

Socialist Republic of Viet Nam

FY2018 Ex-Post Evaluation of Japanese ODA Loan Project

“Higher Education Development Support Project on ICT”

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## 0. Summary

In this project, in order to improve the education level in the information and communication technology (hereafter referred to as “ICT”) sector and develop human resources in Vietnam, the development of facilities for a model education program<sup>1</sup>, the employment of Japanese-language teachers, and the support for undergraduate students and candidates for teachers to study in Japan at Hanoi University of Science and Technology<sup>2</sup> (hereafter referred to as “HUST”) were implemented. The project is confirmed to be consistent with Vietnam’s economic development policy and education development policy, development needs, and Japan’s aid policy, and its relevance is high. The project cost was within the plan due to output changes in the provision of study-abroad scholarships for the postgraduates and procured equipment, but the project period exceeded the plan, so its efficiency is fair. Moreover, the procured details of education equipment were changed in line with the advancements in ICT, but they were properly adjusted so that there was no hindrance to educational activities. The provisions of study-abroad scholarships for the undergraduates was implemented as originally planned. Regarding the quantitative effects of effectiveness, the percentage of the graduates from the program has achieved its goal. However, expected Japanese-language ability at the time of graduation did not achieved the target, as some students had not taken the proficiency test. Similarly, because the number of ICT examination candidates is too small and there is no means to verify objectively, and the ICT skills after graduation could not be judged. On the other hands, most of the graduates have found employment at Japanese or Vietnamese ICT companies, and some have started their own ICT companies that employ hundreds of people. The graduates have become ICT personnel whose skills are highly appreciated by their employers and clients, and thus, the impact of contributing to the Vietnamese ICT industry is seen. The implementation of this project has shown certain effects. However, considering that some of these effects cannot be confirmed, the effectiveness and impact are fair.

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<sup>1</sup> The Technical Cooperation Project, “The project on strengthening the capacity of ITSS education at Hanoi University of Technology (Phase 1 and 2)” (October 2006–September 2008 and March 2009–February 2012), involved the establishment of a management system for a model education program, the support of education content (development of curriculum, syllabi, and education materials, and the transfer of technology to teachers of ICT subjects). ITSS refers to the “ICT Skill Standard” and is an indicator that clearly defines and systematizes individual’s ICT-related skills according to job types and specialized fields and indicates the skills and careers (jobs) required for ICT personnel defined by the Ministry of Economy, Trade and Industry in Japan.

<sup>2</sup> Until 2010, the institution was called the Hanoi University of Technology.

Apart from that, as no particular problems have been observed in terms of the institutional/organizational, technical, financial aspects or the current status of the operation and maintenance system. Thus, the sustainability of effects realized through this project is high.

In light of the above, this project is evaluated to be satisfactory.

## 1. Project Description



Project location



Small class for ICT subjects

### 1.1 Background

In Vietnam, the enrollment rate of higher education has remained at 15%, which is a low level even when compared to the surrounding countries. In addition, it was pointed out that many of the graduates had not acquired the ICT skills to properly respond to the demands of the real world and the problem-solving ability as a result of the curriculum being biased to acquire theory and knowledge. Moreover, universities and research institutes have conducted exercises and experiments using outdated instruments and systems compared to those used in the industry due to a lack of equipment and funds. Therefore, they have had difficulty implementing education and research activities that meet the demands of the industry. Meanwhile, the government of the country has made the development of the ICT industry and software industry and the formation of an information society as one of the priorities of the development policy, and human resource development in ICT was required. Furthermore, in terms of the software industry, the Japanese market has been an important target. In the ICT sector, the pace of technological progress was quicker than other industries, and close cooperation with that industry was particularly required in the implementation of education to respond to the demands of the real world.

Under these circumstances, in order to address the above-mentioned issues concerning the

higher education sector and the ICT sector, the Vietnamese government requested that the Japanese government support a project to improve the quality of higher education, using the ICT sector as a pilot field. In addition, *Asia IT Initiative* (hereafter referred to as “*AITI*”) (June 2004) was announced “to build new international relations suitable for the society in the 21<sup>st</sup> century formed with the focus on the strategic use of ICT” between Japan and Asian countries including the country. Between Japan and Vietnam, a joint statement was made to revitalize each other in cooperation through human resource development in ICT.

## 1.2 Project Outline

The objective of this project is to improve education levels and nurture human resources in the ICT sector by implementing a model education program and supporting hardware (development and expansion of facilities) and software (employment and technology transfers for Japanese-language teachers and studying abroad for undergraduates and teacher candidates) at a university which plays a leading role in educational and research activities of Vietnam’s ICT sector, thereby contributing to strengthening of the country’s industrial competitiveness through the advancement of ICT technology.

Loan Approved Amount/ Disbursed Amount	5,422 million yen/1,891 million yen	
Exchange of Notes Date/ Loan Agreement Signing Date	March 2006/March 2006	
Terms and Conditions	Interest Rate	0.75% <sup>3</sup> /1.30%
	Repayment Period (Grace Period	40 years/30 years 10 years/10 years)
	Conditions for Procurement	General Untied
Borrower/ Executing Agency	The Government of Socialist Republic of Vietnam/Ministry of Education and Training (hereafter referred to as “MOET”)	
Project Completion	August 2016	
Target Area	Hanoi University of Science and Technology	
Main Contractor(s)	-	

<sup>3</sup> This part corresponds to “Japanese-language education (Japanese teacher dispatch)” and “Student scholarships for studying in Japan”.

(Over 1 billion yen)	
Main Consultant(s) (Over 100 million yen)	Japan International Cooperation Center (Japan)/ Padeco Co., Ltd. (Japan) (JV)
Related Studies (Feasibility Studies, etc.)	-“Special Assistance for Project Formation (SAPROF) for Higher Education Development Support Project on ICT” (2005) -Feasibility Study: The Government of Vietnam (2006)
Related Project	[Technical Cooperation Project] “The project on strengthening the capacity of ITSS education at Hanoi University of Technology” (Phase 1, 2006–2008) (Phase 2, 2009–2012)

## 2. Outline of the Evaluation Study

### 2.1 External Evaluator

Tokiko Ito, (Ernst & Young ShinNihon LLC)<sup>4</sup>

### 2.2 Duration of Evaluation Study

This ex-post evaluation was conducted with the following schedule.

Duration of the Study: August 2018–August 2019

Duration of the Field Study: October 21–November 3, 2018, February 24–March 2, 2019

## 3. Results of the Evaluation (Overall Rating: B<sup>5</sup>)

### 3.1 Relevance (Rating: ③<sup>6</sup>)

#### 3.1.1 Consistency with the Development Plan of Vietnam

At the time of the appraisal, the government of Vietnam had formulated the *Socio-Economic Development Strategy (2001–2010)*, aiming for industrialization and modernization along with socialism. In addition, the government of the country formulated the *Education Development Strategy (2001–2010)* and aimed at the implementation of research and development of high-quality human resources to meet the demands of the real world. The goals of the priority areas included the provision of equipment necessary for research and development, the improvement of the quality of higher education and the research and development abilities of research institutes, the direct contribution to the improvement of international competitiveness of the country’s products, the expansion of cooperative relationships with overseas universities and research

<sup>4</sup> Participated as a reinforcement in this evaluation study. (the external evaluator belongs to Octavia Japan, Co., Ltd.)

<sup>5</sup> A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory

<sup>6</sup> ③: High, ②: Fair, ①: Low

institutes, and studying abroad. In addition, the government of the country formulated the *National ICT Master Plan for 2006–2010*, which prioritized the formation of an information society at an early stage through the development of the information industry and software industries.

At the time of the ex-post evaluation, the government of the country has formulated the *Socio-Economic Development Strategy (2016–2020)*, in which it focuses on the promotion of the economic development through the improvement of modern information technology and communication infrastructure. In addition, it aims to rapidly develop high-quality human resources, such as experts and researchers in modern industrial fields. Moreover, the government of the country has formulated the *Vietnam Human Resources Development Strategy (2011–2020)* and *Vietnam Human Resources Development Plan (2011–2020)*. As one of the priority areas for human resource development that contributes to the international competitiveness of the country, along with human resource development in ICT, the necessity of increasing the percentage of ICT personnel trained in ICT specialties at universities and colleges have been raised.

As shown above, at the time of the appraisal and the ex-post evaluation, strengthening of ICT industry and human resource development through higher education are regarded as important in Vietnam, and consistency with policies and measures is recognized.

