Socialist Republic of Viet Nam

Ex-Post Evaluation of Technical Cooperation Project

"The Project on Strengthening the Capacity of ITSS Education at Hanoi University of Technology (Phase 1) (Phase 2)"

External Evaluator: Takako Haraguchi, International Development Associates, Ltd.

0. Summary

This project aimed to provide human resources that would meet needs of industry by opening and managing a practical education program in information technology (IT), based on the Japan's Skill Standards for IT Professionals (ITSS[1]), at Hanoi University of Science and Technology (HUST, formerly known as Hanoi University of Technology (HUT) till May 2010). The division of roles in the creation of the education program was as follows: (i) HUST was responsible for construction of school facilities and providing teaching and administration staff; (ii) a Japanese ODA Loan project, "Higher Education Development Support Project on ICT" (hereafter called "the ODA Loan project") was responsible for procurement of equipment, supporting students to study in Japan and hiring of/ technical transfer to lecturers in Japanese language; and (iii) this technical cooperation project was responsible for development of the program management system, development of the curriculum, syllabi and education materials as well as technical transfer to lecturers in IT-related subjects.

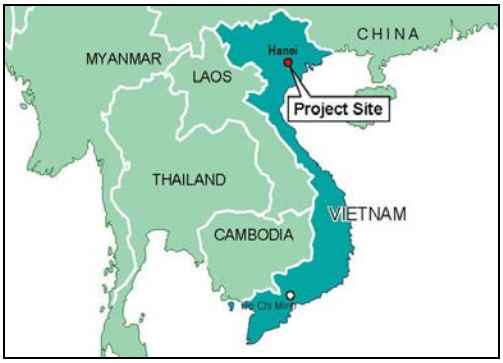
Relevance of this project is high since the project objectives were consistent with the Vietnam's development policies and development needs related to enhancement of higher education and promotion of IT as well as Japan's assistance policies. Effectiveness is also high considering that despite challenges such as delays in procurement of equipment, the management system and program contents were developed under Phase 1 and the program got off the ground under Phase 2, and accordingly, graduates who had both Japanese language skills and IT technical knowledge based on ITSS were produced. After project completion, it was observed that the program was run smoothly and many graduates were active as IT engineers. Regarding impacts, however, there is no objective means to verify the extent to which graduates reached the expected "ITSS level 3 equivalent." Therefore, effectiveness and impact as a whole are evaluated to be fair. Efficiency is high as both project cost and cooperation period were within the plan. Sustainability is evaluated to be fair as prospects for the institutional, technical and financial aspects of program management

[1] ITSS is a set of indicators defined by the Ministry of Economy, Trade and Industry of Japan to clarify and systematize skills required for provision of IT-related services. ITSS consists of the indicators ranging among Levels 1 and 2 (entry level), Levels 3 and 4 (middle level), and Levels 5 to 7 (high level) for each of 35 areas of specialization in 11 job categories (source: Information-Technology Promotion Agency, Japan (IPA) website).

after completion of the ODA Loan project in 2016 are somewhat unclear at the time of ex-post evaluation.

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

1. Project Description



Project Location

Students of the Vietnam-Japan Program (HEDSPI Program) of the School of Information and Communication Technology (SoICT), HUST

1.1 Background

In Vietnam, higher education institutions including those in the field of IT had objectives of conducting research and development and developing human resources of high quality in order to respond to the advancement of science and technology and to demand of society. However, higher education institutions were facing challenges such as excessive emphasis on study and acquisition of theory and knowledge, exercises/ laboratory work using older equipment and systems than those used in industry due to lack of facilities, equipment and funds, and insufficient knowledge among lecturers and technicians to make full use of advanced facilities and equipment. On the other hand, there was an increasing demand for Japanese-speaking IT engineers following the expansion of Japanese enterprises to the IT market in Vietnam.

Under such circumstances, the Vietnamese and Japanese ministers in charge announced a joint statement in June 2004 including a plan to provide IT engineering education in line with ITSS as part of the Asia IT Initiative, a Japan's international IT strategy. Within the framework of that statement, the Japan International Cooperation Agency (JICA) conducted the "Special Assistance for Project Formulation for the Higher Education Development Support Project (IT Sector)" (hereafter called "the SAPROF study") in June 2005, and developed a plan to establish an ITSS-based university education program in HUST as well as a draft curriculum for that program. This project constitutes the technical cooperation portion of an integrated JICA project, "Higher

Education Development Support Project on ICT" (hereafter called "HEDSPI" in distinction from the same-titled ODA Loan project that was the other component of HEDSPI) based on the above-mentioned plan. In this report, the education program that HEDSPI supported in establishment and management is called "HEDSPI Program" in accordance with the project plan as of ex-ante evaluation, while it is often called the "Vietnam-Japan Program" at HUST.

1.2 Project Outline

		Phase 1	Phase 2
Overall Goal		ITSS 3 equivalent level IT human resources are sufficiently provided to the IT and IT related fields.	
Project Purpose		The capacity to conduct the activities towards the establishment of the "School[2]" or its equivalent is developed.	1) Administration of HEDSPI Program functions as an educational body. 2) HEDSPI Program produces IT engineers who have enough basic knowledge on IT and Japanese language.
Output(s)	Output 1	The organization and the system for the "Program[3]" management are established.	The organization and the management system of the HEDSPI Program are established and strengthened.
	Output 2	The skills of staff (Teaching staff and Administration staff) are improved.	Collaboration system with industries is established.
	Output 3	The curriculum, syllabus and teaching materials, IT equipment for 1-3 grades undergraduate and some intensive courses are prepared in accordance with ITSS.	The syllabi, lecture scenarios, teaching materials and learning materials for undergraduate degree course are well prepared and revised regularly.
	Output 4	The 1-2 grades and some intensive courses are implemented.	The syllabi, lecture scenarios, teaching materials and learning materials for intensive course are well prepared and revised regularly.
	Output 5	The collaboration system with industries and other institutes is established.	Students are trained to have basic IT knowledge and Japanese language for IT industry through HEDSPI Program.
	Output 6	Information on IT and its related areas is collected from the market to improve the courses.	
	Output 7	Information on program is disseminated inside and outside of HUST.	

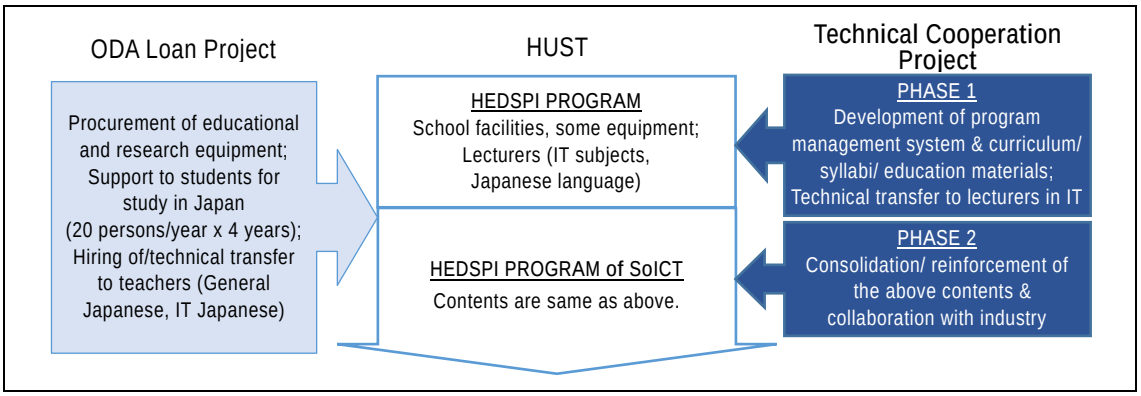
[2] School: an education / research institution that is independent (i.e. has its own official stamp and account) within a university. While placed in the same level as faculties in the organizational structure, schools enable high quality human resource development, integrated technical transfer and research. The school targeted by this project is called "School of ICT (SoICT)" after its official establishment.

[3] Program: a set of special education courses (undergraduate or postgraduate programs) offered at a faculty or school of a university. In each program, students selected from successful applicants to the university receive high quality education. Special programs with international cooperation such as HEDSPI Program are typical ones.

(Continued)

		Phase 1	Phase 2
Output(s)	Output 8	The preliminary works for establishing the "School" are carried out.	
Total cost (Japanese Side)		261 million yen	453 million yen
Period of Cooperation		October, 2006 – September, 2008	March, 2009 – February, 2012
Implementing Agency		Hanoi University of Science and Technology (HUST)	
Other Relevant Agencies / Organizations		Ministry of Education and Training (MOET) (Oversight Agency)	
Supporting Agency/Organization in Japan		Ritsumeikan / Keio Gijuku (Incorporated educational institutions entrusted with project implementation)	
Related Projects		"Higher Education Development Support Project on ICT" (Japanese ODA Loan project; Loan Agreement signed in March 2006; scheduled to be completed in 2016)	

Figure 1 shows the division of roles in implementation of HEDSPI: (i) HUST was responsible for construction of school facilities and providing teaching and administration staff; (ii) the ODA Loan project was responsible for procurement of equipment, supporting students to study in Japan and hiring of/ technical transfer to lecturers in Japanese language; and (iii) this technical cooperation project was responsible for development of the program management system, development of the curriculum, syllabi and education materials as well as technical transfer to lecturers in IT-related subjects.



