to consider for advanced ICT such as China, India, Israel, etc. However, there may be cases where only a specific Sri Lankan company could provide solution to specific technological needs of Japanese companies. As an actual example, a Japanese medical testing equipment manufacturer

collaborated with a company that provides software that uses AI to make simple diagnoses from medical images, and incorporated it into its own testing equipment.[127]

In order to provide matching opportunities for such specific individual technology needs, it would be helpful to establish a kind of "official" business matching system/platform by a Japanese public organization (or by private company who is delegated the management of such system from the government of Japan) so that Japanese companies can post specific technology needs onto the system without having to specify the company or country of origin for the solution. ICT solution providers from Sri Lanka (as well as from any other country) can also register to the system, then can browse the needs posted by Japanese companies. If a Sri Lankan solution provider finds a need that the company can provide solutions for, then the company can start contacting the Japanese company who posted the needs. It is also possible that the system and /or assigned advisors to the system can help in choosing the matching ICT companies. This kind of system is also effective where Japanese companies are not good at directly communicating in English.

The system/platform should be established in Japan rather than in the target country because it is not convenient for Japanese companies to visit individual business matching system in each country. Japan already has a similar system, J-GoodTech, as mentioned in 3.2.3, but since its main purpose is to introduce Japanese companies' technologies overseas, it cannot be used for the purpose described here. The figure below shows a concept of such system/platform.

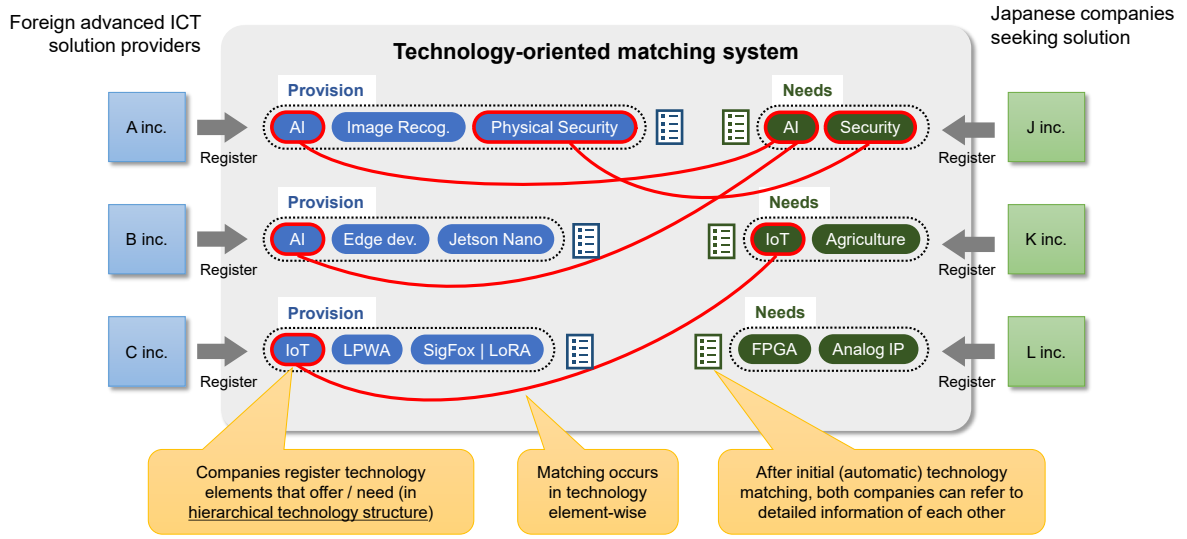


Figure-27 A concept of technology-oriented matching system/platform

[127] https://effectivesolutions.xyz/automatic-eye-screening/

4.2.2 Involvement in Japanese Industry Technology/Research Associations

In Japan, most applied technology cooperation among private companies are done through various technology associations in each industry. These associations are not academic association which focuses more on research topics, but are rather focused on application of technologies so that many technological joint ventures/programs among multiple private companies occur here. These associations are extremely common and unique in Japan, and many of them also accept membership from foreign private companies. So, it is a good idea for Sri Lankan ICT companies who have clear technological edges to join these industry-specific technology associations for getting the latest trend in specific Japanese industry as well as for finding opportunities to start collaboration with Japanese companies. The table below shows some of the examples of such industry-specific technology associations in Japan.

Table-10 Examples of industry-specific technology associations in Japan

Industry	Name of Association	URL
Deep Learning	Japan Deep Learning Association	https://www.jdla.org/
Robotics/IoT	Robot Revolution & Industrial IoT Initiative	https://www.jmfrri.gr.jp/
Embedded systems	Japan Embedded Systems Technology Association	https://www.jasa.or.jp/
Fintech	FinTech association of Japan	https://www.fintechjapan.org/
Computer software	Computer Software Association of Japan	https://www.csaj.jp/

It should be noted, however, that Japanese language skill is generally required for the collaboration with Japanese companies, though it is possible to communicate in English in some associations.

4.2.3 Brand Raising for Japanese Potential Advanced Technology Market

Though the Sri Lankan government and industry (especially EDB and SLASSCOM) have been organizing various events and visits to promote Sri Lankan ICT solution providers to Japan as described in 2.4.2, those activities have been more focused on BPM and outsourcing market in Japan. It is true that the size of these markets is big, but we may also need to consider different approach to promoting business matching for specific advanced ICT needs in Japan that cannot fit into the BPM/outsourcing category. In such approach, each Sri Lankan ICT company is encouraged to establish its clear and distinct technological edge in specific advanced ICT topics[128] instead of marketing the company's ability too broad which the Survey Team often found in the Website or in the responses from ICT companies in our online questionnaire. Showing the company's broad capability to adapt to any kind of request from the client would be effective for general BPM/outsourcing market, but would have adverse effect for Japanese companies who seek extremely specialized technology (such as "designing low power consumption edge device using FPGA for particular AI recognition") because such technologies cannot be achieved easily while doing general purpose ICT system development. In that sense, we may need to pick up very specific area of ICT that Sri Lanka has clear edge to other countries in the world (with

[128] Should not be general ICT areas such as "AI" or "Block chain", but should be more specific technology topics such as "Edge NLP using microcontroller" or "autonomous supply chain tracking and certification using Block chain".

evidence), and to promote these technology areas to Japanese specific industries. The figure below illustrates this brand raising strategy for the specific advanced ICT solutions market.

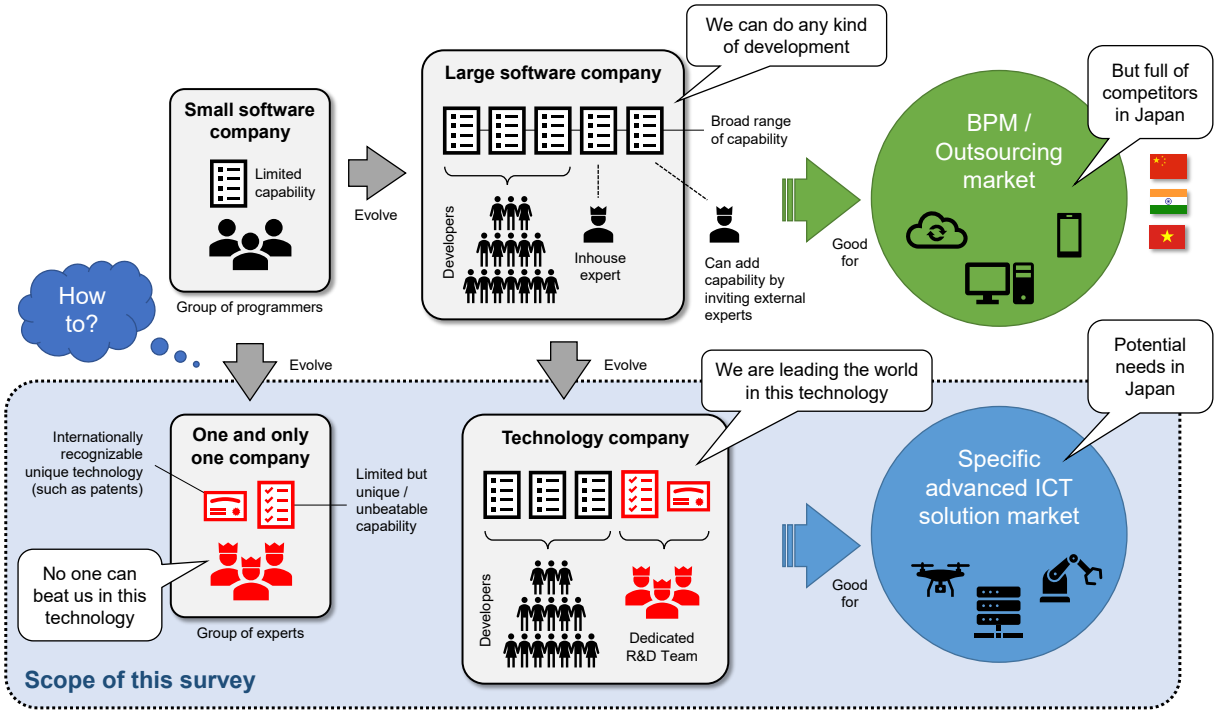


Figure-28 Brand raising strategy for specific advanced ICT solution market

4.2.4 Seminars and Exhibitions to Showcase Sri Lankan ICT Startups towards Japanese SMEs

Sri Lanka has cultivated solid development capabilities by providing outsourcing services to Western countries for many years, and Sri Lankan enterprises are equipped with capabilities to develop new solutions with high difficulty utilizing cutting-edge technologies such as AI, IoT, Blockchain, etc. at a cost of about 30% of Japan. On the other hand, many SMEs in Japan have problems such as a shortage of IT engineers and high development costs. In the Survey, Sri Lankan companies mainly gained interest from Japanese SMEs that have need to develop new solutions at a low cost or companies interested in expanding into the South Asian region, and it has been difficult to gain interest of large Japanese corporates exploring cutting-edge technology. Therefore, the main target for ICT companies in Sri Lanka could be SMEs in Japan who are trying to develop new solutions with a limited budget.

It is desirable to provide opportunities to showcase Sri Lankan enterprises as innovation co-creation partners or DX promotion partners towards Japanese SMEs; for example, seminars featuring multiple Sri Lankan ICT enterprises in different technology fields such as AI, IoT, fintech, or exhibitions to showcase their products may be held towards SMEs in Japan. In particular, some successful examples between Sri Lankan ICT companies and foreign companies can be introduced in the seminars to increase the reliability of the technological superiority of Sri Lankan ICT companies. Also, seminars could be held by industries such as manufacturing, construction, healthcare industries, etc. so that SMEs can

participate in seminars related to their own industry and understand their field innovation and successful alliance examples.

Global IT Park[129] in Minami Uonuma City in Niigata Prefecture, Japan has shown that such seminars and exhibitions are effective in promoting collaboration between Sri Lankan ICT companies and Japanese companies. The Park has six IT companies from Sri Lanka and two from India, and these companies are collaborating with Japanese companies inside and outside the prefecture. The Park holds seminars multiple times a year in collaboration with corporate groups and financial institutions in the prefecture, and in addition, the companies participate in exhibitions such as "Niigata BizExpo" to enhance collaboration with various companies[130]. As a result, Global IT Park has created multiple collaboration examples between Sri Lankan ICT companies and Japanese companies in industries such as manufacturing, agriculture and construction such as shown in the table below

Table-11 Collaboration examples between Sri Lankan companies in the Global IT Park and Japanese companies

Sri Lankan company	Japanese company	Content of collaboration
Effective Solutions Japan	InterEnergy Co., Ltd.., and Ohira Co., Ltd.	Development of a diagnosis support system for diabetic retinopathy using an ocular surface imager and AI image analysis [131]
Epic Technology Group	TechnoBrave Co., Ltd.	Promote FinTech solutions in the Japanese market [132]
Epic Technology Group	DataDock Co., Ltd.	Provide a secure document management system in data centers [133]
AZ IoT Private Ltd.	Niigata Tsushinki Co., Ltd.	Development of driver aptitude testing system for Sri Lanka [134]
Evolve Technologies Japan	Siance Co., Ltd.	Web site development [135]

The Global IT Park was jointly planned by the International University of Japan (IUJ)[136], which was established in Minami Uonuma City as Japan's first graduate university with English as an official language, Minami Uonuma City Government, Niigata Prefectural Government, and Adam Innovations[137], an IT consulting firm established in Japan by Sri Lankan graduates of IUJ[138]. Adam Innovations actively encouraged Sri Lankan IT companies to come to Japan and this led to a number of Sri Lankan IT companies (six) entering the Japanese market. Adam Innovations also has an office in the IT Park where they continue matching Sri Lankan IT companies with Japanese companies.

129 http://gitmu.jp/en_US/
130 https://www.epictechnology.lk/sri-lankan-it-companies-technology-demonstration-in-niigata-japan/
131 https://www.chusho.meti.go.jp/sapoin/index.php/cooperation/project/detail/4254
https://effectivesolutions.xyz/automatic-eye-screening/
132 https://www.epictechnology.lk/epic-technology-group-partners-japanese-software-integrator-technobrave/
133 https://www.epictechnology.lk/sri-lankan-it-companies-technology-demonstration-in-niigata-japan/
134 http://www.dailynews.lk/2018/10/19/business/165936/sri-lankan-companies-showcase-it-projects-japan
135 http://www.dailynews.lk/2018/10/19/business/165936/sri-lankan-companies-showcase-it-projects-japan
136 https://www.iuj.ac.jp/
137 https://www.adam-i.com/
138 https://www.dbic.jp/activities/2020/12/3.html

4.2.5 Invitation Programs to Japan for Sri Lankan ICT Enterprises

There are limited opportunities for Sri Lankan ICT enterprises to become aware of the opportunities or the needs of the Japanese market. Therefore, inbound visiting programs or market research programs could be newly developed for ICT companies in Sri Lanka. Seminars on Japanese market and business matching opportunities with Japanese SMEs and visits to factories and SMEs could be included in the program. Such programs could be designed to be implemented at the time of Japan IT Week.

5 Pilot Activities to Promote Business Matching

5.1 Initial Plan and the Changes due to COVID-19 Pandemic

At the beginning of the Survey, following activities were planned for the pilot promotion of business matching (as described earlier in our Inception Report in May 2020).

- Individual visits to selected local ICT companies in the target country
- Invitation program to Japan for government officials of the target country
- Business matching seminar for ICT companies in the target countries and Japanese companies
- Visiting program to the target country by Japanese companies

Due to COVID-19 pandemic, however, all these activities that require visiting to/from the target countries must be canceled, and following activities are added instead of the canceled activities.

- All individual surveys and interviews to the government, organization, and ICT companies of the target countries are done through online methods.
- Implement a competition for PoC (Proof of Concept) of business collaboration between ICT solution companies in the target countries and Japanese industry.
- Create a promotion video of the ICT industry of each target country specifically targeting the Japanese potential market based on the proposal of branding and marketing strategy that is being created in the Survey.

5.2 Website and SNS for Information Dissemination

The Survey Team created a Website[139] to disseminate information on activities of the Survey as well as to introduce selected ICT companies of the target countries to potential Japanese industries. The Survey Team also used SNS (Facebook[140] and Twitter[141]) to disseminate information on each selected ICT company and launched SNS advertisement to reach potential Japanese companies to participate in the trial business collaboration program (described in 5.5), etc.

[139] https://jica-adv-ict-survey.net/

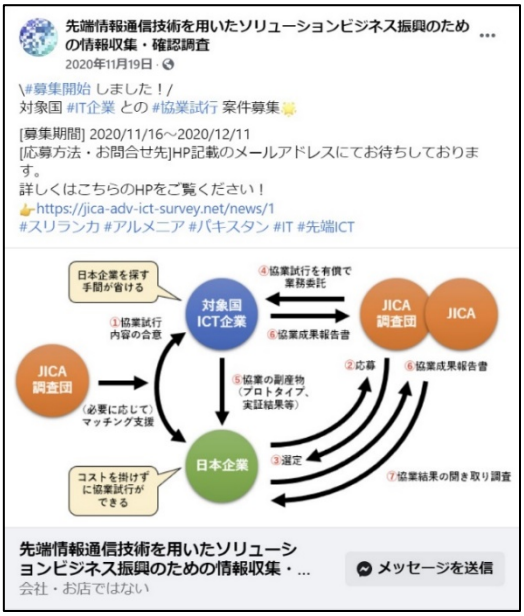
[140] https://www.facebook.com/先端情報通信技術を用いたソリューションビジネス振興のための情報収集確認調査-103439194853226

[141] https://twitter.com/ICT53038019

The result of using SNS advertising was considered effective as many Japanese companies showed their interest in the trial business collaboration program, and some of them actually applied to the program. Below is the overview of SNS advertisement the Survey Team launched.

Table-12 Overview of launched SNS advertisement

<table>
<tr><td>Ad 1</td><td>
• Ad for 5.4 “Seminar on Introducing Japanese Market to Local IT Companies”
• Ad article (Facebook)


• Target audience: CEO, Programmers, Solution architect of target countries
• Target Age: 18 and above
• Cost: 1,000 JPY for 2 days (Ad cost only. Article was created by Survey Team with no cost)
• Result: Reached (Ad shown to) 9,272 people in 2 days. Among them, 192 responded “Interested”.
• Location: Pakistan: around 8,000, Sri Lanka: around 800, Armenia: around 200
</td></tr>
<tr><td>Ad 2</td><td>
• Ad for 5.5 “Pilot Program for Trial Business Collaboration with Japanese Companies”
• Ad article (Facebook)


• Target Industry: Administrative Services, IT and Technical Services, Education and Libraries, Business and Finance, Management, Architecture and Engineering, Food and Restaurants, Construction and Extraction, Production, Healthcare and Medical Services, Installation and Repair Services, Life, Physical and Social Sciences, Protective Services, Farming, Fishing and Forestry, Cleaning and Maintenance Services or Transportation and Moving
• Target Age: 20 and above
• Cost: 4,000 JPY for 1 week (Ad cost only. Article was created by Survey Team with no cost)
• Result: Reached (Ad shown to) 489 people in 1 week. Among them, 15 responded (clicked the link, etc.)
• Japanese company applied for the trial business collaboration by seeing the ad: 2
</td></tr>
</table>

5.3 Seminar on Introducing Advanced Sri Lankan IT Companies to Japan

Two IT industry introduction seminars were held to provide Japanese companies with information on the strengths and characteristics of IT industries in the target countries, and to grasp the needs of Japanese companies concerning the possibility of cooperation with IT companies in the target countries. The objective of the Survey is not just to enhance mere collaboration as offshore development, but aims to promote matching in advanced IT areas that are difficult for Japanese IT solutions companies to provide. Therefore, the event was held as a part of Morning Pitch, an open innovation platform by Deloitte Tohmatsu Venture Support, which has more than 14,000 registered members mainly consisting of new business development managers from large companies searching for advanced technologies and new business creation partners. The event was cohosted by JICA with cooperation from JETRO for reaching potential participants. Due to COVID -19, the seminar was held as a webinar on Zoom.