### 3.1.2 Consistency with the Development Needs of Vietnam

At the time of the appraisal, the market scale of Vietnam's ICT industry had achieved a high growth rate of 25% (world average is 2.5%), and it was considered to be a highly promising industrial sector for the country. The software industry was estimated to comprise 20% of these, and the Japanese market had become an important target for the growth of the industry. And, ICT personnel with world-class expertise and foreign language skills were required. However, in the country's higher education, the curriculum was biased toward theory and knowledge acquisition. The equipment was outdated due to a lack of funds in universities and research institutes. Thus, the problem was that many of the graduates had not acquired the ICT skills that would properly meet the demands of the real world and the problem-solving ability. In addition, the opportunities for balancing education and research and development were not secured, and there was a shortage of teachers and research and development personnel who were highly specialized, equipped with modern teaching methods, and able to utilize the equipment of latest technologies.

At the time of the ex-post evaluation, Vietnam's ICT industry continues to achieve high

growth.<sup>7</sup> According to the MOET, in higher education, many basic education equipment and materials are still used, there is a shortage of teachers with skills adapted to the development in the industry, and many teachers cannot secure research time. In addition, due to a shortage of ICT personnel in Japan and rising labor costs in other countries such as China, Japanese ICT companies have increased their entry into Vietnam since around 2011<sup>8</sup> and many of them are engaged in the offshore development.<sup>9</sup> According to the Japan External Trade Organization (JETRO) Hanoi office, the entry to Vietnamese market of Japanese ICT companies is expected to continue for the time being, and human resource development in ICT is considered to have a high demand.

Base on the above, it can be seen that Vietnam is required to improve its education and research environment to meet the demand for advanced ICT personnel. Therefore, at the time of the appraisal and the ex-post evaluation, it is considered that human resource development in ICT and improvement of the quality of higher education are highly necessary, and consistency between the project and development needs is recognized.

### 3.1.3 Consistency with the Japan's ODA Policy

According to the *Country Assistance Program for Vietnam* (April 2004) formulated by the Ministry of Foreign Affairs of Japan, the support for the areas that are of higher importance and superiority for promoting growth (the economy and technologies that contributes to the market economy and strengthening of the industrial competitiveness) and the support for the human resource development that can reinforce industry of Japan (students studying Japan) were listed as priority support policies for higher education. In addition, the *Overseas Economic Cooperation Operation* (April 2005) formulated by JICA stated “Securing a wide range of human capital to support development as a basis for achieving sustainable growth,” as a policy and it emphasized support for human resource development as a priority area. Similarly, in the *County Assistance Implementation Report* (2005) formulated by JICA, it was stated that “support for human resource development that contributes to market economy and strengthening of the industrial competitiveness is examined”. Moreover, *AITI* was announced between Japan and Asian

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<sup>7</sup> According to the *White Book of Viet Nam Information and Communication Technology* (2011 and 2017), in 2016, Sales of software industry is 23% of ICT industry's overall sales. Between 2008 and 2016, sales of ICT industry recorded a 1,297% increase, and the number of workers a 390% increase. In addition, according to the same book, between 2008 and 2016, the software industry sales recorded a 447% increase, the number of workers a 171% increase, of these, the digital contents industry sales a 168% increase, and the number of workers a 141% increase.

<sup>8</sup> According to the Foreign Investment Agency of Vietnam, the number of ICT investments cases from Japan was 25 in 2011 but increases to 53 in 2017.

<sup>9</sup> The term “offshore development” refers to the outsourcing of operations such as systems development to overseas companies or overseas subsidiaries.

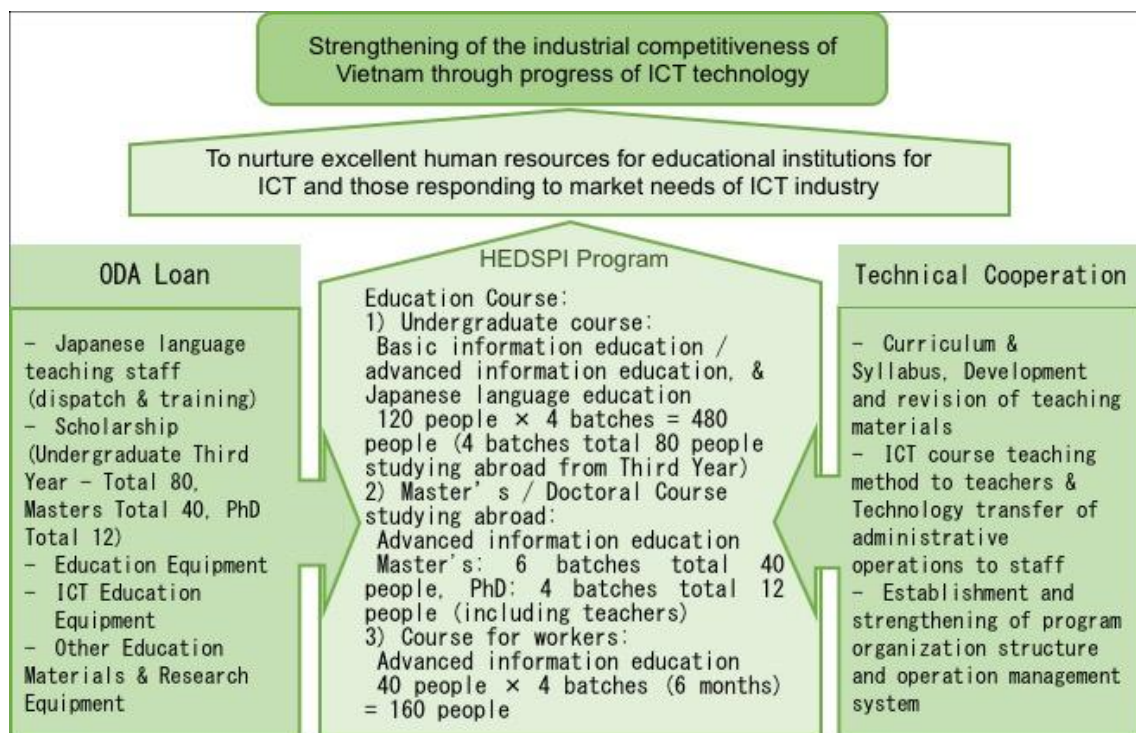
countries including Vietnam. Between Japan and Vietnam, a joint statement was made to achieve mutual revitalization by cooperating in areas such as human resource development in ICT. Based on the above, this project is meant to support human resource development in the fields of higher education and ICT in Vietnam, as is consistent with Japan’s aid policy.

Base on the above, this project is highly relevant to Vietnam’s development plan and its development needs, as well as to Japan’s ODA policy. Therefore, its relevance is high.

### 3.2 Efficiency (Rating: ②)

#### 3.2.1 Project Outputs

The entire educational program including this project and the Technical Cooperation Project is called the “HEDSPI program” as a program for Higher Education Development Support Project on ICT (hereafter referred to as “HEDSPI”). The relationship between the outputs of this project and the Technical Cooperation Project in the HEDSPI program is as shown in Figure 1.



Source: Created based on the document provided by JICA

Figure 1 HEDSPI diagram

In this project, development of facilities, the employment of Japanese-language teachers, and the support for undergraduates and teacher candidates to study in Japan are implemented in HUST.

Table 1 shows the output plan and actual of this project.

Table 1: Output Plan and Actual of This Project

Plan at appraisal (2006)	Actual at Ex-Post Evaluation (2018)
1) Procured equipment (a) Software support i) Japanese-language education -Vietnamese teacher training: 5 -Japanese teacher dispatch period: 2006–2014 ii) Student scholarships for studying in Japan <sup>10</sup> -Undergraduates: 80 in 4 batches -Masters: 40 in 6 batches -PhD: 12 in 4 batches	1) Procured equipment (a) Software support i) Japanese-language education -Vietnamese teacher training: 3 -Japanese teacher dispatch period: 2006–2016 ii) Student scholarships for studying in Japan -Undergraduates: 80 in 4 batches (Keio 30, Ritsumeikan 40, Aizu 10) -Masters: 9 -PhD: 4
(b) Hardware support -Educational equipment & materials: classroom facilities (interior, air conditioning, desks & chairs, copy machines, etc.) -ICT education equipment: Network, server (replaced once), personal computer (replaced twice), software, etc. -Other education materials & research equipment: Laboratory, laboratory equipment	(b) Hardware support -Educational equipment & materials: As planned. Addition: Equipment for big data -ICT education equipment: Almost as planned. Procurement of language education materials and some software are not implemented -Other education materials & research equipment: Almost as planned. Books are procured partly
2) Consulting Services (a) Japanese-language education support (b) Selection of destination of studying abroad, support to accepted students (c) Assistance with bids and contracts for education equipment, supervision of construction	2) Consulting Services (a)–(c) Implemented as planned.