Sources: Prepared based on JICA documents, etc.

Figure 1 Composition of HEDSPI

1.3 Outline of the Terminal Evaluation (Phase 2)[4]

1.3.1 Achievement Status of Project Purpose at the time of the Terminal Evaluation

Based on the finding that students equipped with capacity in IT and Japanese language were produced through establishment of the organizational structure of HEDSPI program and the system of collaboration with industry, it was evaluated that the project purpose was "almost achieved."

1.3.2 Achievement Status of Overall Goal at the time of the Terminal Evaluation (Phase 2)

Based on the findings such as graduates' high academic achievement and good employment situation, students' high motivation for learning Japanese language, increase in Japanese companies' expectations for HEDSPI Program, and utilization of the curriculum of HEDSPI Program in another education program, it was evaluated that the project was "progressing toward achievement (of the overall goal)" and "impact is high."

1.3.3 Recommendations at the time of the Terminal Evaluation (Phase 2)

In order to strengthen the HEDSPI Program's employment support and thus to enhance sustainability of the project, it was recommended that (i) the project carry out necessary activities for making use of the consortium of companies by the time of project completion, and that (ii) the Vietnamese side take over the employment support task from the Japanese expert team. In response to these recommendations, the Japanese expert team implemented technical transfer to the Project Implementation Unit (PIU) on the matters including procedures of organizing job fairs in cooperation with the consortium. At the time of ex-post evaluation, PIU continued the transferred activities such as job fairs inviting the consortium of companies (see "3.2.2 Impact").

2. Outline of the Evaluation Study

2.1 External Evaluator

Takako Haraguchi, International Development Associates, Ltd.

2.2 Duration of Evaluation Study

Duration of the Study: July, 2014 – June, 2015

Duration of the Field Study: September 27, 2014 – October 9, 2014 and January 11,

[4] As the result of the terminal evaluation for Phase 1 was not available, this section describes the result of terminal evaluation for Phase 2 only. The information source was the terminal evaluation summary.

2015 – January 16, 2015

2.3 Constraints during the Evaluation Study

As this project shared the common objectives and was implemented together with the ODA Loan project, the positive changes observed as effects and impacts of this project were effects and impacts of the ODA Loan project as well. In particular, it was hard to determine which part of benefits to students was attributable to this project. Also, this evaluation was too early to examine the institutional aspect of the implementing agency after project completion in a real sense, as the ODA Loan project has not been completed yet, and the organizational setting of the implementing agency is same as the one during the project implementation period, i.e., PIU that was established for implementation of the JICA project (HEDSPI) still exists at the time of ex-post evaluation.

3. Results of the Evaluation (Overall Rating: B[5])

3.1 Relevance (Rating: ③[6])

3.1.1 Relevance to the Development Plan of Vietnam

This project is consistent with the development policies at the times of both ex-ante evaluation and project completion in each phase. First, regarding higher education policies, national development plans such as the Socio-Economic Development Strategy (2001-2010), the Five-Year Socio-Economic Development Plan (2011-2015) and education sector plans such as the Education Development Strategic Plan (2001-2010) and the Education Strategic Development Plan (2011-2010) all aim to respond to the nation's requirement for modernization and industrialization through development of high quality human resources including those in IT by higher education institutions. For example, the Five-Year Socio-Economic Development Plan (2011-2015) places emphasis on promotion of the high-tech industry and utilization of high technology in all industries. Also, the Human Resources Development Plan (2011-2020) emphasizes development of internationally competitive human resources in business and industry, strengthening of research in science and technology, and strengthening of human resources taking a sight on international standards.

Second, IT policies such as "IT 2000" (the information sector master plan developed in 1995), the Five-Year Plan for Development of Software Industry (2006-2010), the Scheme to Early Make Vietnam a Country Strong in Information and

[5] A: Highly satisfactory, B: Satisfactory, C: Partially satisfactory, D: Unsatisfactory
[6] ③: High, ② Fair, ① Low

Communication Technologies (1755/QD-TTg; approved by Minister of Information and Communications of Vietnam; Government Decision dated September 22, 2010) consistently aim at promotion of IT as a growth area and development of IT human resources of international standard.

3.1.2 Relevance to the Development Needs of Vietnam

This project is consistent with the development needs at the times of both ex-ante evaluation and project completion in each phase. First, regarding higher education needs, there was a continuous need for improvement of education and research to respond to demand for industrialization of Vietnam as mentioned in "1.1 Background." Higher education enrollment ratio continued to rise during the period between the time of ex-ante evaluation of Phase 1 and completion of Phase 2 (16% in 2006 and 25% in 2012). However, higher education was still theory and knowledge-centered, and its quality did not meet human resource development demand in rapid industrialization and modernization. Therefore, besides 2.26 million students enrolled in higher education in 2012, around 110 thousand students were studying at universities abroad (mainly in Australia, the United States and China) in the same year. Also, universities jointly established with foreign universities appeared in Vietnam[7].

Second, regarding IT-related needs, the IT industry has been a fast-growing sector with high potential in Vietnam: during the implementation period of this project (2006-2012), both sales and labor force of the IT industry showed constant increase (Figure 2). While the hardware export (direct investment from Japan and Korea) accounted for majority of IT sales, the software industry and digital contents industry expanded as well, and high demand for human resources was seen following the development of web business[8]. Also, more Japanese companies started business in the Vietnam's IT market[9]. Expansion of offshore development by Japanese IT companies continued in Vietnam: according to the "IPA White Paper on IT Human Resources

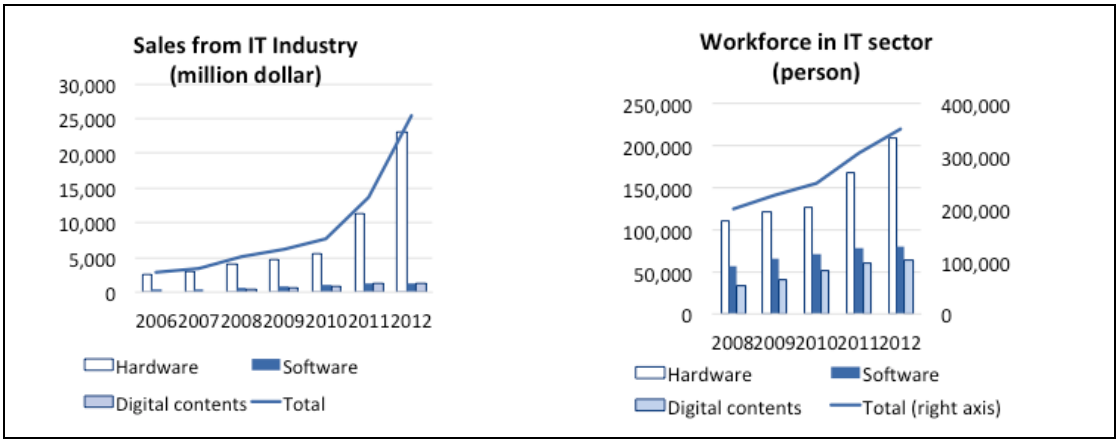
[7] For example, there are Vietnamese-German University (2008-), University of Science and Technology of Hanoi (between Vietnam and France, 2009-) and Vietnam-Japan College (2011-). The statistics mentioned in this paragraph were taken from the database of United Nations Educational, Scientific and Cultural Organization (UNESCO) Institute for Statistics.

[8] The information source is the "Information and Data on Information and Communication Technology (White Book on ICT)" 2009-2013 editions. According to this book, while the number of enterprises increased more than threefold between 2008 and 2012, the increase rate of the number of employees was 24% during the same period.

[9] According to Teikoku Databank, "*Betonamu Shinshutu Kigyo no Jittai Chosa* (survey on Japanese enterprises doing business in Vietnam) 2012," there were 1,542 Japanese-affiliated companies in Vietnam in 2012. Besides 725 companies in the manufacturing industry, 71 companies (4.6%) belonged to the software industry, which was the largest sub category of business.

2012" published by the Information-Technology Promotion Agency, Japan (IPA), Vietnam ranked top among the countries which Japanese IT companies were considering/ interested in as a place for offshore development. Similarly, in the interviews for the ex-post evaluation with parties related to Japanese companies, it was confirmed that there had been high demand for engineers equipped with high-level skills of Japanese language and IT throughout the project period[10].

Suitability of HUST as the implementing agency was high, too. HUST was a top university in engineering in Vietnam, and it was not only good for deploying advanced IT education in international cooperation but also good as a potential model to other universities[11].



Source: Prepared based on Ministry of Information and Communications, "Information and Data on Information and Communication Technology (White Book on ICT)" 2009-2013 editions.