5.3.1 Summary of the Event

Table-13 Outline of the seminar on introducing advanced Sri Lankan IT companies to Japan

Seminar Title	Morning Pitch Global: Next Frontier of Innovation - IT Sector in Sri Lanka and Pakistan -
Date/Time	September 23rd (Wed), 2020, 19:00 – 21:00 (Japan Standard Time)
Format	Online (Zoom Webinar)
Purpose	• Promote Japanese companies' understanding of the strengths of Sri Lankan and Pakistani IT companies and draw attention to IT enterprises in the target countries • Identify the interests and needs of Japanese companies
Target	Japanese companies that are highly interested in open innovation, Japanese companies that are interested in collaborating with overseas IT companies, and Japanese companies that wish to develop overseas markets through partnerships with South Asian companies
Summary	Sri Lanka is a maritime island located as a hub of West Asia and Southeast Asia. With the goal of creating 1,000 tech startups by 2022, the government is focusing on strengthening the tech ecosystem by introducing a 0% corporate tax rate for tech startups, managing government funds to fund startups, and establishing a regulatory sandbox. Their efforts have gradually blossomed, and in recent years, the potential of IT companies in the country has been drawing attention, as shown in the Global Startup Ecosystem Report 2020 of Startup Genome as an active ecosystem. Sri Lanka's IT industry is characterized by a large pool of IT talent, high technology capacity and low development costs. In Sri Lanka, more than 7,000 people with degrees in IT engineering are added to the workforce each year, and Moratwa University, one of the top universities in engineering, has a rich pool of highly skilled talent, with the highest number of students selected by the Google Summer Code (Open Source Software Contest) among participating universities for the 9th consecutive year from 2005. Also, as exemplified by the use of the electronic trading platform developed by Millennium Information Technologies in stock exchanges in London, Italy, Oslo, and Johannesburg, Sri Lankan IT companies have long been providing world-class enterprise solutions to leading companies around the world, and have accumulated know-how. For many years, the country has been positioned as a leading outsourcing country due to its low labor costs and business environment. However, in recent years, due to the government's support measures and deregulation that promotes innovation, many promising IT companies in fields such as FinTech, Blockchain, IoT, and AI have emerged. Moreover, neighboring country Pakistan has 300,000 IT engineers currently and produces more than 20,000 IT human resources in the labor market every year, and the IT industry is achieving continuous growth. Similar to Sri lanka, Pakistan also has gained experinec and know-how and IT BPO sector owing to global network of Pakistan nationals living in overseas and low labor costs in the country. Since 2018, the Pakistani government ha been focusing on investing in AI secotor due to high potential of young and large pool of IT talent in the country. As a result the number of IT startups is increasing, especially in the AI, IoT, and AR/VR sectors. In this program, we introduce software development companies with high expertise and development technologies, and startups that develop leading-edge IT technologies, so that participants can get a glimpse of the IT industry in Sri Lanka and Pakistan.

Program	19:00-19:20	Overview of the IT Ecosystem in Sri Lanka and Pakistan
	19:20-20:55	Company Pitch (Introduction of each company (moderator) 1 minute + pitch 4minutes + Q & A 8 minutes x 7 companies) List of companies **Effective Solutions** (Sri Lanka): Providing Non-Invasive Technology "JENDO" for Early Detection of Cardiovascular Disease by Data Analysis **Senzmate** (Sri Lanka): Tailor-made precision agricultural technology (soil and microclimate sensors, crop hardness) for agricultural companies and researchers algorithms) **BooleanLabs** (Sri Lanka): Providing intelligent banking solutions using AI and IoT for smart cities **Tracified** (Sri Lanka): Supply chain tracking platform leveraging Blockchain **ConscientAI** (Sri Lanka): Bespoke AI solutions for multiple industried to predict fashion trends **Wonder Tree** (Pakistan): Development of a Physical Therapy and Cognitive Therapy Game Using AR **LFD** (Pakistan): AI, Data Science related consulting and solution development
	20:55-21:00	closing

Note: Information on the participating Sri Lankan companies is provided in Appendix 1.

5.3.2 Results of the Event

(1) Participants

153 people registered for the event and 78 people participated on the day. The breakdown of the participants was as follows: 69% were from business companies, 7% from financial institutions (banks & VCs), 3% from media companies, 7% from public agencies, and 14% from others.

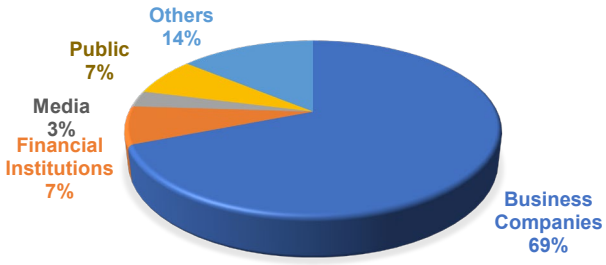


Figure-29 Breakdown of participants

(Seminar on introducing advanced Sri Lankan and Pakistani IT companies)

(2) Results of the questionnaire

The questionnaire function of the webinar was utilized on the day, and the following questionnaire was carried out.

Table-14 Question items in the seminar

#	Question item	Timing of the questionnaire
1	What is your current impression of Sri Lankan and Pakistani IT companies?	Ecosystem overview
2	What are your company's ICT needs and challenges?	Ecosystem overview
3	Are you interested in (company name) company?	After each company's pitch
4	Which company would you like to talk to among the companies that pitchedtoday?	Before event ends

The results of the questionnaire are as follows.

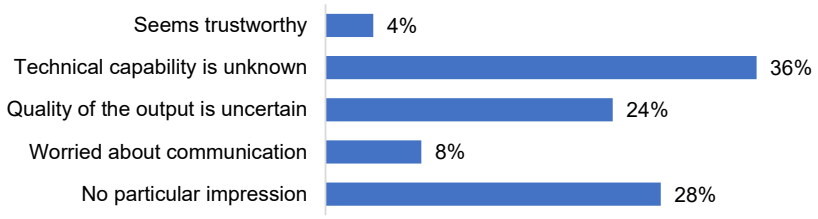


Figure-30 First impression of Sri Lankan IT Companies

Regarding the impressions of Sri Lankan IT companies, 36% of the respondents answered that "Technical capabilities are unknown." and 28% answered that they have "no particular impression." Only 4% of the respondents said they seem trustworthy. It turns out that Sri Lanka's IT industry is not fully recognized in Japan yet. On the other hand, only 8% responded that they are "worried about communication", indicating that they have a certain degree of recognition for being able to communicate well.

The participants' ICT related needs and perceptions were the same as previous seminar for introducing Armenian ICT companies, indicating that there are many companies with a sense of challenges related to the lack of human resources capable of handling leading-edge technologies, and that they are searching for ways to tackle DX.

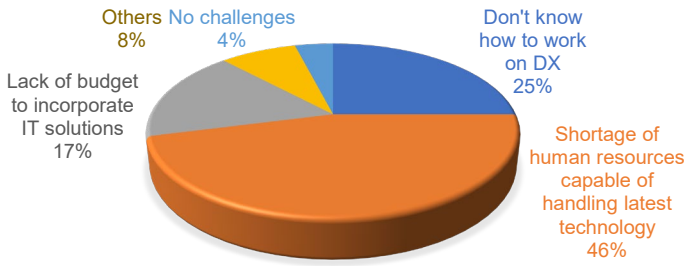


Figure-31 Participants' perception of their ICT related issues

The number of participants showing interest in the companies on stage was as follows, and a certain level of interest was confirmed for all companies.

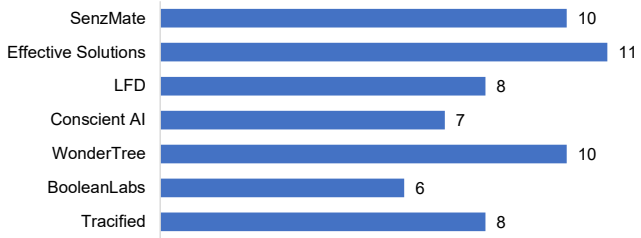


Figure-32 Participants interested in Sri Lankan companies

Table-15 Industries of participants that showed interest in companies presented in the seminar.

Company	Industries of interested participants
SenzMate	Chemical products, telecommunications, scientific products, electrical equipment, manufacturing, agriculture, open innovation
Effective Solutions	Medical equipment, open innovation, electrical equipment, research institutes
LFD	Advertising agency, telecommunications, media, finance
Conscient AI	Automotive, telecommunications, media, open innovation
WonderTree	Medical devices, electronic products, information and communications, research institutes
BooleanLabs	Information and communications, electronic products, open innovation
Tracified	Information and communications, manufacturing, open innovation

(3) Results of Q&A sessions

Q&A sessions were held for about eight minutes after each company pitch. Questions were accepted through the webinar's Q&A function. The main questions from the audience were as follows. (Answers to these questions are omitted.)

Table-16 Main Q&As (Seminar on introducing advanced Sri Lankan and Pakistani IT companies)

Company	Questions
Senzmate	• Can I ask what kind of indices your sensor can capture? • At SenzMate, do you also design hardware or sensors that you use in your solutions • Please explain your business model for SenzAgro services
Effective Solutions	• Are there any other Japanese companies you work with besides Niigata? • What would be your edge vis-a-vis big guys such as as definitive dow jone & Acuris etc. • In you presentation you mentioned that JENDO started clinical tests in Sri Lankan hospital in 2019. What kind of results have you received? What is the next step of this project?
LFD	• How do you get learning data to improve the accuracy of machine learning? • How do you comply with privacy laws and regulations in each country? • Is EAGLE a cloud based solution or is it a on premise solution. Please explain how you ensure the privacy and security of the information transactions in the system.
Conscient AI	• What would be your winning strategy over the big guys? What would be their problems? And what solutions could you provide? • What are the strengths of your company compared to other AI startups?
WonderTree	• Have you applied your solution for dementia? • I would like to know the development schedule for senior products. • Can you please explain how the progress of learning is measured in the therapy games? • What is the business model for AR games?
BooleanLabs	• Can you please explain how your solution is better than what is currently existing in the market • Who are your existing customers? Please explain why they selected your product
Tracified	• Who are your existing customers? Please explain why they selected your product • Are you using open/closed or hybrid Blockchain technology in your solution? Please explain the benefits of using that technology?

(4) Business Matching Support after the Event

For Japanese companies who answered in the questionnaire that they are interested in participating companies, follow-ups were provided via e-mail regarding their needs for cooperation and interest in trial projects. If they show their interest or specific technology needs to be solved, the Survey team supported discussions through online meetings, etc.

5.4 Seminar on Introducing Japanese Market to Local IT Companies

A seminar was held to introduce the characteristics of the Japanese market and its potential needs to the IT industry in the target countries. The seminar was originally planned to be held locally when the Survey Team visited the target countries, but since the field visit was cancelled, the seminar was held online with all the target countries invited. Invitations to seminar participants were sent by e-mail to all government agencies, companies, and industry organizations that were contacted in the course of the Survey, and the recipients were asked to freely share the information with their related parties.

5.4.1 Summary of the Event

Table-17 Outline of seminar on introducing Japanese market to local IT companies

Seminar Title	Introduction to entering advanced ICT solution market in Japan
Date/Time	Wednesday, 21 October, 2020, 18:00~19:30 Japan Standard Time (13:00~14:30 Armenia, 14:00~15:30 Pakistan, 14:30~16:00 Sri Lanka)
Format	Online (Zoom Webinar)
Purpose	• Introduce situation of advanced ICT solution needs in Japan • Introduce characteristics and differences of the Japanese market compared to the Western market • Provide information on branding and marketing to appeal the Japanese market • Encourage participation to pilot business matching activity planned by JICA
Target	• Advanced ICT solution companies in the target countries (Armenia, Pakistan, Sri Lanka) • ICT industry associations and incubators in the target countries • Relevant government agencies and international organizations in the target countries
Program (Armenia Time)	13:00-13:05 Opening remarks and introduction of the project 13:05-13:10 Opening speech Mr. SAITO Mikiya (Senior Deputy Director General, Senior Director, Office of Science, Technology and Innovation, and Digital Transformation, Governance and Peacebuilding Department, JICA) 13:10-13:30 “Situation and needs of advanced ICT solution market in Japan” Prof. John Kojiro MORIWAKA (CEO of Silicon Valley Ventures, Executive Vice President of Moriwaka Medical) 13:30-13:50 “Practices and Uniqueness of the Japanese Business” Mr. Toshihiro MOMATA (Marketing Consultant) 13:50-14:10 “How to brand your company to appeal the Japanese advanced ICT solution market” Yoichi Kogure (Senior Consultant of Japan Development Service Co., Ltd.) 14:10-14:20 Information for entering Japanese market 14:20-14:25 Invitation to JICA Pilot Program for business matching 14:25-14:30 Closing remarks

5.4.2 Results of the Event

(1) Participants

A total of 149 people registered to participate, and 97 people attended in the seminar. The breakdown of participants is as shown in the figure below. 16 participants from Armenia, 43 from Pakistan, 30 from Sri Lanka, etc. By organization, the overwhelming majority were from the private sector. It should be noted that many of the participants from Armenia were government officials (all from MHTI).

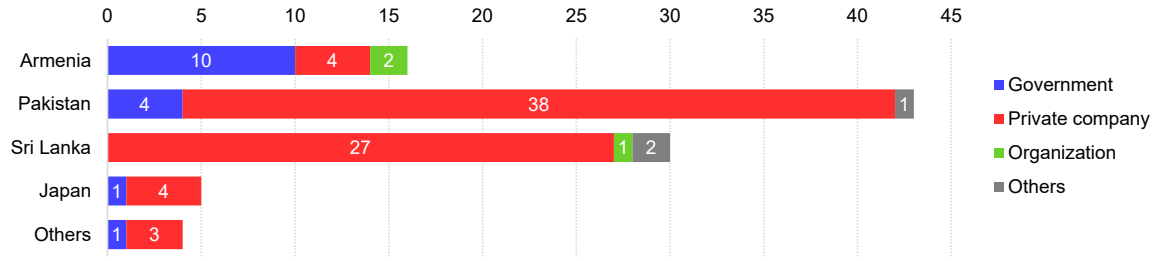


Figure-33 Breakdown of participants (Seminar on introducing Japanese market)

(2) Results of Q&A sessions

During the seminar, Q&A sessions were held using the Q&A function. In total, there were 75 active questions, all of which were answered on the spot by the presenters or the Survey Team members. Typical questions and answers are shown in the table below.

Table-18 Main Q&As (Seminar on introducing Japanese market)

Question	Answer
Can you tell us how we can approach Japanese companies for offering them IT solutions?	I think you need to physically present in one of trade shows (such as Japan IT Week). Or you can find some Japanese friends to connect in the target industry
Are there any opportunities in offshoring IT services?	Yes, but with tough competition.
What is the level of Blockchain adoption in Japan?	For crypt currency market, many. For financial sectors, not so much.
How can we connect with SMEs? Are there any forums?	Try J-GoodTech
How long does it take to build trust and lock a deal in Japan on average?	It depends. Sometimes, it will be longer than you think. But, be patient. Show whoever you are trying to gain trust you are serious.
Is Japanese society hierarchical?	I would say, yes. Seniority is valued as well. President is stronger than vice president, and VP is stronger than manager, oftentimes.
In Trust building mechanisms how can we get the referral based company or person?	Start with nearby connections such as your bank, friends, anyone you see anywhere in Japan. Use every possible way of making connections. Even at restaurants, you may be able to get some connections.
What do Japan based companies think about companies based in Armenia, Pakistan and Sri Lanka? and their way of working?	Many Japanese companies unfortunately don't have a lot of knowledge about those three countries.
Is it necessary to learn Japanese to "melt hearts"?	Some Japanese words might help melting hearts. My suggestion for you is to learn culture behind the language.
How can we reach out to the local Japanese market?	There are a couple of government services for foreign companies when they open business in Japan. One example is JETRO. Please look at their web site.

5.5 Pilot Program for Trial Business Collaboration with Japanese Companies

5.5.1 Overview of the Pilot Program

As a part of the Survey, a pilot program was conducted to solicit business matching in which ICT solution companies in the target countries were paired with Japanese companies to conduct some kind of collaboration or trial in the field of advanced ICT (PoC, development of prototypes, research for product development, etc.). From the applications received, a maximum of six projects were selected after a prescribed screening process, and JICA covered the costs (up to US$10,000 each) for the ICT companies in the target countries to implement the projects. As shown in the figure below, this pilot program was implemented in the form of subcontracting work from the Survey Team entrusted by JICA to the ICT companies in the target countries.

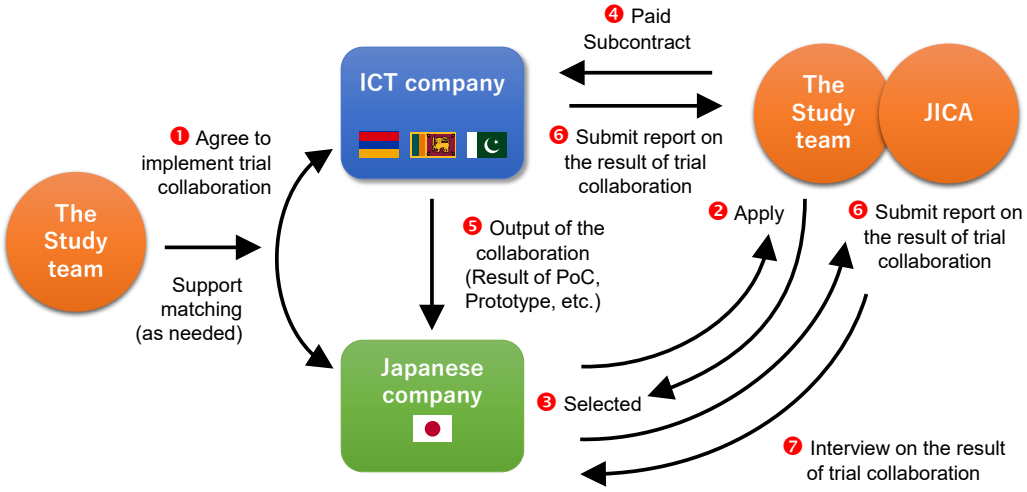


Figure-34 Overview of the Pilot Program for trial business collaboration with Japanese companies

Requirements for applying to the Pilot Program

- The content of the collaboration should be compatible with the purpose of the Survey. Specifically, the collaboration should be related to some advanced ICT field (AI, IoT, Blockchain, etc.). Specific examples are as follows.
  - ➢ Creation of AI models for evaluation by using data provided by Japanese companies
  - ➢ FPGA prototyping according to the specifications provided by the Japanese company (until the demonstration)
  - ➢ PoC supply chain experiment to track producers, etc. using Blockchain
  - ➢ Survey on the current needs for the development of smart medical systems
- The Japanese company should provide the technical specifications and data necessary for the development by the company of the target countries. In principle, technical communication during the development should be conducted directly between the companies.
- As a general rule, the copyright of specific software developed through this project will be held by the IT company (since existing code held by the IT company is often used for prototype

development, for example), but detailed terms and conditions should be determined by agreement between the Japanese company and the partner IT company.

