

Chapter 1 Integral Manufacturing: The Way Forward for Vietnam

Kenichi Ohno
Vietnam Development Forum and
National Graduate Institute for Policy Studies

Our research missions to Thailand, Malaysia and Japan in 2005 and 2006 studied the different policy formulation methods of these countries, including both their strengths and weaknesses, to draw concrete lessons for Vietnam. In this chapter, the framework of thinking within which this research was conducted, as well as my conclusion after the missions, are presented.

1. The need for new industrial policy

Vietnam is deeply committed to global and regional integration, and no one doubts the seriousness of this commitment. Vietnam has already taken many steps to realize this goal, including the completion of the AFTA process, the conclusion of the bilateral trade agreement with the United States, intense negotiation for WTO accession, and preparation for other free trade areas (FTAs). Work is also progressing in the legal area, as the government doubles its effort to create or amend a large number of laws for consistency with international practices. All this is highly commendable.

However, diplomatic and legal preparations are not enough. In order for Vietnam to truly enjoy the fruits of international integration, its real sector must also be prepared. Vietnamese firms need to be competitive enough to survive and even prosper in the new open environment where import protection and special favors are, in principle, no longer allowed. And this is the area in which Vietnam's preparation is the weakest.

In a market economy, the natural selection of enterprises is not only acceptable but also desirable. Ill-managed firms go bankrupt while new firms emerge incessantly, giving dynamism to the national economy. In this sense, we do not expect all existing domestic enterprises to survive the integration shock. However, globalization also carries the risk of de-industrialization and getting stuck with primary commodity production and simple assembly. If a large chunk of Vietnamese industries is wiped out and the domestic market is dominated by imports and FDI firms, and if this trend continues year after year without any sign of reversal, is it acceptable to the Vietnamese people?

Of course, this may not happen. Vietnamese producers may prove to be stronger than we think. But should outcome be left to chance? At present, Vietnam cannot assess or cope with the integration risk properly since there is no clear vision, analysis, target setting or promotion policy. In Thailand and Malaysia, the government and the business community create joint strategies to meet the challenge of international competition. But in Vietnam, no such strategy exists. This gap must be filled by industrial master plans.

Free-market advocates may argue that, once the economy is open and free, the market mechanism will activate the ingenuity of the Vietnamese people and the national economy will

grow and become more efficient. This argument is too naive, and the majority of Vietnamese policy makers already know it. The fact is that the balance of power between large advanced economies and latecomer developing countries is lopsided. Vietnamese firms cannot at present compete squarely with Toyota, Panasonic, LG or Intel in the global market. Instead, they must work with these multinational corporations (MNCs) to improve their abilities and become crucial suppliers in their global value chain. A good policy is needed to encourage and support this effort.

But what kind of policy, more concretely? The days of planning are over. Vietnam can no longer use rigid control to maintain international isolation. The strategy of *infant industry promotion*, adopted by Japan and Korea in the early postwar period, is also out of question. Under this strategy, domestic industries were protected and nurtured until they became sufficiently competitive. But Vietnam cannot introduce such protection because of its commitments to WTO and various FTAs.

Even the strategy of FDI-led growth, exercised by ASEAN4 in the 1970s-90s, is no longer applicable to latecomers like Vietnam. Although Malaysia, Thailand, Indonesia and the Philippines vigorously absorbed FDI, they were slow to remove their tariffs, import restrictions and localization requirements. In these countries, FDI promotion and industrial protection coexisted for at least a few decades. External barriers were lifted only after they achieved significant industrial agglomeration. But Vietnam is asked to remove barriers *now*, before such agglomeration occurs.

For this reason, Vietnam's industrial policy in the 21st century must be new and different from those of other countries in the past. It must reflect the fact that even newcomers must open up very fast. Globalization is inevitable, and Vietnam must position itself to become a meaningful player in the global arena, making sure that its contribution to East Asia and the world will rise over time. What kind of policy can that be? That is the key question for the Ministry of Industry (MOI) in particular and the Vietnamese government in general to consider. That is also the question we wanted to address when we traveled to Malaysia, Thailand and Japan.

