

Development of Industrial Human Resources for FDI-oriented Industrialization in Vietnam

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Introduction

Foreign direct investment (FDI) has shown a recent trend of continuous increase in Vietnam. This can be seen as the secondary investment boom from the second half of the 1990s. The total approved FDI increased 50% in a year from 2004 to 2005, to 6.8 billion U.S. dollars, and reached about 12 billion U.S. dollars in 2006 (GSO, 2007). People usually thought that FDI enterprises producing automobiles, motorcycles and electronic-electrical machinery and appliances were attracted by good, cheap labor forces (workers, line operators). While low wages were necessary, these enterprises also indicated that excellent technicians or line leaders who could execute improvements of production sites were more important for their development and contribution to the industrialization process and economic growth. This is true for both foreign subsidiaries that receive technology transfer directly from their mother companies, and local suppliers that expect spillover effects from FDI companies. If accumulation of assembly industries is not associated with the development of supporting industries¹ founded from foreign and local suppliers, international competitiveness cannot be improved.

Vietnam has a high potential of industrial human resources, however, the shortage of technicians and middle managers has become apparent recently and this trend is becoming more serious. Investments in assembly industries may be expanded in the next few years to utilize relatively low wages, but in the future, when the wages increase, FDI assemblers will move to other countries that have lower operation costs. For continuous and autonomous industrialization, it is essential to promote highly-skilled industrial human resources to improve productivity and added value, beginning now while Vietnam still has the advantages of simple labor forces.

In such a circumstance, the followings will discuss human resources in demand, the system of technical and vocational education and training in Vietnam, and linkages with foreign stakeholders as a measure to speed up industrial skill development.

A demand on industrial human resources and skills

Despite a remarkable increase of FDI in recent years, nothing can guarantee this trend will be continuous in the long run. Advanced Asian countries, like Malaysia and Thailand have been

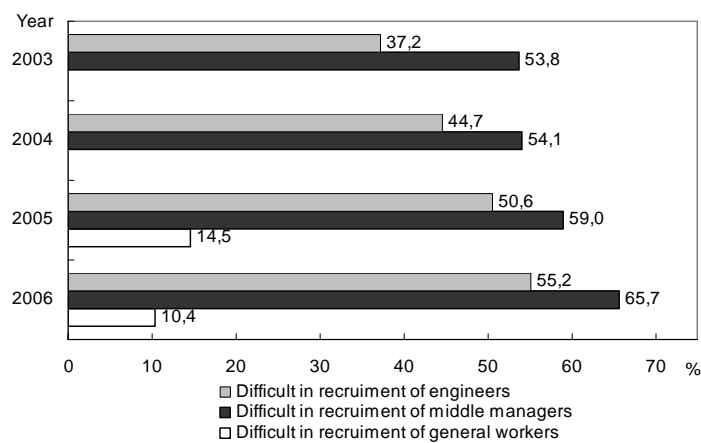
¹ The necessary of supporting industries are mentioned in Mori (2005) and Vietnam Development Forum (2006).

industrialized for some decades, their wage levels are higher than that of Vietnam but their technological capabilities are also higher, thus they can become FDI enterprises' production bases for high value added products. On the other hand, China and India have advantages over Vietnam in terms of domestic market sizes and labor costs; and Vietnam will also have to compete with latecomers, such as Cambodia, Laos, and Myanmar, which are being more competitive than Vietnam in labor costs to attract FDI inflows.

Nowadays, a protective policy for domestic industries like tariff barriers can no longer be used in a complex system of international production division. In becoming a member of the World Trade Organization (WTO) from January 2007, Vietnam was also required to remove such protective policies. For these reasons, it is essential for Vietnam to improve industrial human resources to absorb new technology and become independent from FDI enterprises.

It is difficult to generalize labor demand at a national level due to the differences among industries and enterprises, however to some extent we can see its trend through surveys of "Japanese-Affiliated Manufacturers in Asia" conducted annually by Japan External Trade Organization (JETRO). Figure 1 shows an increase in the number of Japanese manufacturers in Vietnam that found difficulty in the recruitment of middle managers and engineers in the period of 2003 to 2006. In contrast, it became easier for enterprises to recruit general workers (line operators) in 2006 compared with 2005. In addition, findings in the 2006 survey indicated that many enterprises were facing difficulty in seeking mechanical engineers (58.5%) and electrical engineers (41.5%).