Figure 2 Trends in the Size of the IT Industry in Vietnam

3.1.3 Relevance to Japan's ODA Policy

As stated in "1.1 Background," this project was to realize the "Asia IT Initiative" in Vietnam, and was thus relevant at the time of ex-ante evaluation of Phase 1. Also, assistance policies such as the Japan's Country Assistance Program for Vietnam

[10] The demand has been continuously high by the time of ex-post evaluation. According to Japan External Trade Organization (JETRO) Hanoi Office, different Japanese IT companies visit Vietnam almost every week. Also, it is envisaged that in addition to offshore development, demand for business targeted to the domestic market in Vietnam (e.g. computer-aided design (CAD) on contract, call centers, digitization of books, etc.) will increase.

[11] The initial targeted university was Vietnam National University, Hanoi (directly under the Prime Minister) at the time of the SAPROF study. In the course of project formulation, it was decided to change the targeted university to the one under the jurisdiction of MOET, and HUST was selected from among several candidates. In regard to the role of HEDSPI Program as a model program of advanced IT education to demonstrate to other universities, some documents related the SAPROF study and the ODA Loan project describe about such role. However, neither of the ex-ante evaluation reports of this project and the ODA Loan project clearly states the development and dissemination of a model as its objective. Therefore, at least in this ex-post evaluation, the question, "whether HEDSPI Program played a role of a model education program" is dealt with in "3.2.2.3 Other Impacts."

(2004) held IT and human resource development as the priority areas for "promotion of growth," one of the three pillars for Japan's assistance to Vietnam.

This project was highly relevant to Vietnam's development plan and development needs, as well as Japan's ODA policy. Therefore, its relevance is high.

3.2 Effectiveness and Impact[12] (Rating:②)

3.2.1 Effectiveness

3.2.1.1 Achievement of Project Purpose of Phase 1[13]

This project was implemented with the idea of launching an education program (HEDSPI Program) under Phase 1, and once it becomes ready, setting up a school as a more permanent institution to position HEDSPI Program within it, and then consolidating the management of HEDSPI Program under Phase 2. Toward such an idea, Phase 1 planned activities including development of the program management system and course contents, management of undergraduate courses and trial run of adult education courses, and transfer of teaching methods.

In September 2006, right before the start of Phase 1, the undergraduate education of HEDSPI Program started with 121 students of Batch 1 selected from among those who got excellent scores in the examination to enroll to HUST. The project faced hardship in carrying out course management and development of the management system simultaneously, particularly under circumstances where the implementation of the ODA Loan project and the arrival of Japanese experts were delayed.[14] Nevertheless, the management system of the program to learn ITSS-based knowledge and technologies and Japanese language was developed mostly as planned. This was made possible through technical transfer mainly on development of curriculum, syllabi and course materials by the Japanese side, organizational arrangement and preparation for establishment of a school by the

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[12] Sub-rating for Effectiveness is to be put with consideration of Impact.

[13] It was not clear from the ex-ante evaluation report what the indicators of the project purpose specifically meant. In this ex-post evaluation, based on the text of the project purpose, "The capacity … is developed," its two indicators were put together and interpreted as the situation of development of institutional settings of HUST toward establishment of a school. Accordingly, the degree of achievement of the project purpose was assessed in the light of the degree of achievement of the outputs, each of which represents different aspects of the institutional settings to be developed (Table 1). In doing so, more weight was given to the undergraduate component rather than intensive courses (adult education) between the two constituents of HEDSPI Program, as the former was the main component of university education. For the statuses of achievement of individual outputs, see the table at the end of this report.

[14] The delays were mainly due to the MOET's belated approval of the feasibility study (F/S), the master plan of HEDSPI. As stated in Footnote 11, MOET became the responsible ministry for this project in the middle of the project formulation process. Therefore, it was hard for them to proceed with the plan that they had not prepared (information source: interview with MOET). In the first year of HEDSPI Program, classes were conducted using the draft curriculum developed in the SAPROF study and existing syllabi/ education materials of the Faculty of IT (to which most of the lecturers of HEDSPI Program belonged).

Vietnamese side, and procurement of education equipment, etc., hiring of teaching staff in Japanese language, and sending selected students to Japan for study by the ODA Loan project.

Negative effects of the implementation delays were minimized in the following ways: the same Japanese universities had consistently been involved in project implementation since drafting of the curriculum in the SAPROF study; subject-specific Japanese experts who were teaching personnel of the above-mentioned Japanese universities proposed and took countermeasures against non-arrival of equipment in a way, based on the understanding of the aims of HEDSPI Program, that was most suitable to the characteristics of each subject; and Japanese experts specialized in university administration undertook overall progress management. Other issues include failure to fully introduce the management system that the Japanese expert team had initially intended[15], and slow progress of development of intensive courses for working people[16]. Nevertheless, the successful part of the outputs (i.e. provision of undergraduate education) constituted the central factor of the project purpose (i.e. program management system), which enabled students to receive education as planed. Then, at the time of completion of Phase 1, HUST was ready to establish a school integrating HEDSPI Program and the existing Faculty of IT. Therefore, it can be said that the project purpose of Phase 1 was mostly achieved while there were some issues.

Table 1 Achievement of Project Purpose (Phase 1)

Project Purpose	Indicator	Actual
The capacity to conduct the activities towards the establishment of the "School" or its equivalent is developed.	1) The Inputs are made according to the plan.	If interpreting "The Inputs" as the inputs to this project, they were implemented mostly as planned on both Japanese and Vietnamese sides (see "3.3 Efficiency").
	2) The function of the "Program" is improved enough to establish the "School" or its equivalent.	HUST (mainly Faculty of IT) prepared the proposal to establish a school and submitted it to MOET on May 22, 2008 (same as the achievement status of Output 8).

Sources: Response from the implementing agency; JICA documents.

[15] This project aimed to introduce the administration system of Japanese universities, propose the system to be introduced in HEDSPI Program, and strengthen capacity of the administration section necessary for such a system. However, the Japanese side could not fully conduct technical transfer as initially expected due to high confidentiality in some areas such as personnel and budget affairs. Nevertheless, the management system was clearly identified as both the Vietnamese side and the Japanese side played their own roles that were clarified by a manual.

[16] It was planned that intensive courses would provide the contents of the summer intensive courses for undergraduate education to working people. However, such a plan was abandoned for the following reasons: (i) development of undergraduate courses were prioritized; (ii) lecturers of HEDSPI Program had little experience in IT industry, and thus they were reluctant to teach applied IT technologies to engineers in the field; and (iii) procurement of communications equipment was delayed (under the ODA Loan project).

3.2.1.2 Achievement of Project Purpose of Phase 2[17]

Under Phase 2, HEDSPI Program was continuously run as a special program of SoICT, which was established as planned (opened in the academic year 2009). Collaboration with companies was fully deployed in internship and job placement through establishment of a consortium of Japanese companies. While the issue of management continued from Phase 1, HEDSPI Program itself was run almost steadily. Intensive courses remained an issue from Phase 1 as well: the project finally managed to start offering intensive courses, but some of them were cancelled due to an insufficient number of applicants.

Academic performance of undergraduate students was mostly good in terms of both Japanese language and IT knowledge. By the time of project completion, 111 students of Batch 1 graduated from HEDSPI Program (91 students from HUST and 20 students from universities in Japan). Two of them graduated at the top of their classes at Ritsumeikan University and Keio University, respectively, in Japan. Most graduates got jobs in IT companies, majority of which were Japanese companies. Current students and graduates are satisfied with HEDSPI Program because of its richer educational environment and curriculum than the existing Faculty of IT, opportunity to learn both Japanese language and IT knowledge of international standard and large opportunity for studying in Japan and finding good jobs. Based on these findings, it can be said that the first project purpose (management of the program) and the second project purpose (production of IT engineers) were mostly achieved.

Table 2 Achievement of Project Purpose (Phase 2)

Project Purpose	Indicator	Actual
1.Administration of HEDSPI Program functions as an educational body.	1) HEDSPI Master Plan is approved by HUST.	Achieved. The proposal to establish SoICT was approved by HUST and then submitted to MOET. Based on the ministerial decree dated May 19, 2009, SoICT was established as a school including HEDSPI Program.
	2) Progress of the action plan is monitored periodically and revised when necessary.	Mostly achieved with some issues. Some management issues specifically for the Japanese side continued from Phase 1 (e.g. some information was not shared by the Vietnamese side unless inquired by the Japanese side, meetings proposed by the Japanese side did not function as expected, etc.). Nevertheless, HEDSPI Program itself was run smoothly based on the division of roles between the Vietnamese side and the Japanese side and through joint undertakings of progress management by means of weekly PIU meetings.

[17] While all indicators of the project purpose of Phase 2 were considered to be equally important, this ex-post evaluation applied the same judgment criterion to both phases, i.e., among the program components, more importance was placed on achievements of undergraduate education (a main part of university education) rather than intensive courses for adult education, taking into consideration of logical connection between the project purpose and the outputs.