- Other conditions for participation and application shall be in accordance with the prescribed agreement, and submission of the agreement shall be a condition for application.

5.5.2 Call for Pilot Projects and Results of Selection

The call for the Pilot Program was done from November 16th to December 11th, 2020, and all Japanese companies and companies in the target countries that had been contacted in the Survey were invited to apply directly. The invitation was also made through our website of the Survey mentioned above, the e-mail newsletter of related industry associations, and the advertising function of Facebook, etc.

As a result of the recruitment, there were finally applications from 10 corporate pairs. The application documents were reviewed on December 15, 2020 in the form of an online conference. In addition to the Survey Team, JICA's person in charge of this case and international cooperation specialists participated in the review meeting. In examining the application documents, the evaluation criteria were prepared in advance as shown in the table below, and the total evaluation points were set to 100 points.

As a result of the call for applications, we finally received applications from 10 company pairs. The screening of the applications was conducted on December 15, 2020 in the form of an online conference by the Survey Team, the JICA staff in charge of the Survey, and JICA's international cooperation experts. In reviewing the applications, the evaluation criteria were prepared in advance as shown in the table below, and the full score of the evaluation was set at 100 points.

Table-19 Evaluation criteria for applications of trial business collaboration

Evaluation items	Perspective of the evaluation	Score
Relevance to the Survey	Is the pair a combination of an ICT company of a target country that provides solutions in the field of advanced ICT and a Japanese company that is a user of the solutions suitable for the purpose of the Survey? Is it a case that "the solution has already been widely adopted in Japan, and there is no need to use a company from the target country in terms of cost" or not?	20
Advanced technology	Does the content apply technologies from advanced ICT fields (AI, IoT, Blockchain, robotics, etc.)?	20
Feasibility	Can the project be implemented within a limited period of three months? Is it likely that clear and objective results will be obtained?	20
Implementation system	Are there any problems with the implementation system on the part of the Japanese company and on the part of the company of the target countries? Has the commitment of the Japanese company been obtained?	20
Sustainability	Although it is up to the Japanese company to decide whether or not to continue the collaboration after the PoC is implemented, does the PoC have a certain level of sustainability from an objective standpoint? Would it be a case study that can be expected to have a ripple effect on other Japanese companies?	10
Price point	Is the composition of the rough estimate reasonable and within the predefined limit price?	10
	Total	100

After reviewing the 10 applications submitted in accordance with the above-mentioned criteria, the evaluation results were as shown in the table below, and the top six projects with the highest total score were selected. By country, there were three Sri Lankan companies, two Armenian companies, and one Pakistani company.

Table-20 Selection result of trial business collaboration applications

	Selected pairs						Pairs that were not selected			
Evaluation items	A	B	C	D	E	F	G	H	I	J
Relevance to the Survey	20	20	20	20	20	20	10	5	10	10
Advanced technology	20	20	20	15	15	15	18	10	10	10
Feasibility	18	20	20	20	20	20	20	10	5	15
Implementation system	20	20	20	20	20	20	20	5	5	15
Sustainability	10	8	8	10	10	8	4	0	5	8
Price point	10	10	10	10	10	10	10	10	10	10
Total score	**98**	**98**	**98**	**95**	**95**	**93**	**82**	**40**	**45**	**68**

5.5.3 Implementation Results of the Pilot Projects

The selected company pairs started business collaboration in the latter half of December 2020 immediately after the notification of the selection result. Of the six corporate pairs, one of them subsequently declined the Pilot Program in the process of discussing specific details of the collaboration, but the remaining five company pairs all completed the collaboration by May 2021. Appendix 3 shows the results of the trial collaboration for the six corporate pairs, including the pair that declined. The table below shows the summary of results that were judged to be useful from the work completion reports submitted by each corporate pair. Similar opinions are combined into one and its number of opinions is appended. Opinions specific to each country (Armenia, Pakistan, and Sri Lanka) are marked with the country flag.

Table-21 Summary of implementation results of pilot collaboration projects

Question		Answers from Japanese company	Answers from IT company of the partner country
Issues and problems encountered during trial business collaboration	Communication, business practices, culture, etc.	• Language barrier: 3 companies • Time difference	• Language barrier: 2 companies • End users do not understand English • Understanding Japanese industry knowledge and terms
	Technical problems	• Low expertise in fields other than IT (customer industry)	
How the above problems were solved (or not solved)		• Regular meetings • Flexible response to scope changes, etc. • Support from person with high English proficiency • Support from the Survey Team members who are strong in IT	• Regular meetings • Support from the Survey Team members who are strong in English

Question		Answers from Japanese company	Answers from IT company of the partner country
Possibility to collaborate with companies in the partner country	Future possibilities	• Yes (positive): 5 companies	• Yes (positive): 5 companies
	Attractiveness of partner country companies	• High cost performance: 4 companies • High level of advanced technology: 2 companies • Fast development speed: 2 companies • Global standard development approach	• Japanese are professionals: 2 companies • Japanese labor culture, polite business etiquette, time and resource accuracy • Japan's agricultural market is very attractive
	Challenges of the partner country industry	• Support and troubleshooting that require on-site work cannot be expected	• Japanese language is a barrier: 3 companies • Lack of information about the Japanese market
What to do to promote business collaboration	By companies and industry associations of your country	• Make efforts to include target country in the options of the contractor as industry association • Collect more information on IT companies in the target countries, discover good companies, and actively interact with them.	• Providing Japanese language education for developers and incentives for Japanese language ability: 2 companies • Trade and exchange program implementation: 2 companies • Promotion of understanding of Japanese culture, work ethics, etc. • Cooperation with companies in specific industries: 2 companies
	By JICA , Government of Japan	• Continuous implementation of trial business collaboration: 2 companies • Collect and share information regarding IT industry of target countries: 3 companies	• Promotion of entry of IT companies in target countries in the projects of JICA and Japanese companies: 3 companies • Network building between the industry of two countries (Web portal, annual conferences, use case accumulation, etc.): 3 companies
	By Government of target country	• Collect and share information on local IT companies • Support for Japanese language (brochure, etc.)	• Network building between the industry of two countries (Web portal, public relations with Japanese market): 5 companies • Add Japanese to elective courses at IT universities • IT -related joint research with Japanese universities and the support for start-ups starting from there
Other comments and suggestions to promote collaboration between the two countries			• Expansion of international students to Japanese universities • Cooperation program by universities in both countries (joint research, start-up support by both countries, etc.)

5.5.4 Analysis of the Results of the Pilot Projects

In the implementation results shown above, all pairs that collaborated were mostly satisfied with the content of the collaboration and responded positively to the idea of further collaboration with the target country companies. For the IT companies in the target countries, the attitude of the Japanese companies and the Japanese business culture seemed to be favorable, and the Japanese companies were satisfied with the cost performance and technology level of the target companies.

In almost all of the trial projects, the language barrier was cited as an issue. Even if the Japanese side has a person in charge who is fluent in English, if the final beneficiaries (end users) do not have good English skills, there were many issues such as the inability to have direct discussions between users and developers. Another issue is that even if the Japanese company is a specialist in a particular industry, if they are not familiar with the IT field, there were several cases where the members of the Survey Team had to participate in every meeting because the Japanese side could not understand the IT-related content explained by the target company. In order to deal with these issues in future collaborations, English coordinators with knowledge of the target industry will be needed for the former, and (English) coordinators with knowledge of the ICT field will be needed for the latter.

Another area on the Japanese side that deserves special mention is smart agriculture. The Japanese agricultural market is highly premium and crops are sold at a high price point compared to other countries. Farmers are also highly literate in IT and technology, which makes it easy for them to adopt IT and command a price premium to cover the cost.

5.6 Production of a Promotional Video for the Sri Lankan ICT Industry in the Japanese Market

5.6.1 Production Overview

In line with the content of the branding and marketing strategy, 10-15 minute ICT industry promotional video for the Japanese market was produced for each target country. This activity was conducted as an alternative measure to help Japanese companies deepen their understanding of the characteristics and strengths of the ICT ecosystem in each country, since the program for Japanese companies to visit the target countries was cancelled due to COVID-19.

5.6.2 Structure and Content of the Video

In order to introduce the Sri Lankan government's efforts to promote the ICT industry, the characteristics of ICT education, the history of the development of the ICT industry, and the strengths of local ICT companies, we conducted interviews with the following stakeholders in Sri Lanka.

Table-22 Target of interview recording in Sri Lanka

Classification	Organization	Position	Name
Evolvement of ICT industry	LSEG Technology (Former Millenium IT)	Director/Co-Head	Mr. Feroz Cader
Government's initiatives on ICT sector	Export Development Board	Chairman and Chief Executive	Mr. Suresh de Mel
ICT human resource development	SLASSCOM	Chairman	Mr. Channa Manoharan
ICT companies	Epic Technologies	Executive Chairman	Dr. Nayana Dehigama
ICT companies (startup)	Effective Solutions	CEO	Mr. Keerthi Kodithuwakku
Collaboration with Japanese corporates	Hanako Farm	CEO	Mr. Nobuhisa Saito

The following is a synopsis of the promotional video that was produced.

Table-23 Synopsis of the promotional video produced

Part	Contents
1. Quick overview of Sri Lanka	• Geographical location • 0.8 time as Hokkaido island in size • Has been a popular touristic destination for a long time • Recently started gaining attention as a DX partner from overseas countries
2. History of ICT Revolution	• Introduction of world's fastest trading platform that was developed by a Sri Lankan IT company, 'Millennium IT' • Acquisition of 'Millennium IT' by LSEG helped attracting more global companies to Sri Lanka for high-end, innovative solutions • Expedia, e-Bay are some other well-known critical systems that were developed by Sri Lankan IT companies
3. Evolution of ICT industry	• Sri Lanka, as a former British colony had developed many trade relations with UK and Europe • These relations continued after the independence also, and Sri Lanka became a popular destination for IT outsourcing due to cheap labor • Government also heavily invested in developing IT infrastructure and promoting IT industry; as a result, Sri Lanka became one of the top IT/BPO destination in the world. • Software development experience and know-how gained through offshore developments is a key factor to provide high quality, innovative solutions
4. Technology companies	• Introduction of Epic Technologies, a company which specializes in developing innovative solutions to financial sector. Epic's products and solutions have been verified by world class financial players like VISA & MasterCard. • Introduction of Effective Solutions, a University of Moratuwa spin-off startup that specializes in biomedical engineering, AI and data analytics. Their AI algorithms have received patents in the USA and have developed solutions for a Japanese ophthalmology device manufacture too.
5. Collaboration between Sri Lankan and Japanese companies	• There are many collaboration cases between Sri Lankan companies and US/ European companies, compared to collaboration cases with Japanese companies. • Introduce Japanese company Hanako farm's trial project with Sri Lanka's Agritech startup SenzAgro relating to Precision Agriculture Modelling in Watermelon Polytunnels • Global IT Park in Niigata has been trying to promote collaboration between Sri Lankan IT companies and Japanese companies by inviting Sri Lankan startups to Japan. • However, Sri Lankan IT companies need more recognition in the Japanese market for enhanced collaboration.

This video will be uploaded to JICA's YouTube channel and will also be shared with Japanese companies, industry associations, Japanese embassies, JETRO, etc.

6 Proposed Branding/Marketing Strategy for IT Companies to Japan

In the Survey, we developed a draft strategy for branding and marketing of the Sri Lankan ICT industry to the Japanese market, as well as proposed activities based on the draft strategy. These documents are prepared in PowerPoint format with a lot of infographics in accordance with marketing methodology and will be submitted to the Sri Lankan government as a separate document from this report. Here, we will only discuss the outline of the draft strategy and its activities and attach thumbnail images of the draft in Appendix 4.

6.1 Overview of the Proposed Branding/Marketing Strategy

Sri Lanka's branding/marketing strategy was developed according to the following steps, as shown in Process 4-1 of Work 4 in Chapter 1.6

(1) Set priority target industry in Japan

As shown in Table-9, the following industries have been identified as priority target industries.

Fintech, IoT, Health Tech, AI/Data Science, Embedded systems/Robotics

(Note: BPM and E-commerce were not set since they are not advanced IT fields)

(2) Value image to be evoked

First, the target persona for marketing was assumed to be an engineering professional in a Japanese business company, where Xtech/DX is a management issue, but the ideas and solutions are still unclear. The value image of Sri Lanka that we wanted to evoke in this persona is “When it comes to software development for Vertical market, it is Sri Lanka”.

(3) Customer contact points

The story that appeals to customers starts with Sri Lanka's national background, followed by its human resource development, advanced ICT companies, additional business values such as geographic conditions and economic advantages, and the current status of its entry into the Japanese market, before concluding that it would be beneficial for Japanese companies to cooperate with Sri Lankan companies. The promotional video in the previous Chapter was produced in line with this story.

(4) KGI/KPI

As for KGI/KPI to quantitatively measure the results of branding/marketing implementation, it is desirable to use the followings from the perspective of measuring how well the target audience was reached.

- KGI: Market share of Sri Lankan advanced ICT technology companies in the Japanese market
- KPI: Recall rate of Sri Lanka as an image of an advanced ICT country: 10%; Matching/ business meeting support rate: 80%.

6.2 Outline of the Proposed Action Plan

In addition to the above proposed branding/marketing strategy, we have also prepared a separate document on the proposed activities to be undertaken by the Sri Lankan side in the future. The following is a summary of this document. (See Appendix 4 for details.)

- EDB will continue to take the lead in promotion in Japan. No specific organizational changes are required.
- For Sri Lankan advanced ICT companies, it is desirable to secure more resources to enhance the programs and contents related to the entry into the Japanese market.
- As a PR approach to Japanese companies, Sri Lanka will actively participate in exhibitions, business matching and pitching events in line with the behavioral process of Japanese companies in selecting vendors. It would also be effective to set up a base in Japan to be in charge of matching the Sri Lankan ICT industry with Japanese companies.
- Assume one year for research and planning, and about 1.5 years for the launch of the Japan branch.

7 Recommendations on Japan's Support for Promotion of the ICT Industry

In this Chapter, based on the results of the Survey described so far and the results of the various events described in Chapter 6, we will clarify what Japan should support in order to promote business matching between the Sri Lankan ICT industry and Japanese user companies. First, a SWOT analysis was conducted on the advantages of Sri Lanka's ICT industry compared to the ICT industries of other emerging countries (China, India, Vietnam, Bangladesh, etc.) that are already doing business in Japan. The results are shown in the figure below.

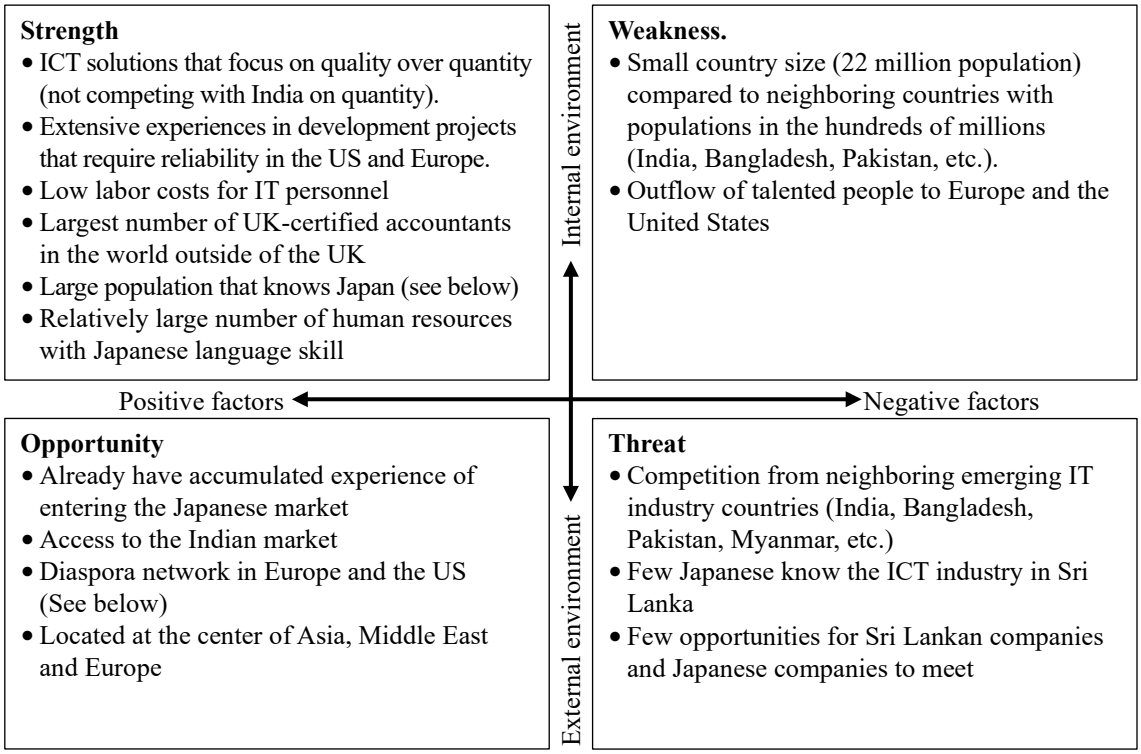
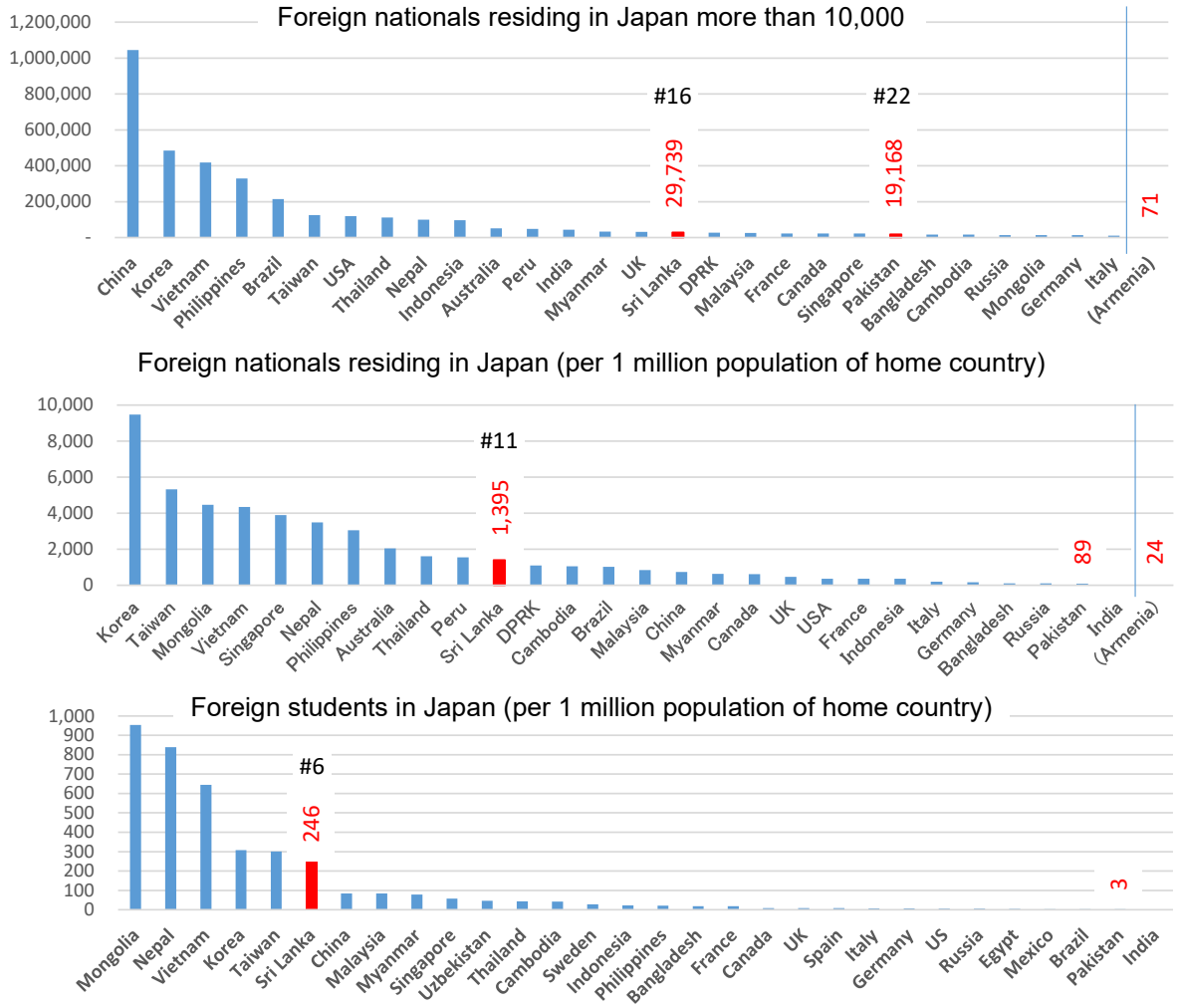