Source: Documents provided by the executing agency

With respect to Table 1, differences are identified in the comparison between the plan at the appraisal and the actual. The following is the explanation:

1) Procured equipment

(a) Software Support

The number of study-abroad scholarships for the undergraduates was as planned. The number of study-abroad scholarships for the postgraduates and Vietnamese Japanese-language teachers training was fewer than originally planned. The main reasons are considered to be the conditions for study-abroad scholarships and the working treatment of this project. In Vietnam, in the case

<sup>10</sup> The undergraduate program is a twinning program. After completing two-and-a-half years of curriculum at HUST, students are transferred to the third year of a university in Japan and study abroad for two years. Applicants will be able to obtain a HUST degree by transferring to the second semester of the fifth year in HUST after graduating from the fourth year (obtaining the degree) of a university in Japan. Scholarships required for two-year master's program and the three-year doctoral program for studying in Japan are supported.



of a state-sponsored study-abroad program including a scholarship from the HEDSPI program, students are required to return home immediately after the course and then work at a public institution (including a state-owned company and university) for a period equal to twice the length of the scholarship that person received. However, salaries for civil servants are low and a working place is not secured. According to the deputy director of the School of Information and Communication Technology (hereafter referred to as “SoICT”),<sup>11</sup> in the case of undergraduates, among the many students who were admitted to HUST, students who wanted to join the program gathered, mainly due to the high possibility of studying in Japan as a system for the HEDSPI program (thus, there were many top graders). Scholarship students were further selected from among the students. In the case of postgraduates, even though the HEDSPI program office has repeatedly conducted public relations activities, the number of scholarships for postgraduates of this project did not meet the original plan. The factors are considered as follows. There were other private study-abroad scholarships for which employment was secured in Japan and overseas, and it is possible that the conditions of the scholarship for this project could have been avoided. In addition, the undergraduates who study in Japan for a total of two years in their third and fourth years have to return to Vietnam and work there for four years. Therefore, it takes eight to nine years in all to meet the conditions of this state-sponsored scholarship, which made it impossible to study in both undergraduate and graduate schools within the program period (eight years in original plan).<sup>12</sup> However, it should be noted that the granting of conditions for the state-sponsored studying abroad were under consideration at the time of the appraisal, but they were later decided by the relevant ministry level and notified to HUST. It is considered that the influence of this condition on the output could not be examined at the time of the appraisal.

#### (b) Hardware Support

Regarding hardware support, it was almost as planned, but there is one difference from the original plan. As the HEDSPI program scrutinized the procured equipment in the project implementation stage, the procurement of a part of equipment was suspended, and the expenditure was reduced. According to the deputy director of the SoICT, the ICT sector had been developing rapidly, models of equipment became outdated between the time of the appraisal and the procurement, some prices fell or some became free of charge, and some obsolete equipment

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<sup>11</sup> At the time of the ex-post evaluation, the HEDSPI program belongs to the SoICT, which HUST established in 2009.

<sup>12</sup> At the time of the appraisal, of the 40 slots in the master’s degree study-abroad program, although ten slots from the undergraduates studying abroad were planned, it was not possible to enter a graduate school using the scholarship and was not implemented.

became unnecessary to purchase.<sup>13</sup> On the other hand, equipment (big-data equipment) that was not planned at the time of the appraisal was judged necessary and procured. At the time of the project planning, as a countermeasure for the procured equipment being susceptible to technological innovation, the consideration was made that software and hardware would be updated.<sup>14</sup> At the time of planning (November 2005), the originally planned procurement period was from April 2006 to June 2013, however, actually it took time from May 2007 to June 2016. Due to taking much time since the planning, the planned procurement of the equipment itself have been changed and cancelled.

### 3.2.2 Project Inputs

#### 3.2.2.1 Project Cost

At the time of the appraisal, the planned total project cost was 6,408 million yen (including 5,422 million yen from the Japanese ODA Loan), but the actual cost was 2,338 million yen (including 1,891 million yen from the Japanese ODA Loan) and was within the plan (about 36% of the planned cost). The main reasons for this are, as already mentioned, that there are effects from changes in the procured equipment and the decrease in study-abroad scholarships for the postgraduates. In addition, the currency-exchange rate fluctuated.<sup>15</sup>

#### 3.2.2.2 Project Period

At the time of the appraisal, the project period was planned to last from March 2006 (starting at the time of the loan agreement) to August 2014 (at the time of graduation of the students of fourth batch of undergraduate program) (a total of 102 months). On the other hand, the actual period was from March 2006 (starting at the time of the loan agreement) to August 2016 (at the time of starting operation of the equipment and the completion of the procurement) (a total of 126 months) and exceeded the plan (approximately about 124% of the plan). The main reason for the delay is that the project period was extended to the loan execution deadline of the loan contract

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<sup>13</sup> As an example, the originally planned audiovisual equipment for use in language learning was deemed inappropriate for language education in Vietnam, so it was judged to be unnecessary to procure. The spread of free software has made it unnecessary to purchase some software.

<sup>14</sup> According to JICA provided documents, “especially as for equipment that is susceptible to technological innovation, it is necessary to consider a flexible scheme to reduce the diminishing effects of obsolescence and to reflect the latest needs of end users.” Thus, in this project, the plan was designed to update the server network and the PCs in response to opinions from the industry during the project’s implementation.

<sup>15</sup> At the time of the appraisal, USD1 = JPY111 and VND1 = JPY0.00703. However, the average for the period when the main expenditures were implemented in the project, 2006–2016, USD1 = JPY101 and VND1 = JPY0.00527 (according to the rate of International Financial Statistics (IFS) of International Monetary Fund (IMF)). During the project’s implementation period, the appreciation of the yen continued, and it is believed that this has affected the reduction of the actual project cost.

due to the low amount of execution of ODA Loan fund because of the delays in the procurement of equipment and by the small number of postgraduate scholarship recipients. The completion of the project period is determined to be at the time of starting operation of the equipment and completion of the procurement as study-abroad scholarships for the postgraduates planned during the extension period were not implemented.

### 3.2.3 Results of Calculations for Internal Rates of Return (Reference only)

As the internal rate of return (IRR) was not calculated at the time of the appraisal, IRR recalculation was not performed for this study.

Based on the above, even though the project cost was within the plan, the project period exceeded the plan. Therefore, efficiency of the project is fair.

## 3.3 Effectiveness and Impacts<sup>16</sup> (Rating: ②)

### 3.3.1 Effectiveness

#### 3.3.1.1 Quantitative Effects (Operation and Effect Indicators)

Table 2 shows the baseline, target, and actual value related to the quantitative effects of the project.

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<sup>16</sup> Sub-rating for Effectiveness is to be put with consideration of Impacts.

Table 2: Data on Quantitative Effects of This Project (Baseline, Target, Actual Value) Note 1

Indicators	Base line	Target	Actual			
			2016	2015/16	2016/17	2017/18
				2 Years After Completion	Completion Year	1 Year After Completion
1. No. of graduates from the program (undergraduate) (people) Note 2	-	432	412	412	412	
2. Percentage of students who achieved the ITSS <sup>17</sup> level at 2 years after graduation (%)	Level 2	-	80	unknown	unknown	unknown
	Level 3	-	10	unknown	unknown	unknown
3. Percentage of students who cleared grade of Japanese-Language Proficiency Test at graduation (%). Note3	Grade 2	-	80	30.2	30.2	30.2
	Grade 1	-	10	4.3	4.3	4.3
4. Percentage of teachers possessing doctoral degree in the target program (%)	55	65	-	-	71.9	

Source: Documents provided by the executing agency

Note 1: The actual values are for the students who enrolled and graduated in four terms during the project period.

Note 2: The HEDSPI program is a five-year program. The number of graduates given here is the sum of the number of students who graduated from the HEDSPI program and from the universities of studying in Japan within the registered deadline (seven years after admission) of the academic years eligible to receive scholarships.

Note 3: The percentage is the number of successful applicants in each grade divided by the number of registrants in the fifth year.