(Table 2 continued)

2) HEDSPI Program produces IT engineers who have enough basic knowledge on IT and Japanese language.	1) Students are satisfied with HEDSPI Program itself.	Achieved. In the interview with students before going to Japan at the time of terminal evaluation, students showed their satisfaction with the facilities/equipment, syllabi, opportunity to study in Japan, etc. that were largely different from other universities in Vietnam.
	2) The percentage of graduate who can get job in IT related fields as their choice.	Achieved. Most graduates chose their places of employment according to their own wishes. Students' career after graduation was as follows: ・ Batch 1 graduates from HUST (not sent to Japan for study) (79 persons): 21 joined Japanese-affiliated companies, 32 joined Vietnamese companies mainly doing business with Japanese companies, 19 joined other foreign companies, etc., 7 went on to graduate school. ・ Batch 1 graduates from universities in Japan (20 persons): 16 joined private companies (breakdown of nationality not available), 3 joined universities, 1 joined MOET. The companies were all in IT related fields.
	3) Number of graduate students working in Japanese IT companies in using Japanese language.	Mostly achieved. 21 of Batch 1 graduates from HUST (not sent to Japan for study) joined Japanese-affiliated companies, of which 9 persons chose to work in Japan. According to PIU, most graduates, including Batch 1 graduates from universities in Japan who got jobs at non Japanese-affiliated IT companies, used Japanese language at work. Therefore, it is considered the degree of achievement of this indicator is satisfactory.
	4) The number of the applicants to HEDSPI Program increases.	Not achieved. The number of applicants remained unchanged. However, that is not a cause for concern as the number was always high (2-3 times as many as the enrollment limit).

Sources: Terminal evaluation report of Phase 2; response from the implementing agency; JICA documents.
Note: In the indicator statement of the PDM, HUST was called "HUT" as it was at that time of ex-ante evaluation.

As above, the project mostly achieved its purposes in both Phase 1 and Phase 2.

3.2.2 Impact

The overall goal common to Phases 1 and Phase 2, "ITSS 3 equivalent level IT human resources are sufficiently provided to the IT and IT related fields," was expected to be achieved in 3-5 years after graduation of Batch 1 students, namely, in 2014-2016. This section first describes the status of HEDSPI Program after completion of this project, and then examines the degree of achievement of the overall goal mainly based on the data as of 2014.

3.2.2.1 Status of HEDSPI Program toward Achievement of Overall Goal after Project Completion

After completion of this project, the undergraduate component of HEDSPI Program has been run mostly well. As an extension of the ODA Loan project (up to 2016)[18] is expected, the program is still managed by PIU. Similarly to during project implementation, students are selected from among 2-3 times as many applicants as the enrollment limit of 120 persons. As of the academic year 2014, HEDSPI Program enrolled students up to Batch 9 and produced a total of 382 graduates of Batches 1-4. Current students (Batches 5-9) are mostly satisfied with HEDSPI Program except with its facilities and equipment (Table 3).

Table 3 Students' Satisfaction with HEDSPI Program and Degree of Fulfillment of Their Expectations upon Application

Question		Score
Satisfaction of current students with HEDSPI Program (n=48): "I'm satisfied with..."		
Course contents of General Japanese		4.4
Capacity of lecturers in General Japanese		4.4
Capacity of lecturers in IT subjects		4.3
Capacity of lecturers in IT Japanese		4.3
Course contents of IT Japanese		4.1
Opportunity to contact companies		4.1
Administration office (PIU)		3.7
Course contents of IT subjects		3.6
Facilities and equipment (including library books)		3.0
"My expectation for HEDSPI Program upon application was met."	Current students (n=48)	4.1
	Graduates (n=24)	4.2

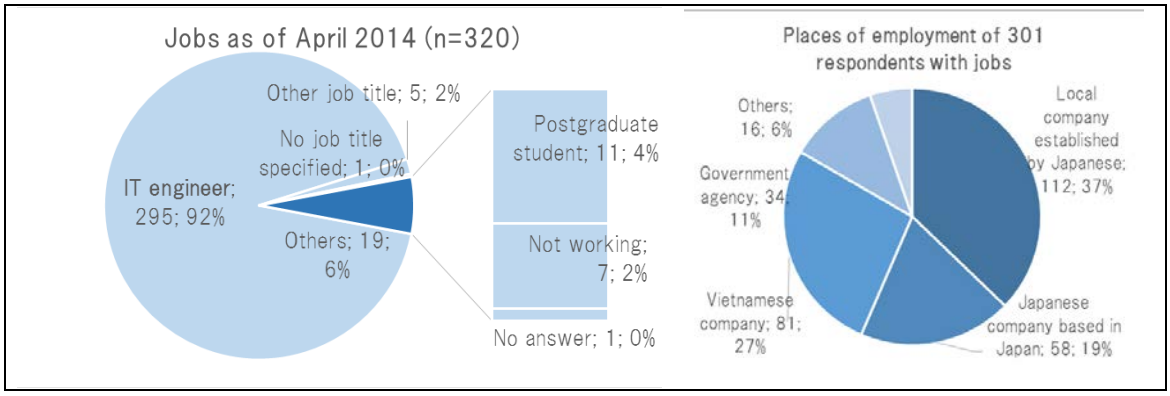
Source: Beneficiary survey.
Note: Each score is the average of responses to the concerned question ranging from 1 point ("Strongly Disagree") to 5 points ("Strongly Agree"). Many respondents also pointed out that they were satisfied with brilliant classmates with whom they worked hard and learned from each other.

There are some concerns on managing the undergraduate courses. The first is a decrease in students' motivation due to the loss of opportunity to study in Japan after the ODA Loan project fulfilled its plan of sending Batch 1-4 students to Japan. The second is a decrease in students' willingness to learn and skill level of Japanese language since (i) the termination of contract with Japanese lecturers in Japanese language (General Japanese and IT Japanese) following the expiration of the project implementation period, and (ii) the leaving of Vietnamese lecturers in General Japanese due to unstable employment status (see also "3.4 Sustainability"). In response to such a situation, PIU has tried to maintain the motivation level of students by means such as arranging Japanese IT engineers as advisors in IT Japanese classes (based on an agreement concluded with a Japanese-affiliated company) and providing more opportunity of internship. The consortium of companies created under this project has continued, providing opportunity of

[18] The implementation period of the ODA Loan project expired in June 2014, while leaving some uncompleted equipment procurement plan and an additional plan. At the time of this ex-post evaluation, the project is in a process of requesting the Vietnamese government for extension of the implementation period up to August 2016, i.e., by the end of the Loan Agreement period.

internship and employment. Upon completion of the project, a Japanese lecturer in IT Japanese took over the coordination task for the consortium. After the contract with Japanese lecturers was terminated, the coordination is undertaken by PIU.

Regarding graduates' employment status, a study conducted by PIU in April 2014 found that 295 (92%) out of the 320 respondents[19] from Batches 1-3 were working as IT engineers mostly at Japanese-affiliated and Vietnamese companies (Figure 3)[20]. Similarly, the questionnaire survey conducted for this ex-post evaluation in November 2014 showed that 22 out of the 24 respondent graduates were IT engineers of either Japanese-affiliated companies or Vietnamese companies whose customers were Japanese companies. Interviews with some of them also revealed graduates were active in their respective workplaces[21].



Source: Prepared based on data provided by the implementing agency.
Note: No difference by year of matriculation was seen.

Figure 3 Employment Situation of Batch 1-3 Students of HEDSPI Program

On the other hand, no intensive courses have been organized since project completion. According to PIU, while SoICT has provided adult education courses focused more on core technology a few times a year, it would be difficult for

[19] 291 out of 320 respondents were graduates. It was explained that the study covered students who started working without graduating from HUST as well.
[20] Out of the 295 IT engineers, 60 persons (20%) were living in Japan and 234 persons (79%) were living in Vietnam. There was no significant difference in this ratio by year of matriculation. According to JETRO Hanoi Office that coordinates meetings where Japanese companies and Japan-related companies exchange views on IT, participating companies' demand for graduates of HEDSPI Program is still very high, and there is a path in which Japanese companies train HEDSPI Program graduates they recruited as executive candidates for a few years in their head offices in Japan, and then assign them as presidents of their local subsidiaries.
[21] Careers of the nine graduates interviewed were as follows: founder of a software company mainly targeted to Japanese companies; employees of that company; one who joined the head office of a Japanese system integration company where he had worked part-time during his study in Japan, and then came back to Vietnam to take up the post of president of the newly-founded Japanese subsidiary of that system integration company; ex-employees of the local subsidiary of a Japanese game development company now working at its head office in Japan; a graduate student in Japan after working in Japan; etc.

university lecturers to teach front line engineers in courses such as the ones developed under this project that dealt with applied technology.

Posters made by students in IT Japanese class, where. In IT Japanese, students learn not only IT terminology in Japanese but also project management through model projects of systems development in Japanese.

IT Japanese class.

Software company funded by a graduate. It employed a number of graduates.