Figure-35 SWOT Analysis of Sri Lankan ICT industry compared to existing countries with business in Japan

Among these, “large proportion knows Japan” means that the number of Sri Lankans residing in Japan and the number of foreign students per unit population in Sri Lanka is large. As shown in the figure below, the number of Sri Lankans residing in Japan is nearly 30,000 which is very large when considered as a percentage of Sri Lanka's population of 22 million. When compared to other countries, the number of Sri Lankans residing in Japan per million population in their home country is 1,395 which is more than China, India and all Western countries. Furthermore, Sri Lanka ranks 6th with 246 students in terms of the number of foreign students studying in Japan per million people in the home country, which means that Sri Lanka has a high density of highly educated people who know Japan well. This should be taken as an advantage when considering the entry of the ICT industry into the Japanese market.

Although it is not well known in Japan, Sri Lanka also has a network of diaspora who migrated abroad during the civil war era, many of whom live in Canada, Europe and India. Many of the Sri Lankan ICT companies that have offices abroad have used this network to establish their business abroad.



Source: Immigration Services Agency of Japan, Statistics of Foreign Residents as of December 31, 2019 calculated from data provided by Japan Student Services Organization

Figure-36 Number of foreign residents and students in Japan by country and their ratio to the population of their home country

Based on the results of the SWOT analysis, the table below categorizes the contents that Japan should support in terms of the target group and the SWOT approach. In the table, those indicated by notation like [PRG1] are the numbers of support measures and actions, and those with high priority is indicated by ★ mark. Details of each program are described in the next section.

Table-24 Proposed support measures and actions by Japan for the promotion of business collaboration with ICT industry in Sri Lanka

Strategy / Target group	Enhance the Strength	Overcome the Weaknesses	Take advantage of Opportunities	Ward off Threats
Government body (Agency)	**[PRG1]** ★ Dispatch of ICT industry business collaboration advisor from Japan			
Educational Institutions	**[PRG2]** International industry-academia collaboration in business matching	**[PRG3]** Internship program at Japanese companies		
IT industry	**[PRG4]** Business matching event with Japanese companies focusing on specific technological fields in which Sri Lankan companies have strengths		**[PRG8]** Accumulate and publicize cases of business collaboration with Japanese companies **[PRG6]** Promotion of business matching with Sri Lankan companies headquartered in the U.S. and Europe	**[PRG9]** Building a technology-oriented business matching system/platform

The following figure shows a timeline of the above support measures, taking into account the order of implementation, priority, and collaborating parties.

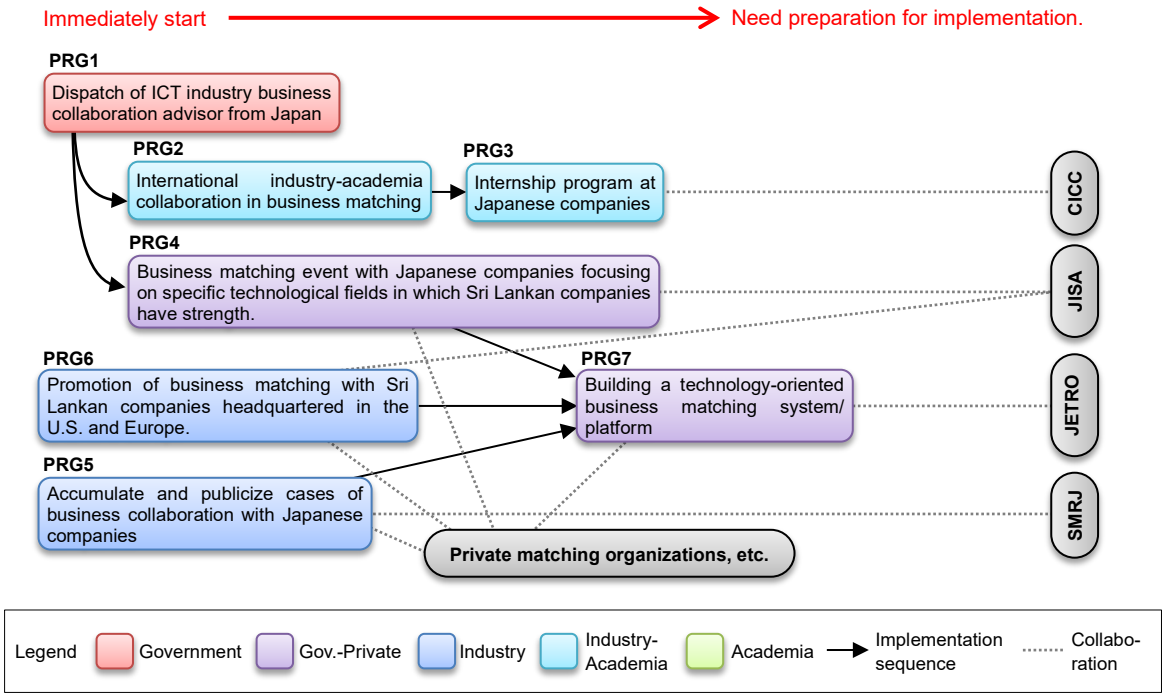


Figure-37 Proposed support measures and actions by Japan for the promotion of business collaboration with ICT industry in Sri Lanka (Timeline)

7.1 Project Possibilities

Possible projects that could be implemented targeting governmental and educational institutions in Armenia would be as follows.

[PRG1] Dispatch of ICT industry business collaboration advisor from Japan

Type of cooperation	Dispatch of experts (long-term)
Necessity of cooperation	While the Sri Lankan government and industry (especially EDB and SLASSCOM) have been promoting the Sri Lankan ICT industry for the BPM and outsourcing markets, a different strategy is required in Japan where there are many competing countries offering similar solutions. In order to develop a strategy that fully takes into account Sri Lanka's position in Japan and its differentiation from other countries, it is necessary to assign a Japanese advisor.
Purpose of cooperation	To recommend to the Sri Lankan government and support the implementation of short and long term strategies for business matching that will highlight the competitive advantages of the Sri Lankan ICT industry to Japanese user companies/industries.
Target institution	EDB, SLASSCOM
Cooperating organization in Japan	JETRO, SMRJ, universities with Sri Lankan students and professors, existing Sri Lankan companies in Japan, JICA
Contents of cooperation	Advisors from Japan will be dispatched as long-term expert with the following TORs. • Stationed at EDB • Review Sri Lankan activities to date (targeting general BPM/Outsourcing market) and advise the Sri Lankan government to narrow down the market and technologies that would appeal to the Japanese side • Establishing a mechanism (network) for regular exchange of views between Sri Lankan HR living in Japan (students, university lecturers, established companies) and the ICT industry in Sri Lanka. • Utilize the above network for intensive marketing and business matching to the Japanese industry focusing on the technology areas where Sri Lanka has an advantage over other countries. • Establishing a specific branding image of Sri Lanka's ICT industry (such as “Sri Lanka for highly reliable Fintech system development”) based on the results of the above activities (it is acceptable if the image is biased towards a specific industry at first) • Develop strategies to expand from the established image to other technology areas. • Specifically, it is expected to be most efficient to promote the possibility of all other support measures ([PRG2] to [PRG7]) as sub-projects and provide advice on their overall coordination.
Time frame	Immediate

[PRG2] International industry-academia collaboration in business matching

Type of cooperation	Expanding opportunities for industry-academia collaboration with overseas ICT companies at Japanese universities
Necessity of cooperation	Although the number of foreign students from Sri Lanka is very high (compared to the population of their home country) and the level of ICT industry in their home country is high, there is a need to improve the current situation where collaboration with Japanese industry is not progressing as expected.
Purpose of cooperation	To establish a mechanism for Sri Lankan students and lecturers in Japanese universities to contribute to the expansion of business matching opportunities between the Sri Lankan ICT industry and Japanese companies.
Target institution	EDB, SLASSCOM

Cooperating organization in Japan	Embassy of Sri Lanka in Japan, universities accepting Sri Lankan students, universities with Sri Lankan lecturers, and other institutions of higher education.
Contents of cooperation	• EDB, SLASSCOM and the Sri Lankan Embassy in Japan will cooperate to establish a network between Sri Lankan students studying/lecturers teaching in Japanese universities and Sri Lankan ICT industry (in collaboration with PRG1). • Utilizing the above network, promote Sri Lankan companies operating in Japan to participate in industry-academia collaboration projects at Japanese universities, or propose to Japanese companies participating in industry-academia collaboration to collaborate with Sri Lankan companies. • Alternatively, Sri Lankan ICT companies can send research students to Japanese universities.
Time frame	Immediate

[PRG3] Internship program at Japanese companies

Type of cooperation	Collaboration between universities and the private sector
Necessity of cooperation	Since the cost of the ICT industry in Sri Lanka is still relatively low, talented people tend to flow out to the Western countries in search of higher income. It is necessary to come up with a mechanism that will allow such human resources to contribute to the development of the Sri Lankan ICT industry without flowing out.
Purpose of cooperation	Provide opportunities for Sri Lankan advanced ICT human resources to work in the Japanese market, and at the same time, establish a system that can contribute to the development of the ICT industry in their home country. By accepting excellent students as interns in Japanese companies, it will be beneficial to the Japanese side that is suffering from the shortage of ICT engineers, and the goal is that after the interns return to their home countries, they will be able to find jobs that will lead to business matching with the Japanese market rather than Europe and the United States.
Target institution	Universities and higher education institutions
Cooperating organization in Japan	Japanese user companies (small and medium-sized distributors, manufacturers, etc.) that lack advanced ICT human resources, Center for International Cooperation in Computerization (CICC), JICA, METI's “Internship Program to Promote Internationalization[142], etc.
Contents of cooperation	• Through the Japanese partner organization, recruit companies that want to accept ICT students from Sri Lanka as interns in advanced ICT fields such as AI and Block chain. • On the Sri Lankan side, recruit students who wish to participate in internship program at Japanese companies. • Students who wish to participate will be matched with companies through online interviews. • Training on Japanese culture and simple Japanese language will be provided prior to the trip to Japan. • Conduct an internship at a Japanese company. The duration of the program would be about 3 to 6 months. • The host company will bear the cost of travel to and stay in Japan. • CICC has successfully implemented a similar project in Myanmar[143] so it is advisable to refer to that project.
Time frame	As soon as the Japanese side is ready to cooperate.

[142] https://internshipprogram.go.jp/

[143] http://www.cicc.or.jp/japanese/news/pdf_ppt/201106MyanmarInternship2020.pdf

7.2 Possibility of Private Sector Collaboration

Potential private sector partnerships with Armenia's ICT industry include the following.

[PRG4] Business matching event with Japanese companies focusing on specific technological fields in which Sri Lankan companies have strength

Type of cooperation	Event implementation
Necessity of cooperation	Need to differentiate Sri Lankan companies from those of other emerging countires that have already established a presence in Japan in the ICT field.
Purpose of cooperation	Business matching between the two countries in specific fields
Target institution	Sri Lankan companies with solutions in specific technological areas. The specific areas are expected to include some of the following areas. • Fintech • IoT systems for specific fields • Health and medical field • Smart agriculture
Cooperating organization in Japan	Industry associations in specific fields, METI, JETRO, JISA, etc.
Contents of cooperation	An online matching event will be held in collaboration with the corresponding industry organization on the Japanese side. • The event will be planned jointly with Japanese industry associations. The industry association should not be user companies, but rather the same industry as Sri Lanka's strong technological field. In other words, it is assumed that Japanese companies will collaborate and co-develop with Sri Lankan companies in the same field. • Recruit companies to participate on the Sri Lankan side. • Participating companies in both countries will create their own business and technical information on the Web in advance and make it available to participating companies. • There will be a period of time prior to the event when the above introductory information can be freely viewed. This does not preclude companies from entering into business negotiations without waiting for the event. • The event will include online opportunities for one-on-one discussions with multiple counterpart companies, as well as breakout sessions where companies in more focused technology areas can come together for discussions.
Time frame	Implement one session, and if there are sufficient concrete results, continue to hold the session on a regular basis.

[PRG5] Accumulate and publicize cases of business collaboration with Japanese companies

Type of cooperation	Information sharing
Necessity of cooperation	One of the characteristics of the business mindset in Japanese industry is the tendency to place emphasis on word of mouth and real cases. No matter how good the ICT companies are in Sri Lanka, Japanese companies often fail to take concrete actions if there are no real cases of collaboration between those companies and Japanese companies.
Purpose of cooperation	Provide Japanese companies with an opportunity to generate interest in matching with Sri Lankan companies and to take concrete actions.
Target institution	Sri Lankan advanced technology companies that have experience working with Japanese companies (not limited to ICT field)
Cooperating organization in Japan	Japanese companies with experience in collaborating with Sri Lankan advanced technology companies, the Sri Lankan Embassy in Tokyo, JETRO, etc.

Contents of cooperation	• Collect case studies in both countries of collaboration between advanced Sri Lankan and Japanese companies. • Interviews will be conducted with companies in both countries that have collaborated with each other to gather information on the challenges of collaboration and the strengths of the other country's companies. • The collected information will be accumulated and (with the consent of the interviewee company) posted on websites that support collaboration with overseas companies. • Ideally, it would be desirable to collect similar cases not only from Sri Lanka but also from Armenia, Pakistan, and all other countries where promoting cooperation with Japan in the future would be beneficial to both countries, and publish them on the business matching system described below.
Time frame	As soon as we find an existing matching site that can help us accumulate and publish examples of collaboration

[PRG6] Promotion of business matching with Sri Lankan companies headquartered in the U.S. and Europe

Type of cooperation	Diverting the business matching scheme with European and American companies
Necessity of cooperation	Based on the results of the trial business matching events conducted in the Survey, Japanese companies that don't know Sri Lanka well tend to have insufficient confidence in Sri Lanka. However, in fact, many Sri Lankan companies are headquartered in Europe or the U.S. and are recognized as European or U.S. companies in terms of registration, so we will take this fact and use Japanese companies' sense of security in "European or U.S. companies" and the existing matching scheme for European or U.S. companies to conduct matching.
Purpose of cooperation	Business matching between international Sri Lankan companies based in the U.S. and Europe and Japanese companies
Target institution	International Sri Lankan companies with offices in Europe and the United States
Cooperating organization in Japan	Organizations and companies that support matching with Western companies, such as Japanese companies that have a need for the solutions offered by Sri Lankan companies mentioned above, or Japanese companies that wish to form a JV with such companies.
Contents of cooperation	• List the ICT companies (or advanced technology companies in general) in Sri Lanka that are based in Europe or the United States. In addition to Sri Lanka, similar companies in Armenia and Pakistan can also be listed. • Identify Japanese industries that may have a need for the solutions provided by the listed companies and solicit interested Japanese companies through industry associations. In doing so, it is not necessary to specify that the listed companies are originally from Sri Lanka, Armenia or Pakistan (as they are registered as European/US companies). • The business matching between these companies and Japanese companies will be conducted using the existing business matching scheme and platform with European/US companies. In other words, formally, it is no different from matching with European/US companies. • The fact that the nationality of the company to be matched is Sri Lankan (or Armenian or Pakistani) will naturally become apparent during the matching process. However, if the matching is done from the perspective of technology and business, these facts will not be a problem.
Time frame	At any time

[PRG7] Building a technology-oriented business matching system/platform

Type of cooperation	Building an online platform
Necessity of cooperation	As mentioned in Section 4.2.1 of the main text, existing business matching sites only provide information on companies, and users can only find companies by searching through a vast amount of information. However, companies that are actually looking for collaboration partners need a function that can automatically present matching candidates based on specific technical keywords.
Purpose of cooperation	Create a new international business matching system/platform that is easy to use and highly efficient for both Japanese and foreign companies looking for business partners.
Target institution	Overseas companies wishing to collaborate with Japanese companies (not limited to countries covered by the Survey)
Cooperating organization in Japan	Japanese companies wishing to collaborate with overseas companies, JETRO, JICA, etc.
Contents of cooperation	• Establish an online system that allows overseas and domestic companies to register their information for the purpose of finding collaborators. • Be sure to conduct screening (manual or automatic) to eliminate false information when registering company information. • In addition to automatic matching based on technical keywords entered by the company, AI will pick up companies with a high expected success rate for matching based on machine learning from the overall information entered by the company, without placing a large burden on the system operator. • In order to alleviate the language barrier, which is the biggest obstacle for Japanese companies to collaborate with overseas, the information entered by overseas companies can be searched and viewed in Japanese by linking with an external automatic translation function, etc. The system will also have a registration function for interpreters. This will allow the same site to be used for securing and booking interpreters in the other party's language when conducting specific business negotiations online. Interpreter personnel can also register on this site to ensure stable and continuous work. • It is desirable that the system be operated by a public organization such as JETRO, as it will ultimately benefit Japanese companies by enabling them to find high-quality, low-cost solutions.
Time frame	As soon as the governing body of the system is determined and the budget is available

(End)