Figure 1. Problems in labor and employment in Vietnam



Source: Authors – drawn upon data from Japanese-Affiliated Manufacturers in Asia, JETRO.
 Note: Surveys in 2003-2004 did not include item "difficulty in recruitment of general workers"

The following will offer a closer insight into types of labor in demand, especially regarding middle managers and engineers. Sections that directly relate to production workshops include, *inter alia*, production management, manufacturing, technique, quality control and management. All of these play an important role in production, among these, manufacturing and technical sections, which require labor forces with technical and vocational education and training, are considered to be more related to production workshops.

Labor forces in the manufacturing section consist of line operators, line leaders, and middle managers. As mentioned earlier, not many enterprises faced difficulty in recruitment of line operators in assembly lines. In addition, the management of local workers requires relatively

fewer contacts between headquarters and subsidiary company, thus manufacturing sections usually takes less time to localize its managers' positions. According to JETRO (2007), 50.9% of Japanese enterprises employed local staff as managers of their manufacturing sections. This, however, does not mean that they meet all requirements of a manufacturing manager. Many enterprises are seeking (i) line leaders who can manage and improve the entire production process rather than a specific line², (ii) workers who can perform precision skills in making metal, plastic parts, molds and dies³, and (iii) middle managers who can determine and solve daily production problems.

Labor forces in technical sections are technicians who graduated from industrial colleges or universities. These sections are tightly connected with design sections in headquarters, and thus need more time in the localization of employees than other sections do⁴. JETRO's survey results showed that most engineers/technicians were considered industrial technicians who could cooperate with design sections or manufacturing sections in headquarters to improve workshop layout, production tools, organization and flows of production lines. Many policy makers in Vietnam understand engineers/technicians as designers, however designing work concentrates only in advanced countries, and local demand on product designs is not very high.

The above analyses indicate that a necessity for industrial development in Vietnam is a labor force that can independently manage and improve all activities in production workshops rather than perform only predetermined tasks. Education institutions in TVET system must be able to cope with an increasing demand on industrial labor forces in order to push up industrialization and maximize effectiveness of FDI inflows that are expanding currently.

An overview of TVET system in Vietnam

In these years, the Vietnamese government pays more attention to strengthening the TVET system to respond to an increase in industrial labor demand yielded by the high speed of industrialization. In the Socio-economic Development Strategy for the Period of 2001-2010 approved by the Communist Party Congress in 2001, the target ratio of workforce with professional qualifications was increased to 40%. In reference to this, the Socio-Economic Development Plan (SEDP) for the Period 2001-2005 set a target for this ratio at 30% in 2005, and the SEDP 2006-2010 promulgated in 2006 aimed to reach to 40% in 2010. In addition, at ministry level, the Ministry of Labor, Invalids and Social Affairs (MOLISA) also announced a Master plan for the development of a network of professional colleges, secondary schools, and training centers until 2010, with a vision to 2020. As mentioned in this master plan, the number of industrial trainees is targeted to increase 11–12% annually.

Vietnam's TVET system consists of universities of technology or industry, industrial colleges, vocational colleges, vocational secondary schools, professional secondary schools, vocational training centers, and employment service centers that provide vocational training classes (Figure 2 and Table 1). According to the Education Law revised in 2005, and the Law on Vocational Training promulgated in 2006, these institutions provide training courses at three levels, i.e. college, secondary, and primary, which cover many subjects, but now mainly

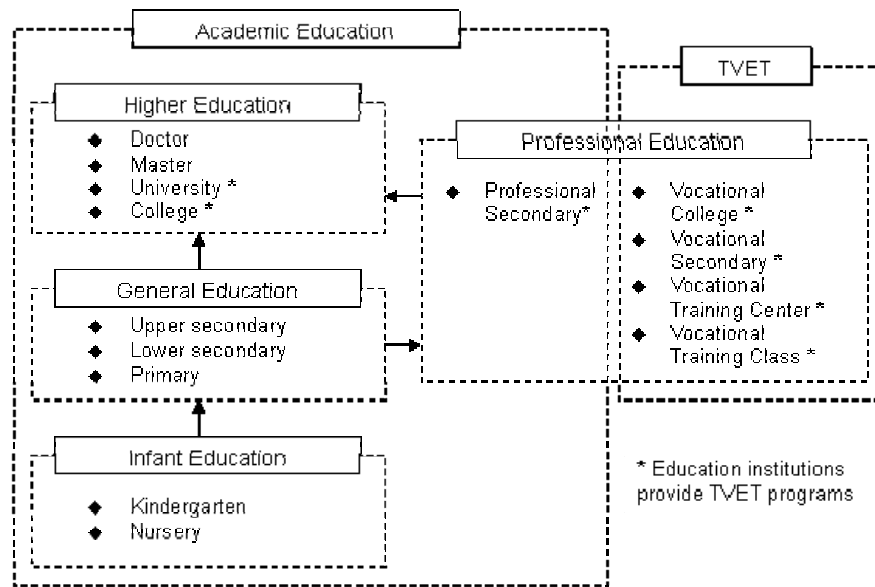
² Fujimoto emphasized a high potential of Vietnam in human resources for integral manufacturing, called "multi-skill workers". See Fujimoto (2006).