2. Weaknesses in Vietnam's policy formulation

To design and implement industrial policy in the age of strong globalization pressure, Vietnam must overcome two methodological problems. At present, master plans are designed and drafted by a small group of officials assigned for the task. They work very hard but cannot produce desired results, because crucial information and cooperation are lacking. More concretely, the weaknesses of Vietnam's industrial policy mostly stem from the following two missing links.

- (i) The lack of cooperation with *stakeholders* (i.e., concerned groups) in the entire drafting and implementation process. In the case of industrial master plans, the most important stakeholder is the business community.
- (ii) The lack of inter-ministerial coordination within the government in deciding concrete action plans.

These problems are unique to Vietnam as they are not observed in other high-performing East Asian countries. In our missions to Thailand, Malaysia and Japan, no serious problems were reported in either government-business cooperation or inter-ministerial coordination in formulating industrial policy.

The main problem caused by the lack of cooperation with stakeholders is that *policy is not supported by the business community and therefore not implementable*. This problem is particularly acute in sectors where private and FDI firms--which are not under MOI's direct supervision--dominate, such as motorbikes, automobiles, and electronics. Even in areas where state-owned enterprises (SOEs) used to play key roles, such as steel and cement, the share of private and FDI production is rising. The drafting process must involve all key players, especially private and FDI firms. Without solid channels to absorb their information and concerns, policy remains ineffective.

Another problem caused by the lack of stakeholder involvement is that *information and analysis are neither to-the-point nor up-to-date*. Even if MOI drafters are intelligent and hard working, it is difficult for a small team to gather all relevant information. This is particularly true with external information such as global industrial trends or the latest strategies of MNCs. Such information should be obtained through close and continuous contact with the business community. A good policy cannot be built on outdated information.

On the other hand, the main result of the lack of inter-ministerial coordination is that *supporting measures are simply mentioned without details*. Measures outside the authority of MOI, such as tariffs and tax incentives or a reform of technical schools and universities, are especially hard to prescribe in detail, since there is no mechanism to discuss and agree on policy measures among related ministries in close consultation. At present, ministries interact only superficially through commenting on mutual drafts and exchanging basic information. This is another reason why timely and effective policy implementation is so difficult in Vietnam.

3. Good policy, modest results

All three countries featured in this report--Thailand, Malaysia and Japan--have constructed effective channels for stakeholder involvement and inter-ministerial coordination in industrial policy making. Thailand has set up industry-specific institutes and official committees to link the government, businesses, and experts. Malaysia has a three-layer structure consisting of the Industrial Planning Committee, the Steering Committee, and technical resource groups, which together mobilize several hundred people to draft an industrial master plan. In Japan, deliberation councils and industry associations have long been the key instruments for sharing information among all stakeholders at any time. The functions of these institutions are explained in detail in the following chapters.

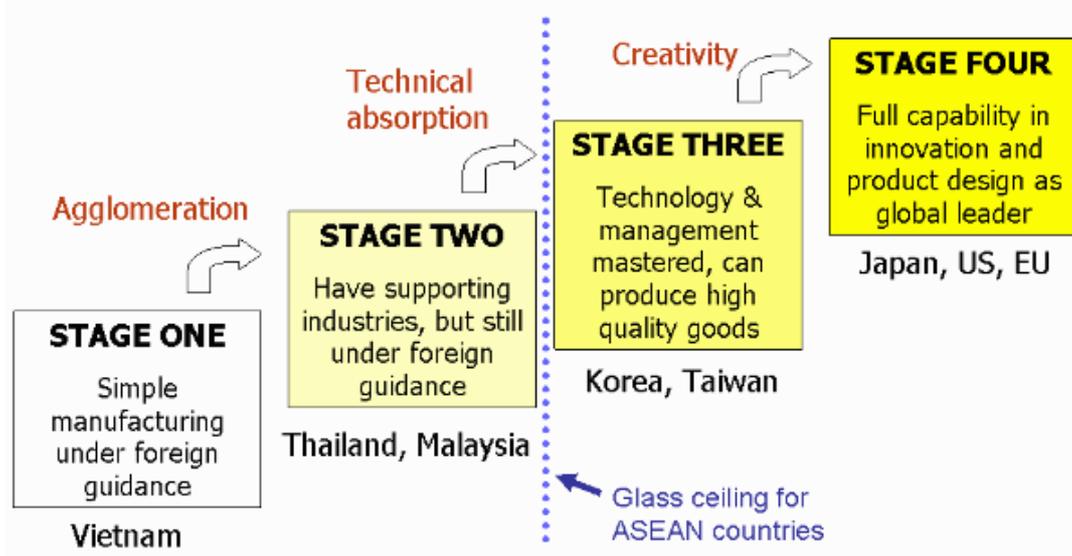
The experiences of these countries make it clear that Vietnam is far behind them in industrial policy formulation and that it has much to learn from them. It must be admitted that Vietnam's policy making method is in the early stage of development. It is still primitive and defective, and inherits many characteristics of the planning days which are no longer valid. Another crucial fact is that the way to achieve good involvement and coordination is not one, and that Vietnam