Appendix 1: List of Organizations/IT Companies Surveyed in Sri Lanka

Government organizations

Name	URL	Overview
Digital Infrastructure and Information Technology Division, Ministry of Defense	http://www.mdiit.gov.lk/	Formulation of policies, programs, and projects, monitoring and evaluation in regard to the subjects of Digital infrastructure and Information technology
Information Communication Technology Agency (ICTA)	https://www.icta.lk/	The lead agency in Sri Lanka for implementation of ICT initiatives by the government
Board of Investment (BOI)	http://investsrilanka.com/	Investment application and licensing agency. Also makes policy such as incentives.
Export Development Board (EDB)	https://www.srilankabusiness.com/	An apex government body mandated to promote export of Sri Lanka products to overseas market

IT industry associations, organizations, incubation centers, and venture capitals

Name	URL	Overview
Computer Society of Sri Lanka (CSSL)	https://www.cssl.lk/	A professional body and learned society in the field of Computing and Information Technology in Sri Lanka.
Disrupt Asia	https://www.disruptasia.today/	Sri Lanka's first ever startup conference and showcase called Disrupt Asia 2016 was organized by the ICT Agency of Sri Lanka on the 28th of July 2016 by bringing some of the best in the ecosystem as well as start-up veterans to share their experience with new start-up founders and address many burning questions budding entrepreneurs have. The event was attended by nearly 350 startups, entrepreneurs, corporates, students and media while 42 speakers including five from Silicon Valley.
Federation of Information Technology Industry Sri Lanka (FITIS)	https://www.fitis.lk/	Set up as a focal point for the ICT industry in Sri Lanka. An apex body of the ICT sector in the country covering all major industry segments such as Hardware, Software, Training & Education, Communication and Professional.
Hatch	https://hatch.lk/	60+ Support companies from any tech focus. Provides co-working space.
Lankan Angel Network	http://www.lankanangelnetwork.com/	The Lankan Angel Network (LAN) is a platform for angel and private investors who invest in high growth early stage Sri Lankan ventures. LAN provides mentorship and funding for the entrepreneurs, streamlined deal flow and structured guidance to the investors until exit.
SLINTEC	http://www.slintec.lk	Nano Technology focused research and development & incubation
Spiralation	http://www.spiralation.com/	National startup Incubator running from 2007. It is a Tech Startup Support Program, an initiative of the ICT Agency of Sri Lanka, the apex ICT institution of the Government of Sri Lanka focuses on supporting new technology ventures. Budding entrepreneurs with a vision of launching their 'Technology Startup' and seeking assistance to foster their ICT business ideas are targeted.
Sri Lanka Association of Software and Service Companies (SLASSCOM)	https://www.slasscom/lk/	The national chamber for the IT-BPM sector formed in 2008. It is the largest association in ICT industry in Sri Lanka.
Sri Lanka Inventors Commission	https://www.slic.gov.lk/	SLIC launched the Establishment of Incubators in 2017 with primary objective of facilitating inventors to develop their inventions and startups effectively. Inventors will be able to expertise in business, marketing, and startup formation through the incubators.

Name	URL	Overview
Startup X Foundry	http://startupxfoundry.com/	E-commerce, Logistics, Blockchain. Collaborating with Norway. Started in 2017.
The National Chamber of Commerce of Sri Lanka (NCCSL)	http://www.nationalchamber.lk/	One of the leading business chambers in Sri Lanka which exclusively serves Sri Lankan exporters.
Venture Frontiers	https://ovibees.com/venturefrontierlanka/	VC for Leisure & Tourism, Agriculture, ICT, Education, Healthcare
Yarl IT Hub	http://www.yarlithub.org/	Located in Jaffna, it is a not for profit social enterprise which strives towards inspiring, supporting and fostering Technology, Innovation and Entrepreneurship in the community.

IT companies

Company name	URL	Overview
4Axis	https://4axissolutions.com/	Creative Development apps developer. Apps are being used over 150 countries worldwide. 28 million users worldwide
99xTechnology	https://www.99xtechnology.com/	Large IT company that has several advanced ICT projects such as Tracified and Maturify
Antyra Solutions (Private) Limited	https://www.antyrasolutions.com	It is an all-inclusive boutique digital marketing agency. Based in Colombo, it works with selected clients across the world to design and execute award winning digital campaigns.
Antyra Solutions (Private) Limited	https://www.antyrasolutions.com	An award-winning integrated agency that combines creativity, technology and performance-based digital marketing under one roof.
Bistec Global	https://bistecglobal.com/	System Development and IT services on product or project basis. Manages extended dedicated teams in Sri Lanka
BooleanLabs (Pvt) Ltd.	https://booleanlabs.biz/	Solution provider for AI, Data analysis, Fintech, Robotics, IoT
Calcey Technologies	https://www.calcey.com/	It is a boutique software product engineering firm specialized in developing digital products for enterprises and startups worldwide
Codegen	https://codegen.co.uk/	Provides wide range of ICT solutions including AI, Data analysis, IoT, Embedded system, etc.
Conscient AI	https://conscient.ai/	An AI technology company that focuses on applying machine learning and deep learning to solve problems in multiple domains (including Fashion/Logistics).
Effective Solutions	http://www.effectivesolutions.xyz/	IoT and robotics company focusing on healthcare, agriculture and manufacturing
Epic Technologies	https://www.epictechnology.lk/	Leader in Digital Transformation, e-government solutions, workflow management, Secure Electronic Payment Automation, Information Systems Security and Mobile Enterprise Automation Solutions in Sri Lanka.
Evolve Technologies	https://evolve-sl.com/	Scalable ERP, Accounting systems, Hospitality industry and restaurants systems
Eyepax IT Consulting (Pvt) Ltd	https://www.eyepax.com	Data analysis, Blockchain, AR/VR, IoT, Mobile, Web, Machine Learning
F Code Labs (Private) Limited	https://www.fcodelabs.com	We are a boutique software services company providing web, mobile, cloud solutions and catering custom AI & machine learning requirements.
Fcode Labs	https://www.fcodelabs.com/	The founding team consists of graduates & great achievers from Faculty of Engineering, University of Moratuwa and former Software Engineers from WSO2, Zone 24x7 & oDoc, who are actively engaged in developing high quality software products to meet industry standards.

Company name	URL	Overview
Fillorie (Pvt) Ltd	https://fillorie.com/	Data analysis, IoT, Embedded system, Enterprise level software applications, vehicle monitoring system, small business application (mobile)
FR SOFTNET (Pvt) Ltd	https://www.frsoftnet.co.uk	Payment Solutions, A Digital Enabler with a range of Fintech and Digital Solutions. HQ in Australia, Development and R&D center in Sri Lanka
H2Compute (Pvt) Ltd	https://www.h2compute.com	General SIer
Helios P2P Pvt Ltd	https://www.heliosp2p.com	P2P Fintech startup
Igniter Space	https://www.igniterspace.com	Provide a platform for kids to learn, use and create technology from university undergraduates
Inova IT Systems (Pvt) Ltd	www.inovaitsys.com	General Software Development, Data analysis, AR/VR, IoT, Embedded system
Insync Information Technologies Pvt Ltd	https://www.insyncit.net	Network automation
JENDO Innovations	http://www.jendoinnovations.com/	Jendo is a preventive healthcare solution, developed with the focus of eradicating this problem for the middle-aged population. It is a highly scalable non-invasive system that can identify abnormalities in the cardiovascular system and predict the risk of disease. Through our proprietary algorithm set, we analyze and provide the best lifestyle advice to keep you safe.
Loonslabs (Pvt) Labs	https://www.loonslab.com	Loons Lab, consists with an innovative group of humans, delivering an utterly immersive brand experience through design, a KNOW-HOW technology, creative COULD-BE and strategic WILL-DO. Main products include health information management, safety management, event management and POS systems
Loops	https://loopsagency.com/	Loops Solutions is a leading Digital Marketing Agency in Sri Lanka offering a range of services including Online Advertising & Social Media Marketing.
Maturify	https://www.maturify.com	Knowledge management using AI, Deep Learning and chatbots (Superbots)
Momentro	https://momentro.com	Data analysis, Digital Marketing, Strong MarTech capabilities
Nanobotz It Solutions	https://www.nanobotz.lk	Implementing an ERP system developed specifically targeting Sri Lankan Government Offices. Also focusing on some short term developments such as POS systems and eCommerce to gather enough funding to further develop our ERP system to fully develop a Mobile Application and proper UI/UX improvements.
Nanobotz IT Solutions (Pvt) Ltd	https://www.nanobotz.lk	A company that was founded by a group of individuals towards a dream of making work fun for everyone through IT and System Innovations integrated with Productivity enhancement.
Odoc	https://odoc.life/	Largest B2B telemedicine company in Sri Lanka and are now expanding in India covering over 130,000 lives.
PayMedia (Pvt) Ltd	https://www.paymedia.lk	A start-up launched in 2014 that provides custom solutions for finance and telecommunication domains such as cash deposit ATM/kiosk switching, POS and desktop, web, mobile & kiosk applications. Paymedia Smart Bank will address all the needs of a running an un-maned bank and will replace 90% of the banking teller and customer service personals workload enabling banks to operate 24x7
Rootcode Labs & Serw	https://rootcodelabs.com/	High-tech Mobile solutions
S L Robotics Solutions (Pvt) Ltd	http://www.slrobotics.com/	Robotics, IoT, Embedded system

Company name	URL	Overview
S. P. Solutions (Pvt) Limited	https://www.sp-solutions.biz	AI, Data analysis, Fintech, Embedded system, Workflows, Document Management and Decision Support.
SenzAgro solutions	https://www.senzagro.com	Subsidiary of SenzMate that provides smart agriculture solutions
SenzMate (Pvt) Ltd	https://www.senzmate.com	A solution company which works on data driven solutions leveraging technologies like IOT and Big Data Analysis
Silverleap Technology Private Limited	https://www.silverleap.com/	Specialized in Fintech, Embedded system, Retail-tech, Transport-tech. Patents for contactless smart cards and mobile base solutions for NFC and Security.
Tracified	https://tracified.com	Powered by Blockchain technology, it facilitates a tamper proof platform that supports sustainable supply chains by making product origins and production practices transparent.
Univisor	https://www.univiser.io	Personalized PtoP platform connecting prospects, students and alumni of a university
Vega Innovations	https://www.vega.lk/	Automotive and Robotics related company
VizuaMatix	https://www.vizuamatix.com	Telecom & Fintech Solutions provider
Yaala Labs	https://yaalalabs.com	AI, Fintech, Blockchain, cloud native platforms, high performance computing, machine learning, Blockchain
Zone24x7 Private Limited	https://www.zone24x7.com	AI, Data analysis, Robotics, AR/VR, IoT, Embedded system, Cognitive Vision/Machine Vision

Note: Several more ICT companies responded to online questionnaire.

International donors/foreign companies that are engaged in IT sector development

Name	URL	Overview
UNDP Sri Lanka	https:///www.lk.undp.org/content/srilanka/en/	UNDP and Citi Foundation entrepreneurship initiative – Youth Co:Lab Technopreneurship for Social Change Program. Started in 2016, it is supported by the National Youth Services Council and Cisco Systems Inc.
International Finance Corporation (IFC)	https://www.ifc.org	A member of World Bank group. An international financial institution that offers investment, advisory, and asset-management services to encourage private-sector development in less developed countries.

Appendix 2: List of Contacted Japanese Industry Associations with Potential Needs for Advanced ICT Solutions

Industry Sector	Potential Technology to Apply	Industry Association and Major Company	URL
Finance/ Securities	AI, Blockchain, Big Data processing, Privileged Access Management Service, Smartphone app, Startup service, etc.	Japanese Bankers Association	https://www.zenginkyo.or.jp/en/
		Japan Securities Dealers Association (JSDA)	https://www.jsda.or.jp/en/
		Japan Consumer Credit Association (JCA)	https://www.j-credit.or.jp/en/
		Fintech Association of Japan	https://www.fintechjapan.org/
		Institute for Monetary and Economic Studies, Bank of Japan (IMES)	https://www.imes.boj.or.jp/en/
		Center for Financial Industry Information Systems (FISC)	https://www.fisc.or.jp/english/
		Chigin Network Service Co., Ltd. (CNS)	https://www.chigin-cns.co.jp/
		Blockchain Collaborative Consortium	https://bccc.global/
		Japan Blockchain Association (JBA)	https://jba-web.jp/
Insurance	AI, Blockchain, Big Data processing, Smartphone app, Image processing recognition and data analysis, Privileged access management service, etc.	General Insurance Association of Japan (GiAJ)	https://www.sonpo.or.jp/en/
		All Japan Independent Adjusters Association (JAA)	http://zengikyo.gr.jp
		National Agricultural Insurance Association	http://nosai.or.jp/
Medical system/ Health care	AI, Big Data processing, Computer vision, Image processing recognition and data analysis, Deep learning, Privileged Access Management Service, Image annotation technology for AI, Smartphone app, etc.	Japan Federation of Medical Devices Associations (JFMDA)	http://www.jfmda.gr.jp/e/
		Japan Association of Medical Devices Industries (JAMDI)	http://www.jamdi.org/about/index_en.html
		Medical Technology Association of Japan (MTJAPAN)	http://www.mtjapan.or.jp/jp/mtj/en/
		Japan Analytical Instruments Manufacturers' Association (JAIMA)	https://www.jaima.or.jp/en/
		Tokyo Metropolitan Institute of Medicine and Engineering HUB Organization	https://ikou-hub.tokyo/
		IoMT (Internet of Medical Things) Society	https://iomt.or.jp/
		Association of Medical Databases in Japan (AMDJ)	http://www.amdj.org/
		Health Data Scientist Association	http://japan-hds.org/
		Japan Medical Venture Association (JMVA)	https://jmva.or.jp/
		Japan Bioindustry Association (JBA)	https://www.jba.or.jp/en/
Machine Tools	AI, FPGA, SoC design, Image processing recognition and data analysis, Computer vision, Deep learning, etc.	Japan Electrical Manufacturers' Association (JEMA)	https://www.jema-net.or.jp/English/
		Japan Auto-Body Industries Association inc. (JABIA)	https://www.jabia.or.jp/en/
		Japan Die & Mold Industry Association (JaDMA)	https://www.jdmia.or.jp/english/
		Japan Machine Tool Builders' Association (JMTBA)	https://www.jmtba.or.jp/english/
		Japan Machine Tool Distributors Association (JMTDA)	http://www.nikkohan.or.jp/english/
Automobile (autonomous driving, etc.)	Autonomous driving, sensing, electrification, etc.	Japan Automobile Manufacturers Association (JAMA)	http://www.jama-english.jp/
		Japan Auto Parts Industries Association (JAPIA)	https://www.japia.or.jp/en/
		Japan Electronics and Information Technology Industries Association (JEITA)	https://www.jeita.or.jp/english/
		Japan Automotive Service Equipment Association (JASEA)	https://www.jasea.org/en.html
		Internet ITS Consortium (IIC)	http://www.internetits.org/

Industry Sector	Potential Technology to Apply	Industry Association and Major Company	URL
Distribution	AI, Blockchain, FPGA, SoC design, Big Data processing, Deep learning, Image annotation technology for AI, Smartphone app, etc.	Japan Retailers Association	https://japan-retail.or.jp/english/
		Japan Institute of Logistic Systems (JILS)	https://www1.logistics.or.jp/
		Japan Information Technology Service Industry Association (JISA)	https://www.jisa.or.jp/e/
		Japan Institute of Material Handling (JIMH)	https://www.jimh.or.jp/en/
Aerospace	AI, Big Data processing, FPGA, SoC design, Image processing recognition and data analysis, Computer vision, Deep learning, etc.	Society of Japanese Aerospace Companies (SJAC)	https://www.sjac.or.jp/en_index.html
		Nationwide Network of Aircraft Manufacturing Clusters (NAMAC)	https://namac.jp/en/
Materials science	AI, Big Data processing, Computer vision, FPGA, SoC design, Image processing recognition and data analysis, etc.	Japan Petrochemical Industry Association (JPCA)	https://www.jpca.or.jp/english/
		Sokeizai Center	https://www.sokeizai.or.jp/english/
		Japan Association for Chemical Innovation (JACI)	http://www.jaci.or.jp/english/
		Japan Chemical Industry Association (JCIA)	https://www.nikkakyo.org/
		West Japan Plastic Products Industrial Association	https://www.nishipla.or.jp/
		Smart IoT Acceleration Forum	https://smartiot-forum.jp/
Biochemical analysis	AI, Computer vision, Image processing recognition and data analysis, etc.	Japanese Association of Clinical Laboratory Systems (JACLaS)	https://jaclas.or.jp/en/
Drug discovery/ pharmaceutical	AI, Big Data processing, FPGA, SoC design, Image processing recognition and data analysis, Computer vision, etc.	Japan Pharmaceutical Manufacturers Association (JPMA)	http://www.jpma.or.jp/english/
		Japan Generic Medicines Association (JGA)	https://backup.jga.gr.jp/english.html
Resource exploration	AI, Big Data processing, FPGA, SoC Design, Image processing recognition and data analysis, Deep learning, etc.	Japan Marine Surveys Association (JAMSA)	https://www.jamsa.or.jp/
		Japan Oil, Gas and Metals National Corporation (JOGMEC)	http://www.jogmec.go.jp/english/
		Remote Sensing Technology Center of Japan (RESTEC)	https://www.restec.or.jp/en/
Plant control	AI, Big Data processing, FPGA, SoC design, Image processing recognition and data analysis, Deep learning, etc.	Japan Institute of Plant Maintenance (JIPM)	https://jipmglobal.com/
		Instrumentation & Process Control Engineers' Association (IPC)	https://www.ipc.gr.jp/
Information security/ Physical security	AI Big Data processing, FPGA, SoC design, Image processing recognition and data analysis, Background noise reduction, Deep learning, Privileged access management service, etc.	Japan Information Security Audit Association (JASA)	https://www.jasa.jp/en/
		Information-technology Promotion Agency, Japan (IPA)	https://www.ipa.go.jp/index-e.html
		Local IoT Acceleration Lab	https://local-iot-lab.ipa.go.jp/
		National Institute of Information and Communications Technology (NICT)	https://www.nict.go.jp/en/index.html
		Japan Institute for Promotion of Digital Economy and Community (JIPDEC)	https://english.jipdec.or.jp/
		Japan Network Security Association (JNSA)	https://www.jnsa.org/en/aboutus/