The HEDSPI program to be evaluated has been operated continuously until the ex-post evaluation.<sup>18</sup> At the time of the appraisal, the target year for the operation and the effect indicators was set to 2016 (academic year 2015/16, two years after the project completion), which is the graduation deadline for the students of targeted four terms. During the project period originally planned (by August 2014), the model education program by the Technical Cooperation Project and the Japanese-language education and provision of undergraduate scholarships by this project were implemented almost as planned. While, during the extension period (September 2014–August 2016), the doctoral degree study-abroad scholarships were not provided. Therefore, in this evaluation, the evaluation judgment is made by comparing the actual value as of 2016 to the target value for that year (2016).

<sup>17</sup> Description of ITSS is stated in the footnote 1 on page 1.

<sup>18</sup> At the time of the appraisal, the HEDSPI program, unlike general undergraduate courses, had a fixed period of implementation, and was scheduled to be implemented until the end of 2014. At the time of the ex-post evaluation, in addition to the general five departments of the SoICT, it has been continuously operated as a special program.

The following is the main points of each indicators 1 to 4 in Table 2:

1) Number of graduates from the program

The students who became eligible for scholarships grants and who could have graduated during the project-implementation period were those who entered in academic year 2006/07 to 2009/10, the four terms of students. The number of students who graduated by academic year 2015/16, which is the registered deadline, was 412 out of 449 students for these four terms who registered at the time of entrance into the university in total (See Table 3).<sup>19</sup> Because the target value of the number of graduates was set at 90% of the number of registrants, the actual of 91.8% across the four terms in total achieves the target value. On the other hand, within HUST, there are generally 60 to 70% of the students who can graduate in five years without repetition. And it is said that about 70 to 80% will graduate by the registered deadline. According to a MOET official, HUST is a particularly difficult university in Vietnam to graduate from. According to the deputy director of the SoICT, the HEDSPI program is as if a double degree program which requires credits in both fields of the ICT and the Japanese language. It is said that some students are unable to earn mainly Japanese-language credits and fail as a result. However, for the targeted four terms of this project, the students were highly motivated to study the Japanese language in order to earn study-abroad scholarships. Therefore, it is thought that the graduation rate of each term was around 90%.<sup>20</sup>

Table 3: Number of HEDSPI Program Registrations and Graduates of Target Year of This Project

Entrance Year	No. of Registered Students at Entrance	No. of Registered Students at 5th year	No. of Graduates at 5th year	No. of Dropouts/Repeaters/Transfers	No. of Eventual Graduates	Graduation Rate (%)
2006/07	115	112	86	4	111	96.5
2007/08	114	111	75	6	108	94.7
2008/09	107	107	69	15	92	86.0
2009/10	113	113	84	12	101	89.4
Total	449	443	314	37	412	91.8

Source: Documents provided by the executing agency

<sup>19</sup> According to the deputy director of the SoICT, the reason the number of registrants does not meet the initially planned 480 people is that although there are applications to meet the capacity or more, the number of registrants is within the capacity. Therefore, when the number of candidates exceeds the capacity, candidates with the entrance examination score below a certain standard are rejected.

<sup>20</sup> The percentage of graduation after the targeted terms (academic year 2010/11 to 2011/12) of this project is approximately 66.4%.

## 2) Percentage by ITSS achievement level two years after graduation

No figures were available for the ITSS level of achievement of the HEDSPI program graduates at two years after graduation. According to the deputy director of the SoICT, this is because the common unified test in Asia<sup>21</sup> which determines the ITSS level of achievement has not been disseminated in Vietnam.<sup>22</sup> The HEDSPI program office tried to obtain the number for the first term graduates, but there were a small number of applicants, and so, the data has not been obtained since then. According to interviews with the deputy director of the SoICT and with the graduates, the main reasons why the examination does not disseminate are because it is possible to find a job without exam results and because the examination fee is high. Although finding employment at a Japanese company requires knowledge equivalent to ITSS Level 2, it is said that it is not required to show the examination results in general. On the other hand, although the numerical values were not available, it is also considered that students who have graduated from the HEDSPI program at HUST, which is difficult to graduate from, have sufficient knowledge of ITSS Level 2. This is because the HEDSPI program is a practical ICT education program based on ITSS in Japan, and the curriculum is designed on the assumption of acquiring knowledge and skills equivalent to ITSS Level 2. Moreover, according to the deputy director of the SoICT, the skills of ITSS Level 3 can be acquired through work experience. Because it depends on the acquired knowledge and skills after employment, it does not mean that engineers generally will reach ITSS Level 3 after years of work. In particular, it is often required from ICT companies to HEDSPI graduates to play the role as bridge system engineers (SEs),<sup>23</sup> and it is difficult to estimate the percentage of graduates who reach ITSS Level 3 because many are often not specialized in engineering services. In any case, it was impossible to judge with a definite numerical value.

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<sup>21</sup> The common unified test in Asia is an examination conducted in Vietnam, the Philippines, Thailand, Myanmar, Malaysia, and Mongolia based on the Japanese information technology engineer examination by the Information-Technology Promotion Agency (IPA). Each examination of the information technology engineer examination and the achievement level of the ITSS are associated. According to the definition of IPA, ITSS level 3 is considered as the pass level of the Applied Information Technology Engineer Examination, and Level 2 is considered as the pass level of the Fundamental Information Technology Engineer Examination.

<sup>22</sup> For reference, as for actual results of the level 2 Examination in Vietnam nationwide, in the year of graduation of the 1st term students (2011) targeted by this project, the number of applicants was 480, the number who passed was 126, and the pass rate was 26%. About the last three years until ex-post evaluation, in 2018, the number of applicants was 184, the number who passed was 73, and the pass rate was 40%, in 2017, the number of applicants was 317, the number who passed was 149, and the pass rate was 47%, and in 2016, the number of applicants was 418, the number who passed was 87, and the pass rate was 21%. Applicants' information of the level 3 was not available. The examination has been conducted twice a year from 2014 until the ex-post evaluation.

<sup>23</sup> A bridge SE is a person who understands not only ICT skills but also language and culture and business practices of destination and original country of offshore development, who stands between the client company and the development engineers in the offshore destination, and who connects, directs and coordinates to ensure the smooth operation. In addition to ability as a system engineer, ability of project management and language skills are required.

### 3) Percentage by cleared grade of Japanese-Language Proficiency Test at graduation

Regarding the Japanese-language ability of graduates, in the HEDSPI program, requirement for acquisition of credits is Grade 3 before graduation. According to the SoICT secretariat, the average pass rates at the fifth year for the four terms targeted by this project did not achieve the target, with 30.2% for Grade 2 and 4.3% for Grade 1 by each grade (See Table 4).<sup>24</sup> However, the pass rates for the 80 students studying in Japan are 21.3% for Grade 1 and 67.5% for Grade 2 respectively, and the target for Grade 1 is achieved. In interviews with the deputy director of the SoICT and a recruiter from a Japanese ICT company, Japanese-language ability required for finding employment in Japanese ICT company is around Grade 2. However, it is not always required to show a certificate, so there are no big disadvantages without certificate on employment.<sup>25</sup>

Table 4: Pass Rate of Japanese-Language Proficiency Test at the Fifth Year of the Terms Targeted by This Project

Entrance Year	No. of Registered Students at 5th Year	No. of Students Cleared Grade 2	Percentage of Students Cleared Grade 2	No. of Students Cleared Grade 1	Percentage of Students Cleared Grade 1
2006/07	112	49	43.8	5	4.5
2007/08	111	34	30.6	7	6.3
2008/09	107	25	23.4	3	2.8
2009/10	113	26	23.0	4	3.5
Total	443	134	30.2	19	4.3

Source: Documents provided by the executing agency

Note: Same as the Note 3 of Table 2

### 4) Proportion of teachers possessing doctoral degrees in the target program

At the time of the ex-post evaluation, 41 out of 57 teachers (71.9%) in charge of ICT subjects in the HEDSPI program are holding doctoral degrees, so the target is achieved. However, the holders do not include any recipients of the study-abroad scholarships of this project.

<sup>24</sup> Some students do not take the test in the target year, so it does not mean that those other than successful applicants have failed the test.

<sup>25</sup> According to an interview with a recruiter from a Japanese ICT company, most of the students who got jobs in Japanese ICT companies are considered to have reached skills equivalent to Grade 2 Level through internships after internal placement, stay in Japan and work for about half a year (when they stay in Japan).