should design a mechanism which is most suitable for its situation and needs. This means that Vietnam must selectively import the good practices of neighboring countries, with necessary revisions and additions, to suit its circumstances. Since institutional evolution is difficult to forecast or plan with any precision, the adaptive process will inevitably be a long one with many trials and errors.

However, there is also a negative lesson from Thailand and Malaysia that is worth attention. While industry-led growth of Thailand and Malaysia has been remarkable by the standards of developing countries in general, it falls short of East Asia’s high performance criteria. These two countries are still unable to break through the “glass ceiling” after several decades of industrialization. The glass ceiling here refers to the difficulty in moving from the second to the third stage in the path of industrialization that I have described on another occasion¹.

A developing country in the catch-up process typically starts with simple assembly to fulfill foreign orders (stage 1), builds industrial agglomeration and supporting industries (stage 2), graduates from foreign guidance to master technology and management (stage 3), and finally achieves innovative, original design capacity (stage 4). I argue that none of the ASEAN countries has graduated from foreign dependency despite their quantitative achievement. They still rely heavily on foreign managers and engineers to run their factories and maintain quality. Since core competence and value creation are not internalized, there is always a risk that industries will shift to China or elsewhere when situations change.

Figure 1-1. Breaking the Glass Ceiling



Source: see footnote 1.

¹ Kenichi Ohno, “Renovating Industrial Policy,” chap.2, Kenichi Ohno and Nguyen Van Thuong, eds, *Improving Industrial Policy Formulation*, Publishing House of Political Theory, 2005 (pp.24-26).

The governments of Thailand and Malaysia are acutely aware of this problem and trying to remedy the situation as a matter of top national priority, as the following chapters indicate. Specifically, this requires strengthening SMEs and creating linkages among them, developing industrial skills, promoting supporting industries, stimulating R&D, and other efforts in human resource development. Nevertheless, local capability of Thailand and Malaysia still falls short of the high requirements of Japanese manufacturing FDI. This is a problem that has been recognized for a long time--at least for two decades--but remains unresolved.

At the risk of over-simplification, we may even say that Thailand and Malaysia are the countries whose governments have succeeded in offering good policy frameworks but whose domestic businesses remain less dynamic than expected. The gap between good policy and modest results is especially striking when we look at the performance of Taiwan and Korea. From the situation of war devastation and dire poverty, they emerged as leading manufacturers of high-quality products in a few decades. They received foreign technical assistance at first, but the time they spent for learning was relatively short. As soon as they mastered technology, they sent foreign advisors home. R&D, product design, enterprise management, and factory operation are now carried out entirely by locals. They invest vigorously abroad to expand production networks, and have become Japan's formidable competitors. And all this was achieved in no more than the time it took for Thailand and Malaysia to reach their current levels.

Why did Taiwan and Korea move up so fast, while Thailand and Malaysia learned more slowly? The reason may be the difference in national character or the difference in policy quality. If Taiwanese and Korean people are genetically more suitable for high-quality manufacturing than Thai and Malaysian people, there is not much the government can do to change people's DNA. But if industrial policies adopted by Taiwan and Korea have been superior in matching national aspiration with needed actions, we are compelled to study much deeper into policy design and implementation to improve the industrial policy framework and content of Vietnam².

Vietnam at present is a country of weak policy formulation. However, Vietnamese people are frequently praised as skillful, diligent and persistent in comparison with other peoples in the region. This points to a possibility of greatly upgrading the industrial capability of Vietnam once policy weaknesses are removed.