³ Supporting industries especially require human resources that acquired high manufacturing skills, which are emphasised in Takabayashi (2006) and Vietnam Development Forum (2006).

⁴ In JETRO (2007), 17% of enterprises interviewed responded that they employed local staffs for manager positions in technical (including R&D) sections.

focus on popular subjects, such as electrics, machine, metal, construction, and sawing.

Figure 2. Education and training system in Vietnam



Source: Authors–drawn upon Education Law (2005) and Law on Vocational Training (2006)

Table 1. TVET system in Vietnam

Level	Training institutes	Period	Qualification	Certificate	Authorized ministries
College	Colleges, vocational colleges, universities of industry	2–3 years	Upper secondary school graduates	College diploma	Ministry of Education and Training, Ministry of Industry and Trade, Ministry of Labor, Invalids and Social Affairs
		1–2 years	Professional secondary school graduates		
Secondary	Professional secondary schools, vocational secondary schools, colleges, vocational colleges, universities of industry	1–2 years	Upper secondary school graduates	Professional secondary/ Vocational secondary education diploma	
		3–4 years	Lower secondary school graduates		
Primary	Vocational training centers, professional secondary schools, vocational secondary schools, colleges, vocational colleges, universities of industry	3 months – 1 year	Youths, unskilled workers	Certificate	

Source: Authors – draw upon Law on Vocational Training (2006)

Vietnam’s TVET system has been changed several times, and now is no longer under the authority of only one ministry, thus it is difficult to get comprehensive data on TVET. As of 2006 in Vietnam, there are 47 vocational colleges, 227 vocational secondary schools, 599 vocational training centers, and more than 1000 other training institutions that provide basic training, including employment service centers (MOLISA, 2007). In addition, there are eight technical universities and more than a hundred colleges and professional secondary schools under the authority of the Ministry of Education and Training that also provide TVET programs (MOET, 2007). The number of TVET graduates increases continuously every year. Statistical data of General Department of Vocational Training showed that even the number of graduates from MOLISA’s training institutions alone already reached 1.2 million in 2005 (OVTA, 2006).

Although the government has tried to strengthen the TVET system, Vietnam is still facing shortages of technical labor forces, especially of technicians and middle managers. In 2005, the number of Vietnamese workers who got professional qualification did not exceed 25% of the total workforce (CIEM, 2006). However, problems do not lie in the number of workers with professional qualification, but on the fact that TVET program graduates do not meet the requirements of enterprises. In particular, FDI enterprises do not appreciate TVET programs because they have not received any improvement ideas from TVET graduates they employed. A certain number of FDI enterprises say that there is usually a big gap between the knowledge graduates gained from TVET programs and that required by the enterprises, thus they have to retrain these graduates after recruiting them, and they even prefer to employ fresh workers to train them from the beginning rather than employ TVET graduates because of their bad habits that are probably derived from TVET program. While the government often focuses on the number of training institutions or graduates, in reality, quality of TVET programs requires more attention from authorities.

Linkages with FDI enterprises to speed up industrial skill development

Low quality of TVET programs are usually considered as an effect of outdated training equipment, poor social attitude against TVET, or unclear division of responsibility between authorities, i.e. MOET and MOLISA.

It is undeniable that these factors are important for TVET programs, however, shortage of good instructors seems to be the most decisive condition. Many instructors with technical education can only give theoretical lectures but not practical ones. On the other hand, Vietnam has started industrialization for only a short time, thus to some extent, the shortage of instructors who could accumulate enough knowledge and experiences is understandable. Advanced technology is firstly transferred into employees and clients of FDI enterprises, and then spilled over to TVET institutions. 20 years after opening the economy and receiving FDI, Vietnam is currently at the beginning stage of incubating a manager class in FDI enterprises, who are accumulating sufficient practical knowledge and experiences. In the future, when the average income of the society increases, these people may move to TVET institutions despite the relatively lower wages. Nevertheless, Vietnam still needs time to reach this stage.