### 3.3.1.2 Qualitative Effects (Other Effects)

#### 1) Improvement of quality of higher education<sup>26</sup>

According to the deputy director of the SoICT and the HEDSPI Program teachers, it was possible to practice a new curriculum and teaching methods at the HEDSPI program. It is a program which can deal with each student at small number class system (about 30 to 60 students), and it is suitable for post-employment practice with its emphasis on practical skills using the ICT equipment. In the past, one lecture was 80 to 100 people in size, and focused on theory without practical-use facilities. From the start of the project through the ex-post evaluation, they utilized these practical-use facilities and have replaced PCs approaching service lives. There is no shortage of educational equipment at the time of ex-post evaluation. The teachers and students continue to use the provided big-data and research equipment in the laboratories. With regard to Japanese-language education, the quality of its teachers and of the education has been secured mainly through partnerships with Japanese ICT companies while keeping the contents of the program. As mentioned above, the HEDSPI program is a difficult course for students because it is an ICT course that requires Japanese-language learning also. However, compared to students of the other ICT courses at HUST, there was no superiority or inferiority in level of acquisition of ICT skills and knowledge. Furthermore, according to the current students, they are generally satisfied with the contents of the ICT subjects and the Japanese-language subject, the abilities and responses of its teachers, facilities and the responses of the office. According to the former undergraduate scholars studying abroad, the contents of the classes at Japanese universities were understood without any problems when studying abroad. In addition, two of the undergraduate students earned top graduation scores from Ritsumeikan University and Keio University respectively. Furthermore, 11 out of the 13 recipients of the postgraduate study-abroad scholarship have been engaged in teachers or researchers at the time of the ex-post evaluation.<sup>27</sup> According to the former scholars studying abroad, the universities' undergraduate and postgraduate programs in Japan had good research facilities and environments, and the teachers were cooperative. Many said that they were very grateful that they would not have the present lives without the program.

At the time of the ex-post evaluation, according to the current students, the main reasons for them to apply for the HEDSPI program is the employment record of the many graduates being

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<sup>26</sup> In this survey, interviews were conducted with the deputy director of the SoICT, three HEDSPI program teachers, five graduates who received undergraduate study-abroad scholarships, two recipients of doctoral study-abroad scholarships, and six current students.

<sup>27</sup> At the time of the ex-post evaluation, out of the nine scholarship recipients of the master's degree, three are university teachers and five are researchers. Three out of the four Ph.D. scholarship recipients are university teachers.



expatriates in Japan and Japanese-language education. According to the SoICT Secretariat, nearly 100% of HEDSPI program graduates work for ICT companies during the period for acquiring statistics.<sup>28</sup> Nearly 60% of these employers are ICT companies in Japan at which working in Japan is premised. Most of the ICT companies in Vietnam where the graduates work are subsidiaries of Japanese ICT companies or companies whose clients are Japanese companies. According to the deputy director of the SoICT, HUST is originally a university with a high academic level, and its students rarely have difficulty finding jobs at graduation. However, the HEDSPI program has particularly many students who have job offers from Japanese ICT companies from the time of attending the program, and such an employment record is a further attraction for students who wish to enter the program. Even though tuition fees for the program have increased, the number of applicants has also increased, and the program is more popular than the other courses in the SoICT. This is likely due to the employment record to Japanese ICT companies of the graduates of HEDSPI program. Therefore, the HEDSPI program is considered to be developing the human resources that ICT companies require, and the postgraduate scholarships have also contributed to produce education and research personnel. Base on the above, this project is considered to contribute to the improvement of the quality of higher education.

### 3.3.2 Impacts

#### 3.3.2.1 Intended Impacts

##### 1) Human resource development corresponding to the market needs of the ICT sector

As per the 3.3.1.2 Qualitative Effect, most of the graduates have been working for ICT companies since 2015. In addition, through interviews with stakeholders, it was seen that both teachers and former scholars studying abroad clearly recognized that the purpose of the program was to develop human resources for Japanese ICT companies. As stated in 3.1.2 Relevance, Consistency with the Development Needs, by the time of the ex-post evaluation, the destination of Japanese ICT companies' investments was transferred from other countries to Vietnam. From Japanese ICT companies expanding into the country, there is a high need for human resources who received Japanese-language education, can understand how to work at Japanese companies,

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<sup>28</sup> SoICT grasps working places of where the graduates of HEDSPI program since 2015. In order to continue the Japanese language education in the program after completion of the project, surveys have been conducted to identify the employees of Japanese ICT companies that are the outputs of the program. Of the 418 graduates from academic years 2014/15 through 2017/18, 415 (99.3%) who found employment at ICT companies, there are 176 (42.4%) employees in ICT companies in Vietnam and 238 (57.6%) employees in ICT companies in Japan.

and can understand the intentions of clients. In particular, Japanese ICT companies engaged in offshore development expect to have personnel who will be active as bridge SEs. The HEDSPI program partnered with a Japanese ICT company that also performs temporary staffing operations by dispatching teachers and manages a Japanese-language education program. Because the company is not a general staffing agency but an ICT company well versed in ICT skills, it is possible to develop human resources who have intimate knowledge of market needs. In addition to ICT skills, the company also teaches Japanese (general and ICT terms) and attitudes to work in Japanese companies (how to work according to work styles such as punctuality and overtime and attitudes to capture the intentions of the other party).<sup>29</sup> Moreover, the HEDSPI program forms a consortium (an organization of several businesses to undertake a project) with Japanese ICT companies (30 to 40 companies) and Vietnamese ICT companies (about 50 companies). In response to changes in the ICT market, opinions from companies might be reflected in classes on ICT subjects. By the time of the ex-post evaluation, a total of approximately 100 Japanese ICT companies participated in job fairs. The number of companies participating in the job fairs repeatedly and companies newly joining is increasing. According to the employer's company, HEDSPI graduates are more likely to have superior ICT skills than new graduates in Japan. It is said that the lack of Japanese engineers was the main reason for hiring Vietnamese people around 2011, but the superiority of personnel graduated from the HEDSPI program has been the reason for hiring them in the last one or two years. Vietnamese people are also expected to be active in new fields of ICT (artificial intelligence technology (hereafter referred to as "AI"), internet of things (hereafter referred to as "IoT"),<sup>30</sup> blockchains, etc.) and launch businesses. Such assessment appears in the improvement of rewards that the starting salary of the Vietnamese personnel exceeds that of Japanese personnel in some companies. It is considered that the students of HEDSPI program are evaluated as human resources that meet the employment needs of Japanese ICT companies.

Furthermore, in some cases, the HEDSPI program graduates started businesses and have hired personnel. Some companies have established ICT companies mainly for offshore development of Japanese ICT companies in Vietnam, and in addition to the head offices in Vietnam, some companies have set up branch offices in Japan and are actively engaged in sales activities for

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<sup>29</sup> The ICT Japanese-language teachers are four former undergraduate scholars studying abroad by this project who work for the ICT Company A. Based on their experience, they teach the corporate culture of Japanese ICT companies, Japanese for ICT required for work, and the necessary attitudes for Vietnamese people working at Japanese companies.

<sup>30</sup> The Internet of Things is a system of things around us being connected via internet, and they control each other by exchanging information.

Japanese clients.<sup>31</sup> Among them, there is a company which has grown rapidly to employ hundreds of people in a few years after its establishment (See Box 1). Both as an entrepreneur and as an employer, the company is considered to contribute to the market needs of the ICT sector.

Based on the above, this project is considered to contribute to human resource development in response to the needs of human resource development in the ICT market in Vietnam.

## 2) Promotion of market economy through human resource development

At the time of the ex-post evaluation, as mentioned above, Japanese ICT companies are moving into the Vietnamese ICT software market, and offshore transactions have been increasing. In such, many of the graduates of HEDSPI program work for Japanese ICT companies and Vietnamese ICT companies. In other words, this project is considered to supply human resources that meet the market needs of Japanese ICT companies which transfer investment from other countries to Vietnam and to contribute to strengthening the country's international competitiveness. In addition, among the companies established by the graduates of HEDSPI program, some companies have been recognized by the Vietnam Software and IT Association (hereafter referred to as "VINASA") (270 member companies) as companies that contribute to the country's top ICT companies and industries (See Box 1). Therefore, this project is considered to contribute to the development of companies that support the development of the ICT industry in Vietnam.

This project contributes to the development of the ICT sector and economic development through the strengthening of the industrial competitiveness related to private investment and the creation of human resources and employment in the software industry in Vietnam. And, it is thought that the system of supply and demand of goods and services by the more private sector-led free economic activities function in the country and support the promotion of market economy.