4. Coping with China

How to cope with China, with its enormous size and rapidly expanding manufacturing capacity, has become one of the most urgent issues all over the world. China has large numbers of managers, scientists, engineers and unskilled workers, ample industrial materials, a relatively high level of technology backed by a long history of industrialization drive, and a thick network of overseas Chinese businesses. The China challenge looms large in the industrial policy debates of Thailand, Malaysia and Japan. It must also be a top issue in formulating Vietnam's new industrial policy.

² Two facts complicate such a study. First, the policies adopted by Taiwan and Korea were very different in that the former promoted dynamism of SMEs while the latter featured large business groups (*chaebols*) supported by large banks. Second, state-led industrialization strategy adopted by Korea, in particular, is no longer available to latecomer countries of today under the globalization pressure.

It is clearly unwise to directly compete with Chinese products in the global market. To avoid this, a country must differentiate its products from Chinese, and position itself as a producer complementary to China rather than competing with it. If this is done successfully, the country can form a production partnership with China and use Chinese low-cost inputs to its advantage. The crucial question is how to do this concretely. The proper positioning requires a clear understanding of the fields in which China excels and the fields in which it does not.

Since China is a big country, it is not easy to find industrial categories that are not produced by it. One needs to go into the level of individual products and even different grades of the same products, to find a niche. Even then, there is no guarantee that China will not produce that product next year. Many countries want to promote “high-tech” industries to upgrade its skills and compete with China. However, the popularity of this strategy must be evaluated against the following precautions: (i) there is a significant gap between national aspiration and actual capability; (ii) no differentiation will occur if all countries adopt this strategy; and (iii) China is also targeting such areas.

Thus, finding a niche in terms of specific products, including “high-tech” products, has certain limits. The better way to distinguish oneself is to analyze China’s strengths and weaknesses from the viewpoint of business architecture, as explained below.

5. Integral manufacturing

We would like to propose one concrete industrial strategy for Vietnam in order to overcome the difficulties addressed in earlier sections. The strategy is targeted at building domestic capability in assembly-type manufacturing, such as electronics and electricals, motorbikes, and automobiles, and the production of parts and components of these industries³. Although assembly-type manufacturing industries differ from one another in some aspects, they are common in the sense that (i) they extensively use metal, plastic and rubber parts; (ii) product quality heavily depends on the quality of these parts; (iii) they also require labor-intensive assembly with precision; and (iv) innovation and model changes are quick and frequent. For this reason, assembly-type manufacturing industries can to a large extent share the same supporting industries and human resources. That is why they should be grouped together in strategic planning.

Vietnam’s workforce is particularly suited to labor-intensive assembly with precision mentioned above, and that is why such FDI inflows are accelerating in recent years. However, Vietnam must also learn and internalize the other aspects, (i) (ii) and (iv) above, to fully take advantage of the strength of assembly-type manufacturing. If this is done successfully, assembly-type manufacturing will surely become the main pillar of Vietnam’s industrialization, providing jobs, improving skills, and raising national income.

³ Assembly-type manufacturing has been the driving force of economic transformation of Japan, Taiwan, Korea, ASEAN4 and China, and it is also expected to play the same role in Vietnam. For other industries, such as garment, footwear, food processing, software, energy, industrial materials, construction, logistics, trade, telecom, finance, tourism, etc, other strategies must be sought since the argument in this section is not applicable to them.

Even without any further policy reform, FDI will probably continue to come to Vietnam and, given sufficient time, the country will reach the income and industrial levels of Thailand and Malaysia today. However, as argued above, these ASEAN neighbors remain heavily dependent on foreign technology and management. Despite many decades of supporting industry and SME promotion, their human resources and local parts makers remain too weak to break through the “glass ceiling” and reach the level of Taiwan or Korea. If Vietnam does not have a good policy, it is also likely to stop at the level of Thailand and Malaysia today.

Another important consideration noted earlier is that Vietnam is required to integrate much faster than ASEAN4. Thailand and Malaysia absorbed a large amount of FDI, but they were not “open” in the sense that they kept high tariffs, localization requirement, import restrictions, etc. for a long time. They used these measures for at least a few decades to develop and protect their industrial base. But Vietnam must open up now, before building such an industrial base, and face global competition. Vietnam’s industrial strategy must therefore be different from and bolder than those of Thailand and Malaysia.