Industry Sector	Potential Technology to Apply	Industry Association and Major Company	URL
Agriculture	AI, IoT, Agricultural support technology using aerial imaging system, Image processing recognition and data analysis, FPGA, SoC design, Deep learning, etc.	Japan Agricultural Mechanization Association (JAMA)	https://nitinoki.or.jp/
		Forestry and Fisheries Aviation Association	http://www.j3a.or.jp/
		Japan Agricultural Drone Association	https://www.nougyoudrone.com/
		Japan Association for Techno-innovation in Agriculture, Forestry and Fisheries (Jataff)	https://www.jataff.jp/index.html
		Agricultural and Livestock Industries Corporation (alic)	https://www.alic.go.jp/english/index.html
		Japan Fisheries Information Service Center (JAFIC)	https://www.jafic.or.jp/
		Japan Drone Association (JDA)	https://alldrones.org/
		Japan Agricultural Drone Association	https://www.alpsdrone.co.jp/
		International Drone Association (IDA)	https://ida-drone.com/
		Hokkaido Agricultural Machinery Manufactures Association	http://hokunoko.jp/
		Japan Management Association (JMA)	https://www.jma.or.jp/en/index.html
		ZEN-NOH(JA)	https://www.zennoh.or.jp/english/index.html
		Central Union of Agricultural Co-operatives (JA-ZENCHU)	https://www.zenchu-ja.or.jp/eng/
		AgVenture Lab	https://agventurelab.or.jp/
		National Agricultural Insurance Association (NOSAI)	http://nosai.or.jp/index.php
		Hokuren	https://www.hokuren.or.jp/
Tourism	Guide AR, Online VR, Smartphone app, etc.	Virtual Reality Innovation Organization (VRIO)	https://vrio.or.jp/
		Japan Travel and Tourism Association	https://www.nihon-kankou.or.jp/home/
Education/ Training	Programming self-study service, Smartphone app, etc.	LOT	https://lot.or.jp/
		Virtual Reality Innovation Organization (VRIO)	https://vrio.or.jp/
Research	Consumer trend survey system, etc.	Japan Marketing Research Association (JMRA)	https://www.jmra-net.or.jp/Portals/0/aboutus/en/index.html
		Japan Marketing Association (JMA)	https://www.jma2-jp.org/index.php
		Computer Software Association of Japan (CSAJ)	https://www.csaj.jp/english/index.html
Clothing/ Fashion	Trend analysis, customer behavior analysis, SNS social listening, Deep learning, etc.	Japan Direct Marketing Association (JDMA)	https://www.jadma.or.jp/
		Japan Apparel Fashion Industry Council (JAFIC)	http://www.jafic.org/
		Japan Fashion Industry Council (JFIC)	http://www.jfic.jp/
Environment	Environment	National Institute for Environmental Studies (NIES)	https://www.nies.go.jp/index-e.html
		Japan Agency for Marine-Earth Science and Technology (JAMSTEC)	https://www.jamstec.go.jp/e/
		New Energy and Industrial Technology Development Organization (NEDO)	https://www.nedo.go.jp/english/index.html
		National Institute of Advanced Industrial Science and Technology (AIST)	https://www.aist.go.jp/index_en.html
Startup	Startup support	Japan Startup Support Association (JSSA)	https://www.yumeplanning.jp/
Others		Smart Japan Alliance	https://smt-jpn.org/

Appendix 3: Results of the Pilot Program for Trial Business Collaboration with Japanese Companies

Table-25 Summary of trial business collaboration results of company pair A

Japanese company	Investment information provider	
ICT company	Mid-sized ICT solution provider in Pakistan	
Content of collaboration	Construction of algorithm for collection and automatic evaluation of corporate governance information by machine learning	
Category of collaboration	PoC	
Result status	Completed	
Questions	Answers from Japanese company	Answers from Pakistani company
Issues and problems caused by communication with the other party, business practices, culture, etc.	N/A	N/A
Technical problems	N/A	(Omitted for technical details)
Other issues and problems	N/A	(Omitted for technical details)
How the above problems were solved (or not solved)	During the regular weekly meetings, the issues faced by the outsourced engineers were shared and discussed. We also shared the output data for each development process and provided feedback on whether there were any major omissions, issues to be resolved, or exceptions to be dealt with.	Frequent meetings were held with customers to discuss and understand the problems they were facing.
Possibility to collaborate with companies in the partner country (not limited to this company) in the future	Positive consideration. Would like to consider assessing corporate governance information with various advanced technologies, as it seems that the company has many elemental technologies, not limited to machine learning in this case.	We can provide services and this project showed us that remote work is possible and there were no significant issues. However, marketing and identifying businesses in need of these services would be a challenge.
Attractiveness of companies of partner country felt through this trial business collaboration	• Response to requests and corrections were quick, and weekly reports were easy to understand, making communication easy. • Rarely felt the time difference, and information exchange was smooth. • The quality of performance is high in relation to the cost, and they have a deep knowledge of advanced technology.	• Very professional business encounter • Hours of operations suitable for remote work
Obstacles of the partner country industry felt through this trial business collaboration	No particular issues	• All of our engineers understand English, but data and documents written in Japanese need to be translated and sometimes the context is not understood. • Language can be a barrier as analysts need to interact with customers. • Social media marketing is very important for off-site companies like ours, but currently, access to social media in Japan is limited.
What companies and industry of your country should do to promote collaboration	To include the target countries in the choice of outsourcing partners/To make these efforts by Japanese industry organizations.	Provide trainings on Japanese language and business culture of Japanese industry.
What JICA and the Government of Japan should do to promote collaboration	Continue trial business collaboration projects like this. The lack of familiarity with the target country may be the first barrier, so it is necessary to expand awareness as the number of PoC cases increases, and to have enough information and deep understanding to be able to introduce IT companies in the target country.	Facilitate additional Japanese subsidiary companies in Pakistan and require IT and software services for them be provided by local Pakistan companies.

What the government of Pakistan should do to promote collaboration	N/A	Allow simpler and fast establishment of Japanese companies in Pakistan and provide tax and other incentives if these companies use Pakistan IT and software services.
Other comments and suggestions to promote collaboration between the two countries	N/A	Scholarships to Pakistani computer science and engineering students for studies in Japanese colleges. This will allow them to learn the language and culture as well as evaluate software needs. These students can then return to Pakistan and become key segment of providing such services to Japanese industry.

Table-26 Summary of trial business collaboration results of company pair B

Japanese company	Semiconductor design solution development company
ICT company	Semiconductor design solution development company in Sri Lanka
Content of collaboration	Performance Improvement of Display Device Electrical Characteristics Analysis Tool
Category of collaboration	Technical study
Result status	The Japanese companies declined the collaboration. The reasons for declining are as follows. • Could not get the specifics of the software implementation in the final proposal submitted by the Armenian company. • The software production capacity seemed to be high, and there were suggestions for means and strategies for long-term implementation methods, but the time, cost, and feasibility of reaching the goal were unclear. Note by the Survey Team: It seems that the Japanese company was expecting not only a trial collaboration but also a full-scale collaboration afterwards, but they were unable to reach an agreement on the part of the collaboration that went beyond the trial.

Table-27 Summary of trial business collaboration results of company pair C

Japanese company	Steel pipe manufacturing company	
ICT company	AI solution provider in Armenia	
Content of collaboration	Project to automate the quality check process using image recognition of produced steel pipes	
Category of collaboration	PoC, Prototype development	
Result status	Completed	
Questions	Answers from Japanese company	Answers from Armenian company
Issues and problems caused by communication with the other party, business practices, culture, etc.	• Language barrier • 5 hour time difference between Japan and Armenia	N/A
Technical problems	• Little expertise in camera selection, photography methods, etc.	• The placement of the camera and lighting to create a good quality AI model was more difficult than expected, and was not completed in time.
Other issues and problems	N/A	• Insufficient high quality data with label to achieve high accuracy of detection was the biggest challenge.
How the above problems were solved (or not solved)	• Members with good English conversation skills participated. • Use of meeting tool such as Zoom	• Changed the implementation method of the AI model.
Possibility to collaborate with companies in the partner country (not limited to this company) in the future	Plans to consider future collaboration in a positive manner.	Ready to provide consulting services to any Japanese company in any industry on how they can benefit from the use of AI in their daily operations.
Attractiveness of companies of partner country felt through this trial business collaboration	• High level of expertise in image analysis • Low cost compared to companies in Japan	• Japan's production monitoring and quality assurance market is attractive • Possible to collaborate on quality control solutions with large Japanese manufacturing companies • Japanese work culture, respectful business etiquette, and precision for time & resource estimations are important

Obstacles of the partner country industry felt through this trial business collaboration	• Support and troubleshooting that requires on-site work cannot be expected. • Performance evaluation of analysis speed, etc. is not possible because there is no comparison.	• The language barrier can certainly be an issue. Luckily, we have not had such issues.
What companies and industry of your country should do to promote collaboration	• Communication tools should be adapted to the company in the other country. • Do not ask for excessive (too detailed) specifications, quality, or verification as domestic companies do.	• Have more various collaborations with companies of different industries
What JICA and the Government of Japan should do to promote collaboration	• Compliance with corporate security policies	• Promoting data collection and education on data quality.
What the government of Armenia should do to promote collaboration	N/A	• Creating more opportunities for partnership between Japanese and Armenian companies.
Other comments and suggestions to promote collaboration between the two countries	N/A	N/A

Table-28 Summary of trial business collaboration results of company pair D

Japanese company	Medical device startup company	
ICT company	IoT solution development company in Sri Lanka	
Content of collaboration	Application development for IoT medical device prototype using new medical sensors	
Category of collaboration	PoC, Prototype development, Research	
Result status	Completed	
Questions	Answers from Japanese company	Answers from Sri Lankan company
Issues and problems caused by communication with the other party, business practices, culture, etc.	• Japanese companies should learn to recognize technical terms in English common to the ICT industry.	• During initial discussions, we got the help of Sri Lankan friend located in Japan for translation.
Technical problems	• The software used to share the deliverables and progress was not very common in Japan. It would be good to have an opportunity to discuss in advance what software will be used.	(Omitted for technical details.)
Other issues and problems	None	(Omitted for technical details.)
How the above problems were solved (or not solved)	• Supported by the Survey Team members. (for technical discussions, etc.)	To verify how the actual system works, we had a real device sent to us by courier.
Possibility to collaborate with companies in the partner country (not limited to this company) in the future	• Opportunities for online collaboration should continue to increase. For Japanese companies looking to expand their business globally, collaboration with overseas companies is inevitable. • We are very satisfied and would like to continue to collaborate with them.	• We see a great potential in business collaborations in the IoT domain. We are confident of gaining a foothold in the Japanese market using technology in this field.
Attractiveness of companies of partner country felt through this trial business collaboration	• A global standard development approach • Fast development speed • Might also be cost effective	• Common Asian Culture that binds the two countries • Increased use of IoT applications in day-to-day life • High growth potential for foreign software firms
Obstacles of the partner country industry felt through this trial business collaboration	• Need for frequent and smooth communication since the common language is English • Need to agree on the software to be used • Adjusting the time zone (inevitable for foreign country)	• Lack of information about use of advanced ICT technologies used in the Japanese market • Unavailability of any guideline/tax structure/ employee restrictions for foreign companies who wish to operate in Japan. • Lack of information about salary structure/ remuneration schemes for software developers in Japan

What companies and industry of your country should do to promote collaboration	• We need to develop our own services and products, always with the perspective of developing global services. • Make necessary contacts to ensure that specifications and communication in English are available.	• Train developers in the Japanese language and provide incentives for competency in Japanese • Establish professional developer exchange programs with Japanese counterparts • Work with the Sri Lankan embassy in Japan to organize referral programs showcasing Sri Lankan ICT companies
What JICA and the Government of Japan should do to promote collaboration	To create business and collaboration opportunities for both the partner country and the Japanese side, and to provide financial support and subsidies.	• Establish a web-based portal highlighting opportunities available in the Japanese market. • Register ICT companies in Sri Lanka for possible matching with startups/ businesses in Japan • Initiate a referral program where JICA will act as a referrer of ICT companies in Sri Lanka for Japanese businesses • Enable and open opportunities for Sri Lankan ICT companies to develop software for JICA funded projects in other countries.
What the government of Sri Lanka should do to promote collaboration	Maintaining development environment when local development is required. Provide measures for people from Japanese companies to travel and stay in the country safely, including convenience in obtaining visas. In addition, should actively disseminate information on the development environment, business customs and culture of the country and maintain close communication with each other.	• Include Japanese language as an optional course unit in Universities for ICT degree programs • Promote the online portal [144] through social media and the Japanese consulate. • Establish a Japanese business linkage cell to coordinate ICT business collaborations between Japan and Sri Lanka • Provide incentives to university academics to carry out research collaborations with Japanese universities relevant to the ICT industry and setup startup companies based on research outputs
Other comments and suggestions to promote collaboration between the two countries	Would like to see more announcements of this kind of collaborative trial projects in the future.	• Organize annual conference where startups from both countries can showcase their products • JICA to support establishment of joint ventures/partnerships between ICT companies in the two countries • JICA to offer support to obtain ISO certification for ICT startups • Initiate a global referral program where Japanese and Sri Lankan companies jointly develop software for major Japanese companies who serve other continents (e.g. automakers, heavy machinery, electronics, etc.) • Establish a program where University academics from both countries can start a business serving a common goal (e.g. University academic in Japan establishes a startup company to manufacture an IoT device and partner faculty from Sri Lankan university setup a startup company to develop required application software for the IoT device).

[144] https://www.srilankabusiness.com/

Table-29 Summary of trial business collaboration results of company pair E

Japanese company	Smart agriculture system development company	
ICT company	Smart agriculture solution provider in Sri Lanka	
Content of collaboration	Smart agriculture solutions for monitoring crops, conserving resources, preventing risks, and maximizing production using AI and IoT	
Category of collaboration	PoC, Prototype development, Research	
Result status	Completed	
Questions	Answers from Japanese company	Answers from Sri Lankan company
Issues and problems caused by communication with the other party, business practices, culture, etc.	Got support from the Survey Team members, but it was a little difficult to get the Sri Lankan engineers to understand the meaning of Kanji characters in technical terms.	• Language was a barrier to communicate with Japanese farmers. • The end client is a farmer, so we need to communicate through our business partner
Technical problems	Technically, there is no problem.	The solution was designed for 2G networks, but since there is no 2G in Japan, it had to be changed to support 3G and Wi-Fi.
Other issues and problems	(Omitted for technical details.)	Due to sudden climate changes this year crop rotation is delayed by one month, so the completion of the project was extended to the end of May 2021.
How the above problems were solved (or not solved)	(Omitted for technical details.)	• Had a mediator to translate between English and Japanese. And we got support from Survey Team. • Got assistance from Japanese local Wi-Fi providers as well. • Instructed the deployment guidelines, shared instruction manuals/videos, and provided virtual training as well.
Possibility to collaborate with companies in the partner country (not limited to this company) in the future	In the future, we can further standardize data, provide data to new farmers, and collaborate in consultations.	Japanese agricultural market is highly premium, and crops are sold at high price points. Also, the technological literacy of farmers is one of the highest in the world. Therefore, agri-tech companies have the potential to expand in the Japanese market.
Attractiveness of companies of partner country felt through this trial business collaboration	• It is possible to build a cloud system for cultivation at a relatively low cost. • We felt that there is a lot of potential for the use of AI and big data in the future. • Companies that can also develop IoT units	• The demand for IoT intelligence in the agricultural sector is growing across the globe. • The IT literacy of Japanese farmers is surprisingly attractive. • Even small improvements through technology can bring high value and return on investment in Japan's premium agricultural market.
Obstacles of the partner country industry felt through this trial business collaboration	N/A	• There is a lot of customization required to localize a technology platform into Japanese. • Japan is very competitive in the technology sector compared to other consumer markets in the world.
What companies and industry of your country should do to promote collaboration	Gather more information on IT companies in the target countries, discover unknown good companies, and actively interact with them.	• Further strengthen cooperative relationships with public institutions such as JICA. • Frequent trade programs and conferences. • Selection of technology companies in specific fields to participate in projects in Japan.
What JICA and the Government of Japan should do to promote collaboration	Would also like to receive support for the phase after the PoC where the results are put into products.	• Give these opportunities to young start-ups to experiment with new market development. • JICA can share more use cases in an open forum through Sri Lankan ICT agencies to bid for them.

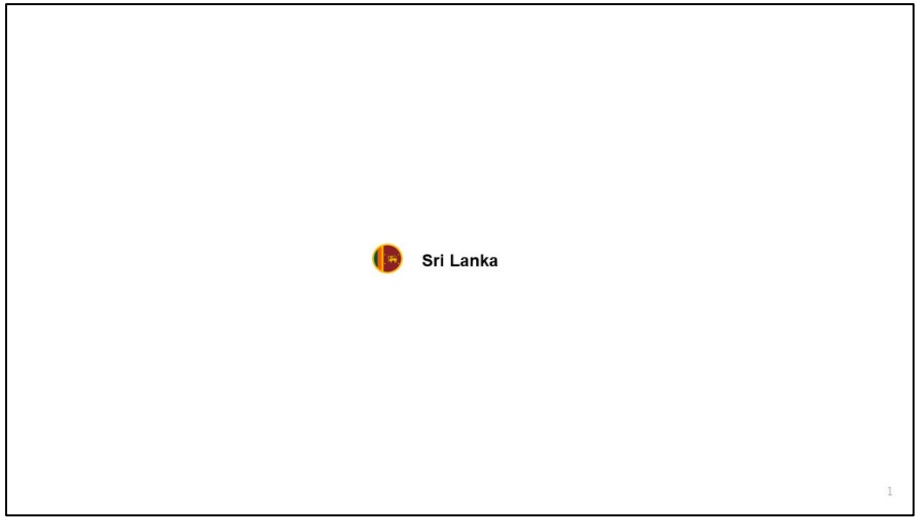
What the government of Sri Lanka should do to promote collaboration	It would be good to have a system to collect detailed information on local companies and introduce some of the most suitable companies in response to inquiries from Japan. It would also be helpful if they can coordinate a visit to the country.	To support local start-up companies to enter the Japanese market by conducting technological exchanges within the government.
Other comments and suggestions to promote collaboration between the two countries	Sri Lanka, as a subcontractor of the world's IT companies, has a concentration of world standard technologies. If we can match them well, I think we can build a better relationship for both countries.	The two governments should sign a long-term agreement to share technical expertise and exchange technology.