## 3) Promotion of mutual understanding through the university exchange between Japan and Vietnam

At the time of the ex-post evaluation, the HEDSPI program continued to partner with Aizu University, with which a study-abroad exchange program is implemented. There are cases of conducting ICT research seminars and exchange with Keio University, Ritsumeikan University, Shibaura Institute of Technology, etc. by individual teachers. However, partnership programs have

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<sup>31</sup> At an ICT exhibition for business purposes, which is considered to be one of the largest in Japan (the number of exhibitors and product display areas compared to similar types of exhibitions. More than 1,500 exhibitors and around 100,000 visitors) held annually in Tokyo, according to the JICA Vietnam Office, in the spring of 2019, at least six exhibitors of companies involved with HEDSPI program graduates were confirmed.

been implemented as HUST apart from this program, and it cannot be specified that this project directly affects promotion of mutual understanding between the two countries. On the other hand, there are cases that the success of students after graduation of undergraduate scholarships of the HEDSPI program are reported by the Japanese media and posted in the publications of the university where they studied. Moreover, there are exchanges in which the company which the undergraduate scholars studying abroad established is visited by the current university students from the Japanese universities from which the scholars graduated. Therefore, this project is considered to deepen mutual understanding through exchanges between universities at the individual level.

Box 1: Case of start-up of ICT company by the graduates

Mr. A, a first-term student of the HEDSPI program, studied at Ritsumeikan University as an undergraduate scholar. He studied for many hours a day and earned a slot for studying abroad in Japan, and also frequently went to the laboratory while studying abroad. After graduation, he returned to Vietnam, got a job at one of the largest ICT companies in Vietnam, and was promoted to be a project manager as an engineer with programming skills and fluent Japanese and English within one year. Through his experience of realizing that the home country was still a poor country while studying abroad, he aimed to realize the dream of young people in his home country. As a bridge between Vietnam and Japan, he established ICT Company B in Hanoi together along with four people who had been the undergraduate scholars of HEDSPI program in April 2012. The company set up branch offices in Danang and Tokyo in 2016 and has become on a scale of employing 600 engineers by the time of the ex-post evaluation. It aims to expand to a scale of employing 1,000 people by 2020. It implements offshore development with Japanese companies as the main clients (95%). Focusing on development of smartphone games and applications, development of Web systems and applications, development of financial and business systems, software quality verification services, and development of AI, IoT and embedded applications are handled. There are many employees who have worked in Japan, and more than half are holding Grade 1 to 3 of the Japanese-Language Proficiency Test. The employees are given Japanese-language and Japanese-culture education. They can communicate directly with clients without using translators.

By the time of ex-post evaluation, the company received awards to the companies whose

products and services are judged to be extremely excellent as a company that contributes to the ICT industry in Vietnam (awarded for four consecutive years up to 2018) and an award to the top 30 companies in the country from VINASA. It has also received many coverages from Japanese business and ICT-related media. The company's aggressive proposals and contents for business improvement, and technical reliability, including the quality control, as an organization are highly appreciated by the clients. Moreover, it is appreciated that there are elements that are familiar to Japanese people such as day-to-day communication and meetings conducted all in the Japanese language, noticeable improvement of the Japanese skills of employees day by day, understanding of Japanese customs, and a sense of responsibility of on-time delivery of products. In addition to employees with a high level of Japanese-language proficiency, graduates from top-ranked universities, winners of international competitions of math, physics, and ICT are gathered, and salaries of employee are well-treated. The attractiveness of offshore development is the low order cost, but the company is improving its international competitiveness in terms of quality.

### 3.3.2.2 Other Positive and Negative Impacts

#### 1) Impacts on the Natural Environment, Resettlement, and Land Acquisition

This project falls under Category C of the *JBIC Guidelines for Confirmation of Environmental and Social Consideration* (April 2002). Its undesirable impact on the environment was considered to be minimal. In addition, through interviews with the executing agency and on-site inspections, it was confirmed that there were no environmental impacts and problems related to resettlement and land acquisition as the project has provided ICT education and research equipment to existing facilities in HUST and has trained personnel on the university site.

#### 2) Unintended Positive Impacts

Another impact is the effect on the current HEDSPI program by the reputation of graduates' employment record. After completion of this project, opportunities for study-abroad scholarships as part of the HEDSPI program have been significantly reduced. In the ex-post evaluation of the Technical Cooperation Project, there was concern about whether the motivation for learning the Japanese language would continue even for programs that do not have study-abroad opportunities. However, despite the fact that at HUST, which was originally difficult to graduate from, the HEDSPI program is even more difficult due to studying both specialized ICT technology and Japanese language, and its tuition fee has gradually increased since completion of this project, the

number of applicants and registrants has been increasing at the time of ex-post evaluation.<sup>32</sup> It is thought that the motivation for Japanese-language learning of HEDSPI program students is supported by the employment record of the graduates at Japanese ICT companies based in Japan. On the other hand, according to the deputy director of the SoICT, although some other universities are interested in incorporating Japanese-language education in courses for engineers, this is because keeping willingness to learn the Japanese language is difficult for the students who aim at becoming engineers. So, there are some universities that have canceled the courses after they tried. In such a circumstance, because the HEDSPI program continues to teach Japanese language, it is said that there have been inquiries from several other universities on how to operate the HEDSPI program. Therefore, it is considered that the realization of this project effect, which is the employment record of graduates, guarantees the quality of the educational program of this project and also influences the possibility of spreading it to other universities as a model.

Based on the above, this project has shown some positive effects on human resource development in response to the market needs in the ICT sector. However, because the cleared grades of the Japanese-Language Proficiency Test do not reach the target value and the numerical values of the ITSS achievement level are not available and cannot be confirmed quantitatively, it is judged that the effectiveness and impacts of this project are fair.



Photo 1: Posters created at Japanese-language classes (sightseeing and ICT Japanese education)

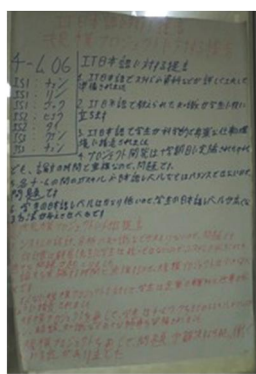


Photo 2: Poster for the job fair for HEDSPI program

**Box 2: The synergy effects of this project (ODA Loan) and the Technical Cooperation Project**

From the time of project formation, direct outcomes of the ODA Loan Project were shared with the overall goal of the Technical Cooperation Project. In the two projects, outputs and

<sup>32</sup> The number of registrants was temporarily reduced after the end of the main input of this project, but the number has been increased since year 2016/17 (105 in academic year 2014/15, 80 in academic year 2015/16, 125 in academic year 2016/17, 148 in academic year 2017/18, and 209 in academic year 2018/19).

activities and their implementation timings were designed as two wheels of the project that shared the overall goal by utilizing the characteristics of each scheme. With regard to the direct outcomes of the ODA Loan Project (improvement of education level in the ICT sector and development of human resources), it would be difficult to achieve without the implementation of the education program through the Technical Cooperation Project, and it is considered that the complementary roles of both projects were assumed from the time of design. Thus, the followings are noted as synergy effects.

The impact from the HEDSPI program is expressed as stated in “Unintended Positive Impacts” by the time of ex-post evaluation. This is considered to be due to the synergy between the Technical Cooperation Project (education program) and the ODA Loan Project (studying abroad). At the beginning of the project, the contents and results of the education program of the Technical Cooperation Project were not clear to the students in HUST. Nevertheless, it is thought that the reason the top-ranked students at HUST gathered in the HEDSPI program with the burden of learning Japanese subjects in addition to ICT subjects at that time was because of the wide study-abroad opportunities (one in six students in one academic year). Therefore, at the time of completion of the project when studying abroad in Japan had been completed, there were concerns for the future HEDSPI program about the number of applicants and motivating students to study the Japanese language. However, it is thought that Japanese ICT companies started to realize the excellence of HEDSPI program graduates because the undergraduates studying abroad who received the HEDSPI education program and scholarships under the ODA Loan Project graduated with awards as top students at two universities. Additionally, the students with high Japanese-language skills and ICT skills have succeeded as bridge SEs who know Japanese culture in offshore development of Japanese ICT companies. Moreover, that played a role which leads to the high employment record of the subsequent graduates in Japan and Vietnam. As a result, the number of new applicants for the HEDSPI program has not decreased, and Japanese-language study is continuing. Thus, the effects of the HEDSPI program continuing until the ex-post evaluation are considered to be due to the synergetic effects of both projects.