Let us now propose a new manufacturing strategy for Vietnam based on the above considerations.

- (1) Vietnam should liberalize its trade and investment regimes unconditionally and more decisively than ASEAN4 did in the past, create the most free and low-cost business environment in East Asia, and attract a large amount of FDI without selectivity⁴. This decisive openness should be the strongest selling point in FDI marketing.
- (2) Linkage between domestic firms and foreign multinationals should be promoted as a matter of highest priority. Vietnamese firms should double efforts to become suppliers of FDI manufacturers and foreign buyers, and improve their capabilities. The government should support their effort.
- (3) Vietnam should learn the *monozukuri*⁵ spirit of Japan’s *integral manufacturing*, as explained below, as quickly as possible. Vietnam should aim to become a reliable developing country partner in high-quality manufacturing with Japan and other developed countries producing integral products.

Prof. Takahiro Fujimoto of Tokyo University and his research team have come up with the business architecture theory to explain the differences among the manufacturing industries of major economies such as Japan, China, the United States, Korea, Taiwan, and ASEAN countries. This theory has a significant implication for Vietnam’s industrial strategy. According to Prof. Fujimoto, there are two basic architectural types in manufacturing--modular architecture and integral architecture. In modular architecture, the modality of interaction among components is standardized for easy connection. For example, desktop computers are a typical modular product in which globally common components from various companies are freely combined. By contrast, in integral architecture, the complexity of interaction is happily accepted, and improvements are achieved through numerous trials and errors. For example, automobiles must

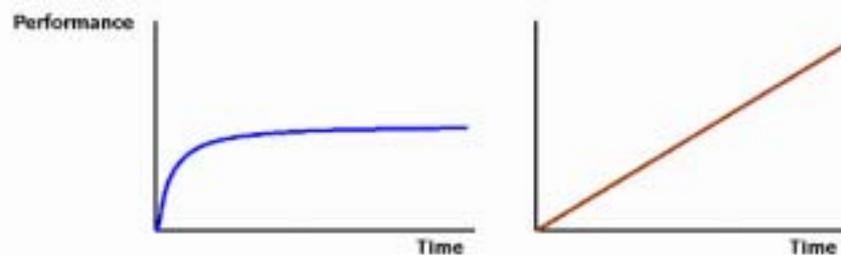
⁴ The only permissible reasons for rejecting FDI are environment, cultural indecency, and national security. This rule should be applied sparingly under transparent criteria.

⁵ *Monozukuri* literally means “making things” or “manufacturing.”

be manufactured with integral architecture if multiple objectives such as performance, comfort, fuel efficiency, safety, etc. are to be attained simultaneously. Generally speaking, modular architecture is suitable for obtaining quick results at low cost while integral architecture is appropriate for the pursuit of ever-higher quality in the long run.

Figure 1-2. Modular versus Integral Manufacturing

	Modular manufacturing	Integral manufacturing
Parts interface	Parts are common and can be used for any model	Each product has unique parts, specifically designed
Merits	Quick results and flexibility	Endless pursuit of quality
Demerits	No differentiation, excess entry, low profit, lack of R&D	It takes much energy and time to achieve results
Institutional requirement	Openness, quick decision making, flexible outsourcing	Long-term relations, building internal skills & knowledge



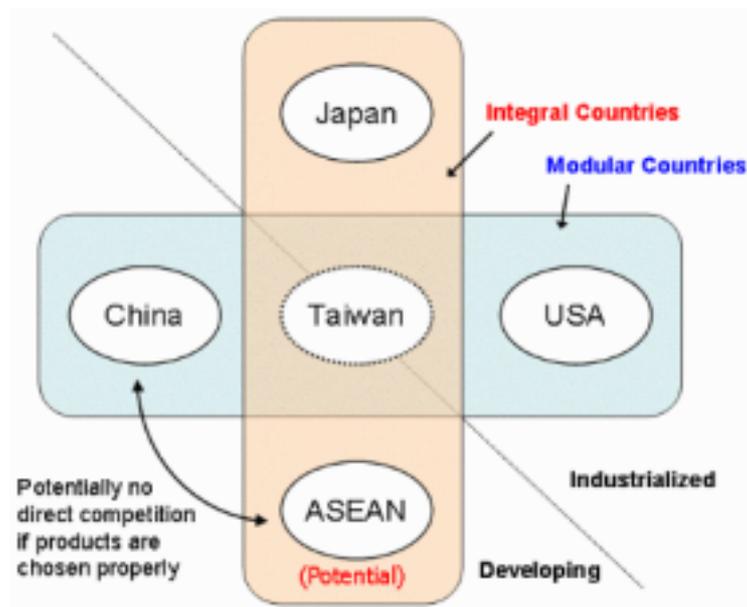
Correspondence between products and business architecture is not fixed; it evolves dynamically with the business strategy of each firm or country, technical progress, and consumer tastes. In addition, business architecture often has structural layers in which, for example, modularization may proceed in final assembly while integration may deepen in components.