3.2.2.2 Achievement of Overall Goal[22]

As mentioned above, it is estimated that majority of graduates are active as IT

[22] The ex-ante evaluation report did not clearly describe specific means to measure the indicator of the overall goal as well as the target year and target value. In this ex-post evaluation, the judgment was made with reference to the followings:

- Measurement: To check whether graduates reached the ITSS Level 3 "equivalent," this evaluation first used (i) the number of passers of the Information Technology Professionals Examination Council (ITPEC) Common Examination as the most objective indicator. The ITPEC Common Examination is an examination that IPA has disseminated to Asian countries as a compatible to the Japan's Information Technology Engineers Examination (ITEE). In Vietnam, the Vietnam Training and Examination Center (VITEC) administers the ITPEC Common Examination. Next, as a qualitative indicator, the evaluation used (ii) the number of graduates who satisfied the requirements for Level 3 defined by IPA as the "evaluation indicator without using ITEE," namely, "Can accomplish all required tasks without help. Trying to establish a specialized area of one's skills. Has applicative knowledge and skills necessary to be a professional. Continuous improvement of one's skills is required in skill development." (Source: IPA, "*IT Sukiru Hyojun Hayawakari* (quick guide to ITSS)," 2011).
- Target year: The overall goal aimed to "sufficiently" provide Level 3 equivalent engineers. Also, according to JICA documents, it seemed that this project had an idea to set the target year at 3-5 years after graduation of students. On the other hand, the ODA Loan project set the operation and effect indicators as "10% of graduates pass the examination on ITSS Level 3 equivalent in 2 years after graduation." Putting these together, this ex-post evaluation checked the result in 3 years after graduation. The ex-post evaluation was conducted in the academic year 2014, which was after 3 years since the graduation of Batch 1 students.
- Target value: (i) For the quantitative indicator, the operation and effect indicator of the ODA Loan project was used and the target value for ex-post evaluation was set at 10% of graduates. (ii) For the qualitative indicator, considering that the overall goal is to "sufficiently" provide Level 3 equivalent IT engineers, the target value was roughly set at 80% of graduates.

engineers at Japanese companies or Vietnamese companies doing business with Japanese companies. However, that finding is not enough to prove the achievement of the indicator of the overall goal. First, the degree of achievement of the quantitative indicator cannot be accurately judged using the result of the Information Technology Professionals Examination Council (ITPEC) Common Examination (corresponding to the Information Technology Engineers Examination (ITEE). See the footnote 22), which is an objective measure of knowledge and skills of "ITSS Level 3 equivalent." This is because the number of examinees is small as the examination has not been widespread in Vietnam.

Second, as for the qualitative indicator, it was confirmed from the questionnaire/ interview survey with graduates and their employers that some graduates satisfy the requirements for Level 3. However, they did not account for 80% of respondents (the rough target), and the number of respondents was too small to correctly estimate how many of the total number of graduates are qualified that way. Also, several interviewed companies commented that there was no difference in technical capacity between HEDSPI Program graduates and IT engineers who graduated from other universities in Vietnam. Therefore, it is difficult to identify the impact specifically brought about by this project.

With regard to the ITPEC Common Examination, expectations on spread of ITSS is increasing as it was arranged that starting in November 2013, passers of the ITPEC Fundamental Information Technology Engineer Examination (FE Exam, equivalent to ITSS Level 2) or higher-level examinations in member countries of ITPEC including Vietnam are qualified for Japanese engineer visas for 3 years or longer[23].

As stated above, despite the observation of the effect that most graduates of HEDSPI Program were active as IT engineers, it cannot be confirmed whether such graduates well reached ITSS Level 3 as expected. Therefore, the project has achieved its overall goal at a limited level.

[23] Source: Public Notice of the Ministry of Justice, No. 437. According to VITEC, workers without engineer visas have to come back to Vietnam every six months.

Table 4 Achievement of Overall Goal

Overall Goal	Indicator	Actual
ITSS 3 equivalent level IT human resources are sufficiently provided to the IT and IT related fields.	Number of graduated students who have already been engaged in IT related fields in having the skill of ITSS 3 equivalent level (i) (Quantitative indicator) Number of passers of ITPEC Common Examination (IEEE)	(i) Achievement level is not clear. While in school, 11 HEDSPI Program students took the Level 3 equivalent examination, namely, Software Design and Development Examination (SW Exam, until April 2010) or Applied Information Technology Examination (AP Exam, after November 2011), and two of them (Batch 2 and Batch 3) passed it. While the number of passers among graduates is unknown, it was confirmed that at least one of them passed. During the same period, however, 16 out of 157 examinees passed the same exam in the entire country. (Reference information) The number of HEDSPI Program students who passed the Level 2-equivalent FE Exam while in school (its proportion to the total number of students in their respective batch): 79 students (77%) of Batch 1; 64 students (60%) of Batch 2; 46 students (35%) of Batch 3; and 37 students (36%) of Batch 4 (those studying in Japan were not counted since they did not take the exam in Vietnam).
	(ii) (Qualitative indicator) Number of graduates who can accomplish all required tasks without help as IT engineers	(ii) The number is not available. Out of the 24 graduates who responded to the questionnaire survey at the time of ex-post evaluation, 6 persons agreed to the statement, "I have skills equivalent to ITSS Level 3." Also, 3 out of the 5 persons from IT companies who responded to the survey (the part for employers) agreed to the statement, "Recruited HEDSPI Program graduates have skills equivalent to ITSS Level 3." (Reference information) Respondents from IT companies commented as follows: "Graduates with sense reach the mentioned level in one year after joining my company;" "Graduates reach the mentioned level after in-house training;" "The answer depends on definition of "required tasks;"" "The overall level is not clear because we only recruit graduates from universities in Japan;" "The level depends on individuals;" "The overall level can be Level 2, but in some specific areas such as software development for personal computers, it is possible to say graduates have Level 3 skills;" "It is not only that HEDSPI Program graduates have high skill levels but graduates from IT faculties / departments of other universities in Vietnam are on the same level." (The last opinion was heard from all of the three Japanese employers interviewed.)

Source: Ministry of Economy, Trade and Industry, "*Joho Shori Gijutsusha Shiken to IT Sukiru Hyojun* (ITEE and ITSS)," 2004; IPA website; response from the implementing agency; response from ex-Japanese experts; beneficiary survey; response and data from VITEC.
Note: Descriptions of (i) and (ii) in the "Indicator" column are definitions by the evaluator.

3.2.2.3 Other Impacts

1) Impact on other universities in Vietnam

For one case, SoICT opened a new special program in 2009 using the curriculum of HEDSPI Program and conducting classes in English. 40 students are enrolled in the program every year. For another case, a Vietnamese leading IT company established a private university that provides education based on the HEDSPI

Program's concept of "teaching IT in Japanese," to address an issue that in spite of recruiting many HEDSPI Program graduates every year, the number of new hires cannot fulfill its target. Although within the same school, the former case shows expansion of HEDSPI Program as a model education program (in the latter case, the curriculum of HEDSPI Program is not used). However, "expansion of the program to other universities," the expected status at the beginning of the project, has not taken place yet[24].

2) Impact on universities in Japan

As impacts on Japanese universities, ex-Japanese experts (teaching and administrative staff of universities in Japan) pointed out that the universities secured good foreign students (transferred to the third grade) and that participating in this project became one of the universities' achievements in large-scale international cooperation. Primarily, these are directly attributed to the fact that (i) the students sent to Japan were the best 20 students of each batch (every year) of HEDSPI Program students, who were all selected from among top-level students and that (ii) under the ODA Loan project, the component of supporting students for study in Japan was implemented in accordance with the plan. Nonetheless, the impacts may not have materialized if this project did not support, in terms of curriculum and program management, the education of each of those students for three years from matriculation to departure for Japan.

Since this project has to some extent achieved the project purpose and overall goal, effectiveness and impact of the project are evaluated to be fair. For the project purpose, while there were problems in intensive courses for working engineers, the undergraduate courses were established and managed mostly as planned. As for the achievement of the overall goal, more than 90% of graduates were active as IT engineers after project completion, and some of them are considered to have reached "ITSS Level 3 equivalent," the expected target. However, there was no means to correctly measure such

[24] According to PIU, it received inquiries from some universities on the curriculum of HEDSPI Program, but such universities did not adopt the curriculum due to their insufficient teaching and learning conditions (e.g. equipment and lecturers). On the other hand, Keio University, which was entrusted with implementation of this project, is planning to start an exchange program with another university in Vietnam based on the experience of accepting students from Vietnam (transferred to the third grade) under HEDSPI Program. In addition, although it was primarily an impact of the ODA Loan project, there were cases in which lecturers of HEDSPI Program who were sent to Japan for postgraduate degree became lecturers of other universities after their return to Vietnam (3 persons who got the doctoral degree and 9 persons who got the master's degree.) According to PIU, research outputs of lecturers (e.g. the number of research projects engaged and the number of papers published) have increased, but it is not be associated to this project.

results, and the observed improvement of the skills of graduates was not identified as impact of this project.