### 3.4 Sustainability (Rating: ③)

#### 3.4.1 Institutional/Organizational Aspect of Operation and Maintenance

At the time of the ex-post evaluation, MOET supervises higher education institutions including HUST in general. As for the sustainability of the HEDSPI program, it continues to be operated as

a special program that belongs to the SoICT at HUST, and at the time of the ex-post evaluation, HUST secretariat manages the finances, facilities, teacher employment, and student relations (registration, tuition, and credits) of all the undergraduates faculties including the SoICT at HUST. At the SoICT secretariat, six staff members work and manage the operation and maintenance including the procurement management of facilities and equipment of the program and the management of educational content such as the curricula of the departments belong to the SoICT. The teachers belonging to the SoICT teach ICT subjects in the HEDSPI program (57 teachers). Since academic year 2017/2018, as the capacity of the program has been increased compared to the time of the project implementation, for the Japanese-language subject, the Japanese-language teachers are slightly lacking but are secured (two Japanese and ten Vietnamese teachers) at the time of the ex-post evaluation. The Japanese-language education program has been operated in partnership with the Japanese ICT Company A which has belonged to the corporate consortium of HEDSPI program since 2014. The company selects the Japanese-language teachers, provides compensation and conducts supplementary lessons. The HEDSPI program decides on the Japanese-language curriculum and textbooks and is responsible for managing teacher recruitment, contracting and payroll, managing the quality of the Japanese-language level based on exam results, managing the credits, and managing graduation requirements. Moreover, regarding the update of ICT subjects in the program and job fairs, the HEDSPI program arranges partnerships with the consortium with which the SoICT secretariat is affiliated. According to the deputy director of the SoICT, it is difficult to secure Japanese-language teachers due to the treatment. Furthermore, after completion of the project, HUST once moved to make Japanese-language education as an elective subject due to requests from students and parents because of the high degree of difficulty of graduating from the HEDSPI program. However, because acquisition of Japanese-language ability is a major feature of the HEDSPI program, the SoICT strongly advocated the significance of continuing Japanese-language education to the HUST president, and it was decided to remain as a compulsory subject. Under the circumstances, the deputy director also stated that he has been making efforts to secure teachers in partnership with the Company A. According to the officer of the Japanese ICT Company A, which is a partner of Japanese-language education, the company plans to continue the partnership for a while. However, it might be necessary to utilize the consortium with many companies and continue to take measures to continue the operation of high-quality Japanese-language education in addition to collaboration with Company A.

Regarding the continuity of the effect of the project by study-abroad scholarships, the former



scholars studying abroad have been involved as lecturers in ICT Japanese-language education, and the educational effect on current students is enhanced. Moreover, there is a HUST alumni association and information exchange takes place as needed although it is not particularly concerning for the follow-up of former students. The Follow-up surveys of graduates also use information from the alumni association. Regarding the continuity of the study-abroad system, it is not the main purpose (effect) of this project, but as mentioned in the Impact, exchange study through scholarships provided by one of the universities which was then a study-abroad scholarship partner continues with the HEDSPI program.

Base on the above, at the time of the ex-post evaluation, no major problems have been observed with regard to the institutional and organizational aspects of operation and maintenance of the project.

#### 3.4.2 Technical Aspect of Operation and Maintenance

There is a person in charge of ICT network of the SoICT which operates and maintains the HEDSPI program, who develops the network environment. According to the deputy director of SoICT, the maintenance of ICT equipment is done by teachers, but there are no particular difficulties. In fact, confirmation by the teachers was conducted, and if necessary, repairs including outsourcing were arranged as needed. There was no unused equipment and no equipment that had been left unused due to defects at the time of the ex-post evaluation. Although as for the educational content, the curriculum at the time of project implementation has been continued, the contents of 49 ICT-related subjects are reviewed annually to make them correspond to the latest technology program based on teachers' decisions or the request of ICT companies.<sup>33</sup> Departments and programs at the SoICT get approval and implement changes in such contents. Therefore, the technical aspects of the operation and maintenance of equipment and the contents of ICT education are secured and implemented without problems by the SoICT staff and teachers. With regard to the technical abilities of Japanese-language teachers, the Japanese ICT Company A, which is affiliated with the program, is involved in job posting. With regard to the education contents, efforts are made to ensure that the level meets the needs of companies, with a focus on Japanese ICT companies. At the time of the ex-post evaluation also, it is considered that the quality of education is secured base on the fact that the employment situation of graduates at Japanese ICT companies is steady and unchanged.

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<sup>33</sup> The SoICT does not record the frequency of reviews and the number of subjects reviewed.

Regarding the continuity of the effect of the project by study-abroad scholarships, maintenance of the knowledge obtained through studying abroad does not fall the subject of this evaluation criteria because individual graduates are beneficiaries due to the nature of the project. However, as mentioned above, many graduates of the undergraduates are working at ICT companies, and many postgraduates are working at education and research institutes. It is thought that they continue to use and improve their ICT knowledge and skills and research. With regard to the continuity of the study-abroad system, as mentioned above, an exchange study with a Japanese university is conducted, and the ability to coordinate among the universities is believed to be secured.

Based on the above, at the time of the ex-post evaluation, no major problems have been observed with regard to the technical aspects of operation and maintenance.

### 3.4.3 Financial Aspect of Operation and Maintenance

The budget for operation and maintenance budget of the SoICT is as shown in Table 5.

Table 5 Operation and Management Budget of the SoICT (Latest Three Academic Years)

(Unit: 1,000 Vietnamese dong)

Item	Overtime, Allowance, Visiting Teachers	Tuition	Exam Related	Practice & Activity Related	Student Relations	Others	Total
2015/16	4,782,000	509,000	719,000	349,000	220,000	27,000	6,606,000
2016/17	5,174,138	619,481	1,304,653	872,016	427,720	-	8,398,008
2017/18	6,968,678	894,967	1,209,538	996,608	740,665	561,322	11,371,778

Source: Documents provided by the executing agency

Note: The amount for academic year 2015/16 is the approved budget. The figures for academic year 2016/17 and 2017/18 are actual.

The operation and maintenance costs of the HEDSPI program are allocated from the SoICT budget. Although there are years with different expenses items, it can be seen that the total budget for operation and maintenance of the SoICT has been increasing due to the increase in tuition fees for the HEDSPI program, as described later. Besides, teacher salaries are paid directly from HUST. There has been no problem securing the salaries for ICT subject teachers. The Japanese-language teacher salaries are secured by adding compensation from the partnered Japanese ICT company (one third paid by the HEDSPI program). This is because it is difficult to secure Japanese native Japanese-language teachers with the civil servant salary level provided by HUST. Furthermore, the scope of autonomy of HUST had increased by the time of ex-post evaluation after the project

completion, and HUST is gradually increasing the tuition of the HEDSPI program (1.5 to 2 times that of the other courses of the SoICT). According to the deputy director of the SoICT, there will be no problems with the operation and maintenance budget allocated from HUST to the SoICT. In addition, there is financial support for equipment and activity costs, such as participating in ICT-related competitions, from ICT companies forming the consortium. The amount is different depending on the year, but it is about 300 to 500 million Vietnamese dong.

From the above, although it is necessary to continue taking measures other than collaboration with Company A in order to stably secure the salaries for Japanese native Japanese-language teachers, at the time of the ex-post evaluation, no major problems have been observed in terms of organizational financial aspect of operation and maintenance.

#### 3.4.4 Status of Operation and Maintenance

At the time of the ex-post evaluation, with regard to maintenance and management of the developed equipment, the teachers and staff check the condition of the facilities and equipment and arrange replacement and repair including outsourcing as appropriate at the beginning of the academic year for the HEDSPI program. At the time of the ex-post evaluation, equipment for big data has not been specifically maintained because it is within the warranty period, but no major failures have occurred to this point. Through interviews at the time of the field survey, no failure was reported in the equipment itself by the teachers and staff who use it.

As shown above, at the time of the ex-post evaluation, no major problems have been observed in terms of the current status of the operation and maintenance.

Base on the above, no major problems have been observed in the institutional/organizational, technical, financial aspects or the current status of the operation and maintenance system. Therefore, sustainability of the project effects is high.