Japan is a country of integral architecture, intensely interested in efficient factory operation and product integrity. By contrast, the United States excels in modularization and is good at slicing the supply chain of a product into appropriate elements, standardizing them and making profits by the novelty of combination. China is also a country of modular architecture, but its comparative advantage lies in labor-intensive modular products rather than knowledge-intensive modular products as in the case of the United States. Prof. Fujimoto considers China to be a country of quasi-modularity since its manufacturing features mass production of products with copied design and technology rather than original innovation.

Since the United States and China are both modular countries with different development levels, they are complementary production partners. The former can supply technology and capital while the latter can offer cheap labor to produce modular products. Meanwhile, Japan is a country of integral manufacturing with high technology, high wages and aged population looking for a developing country partner. Using cheap unskilled labor in China and ASEAN is not enough to fully exploit the potentiality of integral manufacturing. If ASEAN, the traditional

destination of Japanese FDI, learns to become a manufacturing partner with long-term vision and strong aspiration for high quality, Japan and ASEAN can form a strategic alliance in manufacturing integral products which are differentiated from Chinese products. However, this alliance remains a possibility since no ASEAN country has acquired necessary skills and attitude for Japanese-style manufacturing. As noted above, Thailand and Malaysia are currently struggling to become full-fledged manufacturing countries. They still need Japanese managers and engineers to stay, and depend heavily on FDI parts producers.

Figure 1-3. Production Alliances Based on Business Architecture



Source: Prof. Takahiro Fujimoto's explanation to the joint VDF-MOI mission in Tokyo, June 2005.

To become a partner in integral manufacturing requires ability to design and operate factories efficiently; maintain, adjust and repair machines; design parts; produce precision molds and dies; educate highly skilled industrial *Meisters*, and so on. These requirements are not new. But the point is that they must be accomplished well with purpose and tenacity. This will enable ASEAN to graduate from simple assembly by foreign orders to participation as an indispensable player in the global manufacturing network. This will also upgrade the Japan-ASEAN economic relationship to a higher level.

Among ASEAN countries, Vietnam and Thailand are top candidates for this feat. Vietnam should set a clear goal with appropriate action plans, and the Japanese government and business community should actively provide technical assistance and business cooperation for this purpose.

This perspective explains why supporting industries (especially high-quality plastic and metal processing industries) and human resource development (especially high-level production managers and engineers) are so crucial for Vietnam. They are needed to significantly raise

domestic manufacturing capability, and to differentiate Vietnam from China and other ASEAN countries. It also means that copying China's manufacturing style or receiving Chinese technical assistance is not desirable for Vietnam since it only leads to low-price, low-quality competition yielding little profit, as well as a direct clash with Chinese products.

6. Anticipated skill shortages in Japan

Japan desperately needs a developing country partner in integral manufacturing but has found none so far. It needs such a partner since its wages are too high and its population is aging, making it very difficult to find young engineers and production managers in sufficient number and quality inside Japan. The postwar baby boomers, born in 1947-49, with high skills are reaching the retirement age soon. The 1947 babies will become 60 years old in 2007 and begin to leave factories (the "2007 problem"). Their skills must be transferred to the next generation but Japan lacks a sufficient number of successors.