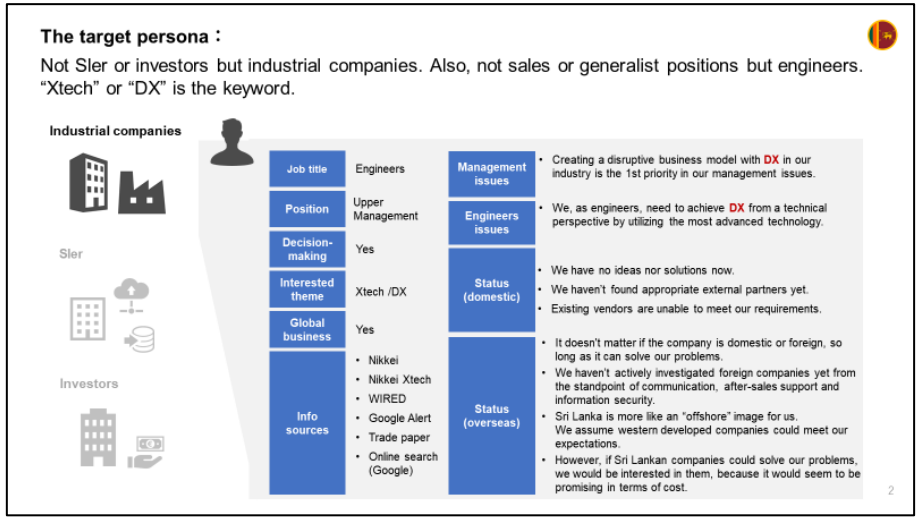
Table-30 Summary of trial business collaboration results of company pair F

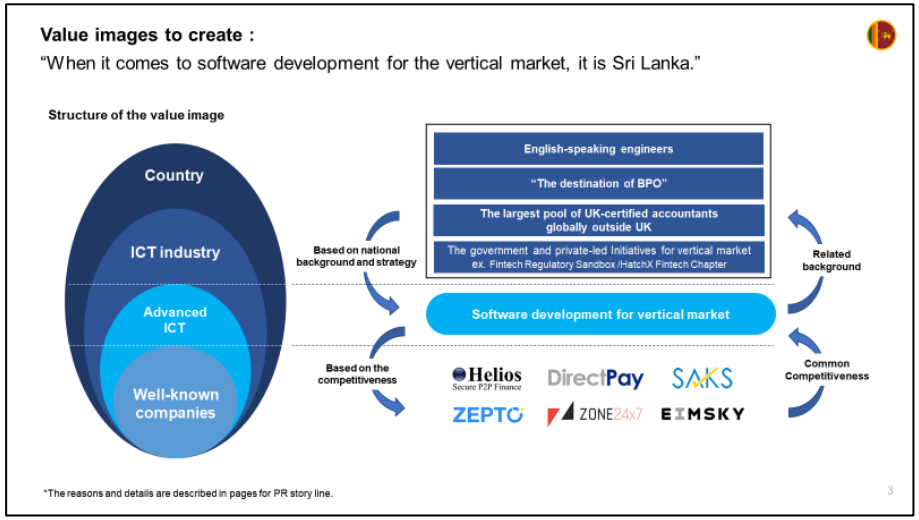
Japanese company	Agricultural IoT solutions company	
ICT company	AI Solution Provider in Sri Lanka	
Content of collaboration	Video analysis of agricultural workers and Japanese voice command recognition	
Category of collaboration	PoC, Prototype development	
Result status	Completed	
Questions	Answers from Japanese company	Answers from Sri Lankan company
Issues and problems caused by communication with the other party, business practices, culture, etc.	• It was difficult for the Sri Lankan engineers to judge whether the recognized Japanese from the voice was correct. Knowledge of Japanese language, Japanese customs, and the agricultural field are necessary, and it is difficult to learn in a short period of time, so an advisor to support them is essential. • It was difficult to respond due to lack of English conversation skills. There were many points that we did not understand about Sri Lankan culture.	• Language barrier since our team does not speak or read Japanese language. • The timeline and the budget were somewhat limited for the initial scope of the project.
Technical problems	Since their technical capabilities and development environment are unknown, it would be difficult to improve the accuracy rate of the important Japanese conversion of voice commands.	• Relatively low maturity of AI speech to text technology for Japanese language compared to English. • Developer testing voice input flows of the solution was somewhat challenging
Other issues and problems	As for the development, we have been holding development progress meetings every two weeks, but due to the limited development time, the program verification time becomes short.	N/A
How the above problems were solved (or not solved)	In order to support development in a short period of time, we provided specific voice examples in advance with their Japanese text for voice commands, and provided data to verify whether the developed application can convert the voice correctly when playing the voice in-house.	• With the support of a Survey Team member, we could overcome the language barrier. The product owner of Japanese company also speaks English, so communication was not a problem. • Timeline and budgetary limitations were overcome by discussing with the client and agreeing to a manageable yet usable scope. The client understood the limitations and was flexible to reduce the scope.
Possibility to collaborate with companies in the partner country (not limited to this company) in the future	Companies in each country have established Japanese subsidiaries to collaborate with Japanese companies. There is a possibility of collaboration for new projects in the future, if necessary.	We believe that there is great potential in the Japanese market because we can provide services in specialized fields without compromising on quality or competence. We find Japanese people and the culture to be welcoming and professional which makes it quite easier to work with.

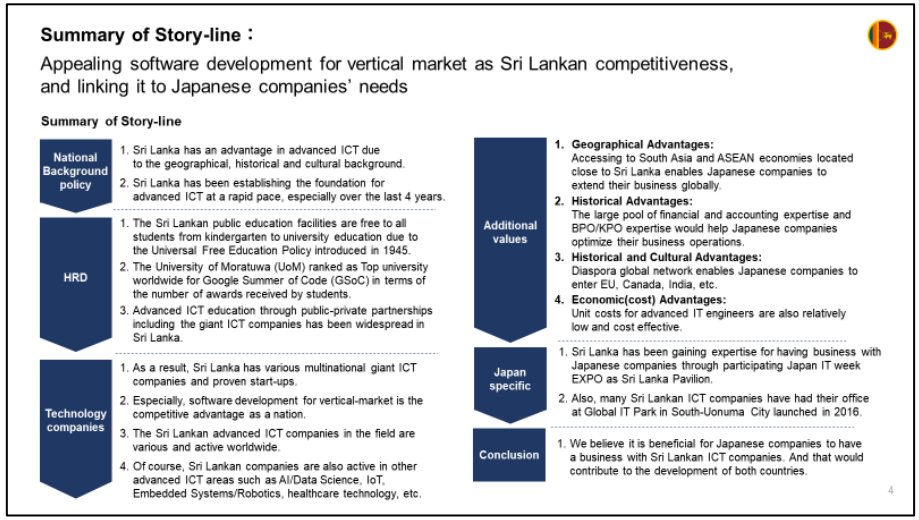
Attractiveness of companies of partner country felt through this trial business collaboration	• Speeding up development by working with companies that have excellent human resources in the target countries • Reduction of development costs	• Developed, stable economy • Mature tech industry • High demand for tech talent • Professionalism and the work-oriented culture
Obstacles of the partner country industry felt through this trial business collaboration	• Lack of understanding of Japanese • Lack of English skills on the Japanese side	• language barrier • Potential competition with existing suppliers • Physical distance and time difference
What companies and industry of your country should do to promote collaboration	• Company: English Skill Up • Industry associations: Research strengths and weaknesses of overseas IT companies. Create a map of recommended skills.	• Actively pursue opportunities and deliver the best quality outcomes • Overcome the language barrier by acquiring or developing staff who can communicate and work in Japanese • Understand the Japanese culture, work ethics etc. and adapt to those • Organize as a community and promote the services/talent as a country
What JICA and the Government of Japan should do to promote collaboration	• Organize past achievements and recommendations. • Organize the history, characteristics, and contributions of the target company. • Disclose the characteristics of the target country's IT companies, the target country's policies and promotion subsidies, etc.	• Promote Sri Lankan companies to the Japanese market and encourage collaboration • Open channels and facilitate networking between the industries from two countries • Become early facilitators of any limitations such as language and market access
What the government of Sri Lanka should do to promote collaboration	• Brochures in Japanese language • Strengthening of Japanese language support system	• Encourage local industry to pursue opportunities in Japan • Facilitate collaboration between the industries form two countries and eliminate any barrier • Actively promote the local talent and the capabilities in the Japanese market
Other comments and suggestions to promote collaboration between the two countries	• It should have been a great challenge for the Sri Lankan company to participate without knowing Japanese. • It was very important that we got support from a Survey Team member who understand both Japanese and Sri Lankan culture so that we could select company and follow-up development in a short time period.	Short-term, PoC projects like this give a very good opportunity for service providers to prove their capabilities to prospective clients. And for prospective clients, it is a good opportunity to evaluate new suppliers without taking too much business risk.

Appendix 4: Branding/Marketing Strategy and Action Plan for Sri Lanka to Enter Japanese Market (Thumbnail only)







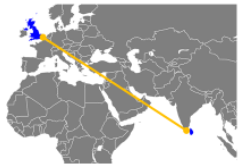


Storyline

1. Historical, geographical and cultural background

Sri Lanka has an advantage in advanced ICT due to its geographical, historical and cultural background.

National Background regarding the ICT Industry

Geographical aspect	Historical aspect	Cultural aspect
• The time difference between Sri Lanka and US , which is the major BPO customer in Sri Lanka, has contributed to the development of BPO industry in Sri Lanka	• Sri Lanka has been in good relationship with UK since their independent.	• An open mind-set that is pioneering IT initiatives in South Asia.
		 ■ First to ➢ liberalize its economy, ➢ introduce cell phones ➢ Launch 3G, 4G
1 Time-zone (UTC+5:30)	1 English-speaking engineers	1 "To be the first of many" mind sets
2 "The destination of BPO"	2 The largest pool of UK-certified accountants globally outside UK	2 Multi-national companies entering • HP(Hewlett-Packard), NTT, etc.

2. Government policy

Sri Lanka has been establishing the foundation for advanced ICT at a rapid pace, especially over the last 4 years.

Important Developments and Achievements

1989	• Introduced cell phones in Sri Lanka
2004	• Launched 3G in Sri Lanka
2008	• Formed the national chamber for the IT-BPM sector
2009	• Sri Lankan Export Development Board (EDB) has identified ICT as amongst the top ten export generators for Sri Lanka.
2013	• Launched 4G in Sri Lanka
2017	• The government released a development Vision 2025 which aims to transform the country into a rich country, and a "hub of the Indian Ocean, with a knowledge-based, highly competitive, social-market economy". (Technology and digitalization were identified as a focus area to drive the nation's progress as well.)
2018	• The government updated consumer protection laws to establish a more modern and mature framework for E-commerce. (Priority areas: access, payments and data protection)
2018	• The Ministry of Development Strategies and International Trade (MoDSIT), and the Sri Lanka Export Development Boar developed National Export Strategy (NES) of Sri Lanka. (IT-BPM was identified as one of the six focus sectors)

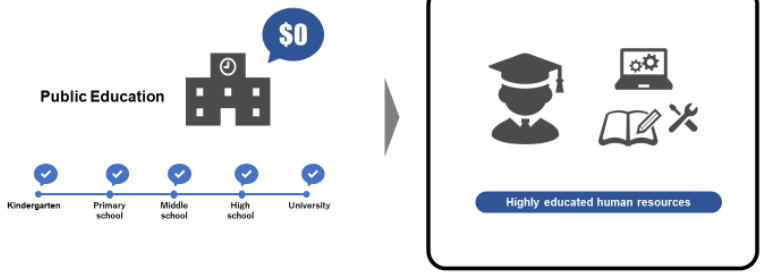
2019	• The Digital Infrastructure and Information Technology Division (Ministry of Defense) established the National Digital Policy for Sri Lanka.
	  • It sets out two main pillars of focus, firstly encouraging digital and innovative business solutions in the private sphere, and secondly adopting digital solutions to increase efficiency of government systems.
	  • Common focus areas between both pillars include Fintech and digital payment solutions, as well as Research and Development (R&D) efforts particularly in the AI sector.
	• Sri Lanka's first AI policy framework was launched.

2020	• Launched an institute dedicated to AI and data analytics.

2. ICT HRD 1/3

The Sri Lankan public education facilities are free to all students from kindergarten to university education due to the Universal Free Education Policy introduced in 1945.

Public education in Sri Lanka



2. ICT HRD 2/3

The University of Moratuwa (UoM) ranked as Top university worldwide for Google Summer of Code (GSoC) in terms of the number of awards received by students.

Google Summer of Code (GSoC)

"15,000+ STUDENTS, 109 COUNTRIES
15 YEARS, 686 OPEN SOURCE ORGANIZATIONS
36,000,000+ LINES OF CODE

Google Summer of Code is a global program focused on bringing more student developers into Open Source software development. Students work with an Open Source organization on a 3-month programming project during their break from school."

The University of Moratuwa

"The University of Moratuwa (UoM) recorded significant achievement when it was placed as the top university worldwide in terms of the number of awards received by students at the Google Summer of Code (GSoC) competitions from its inception in 2005 to 2009."

Source: Google Summer of Code, The University of Moratuwa Website

2. ICT HRD 3/3

Advanced ICT education through public-private partnerships including the giant ICT companies has been widespread in Sri Lanka.

Partnership examples regarding advanced ICT education in Sri Lanka

- SLASSCOM collaborated with Amazon Web Services (AWS) to train 50,000 students in this domain over the next two years from 2019.

- SLASSCOM and EDB partnered with the University of Colombo to offer a 'Training Program in Fundamentals of Data Science' through the newly formed Centre for Data Science.

- An institute dedicated to AI and data analytics was also launched in 2020. Microsoft partners with Sri Lanka's first education institute dedicated to the field of applied AI, AI Academy.

Source: Daily FT website, srilankabusiness.com, Microsoft website, AI academy website

3. ICT companies in Sri Lanka

As a result, Sri Lanka has various multinational giant ICT companies and proven start-ups.

Major multinationals

accenture (Partnership)

Promising Local Startups

- FinTech: Helios (Secure P2P Finance), DirectPay
- AI/Data Science: SAKS, ZEPTO
- Healthcare: BLUEVOK, oDoc
- Business Process Management (BPM): arimac, infomate, epic
- E-Commerce: Takas.lk, Kapruka.com
- Embedded Systems/Robotics: ZONE24x7, Atlas
- IoT: EIMSKY, Utech

The value of the Sri Lankan startup ecosystem has quadrupled from 2017 to 2020 with a CAGR of 54.1%

4. The Sri Lankan core ICT value

Especially, software development for vertical-market is the competitive advantage as a nation.

Examples: FINTECH

Advantages	Result
■ Historical background strength Financial Expertise ➢ The largest pool of UK-certified accountants globally outside of the UK	**Winning many prestigious global awards**
■ The government initiatives Fintech Regulatory Sandbox ➢ Providing selected Fintech innovators to test their products and services for 9 months in a controlled environment before launching their products into the market, and without the risk.	APICTA AWARDS 2019 CATEGORY □ Consumer - Banking & Marketing — Winner □ Business Services - Finance & Accounting Solutions — Winner
■ Private company-led initiatives HatchX Fintech Chapter ➢ Launched by startup incubator Hatch in partnership with Lankan Angel Network, and endorsed by the Central Bank and Fintech Association of Sri Lanka	➢ Fintech companies in Sri Lanka have also been winning many prestigious awards in international startup competitions such as the APICTA Awards.

4. The Sri Lankan ICT companies.

要適切企業

The Sri Lankan advanced ICT companies in the field are various and active worldwide.

Software development for vertical-market

Helios
Secure P2P Finance

- Helios is the first and only Peer to Peer landing platform in Sri Lanka, backed by **blockchain** and cryptography technology.
- It launched the Helios platform in 2018 to connect investors with borrowers and allow both to obtain competitive interest rates compared to the market.
- As of June 2020, the platform has funded LKR 19.6 million (US$108K) in loans, a 5-fold increase from total loans in July 2019 at LKR 4 million (US$22K).

DirectPay

- DirectPay allows users to make payments to companies or other individuals through QR codes within a mobile application.
- Launched in 2017, DirectPay has partnered with offline merchants across Sri Lanka and ecommerce sites to offer e-payment options to consumers.
- **They have won many accolades, a gold award at the 2018 APICTA Awards, as well as Best Mobile Payment award in NBQSA 2019.**

The above companies are examples. We have more ICT companies in the field in Sri Lanka.

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4. The Sri Lankan core ICT value

要適切企業

Of course, Sri Lankan companies are also active in other advanced ICT areas such as AI/Data Science, IoT, Embedded Systems/Robotics, healthcare technology etc.

AI/Data Science

SA Knowledge Services
- Professional services and product development in Data Science, Machine Learning and AI.

Zeptolytics
- AI-powered data analytical tool

IoT

Eimsky Business Solutions
- IoT solutions for logistics, smart office solutions, workflow management and highway tolling

UTECH Technologies
- Products for remote manufacturing, process, cold chain, server room and warehouse monitoring

Embedded Systems/Robotics

Zone 24x7
- Technology consulting and engineering services encompassing both hardware and software.

Atlas Axillia
- Automated Guided Vehicle (AGV). Also, other stationery products like books, pens, etc.

Healthcare

BlueVok
- Electronic health record system software and e-prescription platform

PulzSolutions
- Wearable ECG devices which track wearer's health in real-time

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Additional Values

of business with Sri Lankan companies

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5. Additional values of business with Sri Lankan companies

1. Geographical Advantages:

Accessing to South Asia and ASEAN economies located close to Sri Lanka makes Japanese companies extend their business globally.

- Sri Lanka is an island country in South Asia.
- Strategically located in the Indian Ocean, it is closest to India and is between key regions such as ASEAN and the Middle East, and closer to Europe than Japan.
- These factors have made Sri Lanka known as a location where companies can set up base to connect to rest of the world, be it physically or digitally across time-zones .
- Together with its foreigner-friendly business environment, Sri Lanka is also viewed as a gateway to its other fast-growing South Asian nations, due to its closeness in both physical distance and economic relations. B
- Sri Lanka, with a population of approx. 20 million, is recognized as a test marketing place for the South Asia and ASEAN market.

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5. Additional values of business with Sri Lankan companies

2. Historical Advantages:

The large pool of financial and accounting expertise and BPO/KPO expertise would help Japanese companies optimize their business operations.

Financial & Accounting Expertise

The largest pool of UK-certified accountants globally outside of the UK

The country of BPO / KPO

"Offshore Destination of the Year" by National Outsourcing Association (GSA-UK) in 2013 and 2014.

Optimizing business operation

Optimizing business operation enables Japanese companies to reduce costs

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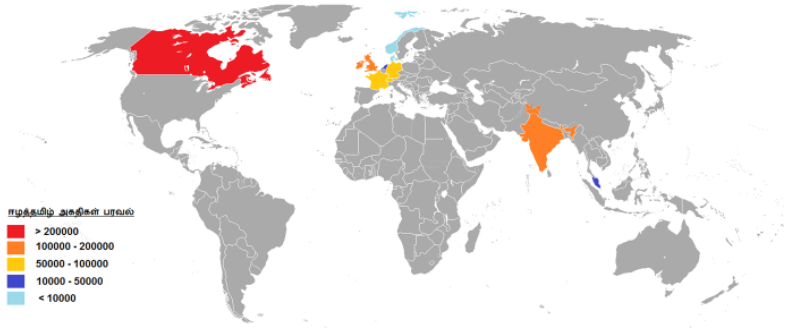
5. Additional values of business with Sri Lankan companies

3. Historical and Cultural Advantages:

Diaspora global network enables Japanese companies to enter EU, Canada, India, etc.