Is there any measure to speed up spillover of knowledge and technology from FDI enterprises to TVET institutes? One proposal is to carry out TVET programs in cooperation with FDI enterprises, where the manager class has accumulated practical knowledge and experiences. If both sides cooperate directly, there will be a possibility to shorten the time for spillover effects of technology to TVET programs, and to directly exchange information about labor demand. In this way, TVET institutions can adjust their curriculum to the needs of industry, and improve employability of their graduates.

The problem is how to cooperate with FDI enterprises because the nature of enterprises is the pursuit of profits. Of course, there are many enterprises that have enthusiasm for social responsibilities, but in principle, this cooperation is also expected to bring about long term benefits for enterprises. For that reason, to get involvement from FDI enterprises in TVET, it is essential to give incentives to create a cooperative environment between both sides.

Normally, enterprises would positively cooperate with TVET if three conditions are satisfied. Firstly, their production must reach a stable stage after some years of operation. In the initial stage of production, the enterprises have no time to deal with external affairs. Secondly, the

enterprises have to seek either local procurements to cut down production costs or local partners to expand their production. In this case, strengthening the TVET system will improve the capability of local enterprises and indirectly benefit FDI enterprises in return. Finally, the shortage of skilled labor forces will push the wage level up and cause enterprises to scramble. To avoid an excessive increase in wages and to improve productivity, the supply of skilled labor forces must be expanded immediately. It is crucial to create an environment for these three conditions to occur.

A linkage between FDI enterprises and government in Malaysia–Penang Skill Development Center

Penang Skill Development Center (PSDC) is a successful example of public–private cooperation in human resource development in Malaysia. Responding to requirements of FDI enterprises, the Malaysian government established PSDC in 1989. Penang province became a center of electrical and electronic industry beginning in the 1970s with a huge FDI inflow, but FDI enterprises there soon faced a shortage of skilled labor forces in the second half of the 1980s, and consequently struggled because of a sudden wage jump. FDI enterprises, especially American affiliated manufacturers, proposed to build a human resource development center. Both local and central government supported this proposal by establishing PSDC.

A notable feature of PSDC is its management system. Core members of the steering committee include representatives from FDI and local enterprises, and government bodies play a supporting role for the committee⁵. As a result, the center can adjust curricula to correspond with enterprises' requirements, and possess lecturers from FDI enterprises, who are able to transfer the newest technology and their practical knowledge to trainees.

Vietnam does not have such center. Many enterprises have stabilized their productions after five to ten years of operations, and now are looking for talented industrial human resources to improve their competitiveness. Unfortunately, the supply of skilled labor forces has not caught up with the increasing demand of enterprises. This situation leads to occurrences of sudden wage jumps and job hopping⁶ but also creates chances for TVET institutions to cooperate with enterprises. The following will introduce some good examples in industrial human resources development in Vietnam⁷.

In-house training in FDI enterprise – Development of mould and die making technician in Muto Vietnam Company

The first option for an enterprise facing a skilled labor shortage is in-house training. Coping with this shortage, some FDI enterprises in Vietnam have developed their own training programs. Muto Vietnam Co., Ltd., a manufacturer of moulds, dies, and injection moulded plastic parts located in Bien Hoa Industrial Park and Long Binh Industrial Park in Dong Nai province, is among these enterprises. Muto Vietnam has started to open occasional in-house training courses on designing and making moulds and dies for their technicians since 1998. The company has organized six courses and trained 170 trainees in total. This activity not

⁵ Steering Committee in 2005-2006 included representatives from 11 enterprises, of which five are from multinational enterprises, such as AMD, Intel, Motorola, and Seagate (Mori, 2005, p. 51).

⁶ According to JETRO (2007), 68.7% of enterprises faced difficulty in employment due to wage jump. Moreover, job hopping in provinces surrounding Ho Chi Minh City was also reported in JETRO (2006b), p. 71.

⁷ The following examples are mainly based on surveys conducted by the authors from 2005 to 2007.

only improves skill levels of employees, but also keeps the job hopping ratio in the company at a low level.

In-house training seems to be an ideal for any enterprise, but some enterprises cannot implement it for many reasons. Moreover, enterprises that are providing in-house training programs may not be able to maintain this activity due to the huge number of employees involved with their production expansion, which exceeds their training capacity. In this case, it may be better if enterprises utilize TVET programs provided by training institutions.