3.3 Efficiency (Rating: ③)

3.3.1 Inputs

Table 5 Planned and Actual Inputs

Inputs	Plan	Actual (Project completion)
(1) Experts	Number not mentioned	Total 138 MM* (Phase 1) 21 persons (49 MM) (Phase 2) 33 persons (89 MM)
(2) Trainees received	Number not mentioned	Total 38 persons (Phase 1) 14 persons (Phase 2) 24 persons
(3) Equipment	Not mentioned	(Phase 2) 1 million yen (office equipment, etc.)
Japanese side Total Project Cost	Total 740 million yen (Phase 1) 270 million yen (Phase 2) 470 million yen	Total 714 million yen (Phase 1) 261 million yen (Phase 2) 453 million yen
Vietnamese side Operational Expenses	Not clear	Preparation of office and meeting rooms necessary for project implementation; purchase of equipment 23,763 million dong (approx. 174 million yen)

Sources: Ex-ante evaluation report; JICA documents.
Notes: * MM stands for man month. Exchange rate applied was 1 dong = 0.0073 yen (2006).

3.3.1.1 Elements of Inputs

The elements of inputs of this project are considered to be mostly appropriate to produce the outputs. First, on the Japanese side, the areas of cooperation by experts consisted of the management areas and the technical areas (common subjects such as mathematics and electronic engineering, IT-related subjects and ITSS/ETSS (Embedded IT Skill Standard) practice/ intensive courses), which were flexibly adjusted to cope with a change in policy of the organization entrusted with project implementation and additional work items during project implementation period[25]. It can be said that the inputs implemented for the unproduced part of the outputs (i.e. those related to the intensive courses that were not realized) were wasted, although

[25] For example, in response to a policy change that made it difficult for teaching staff to leave their university in Japan for long period, each expert (teaching staff) covered several subjects. Also, to develop the syllabus of IT Japanese that was added to the scope of work of experts, assignment of IT-related subjects was adjusted.

the volume of such inputs was only a small part of the total inputs[26].

Next, no major problem was seen in the Vietnamese side inputs, either. In the initial stage of project implementation, the implementing agency's understanding of the project was not high enough due to some factors including transfer of the vice rector (who played a central role in the project formulation stage) right after the commencement of the project. Such a situation affected technical transfer, but as the activities progressed, the implementing agency deepened their understanding. The construction of a new school building and renovation of existing buildings on HUST budget had been implemented as planned.

3.3.1.2 Project Cost

The project cost was lower than planned in each phase as well in total (96% of the planned total of Phases 1 and 2 costs).

3.3.1.3 Period of Cooperation

The cooperation period was also shorter than planned in each phase as well as in total (90% of the planned total period from the start of Phase 1 to the completion of Phase 2)[27].

Both the project cost and project period were within the plan. Therefore, efficiency of the project is high. Although the intensive courses were partly delayed or not implemented, that is not a big factor in evaluation judgment as intensive courses constituted only a small part in terms of both inputs and outputs.

3.4 Sustainability (Rating: ②)

Overall, sustainability should be checked in terms of (i) continuous operation of HEDSPI Program and (ii) consequent good performance of IT human resources equipped with Japanese language and ITSS-based technical knowledge.

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[26] In Phase 1, the volume of inputs related to intensive courses (calculated at 7 MM or less by the ex-post evaluator) was not enough in a sense that the syllabi for intensive courses were not completed in time. However, it is also possible to say the volume was enough considering that intensive courses were not the main courses of HEDSPI Program. In Phase 2, on the other hand, some of the intensive courses were not implemented despite the course development was completed. In that sense, part of the expert input (calculated at 6 MM or less) was wasted.

[27] Some JICA documents related to Phase 2 reported about transition from Phase 1 and Phase 2 as follows: the discontinuation of technical cooperation during the transition period between Phase 1 and Phase 2 (there was a five-month blank period between the two phases) led to taking of time in Phase 2; and as assistance from Japan once stopped, it took time to restore the trust relationship between the Vietnamese and Japanese sides of the project. According to PIU at the time of ex-post evaluation, there was no particular problem of that kind as they were aware that there would be Phase 2. Although the real situation at that time is not clear, the activities of Phase 2 completed within the planned period and did no affect production of the outputs.

3.4.1 Related Policy and Institutional Aspects for the Sustainability of Project Effects

For sustaining project effects in the policy and institutional aspects, development policies in higher education and IT should place emphasis on development of IT human resources. First, the policies mentioned in “3.1 Relevance” are all still effective at the time of ex-post evaluation. Next, the National Strategy for Science and Technology Development (2011-2020) (announced in April 2012) holds IT as the most important area for development, promoting research and development and technology transfer in each field of hardware, software and digital contents. In addition, as described in “3.2.2 Impact,” a preferential treatment in issuing Japanese visas for passers of the ITPEC Common Examination started in 2013, which enhanced advantage of HEDSPI Program that offers ITSS-based courses and encourages students to take the Common Examination.

Therefore, conditions are secured for sustainability of project effects in the policy and institutional aspects.

3.4.2 Organizational Aspects of the Implementing Agency for the Sustainability of Project Effects

In the organizational aspects, a management system of HEDSPI Program is required within HUST for sustainability of effects of this project.

At the time of ex-post evaluation, HUST has 22 faculties or schools and 20 research institutions. Among them, SoICT consists of five departments (former Faculty of IT,) HEDSPI Program and English Program on IT (using the curriculum of HEDSPI Program). No major changes have occurred to organization of HUST/SoICT since the project implementation period.

Since the time of establishment of HEDSPI Program, PIU has functioned as a project office of HEDSPI (a JICA project) and as the administration office of HEDSPI Program (an education program) simultaneously. At the time of ex-post evaluation, the number of PIU staff is 12 persons of whom 9 persons are SoICT staff members and 3 persons are hired by the ODA Loan project. According to PIU, there is no problem in assignment of personnel.

There are some concerns. The first is on the prospect of continuation of HEDSPI Program and its implementation set-ups after completion of the ODA Loan project in 2016. The vice rector (in charge of HEDSPI) of HUST and the dean of SoICT said that they plan to continue HEDSPI Program and maintain the current form of PIU as the administration office of SoICT. However, as it will be in 2016 when the implementation structure needs to be changed, there is no official document on the

future of HEDSPI Program at the time of ex-post evaluation[28].

The second concern is on the prospect of securing Japanese language lecturers. As mentioned in "3.2.2 Impact," the contract with Japanese lecturers was terminated and several Vietnamese lecturers left their jobs one after another. According to PIU, HUST is a university in engineering subjects and therefore it is difficult to hire more than one Japanese language lecturers as permanent employees. As a solution, it is planned to conclude an agreement with a foreign language department of another university on dispatch of Japanese language lecturers, although the plan has not been concretized yet.

The third concern is on the prospect of continuing collaboration with industry. Although companies have kept accepting interns and participating in job fairs, the interviews revealed that many of them are solely interested in recruiting graduates of HEDSPI Program. Therefore, continuity of collaboration may depend on whether HEDSPI Program can keep producing high quality human resources without JICA's assistance. At the time of ex-post evaluation, it is not clear whether the loss of Japanese language lecturers in the academic year 2014 will affect the teaching level of HEDSPI Program. Besides that, considering the current circumstances that multifaceted cooperation relationship such as participation in intensive courses and joint research has not been built, it is difficult to conclude the prospect of collaboration is certain[29].

Therefore, the organizational aspect has some problems to sustain project effects.

3.4.3 Technical Aspects of the Implementing Agency for the Sustainability of Project Effects

For sustainability in the technical aspect, SoICT/HEDSPI administrative personnel need skills in program management and maintenance of facilities/equipment, lecturers in IT subjects need knowledge and skills for updating of the curriculum and syllabi, and lecturers in Japanese language need skills of Japanese language and Japanese language teaching.

[28] Based on the responses to the questionnaire and interview. The Faculty of IT (predecessor of SoICT) once opened a French special program with assistance from the government of France, but the program was closed in 2009 following the termination of financial assistance. According to PIU, HEDSPI Program would not follow the same path, as demand for Japanese-speaking engineers is higher than French-speaking engineers.

[29] Under the ODA Loan project, a component named "IT Laboratories" is being planned as an additional activity for 2015-2016. The purpose is to facilitate joint research with companies through development of research laboratories. It is planned to start the activity as soon as the government of Vietnam approves the proposal for extension of the implementation period of the ODA Loan project.

No problem is seen in skill level of administrative staff and teaching staff in IT subjects at the time of ex-post evaluation. PIU staff has managed the courses without trouble after completion of this project. After completion of the ODA Loan project, SoICT plans to continuously assign the same staff members as administrative officers of HEDSPI Program. Lecturers in IT subjects have revised their syllabi and education materials in response to feedback from students and have incorporated information on up-to-date IT trends[30].

Table 6 Lecturers' Opinions on the Curriculum, Syllabi, etc. (n=12)

Question	Score
The curriculum can meet current human resource demand in IT sector.	4.4
The syllabi and education materials I use can meet current human resource development demand in IT sector.	4.3
"The Syllabus/Education Materials Manual" is still useful.	4.2
The syllabi and education materials are updated upon necessity after completion of assistance from Japanese experts in May 2012.	4.0

Source: Beneficiary survey.
Note: Each score is the average of responses to the concerned question ranging from 1 point ("Strongly Disagree") to 5 points ("Strongly Agree").