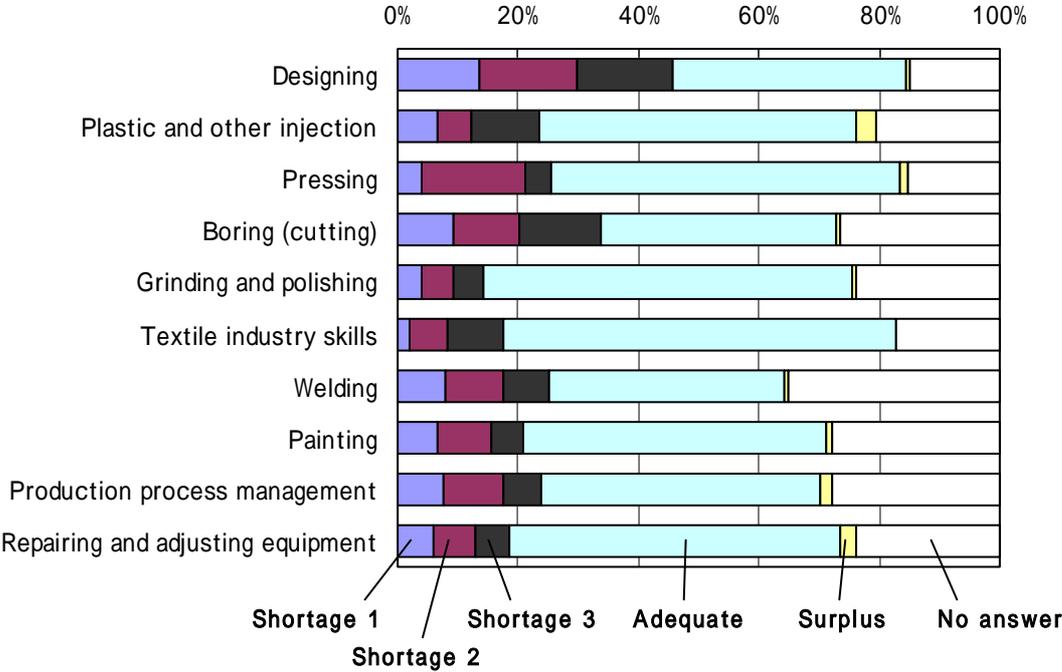
According to the *White Paper on Monozukuri*⁶, the number of monozukuri workers in Japanese manufacturing was 1.93 million in 2005. When asked if the "2007 problem" (retirement of skilled workers) was a serious concern, 30.5% of the manufacturing firms responded yes. Among them, main reasons for their concern included long time required for skill transfer (68.5%), lack of younger engineers with enthusiasm (64.5%), and difficulty in communication between teacher and student due to a large age or skill gap (41.9%).

Figure 1-4 shows the worker shortages for the ten largest basic industrial skills in Japan. As of 2005, worker shortages are not yet severe, with only 25.6% of the respondent firms reporting skill shortages in quantity or quality (or both), 47.9% reporting adequacy, and 1.7% reporting surpluses (these numbers are averages for the ten skills). However, as time progresses, skill shortages are likely to worsen. Many firms are expected to retain skilled workers beyond the retirement age, which will delay the impact of the 2007 problem for several years. But in the long run, Japan will inevitably face skill shortages unless fundamental solutions are found.

I have highlighted Japan as a principal monozukuri partner for Vietnam, since Japan is the only country in East Asia that has achieved a high level of integral manufacturing. In addition, Japan is already the most important manufacturing investor in Vietnam. Moreover, if Vietnam masters integral manufacturing, it can also cooperate more effectively with, for example, German automobile producers or Italian machinery companies. That is why I sincerely hope that high aspiration for assembly-type integral manufacturing be incorporated as one of the strategic pillars of Vietnam's overall industrial master plan.

⁶ Ministry of Economy, Trade and Industry; Ministry of Health, Labor and Welfare; and Ministry of Education, Culture, Sports, Science and Technology, *White Paper on Monozukuri*, 2005. Data in the text were obtained from the survey by the Ministry of Health, Labor and Welfare on enterprises with five or more regular employees.

Figure 1-4. Shortages and Surpluses of Monozukuri Workers in Japan



Source: see footnote 6.
 Note: These are the survey results on the ten basic industrial skills with largest numbers of workers in 2005. Shortage 1, 2 and 3 are shortage in quantity, shortage in quality, and shortage in both quantity and quality, respectively.