## **4. Conclusion, Lessons Learned and Recommendations**

### 4.1 Conclusion

In this project, in order to improve the education level in the ICT sector and develop human resources in Vietnam, the development of facilities for a model education program, the employment of Japanese-language teachers, and the support for undergraduate students and candidates for teachers to study in Japan at HUST were implemented. The project is confirmed to be consistent with Vietnam's economic development policy and education development policy,

development needs, and Japan's aid policy, and its relevance is high. The project cost was within the plan due to output changes in the provision of study-abroad scholarships for the postgraduates and procured equipment, but the project period exceeded the plan, so its efficiency is fair. Moreover, the procured details of education equipment were changed in line with the advancements in ICT, but they were properly adjusted so that there was no hindrance to educational activities. The provisions of study-abroad scholarships for the undergraduates was implemented as originally planned. Regarding the quantitative effects of effectiveness, the percentage of the graduates from the program has achieved its goal. However, expected Japanese-language ability at the time of graduation did not achieved the target, as some students had not taken the proficiency test. Similarly, because the number of ICT examination candidates is too small and there is no means to verify objectively, and the ICT skills after graduation could not be judged. On the other hand, most of the graduates have found employment at Japanese or Vietnamese ICT companies, and some have started their own ICT companies that employ hundreds of people. The graduates have become ICT personnel whose skills are highly appreciated by their employers and clients, and thus, the impact of contributing to the Vietnamese ICT industry is seen. The implementation of this project has shown certain effects. However, considering that some of these effects cannot be confirmed, the effectiveness and impact are fair. Apart from that, as no particular problems have been observed in terms of the institutional/organizational, technical, financial aspects or the current status of the operation and maintenance system. Thus, the sustainability of effects realized through this project is high.

In light of the above, this project is evaluated to be satisfactory.

## 4.2 Recommendations

### 4.2.1 Recommendations to the Executing Agency

The main feature of the HEDSPI program is Japanese-language education, that corresponds to the needs of Japanese ICT companies. In addition, the strength of the employment record of the graduates with ICT skills and Japanese skills at Japanese ICT companies has led to securing new students for the HEDSPI program even after the increase in tuition. In order to continue this, it is necessary to secure the quality of Japanese-language education. At the time of the ex-post evaluation, because it is difficult to secure Japanese-language teachers only with the SoICT, mainly due to treatment factors, partnered Japanese ICT Company A has been compensating salaries for Japanese-language teachers. Although no problems have occurred at the time of ex-post evaluation, it is not easy also for Company A to secure Japanese-language teachers, and it

cannot be optimistic in the future. For the SoICT to continuously expand the project effects while utilizing the features of the program, and to maintain the educational content commensurate with the increased tuition, it is necessary to consider the possibility of partnering with other companies as a measure to avoid risk from depending on one company and the measures that enable special salary treatment for Japanese national teachers within HUST, as well as to continue efforts to secure the quality of Japanese-language education and Japanese-language teachers.

#### 4.2.2 Recommendation to JICA

None

#### 4.3 Lesson Learned

##### To establish appropriate indicators and collection methods to measure the quality of higher education

In this project, “Percentage of students who achieved the ITSS Level 2 and 3 at two years after graduation” and “Percentage of students who cleared Grades 2 and 1 of the Japanese-Language Proficiency Test at graduation” were set as the operation and effect indicators. However, these skill levels are not required to acquire for the graduation requirements for the undergraduate program. They were not considered essential to acquire, and even if it was not acquired, did not necessarily affect employment depending on the path taken after graduation and the characteristics of the work content. Moreover, it is also considered that the target value was also set much higher than the level required for project effects. In other words, these were not necessarily appropriate indicators to measure the improvement of the quality of higher education as an effect of the project. In addition, regarding ICT skills, the indicators were the levels at two years after graduation, and at the time of the appraisal, the executing agency agreed to “track the graduates for five years” in the agreement document. However, the document did not specifically describe what to pursue and how to track the graduates. In practice, it was difficult for the executing agency to collect information from the graduates on a regular basis, and the executing agency did not have information at the time of the ex-post evaluation. Moreover, data acquisition has also been stagnant because the standard test of ICT skills that became the standard of indicator has not been disseminated in Vietnam. As a result, it was difficult to evaluate the project effects at the time of the ex-post evaluation.

In the future, at the time of project formation, when measuring the quality of higher education according to language and ICT skills test results as project effects, it is desirable to consider

indicators that can easily be used to verify the project effects by confirming the graduation requirements, the ability of human resources required by the employers, and the dissemination situation and degree of recognition of standard tests and to establish indicators for which data can be collected at the time of graduation. If an indicator that must be obtained by tracking the graduates, it is desirable to consider the tracking mechanism and agree on with the executing agency. Examples are the following: to determine an easier survey method (e.g., an online questionnaire), at the time of graduation, to inform the purpose and content of the survey, to publicize the request for cooperation to secure contacts and the questionnaire survey method to all the graduates, to make sure to register all students for contact information if there is an alumni association, to ask students to report to the secretariat when their contact information changes if there is not an alumni association, and to determine the proportion of responses necessary for the evaluation judgment or to carry out a sample survey.

To consider the conditions of granting scholarships and to examine implementation according to the project effects

In this project, regarding the development of human resources for teachers and researchers, study-abroad scholarships for postgraduates were provided. However, it was impossible to study in both undergraduate and postgraduate programs due to working conditions after studying abroad through the state-sponsored scholarship in Vietnam. Moreover, the treatments, civil servant salaries are low and a workplace was not prepared, were the some of the reasons which keep students from applying this scholarships. These were the main factors, and the number of applicants was not fulfilled.

In the future, when conducting similar projects, at the time of project formation and appraisal, it is desirable for JICA to confirm the conditions for providing a study-abroad scholarship and the conditions for employment necessary for teachers and researchers in the target country, to examine the conditions with the executing agency as necessary, and to consider whether or not granting a scholarship is appropriate. If a scholarship is implemented, it is desirable to clearly explain the expected effects and the conditions of the scholarship to the scholarship candidates.

Points to consider when implementing projects in areas in which technological innovation is rapid

At the time of this project design, it was considered that software and hardware were to be upgraded as measures because the equipment to be procured is likely to be affected by technological innovation. However, in this project, the content of the planned procured equipment

itself was significantly changed and canceled due to rapid technological innovation during the period from design to implementation. As a result, various approval procedures in the administrative organization took time, which led to the extension of the project period.

In the future, when implementing similar projects in a field in which technological innovation is rapid like the ICT sector, regarding items susceptible to change, it is desirable for JICA and the executing agency to set a project period based on the response period after agreeing that there might be changes in the equipment to be procured at the time of planning and to determine the appropriate equipment at the time of procurement.

Comparison of the Original and Actual Scope of the Project

Item	Plan	Actual
1. Project Outputs	1) Procured Equipment (a) Software support i) Japanese-language education -Vietnamese teacher training: 5 -Japanese teacher dispatch period: 2006–2014 ii) Student scholarships for studying in Japan -Undergraduate: 80 in 4 batches -Master’s: 40 in 6 batches -PhD: 12 in 4 batches	1) Procured Equipment (a) Software support i) Japanese-language education -Vietnamese teacher training: 3 -Japanese teacher dispatch period: 2006–2016 ii) Student scholarships for studying in Japan -Undergraduate: 80 in 4 batches (Keio 30, Ritsumeikan 40, Aizu 10) -Master’s: 9 -PhD: 4
	(b) Hardware support -Educational equipment & materials: classroom facilities (interior, air conditioning, desks & chairs, copy machines, etc.) -ICT education equipment: Network, server (replaced once), personal computer (replaced twice), software, etc. -Other education materials, research equipment: Laboratory, laboratory equipment	(b) Hardware support -Educational equipment & materials: As Planned. Addition: Equipment for big data -ICT education equipment: Almost as planned. Procurement of language education materials and some software are suspended -Other education materials & research equipment: Almost as planned. Books are procured partly
	2) Consulting Services (a) Japanese-language education support (b) Selection of destination of studying abroad, support to accepted students (c) Assistance with bids and contracts for education equipment, supervision of construction (foreign: 103M/M, local: 53 M/M)	2) Consulting Services (a)–(c) Implemented as planned. Actual M/M not confirmed.
2. Project Period	March 2006–August 2014 (102 months)	March 2006–August 2016 (126 months)
3. Project Cost		
Amount Paid in Foreign Currency	5,245 million yen	1,375 million yen
Amount Paid in Local Currency	1,163 million yen	963 million yen
	(165,433 million Vietnamese dong)	(182,732 million Vietnamese dong)
Total	6,408 million yen	2,338 million yen
ODA Loan Portion	5,422 million yen	1,891 million yen



Exchange Rate	1 Vietnamese dong = 0.00703 yen 1 USD = 111 yen (As of October 2005)	1 Vietnamese dong = 0.00527 yen 1 USD = 101 yen (Average between 2006 and 2016) (Source: International Financial Statistics (IFS) of IMF)
4.Final Disbursement	August 2016	