Sri Lankan Tamil diaspora global network



Source: Wikipedia (originally updated by Vardion)

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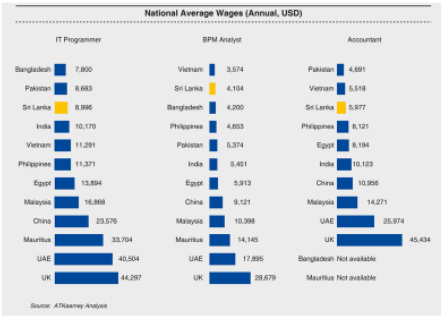
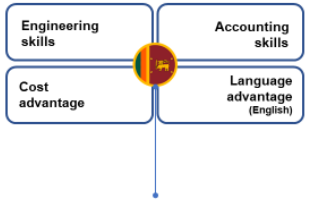
5. Additional values of business with Sri Lankan companies

3. Economic (Cost) Advantages:

Unit costs for IT engineers and accountants are also relatively low and cost effective.

National Average Wages (Annual, USD)





Sri Lanka is the only country to meet the 4 factors.

Source: Sri Lankan IT/BPM Industry 2014 Review

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6. Japan specific

Sri Lanka has been gaining expertise for having business with Japanese companies through participating in the Japan IT week EXPO as Sri Lanka Pavilion.

Japan IT Week

EDB

Sri Lanka Pavilion

Source: Japan IT Week website, Daily FT website

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6. Japan specific

Also, many Sri Lankan ICT companies have their office at Global IT Park in South-Uonuma city launched in 2016.





Global IT Park plans to establish 360 companies by 2030. During its 1st phase from 2016- 2017, Global IT Park plans to invite 16 IT companies from different countries in the world that excel in IoT, FinTech, ERP and Digital Marketing technologies, .

Opened on August 23rd, 2016, currently Global IT Park is home to 5 companies, mainly from India and Sri Lanka, as major IT hubs in Asia.

Source: Global IT Park, Uonuma city website

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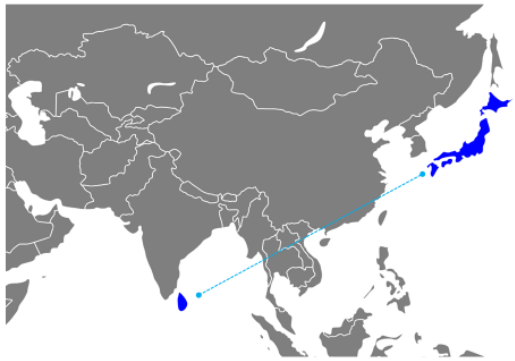
7. Conclusion

We believe it is beneficial for Japanese companies to conduct business with Sri Lankan ICT companies. And that would contribute to the development of both countries.

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8. Contact

Please feel free to contact us If you are interested in Sri Lankan ICT companies.

Sri Lanka Export Development Board

Sri Lanka Export Development Board (SLEDB) is Sri Lanka's premier organisation for the development and promotion of exports, established in 1979 under the Sri Lanka Export Development Act No. 40, under the influence and guidance of the International Trade Center (ITC) and the United Nations Conference on Development of Trade & Tariffs (UNCTAD).

Established as the executive body of the Export Development Council of Ministers headed by the President of Sri Lanka, SLEDB is the organisation responsible for the development and promotion of exports of Sri Lanka, playing the role of a ;

- Policy Adviser - Advising the Government on national export development policies to create a conducive environment for exports
- Monitor - Monitoring the performance and function of the export sector
- Promoter -Implementing product, design, market and other development programmes to promote Sri Lanka's products and services
- Facilitator - Serving as the focal point of export development, facilitating and co-coordinating export development activities with all stakeholders
- Knowledge Provider - Providing advisory services and information regarding all aspects of the export business and advisory assistance to the exporters

Information

Sri Lanka Export Development Board
No. 42 Nawam Mawatha,
Colombo-02, Sri Lanka.
+94-11-230-0705 / 11
+94-11-230-0715
edb@edb.gov.lk

Customer Help Desk:
+94-11-230-0710 (Hotline)
+94-71-440-6119 (Director TFTI)
helpdesk@edb.gov.lk

www.srilankabusiness.com

Source: Sri Lanka Export Development Board Website

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Action Plan

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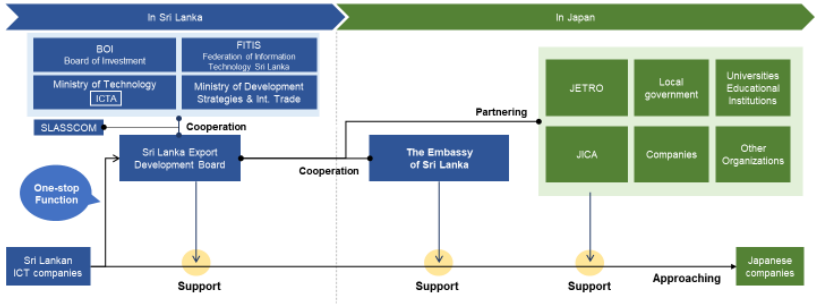
Scheme of Japanese market entry:

The EDB continues promoting Sri Lankan ICT in Japan. No organization changes necessary.

Overview



For further promoting, the key factor is to more focus on "Advanced" ICT and more business-matching opportunities by collaboration with Japanese entities.

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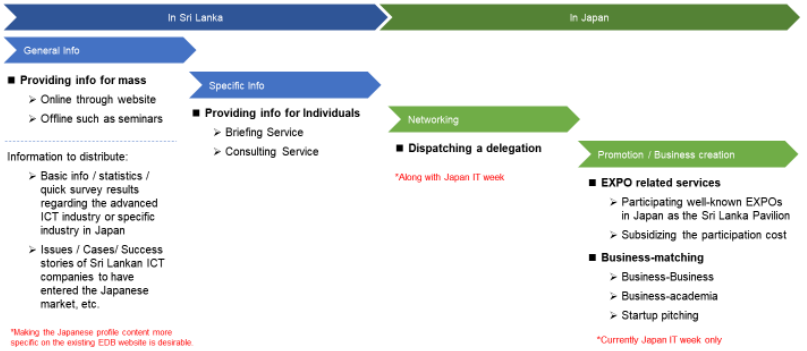
Programs for Sri Lankan advanced ICT companies:

For Sri Lankan ICT companies

It would be more effective for EDB to secure more resources to make their programs/content richer.

Overview of suggested programs



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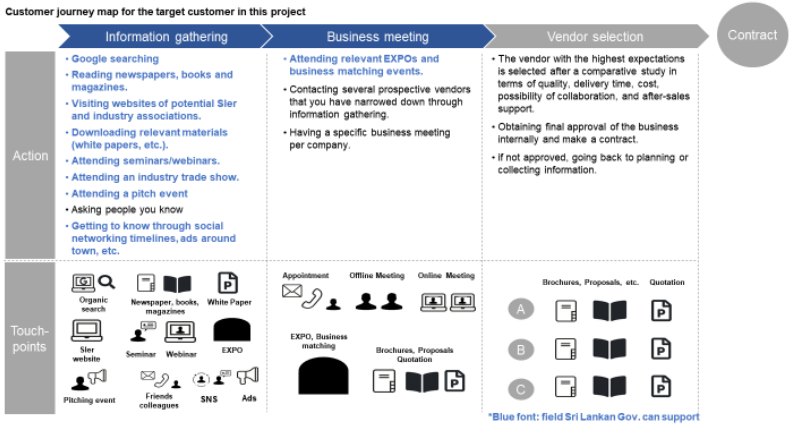
Appealing-approach to Japanese companies:

To Japanese companies

Conducting based on a behavioral process of the Japanese companies' vendor selection.

Customer journey map for the target customer in this project



*Blue font: field Sri Lankan Gov. can support

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Appealing-approach to Japanese companies – Information gathering phase:

To Japanese companies

Optimizing / creating online contents on EDB website fitted to Japanese companies.

Recommended countermeasures per customer touchpoints

Touchpoint	Countermeasures	Touchpoint	Countermeasures
Organic search	• Making the existing EDB website contents richer (the content includes local IT events) • The EDB website has google translation including Japanese, but it might be better to translate by themselves in aspect of quality. • Creating a promotion video for the Japanese market.	EXPO	• Participating in EXPOs related to ICT in Japan as the Sri Lanka Pavilion • Participating in conferences for specific industry themes **See next page for details
Newspaper, books, magazines	• Issuing press releases to get media coverage	Pitching event	• Partnering with the organizers of an ICT-related start-up pitch event in Japan *See next page for details
Sier, other related organization website	• Encouraging Sri Lankan companies interested in entering the Japanese market and the related organizations to make their own websites available in Japanese. (Providing subsidies is an option)	Friends Colleagues	• (Uncontrollable)
White Paper	• Providing more specific info such as ICT industry reports on Sri Lanka, etc. on the EDB website. • Encouraging Sri Lankan companies interested in the Japanese market to make their reports available in Japanese.	SNS	• Posting info on SNS as well (Facebook and Twitter) when posting the same info on website *UGC: Uncontrollable
Seminar Webinar	• Co-organizing seminars with governmental organizations such as JICA and JETRO, as well as Japanese companies about the Sri Lankan ICT industry and the related companies and investments.	Ads	• Considering various types of online advertising at the time of events (listing ads and SNS ads)

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Appealing-approach to Japanese companies – Business meeting phase:

To Japanese companies

Creating touchpoints by conferences, business matching and pitching events has higher priority.

Overview of Initiatives for Each Event

	EXPO	Business Matching ★	Pitching Event ★
Goal	• Increasing the recognition of Sri Lankan ICT companies in Japan and realizing business with Japanese companies.	• Realizing business between Sri Lankan ICT companies and Japanese companies on specific themes.	• Increasing the recognition of Sri Lankan ICT startups in Japan and realizing business with Japanese companies..
Approach	• Applying to participate in prominent Japanese EXPOs as the Sri Lanka Pavilion • Embassy of Sri Lanka speaks at the seminar held at the exhibition. • Participating in conferences for specific industry themes as a supporting member.	• Applying to co-operate the organizers of business matching, such as JICA, JETRO, local government, and companies, that hold business-matching events on a regular basis.	• Applying to co-operate the organizers of business matching, such as JICA, JETRO, local government, and companies, that hold startups pitching events on a regular basis.
Events / Partners (candidates)	**EXPO:** • Japan IT week ▶ Participated already in a row • CEATECH, Japan • Wireless Japan • Maker Faire Tokyo **Conferences:** ★ • TBU • TBU	• JICA • JETRO • Local government • Innovation Leaders Summit (PROJECT NIPPON)	• Deloitte • Plug and Play
Note	• The widest reach. Effectively reachable and can be branded as a country by exhibiting as a pavilion. • Recommended as the most prioritized activity.	• The event can be combined with seminars and dispatching-a-delegation event together for efficient promotion. • Business matching is especially useful when the priority is to realize business with Japanese companies, as it allows to set a theme by industry axis.	

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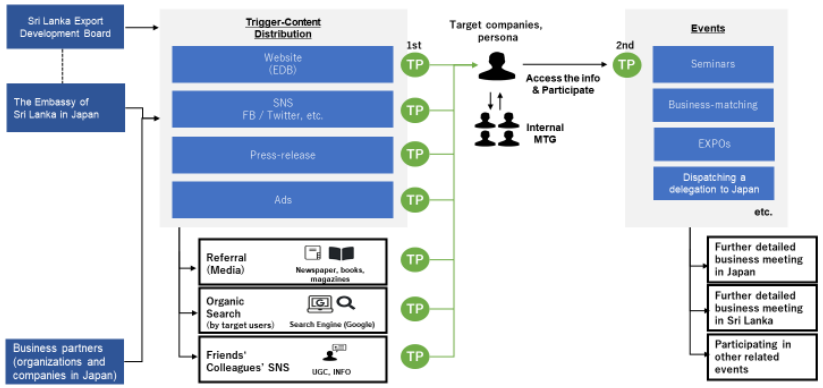
Appealing-approach to Japanese companies – Expected flow and process

To Japanese companies

Distributing triggered content to create the first customer touchpoints,
and connecting to secondary customer touchpoints, such as events that can be deeply engaged.



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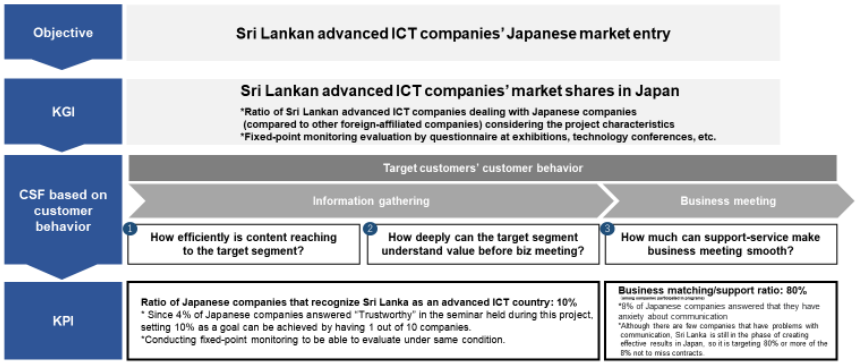
Key Actions 1/2

Focusing on one KPI in each phase of information gathering and business meeting.



* Since it is a KPI item and value for the first year as an initial hypothesis, it is assumed that it will be refined in actual operation.
*Setting KGI in the first year as a qualitative goal and quantifying it by survey results when conducting KPI fixed point monitoring evaluation at the end of the first year.

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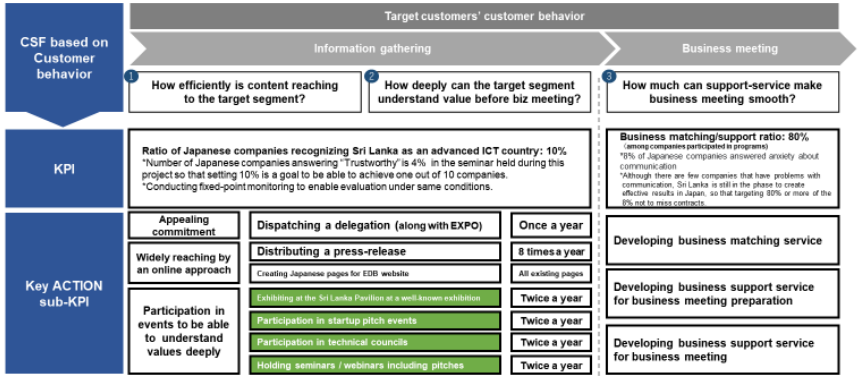
Key Actions 2/2

The key actions for Sri Lanka, which has high exposure and channel coverage, are measures to more deeply appeal values.



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*Setting KGI in the first year as a qualitative goal and quantifying it by survey results when conducting KPI fixed point monitoring evaluation at the end of the first year.

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Project Schedule

A research / planning phase for a year, and an execution phase for one and a half year.

Timeline

① Research / Planning Phase — 1 Year

② Execution Phase — 1~1.5 Year

Researching and planning a Japanese branch office — 11 months

Final approval — 1 month

Developing a Japanese branch office — 1~1.5 Year

Establishing a Japanese branch office is preferable in aspect of the project objective but not mandatory.

*Organization that oversees activities in Japan

Developing programs — 1 year

- Information provision programs for general
- Information provision programs for individual companies
- Business Creation programs
- Professional services (Legal / Accounting / Labor)

★ Launch a Japanese branch office

Researching and planning a Japanese branch office as well as finalizing outline of programs.

Building channels, Taking programs specific and launching them as well as establishing the Japanese branch office based on the plan.

* The above is a model case because they are affected by the Sri Lanka's ongoing national strategy, budget, and measures.

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Schedule for establishing a Japanese branch office

Planning sector / Marketing sector

Phase	Category	Tasks	Sector in charge	Phase1 1Q	2Q	3Q	4Q	Phase2 1Q	2Q	3Q	4Q	+ α 1Q	2Q	~
Research Planning	Researching and planning a Japanese branch office	Goal setting of the base (ex: role and responsibility among stakeholders)	Planning											
		Designing function of the base	Planning											
		Designing structure / organization of the base	Planning											
		Feasibility study for Japanese market to design programs	Marketing											
		Selecting programs (lineups)	Marketing											
		Identifying related events required by the provided program	Marketing											
		Extracting collaborative partner candidates (public and private) required for the provision program	Marketing											
		HR Planning for the base	Planning											
		Finalizing a budget for the base	Planning											
	Finalizing and approval	Final approval of the plan and budget	Planning				★							
Execution	Personal arrangement	Procedures such as visa, business traveling, etc.	Planning											
	Office search/Contract	Search and contract for the base in Japan	Planning											
	Office arrangement	Contracting & purchasing an office equipment, interiors, etc.	Planning											
	PR tools arrangement	Selecting and registering PR tools and services	Marketing											
	PR the launch	Send press release (consider an opening ceremony if necessary)	Marketing									★	Buffer time	

* The above is a model case because they are affected by the Sri Lanka's ongoing national strategy, budget, and measures.

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Schedule for developing programs

Planning sector / Marketing sector

Programs	Category	Tasks	Sector in charge	Phase2 1	2	3	4	5	6	7	8	9	10	11	12	+ α 1Q	2Q	~
Programs for Providing info for mass	Creating and distributing content	Planning content to distribute for mass *Planning for both of companies in the countries Distinguish and align content for both of online and offline KPI setting and finalize the program including its timeline	Marketing															
	Seminar	Planning themes for seminars/webinars Selecting person in charge, locations, approaches per theme Planning and finalize business partners and the scheme	Marketing															
	Website	Planning the website for the branch in Japan Planning content on the website to distribute online specifically Creating and publish the website	Marketing															
	Partners' website	Planning themes, a scheme and business partners	Marketing															
	Related organizations' website	Requesting the organizations to make their website content available to read in Japanese	Marketing															
	Press-release	Planning target media, a person in charge and operation for press-release	Marketing															
	Advertising	Planning target media, a person in charge and operation for ads (in the case of promote)	Marketing															
Programs for specific companies	Briefing	Planning the program specifically - Theme, a briefing menu, a person in charge, the way to provide, location, term, charge or not, KPI, etc.	Marketing															
	Consulting	Planning the program specifically - Theme, a consulting menu, a person in charge, the way to provide, location, term, charge or not, KPI, etc.	Marketing															
	Business matching and support	Planning the program specifically - Theme, a support menu, a person in charge, the way to provide, location, term, charge or not, KPI, etc.	Marketing															
Professional service	Law/Accounting/HR, etc.	Selecting business professionals in the field of law, Law/Accounting/HR	Marketing															
		Planning a scheme to provide services																
Business creation	Delegation	Planning a delegation programs such as setting goals, structure, organizing, announcing, etc.	Marketing															
	EXPO	Selecting EXPOs to participate Planning a national pavilion such as exhibition area, booth designing, companies to participate, selection of translators, subsidies, etc. Planning a scheme of business-matching during the EXPOs Planning and selecting speakers for Promotion at events of the EXPOs	Marketing															
	Technology conferences	Listing up technology conferences in Japan Selecting the suitable conference to be able to be a member and meet the goal Developing an annual schedule	Marketing															
	Pitching event	List up startup pitching event organizers in Japan Selecting the suitable organizers to be able to join or work together Developing an annual schedule	Marketing														Buffer time	

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