There is a small concern on revision of the curriculum. The latest version of the curriculum was published for the academic year 2011. According to a rule of HUST, curriculums should be updated every 3-4 years. While the part of the curriculum related to Japanese language was updated in 2014, there is no immediate plan to update the part related to IT subjects. Comments provided by IT-related informants (ex-Japanese experts, Japanese-affiliated companies, an IT engineer of a Vietnamese company who is not related to Japan, etc.) on appropriateness of the IT-related part of the curriculum are divided in the two arguments. On one hand, opinions are summarized, "The curriculum is good enough for learning the basics at the undergraduate level. Lecturers can reflect advanced knowledge and technologies by updating syllabi and education materials (as they currently do in HEDSPI Program) and by taking up such topics in graduation work." "Different companies require different advanced technologies. Therefore, it is enough for students to learn necessary technologies after they are employed." On the other hand, opposite opinions can be summarized, "The curriculum is old for producing industry-ready engineers in the mainstream technology areas today." Considering these opinions, the present curriculum may not be necessarily too old but it had better be updated before too long.

[30] Some informants including ex-Japanese experts and Japanese-affiliated companies pointed out that technical level of lecturers is high enough to teach in undergraduate courses, but the level of their research is not necessarily so if considering development of HUST/SoICT toward a research university as it aims. This point may affect sustainability of project effects in a sense that if HEDSPI Program develops into a high quality education and research program, collaboration with industry will also be promoted and diversified. The ex-post evaluation, however, did not take account of this point as a direct ground for judgment. In this regard, HUST once requested JICA for assistance, as Phase 3 of the technical cooperation project, in extending HEDSPI Program to postgraduate education. However, JICA did not take up the request on the grounds that the remaining balance of the ODA Loan project should be used.

There is a concern on the level of Japanese language lecturers teaching General Japanese. The level of Japanese teaching is being questioned due to high turnover of Vietnamese lecturers who received technical transfer. All but one who had been with the project from the beginning left SoICT. Several (ex-) Japanese language lecturers and employers of graduates of the program also pointed out a decrease in language ability of recent students.

Regarding IT Japanese, although contract with lecturers from Japan was not renewed for the academic year 2014, a certain technical level was being maintained by the above-mentioned Vietnamese lecturer (who received technical transfer), another Vietnamese lecturer who was about to return to Vietnam after receiving PhD, and engineers from a Japanese-affiliated company who teach at HEDSPI Program on voluntary basis, and through instruction in model projects that need hands-on knowledge, skills and experience of project management.

There is also a small concern on equipment maintenance skills. In the questionnaire survey for the ex-post evaluation, almost all respondent lecturers and students pointed out the problem of maintenance (e.g. some equipment are not in a good condition, some are left unrepaired, etc.). PIU replied on this point that while the staff in charge of facilities and equipment still uses the equipment maintenance manual developed under this project, PIU is only responsible for checking, and broken equipment have to be sent to the department of equipment of HUST for repair that usually takes a few months. Several other informants from universities also commented that such a situation is a common response in universities in Vietnam. In fact, the troubles of air conditioners and projectors pointed out by many respondents at the time of the first site visit in October 2014 were repaired by the time of the second site visit in January 2015. In this way, the problem mentioned by the lecturers and students is not peculiar to HUST or HEDSPI Program. Nevertheless, from the viewpoint of providing a program with higher quality than regular faculties and departments, more prompt and proper response to troubles than normal is desirable. As for a concern for the future, it is not clear whether SoICT can secure sufficient maintenance skills for the new equipment, i.e., the research equipment delivered in January 2015 under the ODA Loan project as well as the research laboratories that are planned to be developed once extension of the project period of the ODA Loan project is approved. Failure to secure such skills may affect the collaborative relationship with companies to be strengthened through the above-mentioned research laboratories.

Therefore, the technical aspect has some problems to sustain project effects.

3.4.4 Financial Aspects of the Implementing Agency for the Sustainability of Project Effects

Sustainability in the financial aspect needs securement of budget to continuously run HEDSPI Program, especially the budget to secure lecturers and maintain the facilities and equipment after completion of the ODA Loan project.

Although specific information on revenues and expenditures of HEDSPI Program was not available, PIU confirmed that there is no major problem at the time of ex-post evaluation[31]. To run HEDSPI Program, PIU manages to compensate the loss of funding from the ODA Loan and the corresponding project budget borne by the Vietnamese side with the tuition increase[32].

Replacement of the existing equipment may not cost much because the procurement was not fully implemented as planned. However, with the current budget size of HEDSPI Program at the time of ex-post evaluation, it is considered difficult to allocate spending to maintenance and replacement of the above-mentioned new equipment (including those to be procured in the "IT Laboratory" component that is in the planning stage). Such maintenance and replacement may need another arrangement of budget by HUST/SoICT as well as acquisition of more research grants and other financial inputs from industry by improving the research skills.

Therefore, the financial aspect has some problems to sustain project effects.

Some minor problems have been observed in terms of the organizational, technical and financial aspects of the implementing agency. Therefore, sustainability of the project effects is fair.

4. Conclusion, Lessons Learned and Recommendations

4.1 Conclusion

This project aimed to provide human resources that would meet needs of industry by opening and managing a practical education program in IT, based on the Japan's ITSS, at HUST. The division of roles in the creation of the education program was as follows: (i) HUST was responsible for construction of school facilities and providing teaching and administration staff; (ii) the Japanese ODA Loan project was responsible for

[31] According to the financial information provided by PIU, HUST allocated 6.5 billion dong (approx. 39 million yen) to SoICT in each fiscal year 2012 and 2013, and most of that budget accounted for personnel cost (6.3 billion dong in 2012 and 5.9 billion dong in 2013). Information on the use of the difference was not available.

[32] PIU explained that it raised the tuition from the level of normal undergraduate courses to the level of other special programs.

procurement of equipment, supporting students to study in Japan and hiring of/ technical transfer to lecturers in Japanese language; and (iii) this technical cooperation project was responsible for development of the program management system, development of the curriculum, syllabi and education materials as well as technical transfer to lecturers in IT-related subjects.

Relevance of this project is high since the project objectives were consistent with the Vietnam's development policies and development needs related to enhancement of higher education and promotion of IT as well as Japan's assistance policies. Effectiveness is also high considering that despite challenges such as delays in procurement of equipment, the management system and program contents were developed under Phase 1 and the program got off the ground under Phase 2, and accordingly, graduates who had both Japanese language skills and IT technical knowledge based on ITSS were produced. After project completion, it was observed that the program was run smoothly and many graduates were active as IT engineers. Regarding impacts, however, there is no objective means to verify the extent to which graduates reached the expected "ITSS level 3 equivalent." Therefore, effectiveness and impact as a whole is evaluated to be fair. Efficiency is high as both project cost and cooperation period were within the plan. Sustainability is evaluated to be fair as prospects for the institutional, technical and financial aspects of program management after completion of the ODA Loan project in 2016 are somewhat unclear at the time of ex-post evaluation.

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

4.2 Recommendations

4.2.1 Recommendations to the Implementing Agency

HUST/SoICT is recommended the followings for sustaining the project effects:

1) Prepare an official document and have it approved within the university as soon as possible to articulate its policy to continue HEDSPI Program after the academic year 2016, when the completion of the ODA Loan project is scheduled.

2) Secure Japanese language lecturers as soon as possible. For this, further develop and implement the existing plan such as concluding an agreement with a foreign language department of another university (see "3.4.2 Organizational Aspects of the Implementing Agency for the Sustainability of Project Effects"). In doing so, consider ways to utilize ex-lecturers who left HEDSPI Program after receiving technical cooperation (e.g. inviting them as advisors for transfer of the techniques they acquired under this project). Regarding IT Japanese, maintain the current quality of education by continuing cooperative relationship with Japanese-affiliated companies and

technical transfer to Vietnamese IT Japanese lecturers.

3) Maintain the ongoing cooperation with Japanese-affiliated companies and Vietnamese companies doing business with Japanese customers.

4) Maintain the current high selection level of students to enroll to HEDSPI Program (i.e. selecting from among entrants to HUST with top scores in the entrance examination).

5) In order to align the level of maintenance of facilities and equipment to the high quality of courses offered by HEDSPI Program, develop a mechanism of responding to breakdown and troubles of equipment more promptly than the normal repair process of the university. If such a mechanism is difficult, consider preparing back-up equipment.

4.2.2 Recommendations to JICA

1) Ensure sustainability of project effects by facilitating implementation of the "IT Laboratory" component being planned under the ODA Loan project and thereby strengthening cooperation between HEDSPI Program and industry.

2) Raise interest of the Japanese Embassy and Japanese-affiliated companies in increasing opportunity for undergraduate students of HEDSPI Program to study in Japan and provide those organizations with related information so that HEDSPI Program could promote study in Japan even after the opportunity under the ODA Loan Project was lost.