Human resource development in cooperation with industrial park – Vietnam–Singapore Technical Training Center

Vietnam–Singapore Technical Training Center (VSTTC) was established in 1997 with supports from the Singaporean Government, located in front of Vietnam–Singapore Industrial Park (VSIP) in Binh Duong province, a neighboring province of Ho Chi Minh City. A main purpose of VSTTC is to provide labor forces for enterprises operating in VSIP through five six-month training courses, including (i) electrical maintenance, (ii) mechanical maintenance, (iii) machining, (iv) electronics, and (v) mechatronics. In 2005, there were 230 students enrolled in these courses, of which 95% were unemployed high school graduates, and 5% were dispatched by their employers.

VSTTC holds regular meetings with enterprises in VSIP, making efforts to design curricula and courses to meet their labor demands⁸. For instances, responding to an increasing demand on the mechatronics labor force, the center increased the number of enrollments in this course. All graduates were employed immediately and most of them worked in enterprises within VSIP.

The support from the Singaporean government ended in 2006. The center was merged with a professional secondary school in Binh Duong province, expanded to provide long term training courses, so the number of students reached 2,000. The center also expected to be upgraded to a college in the future. However, the increase in the number of students brought about a need of additional equipment for practice, and thus, a financial difficulty for the center.

Collaboration between higher education and enterprises–Hanoi Industrial College (HIC)–JICA Project

The project for strengthening training capability for technical workers in Hanoi Industrial College (HIC) (hereafter called HIC-JICA project) implemented by Japan International Cooperation Agency (JICA) in the period of 2000–2005 can be a good example of collaboration between higher education and enterprises in human resource development⁹. HIC-JICA project consisted of two courses, a two-year training course for qualified students, and a short training course for employees or lecturers. Every year, the former receives about 240 to 360 students enrolling in training courses on three subjects, including (i) machinery processing, (ii) mechanical metal sheet processing, and (iii) electric control (JICA, 2004).

⁸ Members of VSTTC's Board of Governors consisted of representatives from Singapore and Vietnamese governments, VSIP JV Pte. Ltd., and enterprises in VSIP.

⁹ HIC was upgraded to Hanoi University of Industry from December 2005, HIC-JICA courses now are continuously provided by Vietnam–Japan Center.

A salient feature of HIC-JICA project is an emphasis on practice: 60–70% of training time was used for practical training. A more interesting point is that the project received manufacturing orders from enterprises to acquire practical techniques¹⁰. Under instructions of Japanese experts and Vietnamese instructors, students produced many products, samples, and manufacturing tools ordered by FDI and local enterprises. From this, students knew how to read blueprints used in enterprises, and got a real sense of precision and quality of products.

In addition, the project also implemented an internship program in enterprises. This program gave more opportunities for students to practice, and was also a chance for receiving enterprises to find talented students. An employment rate of graduates from this project reached 100%, and about half of them were recruited by the enterprises that received them as internship students. From the initial results of the program, we can say this is a successful case that should be promoted in the future.

Conclusions

Vietnam achieved remarkable results in economic development and FDI expansion thanks to cheap and good labor sources, and prospective expectations. However, if industrial human resources cannot develop as expected, this development impetus will possibly taper off. Vietnam's potential in industrial human resources is widely recognized, thus turning this potential into reality is a key to level up Vietnam's industrial capability.

The government already realized the importance of skill development and attempted to improve human resources through strengthening the TVET system. Nevertheless, the efforts should be made by not only the government, but also enterprises that are owners of the newest knowledge and technology. Especially because collaboration with FDI enterprises is probably the most effective way to accelerate industrial skill development through technology transfer. Recent problems, such as labor shortages, rising wages, and high demand on local procurement, bring about more chances for collaboration between TVET institutions and enterprises. The government should support TVET institutions to utilize these chances.

Of course, some aspects should be taken into account when promoting this collaborative activity. For instance, training institutions may lose sight of their original purposes of training and education to pursue profits gained from cooperation with enterprises. Particularly, if they accept orders of mass production instead of those for an experimental purpose, business activities of small and medium enterprises might be impeded. They may gain profits at a level necessary to maintain practical training activities, but if they forget their main purposes and only concentrate on making profits, the program may not be able to contribute to improvement of students' skills. It is the government's duty to correct market failures through policy intervention in order to prevent an occurrence of this risk.

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¹⁰ Until March 2005, the project received orders from more than 60 enterprises (JICA, 2004).

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