4.3 Lessons Learned

4.3.1 Necessity of careful project design to minimize effect of delays in other projects implemented integrally with this project, and necessity of risk analysis in the planning stage of such a project (in case of integrated implementation of ODA Loan and technical cooperation)

This project shared roles with the ODA Loan project that was integrally implemented toward the achievement of the common overall goal, and produced good effect. Although the procurement of equipment under the ODA Loan project was delayed, its effect was minimized as the Japanese experts of this project reviewed the syllabus and proposed countermeasures for each subject so that students could fulfill their learning objectives without laboratory equipment. In addition, it was fortunate that in the case of this project, the area of assistance was IT in which many topics could be covered without special equipment but only with personal computers of students (there will be cases where, depending on areas of assistance, such adjustment after the occurrence of the problem may not be possible).

Also, this project was planned and implemented in two phases while in parallel with the ODA Loan project that was planned in one phase from 2006 to 2014 (the Loan Agreement date was in 2016). While Phase 1 and Phase 2 of this project shared the common overall goal, the plan of Phase 2 was elaborated at the end of Phase 1 based on the progress till that time. This enabled the achievement of the project purpose while eliminating wasted inputs.

As such, a project can expect synergy effect by implementing projects of other schemes in an integrated way, but it is necessary in both planning and implementation stages to consider flexible measures against potential negative effects of progress of such projects.

For example, in case of implementing an ODA Loan project and a technical cooperation project integrally as was in the case of this project, (i) ensure project implementation in an integral manner by setting the overall goal and project purpose that are same as or coordinated with those of the ODA Loan project; at the same time, divide the technical cooperation project in phases in order to be prepared for significant design changes that might become necessary in the implementation stage; (ii) during the implementation, monitor the progress of the ODA Loan project and prepare to immediately respond to issues that may affect activities of the technical cooperation project (e.g. preparation of countermeasures to such issues by Japanese experts from technical viewpoints;) and (iii) for such situations as well, it is suggested to have a discussion, prior to implementation, between the technical cooperation project and the ODA Loan project on risk analysis against possible delays (e.g. what kind of delay for how long period will cause what kind of effect, what kind of measures will be possible to avoid such effect, what is the tolerable limit of the delay beyond which it may become a killer assumption, etc.).

4.3.2 Necessity of setting the timing of ex-post evaluation with consideration to other projects implemented integrally with this project (in case of integrated implementation of ODA Loan and technical cooperation)

This ex-post evaluation only covered the technical cooperation project portion of the integrated JICA project (i.e. HEDSPI), and was conducted before completion of the ODA Loan project portion. Therefore, it was difficult to identify effect of this particular project among the observed effects as well as to assess sustainability after full completion of the integrated project. Also, as the analysis of issues lacked a viewpoint from the side of the ODA Loan project, the evaluation could not draw lessons learned to be applicable to the integrated project as a whole. A future ex-post evaluation of a technical cooperation project that share the common objectives with

an ODA Loan project can be conducted as a program-level evaluation covering both projects (schemes), and such an evaluation may make it possible to draw more accurate evaluation results as well as more useful lessons learned than evaluation of individual constituents of the program.

4.3.3 Clarification of division of roles between the partner country side and the Japanese side in technical cooperation in organizational and management aspects

This project aimed to build capacity of the administration office to manage an advanced education program. However, the Japanese side could not fully conduct technical transfer as initially expected due to high confidentiality in some areas such as personnel and budget affairs. When a project plans to build an institution based on existing organizations (in this project, HUST and ex-Faculty of IT), it may be realistic to clarify (i) the areas the Japanese side can intervene (in this project, facility and equipment management) and the areas it should not (in this project, financial management, student management and personnel management) and (ii) division of roles between the partner country side and the Japanese side, before making the technical transfer plan in the planning stage.

4.3.4 Careful analysis of necessity and implementation capacity of adult education courses conducted by university lecturers

The intensive courses that this project planned for working people faced issues such as difficulty to design a course that can meet various needs of trainees from different companies, and small number of applications to the courses taught by Vietnamese lecturers who did not have experience in the field. In planning adult education courses particularly in most advanced and fast-changing areas such as IT, the courses to implement should be decided after careful consideration of the course contents as well as experience and capacity of the instructors. On the other hand, SoICT (where HDSPI Program belongs to) provides adult education courses several times a year on more basic knowledge and core technology. This shows that universities are capable of providing training and adult education courses on knowledge and technology that are fundamental to applied technology.

Annex: Production of Outputs at Project Completion Time

Outputs (achievement status in parentheses)	Indicators	Achievement status of individual indicators at completion of respective phases
PHASE 1		
1) The organization and the system for the "Program" management are established. (Mostly Achieved)	Planned staff is allocated.	Achieved. PIU staff and lecturers were allocated.
	Management system for staff, budget, and facilities is clarified.	Mostly achieved. Despite some aspects of the Vietnamese system that were highly confidential and difficult to intervene, division of roles were clarified in the manual.
2) The skills of staff (Teaching staff and Administration staff) are improved. (Partly Achieved)	Skills of the staff after the technology transfer are improved (checked by skills assessment sheet.)	Partly achieved. Skills were improved but not checked using skills assessment sheet.
3) The curriculum, syllabus and teaching materials, IT equipment for 1-3 grades undergraduate and some intensive courses are prepared in accordance with ITSS. (Partly Achieved)	All the required resources for the courses are prepared.	Partly achieved. Undergraduate courses were developed, but intensive courses were not completed due to high level of difficulty and delay of ODA Loan project. Setting up of IT equipment was possible only on PCs, and other equipment was not set-up due to delay of procurement.
4) The 1-2 grades and some intensive courses are implemented. (Partly Achieved)	The courses are given as scheduled.	Partly achieved. Undergraduate courses were implemented but intensive courses were not implemented.
5) The collaboration system with industries and other institutes is established. (Mostly Achieved)	Meeting with industries and institutes are held.	Mostly achieved. Indicator was fulfilled as meetings were held. As for "establishment" of "systems," descried in Output, at least a pattern of collaboration for Phase 2 was prepared.
6) Information on IT and its related areas is collected from the market to improve the courses. (Not Achieved)	The survey results are utilized for the courses.	Not achieved. The survey was only partially conducted, and the result was not reflected to the curriculum (it was achieved in Phase 2).
7) Information on program is disseminated inside and outside of HUST. (Partly Achieved)	Disseminated activities are made.	Partly achieved. Public relations for Japanese were conducted, but the Vietnamese side was barely involved.
8) The preliminary works for establishing the "School" are carried out. (Achieved)	Criteria for becoming the "School" such as number of staff, skill level of the staff, satisfaction rating of the students is clarified.	Achieved. HUST submitted MOET the proposal to establish SoICT on May 22, 2008.
PHASE 2		
1) The organization and the management system of the HEDSPI Program are established and strengthened. (Mostly Achieved)	HEDSPI Master Plan is set.	Achieved. HEDSPI Master Plan had been made.
	Staff is allocated according to the plan.	Achieved. Administration and teaching staff was allocated.
	Financial report is made every year.	Achieved. Financial report was periodically issued.
	All IT facilities and equipment are maintained properly.	Achieved. Facilities and equipment were maintained.
2) Collaboration system with industries is established. (Achieved)	The number of IT companies which continuously collaborate to HEDSPI Program.	Achieved. 46 companies participated in the consortium as of the end of January 2012.
	The number of seminars conducted in collaboration with IT companies.	Achieved. Annual seminars were provided in collaboration with companies and related organizations.
3) The syllabi, lecture scenarios, teaching materials and learning materials for undergraduate degree course are well prepared and revised regularly. (Mostly Achieved)	The syllabi, lecture scenarios, teaching materials and learning materials are revised by the counterpart personnel every year.	Achieved. HEDSPI Program lecturers who were counterpart personnel updated the syllabi and education materials every year.
	Students are satisfied with learning materials.	Mostly achieved. While there was some low evaluation, satisfaction rate improved as the materials were updated.

(Continued)

4) The syllabi, lecture scenarios, teaching materials and learning materials for intensive course are well prepared and revised regularly. (Partly Achieved)	The syllabi, lecture scenarios, teaching materials and learning materials are revised by the counterpart personnel every year.	Partly achieved. Some courses were not realized due to low needs, etc.
	Participants of the intensive courses are satisfied with learning materials.	Partly achieved. Satisfaction rate differed by course.
5) Students are trained to have basic IT knowledge and Japanese language for IT industry through HEDSPI Program. (Mostly Achieved)	The percentage of passer of FE and SW exam is higher than the average in Vietnam.	Achieved. Passing rates of HEDSPI Program students were 36-50% on FE Exam and 13% on SW Exam, which were higher than Vietnamese averages (16-30% on FE Exam and 12% on SW Exam).
	The percentage of passer of Japanese language test conducted in Japanese language class. (Note: The definition of this indicator was unclear. In this ex-post evaluation, the expected level was set at "More than half of students have Japanese language skill level equivalent to 2nd grade of the Japanese Language Proficiency Test at the time of graduation" with reference to existing documents such as monitoring reports.)	Mostly achieved. Passers of the Japanese Language Proficiency Test accounted for 85% of Batch 1 graduates (at the time of graduation; including those studied in Japan) on any of 1st – 4th grade and 48% on 2nd grade or higher.

Sources: Terminal evaluation report of Phase 2; JICA documents; responses from the implementing agency.