

# Competitiveness of the Philippine IT Industry: *What Lies Ahead*\*

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The Philippine information technology (IT) industry<sup>1</sup> has developed into one of the fast-growing and important industries of the country. It boasts of currently being the largest foreign exchange earner for the country. The country is also now known as the second largest producer of computer services in Asia, the first being India. Today, the industry has become more than just an industry that produces output and services. It has become an enabling technology for the development of the country, penetrating and linking businesses, industries, households, individuals and government, as information technology continues to pervade in all sectors of society.

Despite these, however, the industry suffers from structural weaknesses that put the long-term competitiveness of the industry at risk unless they are addressed. This *Policy Notes* briefly examines what lies ahead for the industry and offers strategies to keep the industry's present edge.

## Industry situationer

The Philippine IT industry is the outgrowth of the semiconductor industry that flourished in the 1980s when the country became part of the global production network of multinational companies feeding the global market with IT products, particularly semiconductor. It contributes about 11 percent and 9 percent of manufacturing value added and employment, respectively. Exports of IT products increased from US\$3.4 billion in 1991 to US\$14.7 billion in 1997 (Figure 1) while exports of IT services increased from US\$60 million in 1993 to US\$250 million in 1997 (Figure 2). Together, they account for about 60 percent of the country's total exports.

The experience of the country, however, is a big contrast to the NIEs (Singapore, Taiwan and South Korea) which, having been also an integral part of that global production network, have developed their respective indigenous IT industries with their own brands and products, and in the 1990s, became one of the largest global producers of key

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*\*This is based on Austria (2000).*

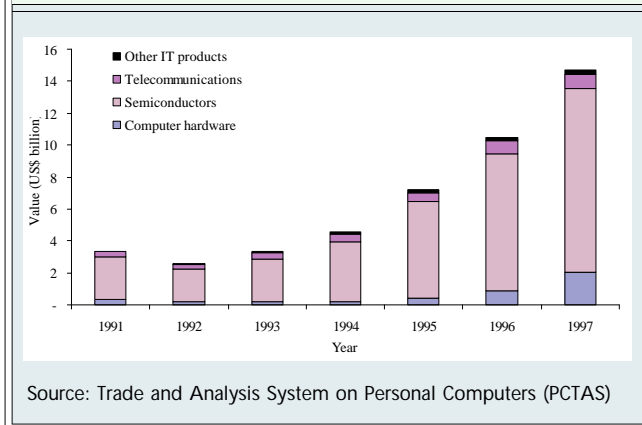
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*<sup>1</sup>The industry includes the manufacture of IT products (computer hardware, telecommunications equipment, semiconductors) and the provision of IT services (computer software and services). Consumer electronics is not included in the industry.*

*PIDS Policy Notes are observations/analyses written by PIDS researchers on certain policy issues. The treatise is wholistic in approach and aims to provide useful inputs for decisionmaking.*

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**Figure 1. Philippine Exports of IT Products, 1991-1997**



**Figure 2. Philippine Exports of IT Services, 1993-1997**



segments of the IT industry. The Philippine IT industry is still on a substantially lower level than those of the NIEs, both in terms of sophistication of the products and the technological complexity of the production process involved. Production consists mostly of labor-intensive assembly and testing operations. Localization of inputs is still at an embryonic stage as an approximate 54 percent of total exports relies on parts and materials imported on consignment basis. The high import content implies that foreign exchange earnings are far less than the gross level. It also implies that the industry does not create forward and backward linkages in the economy. Furthermore, considering that as-

sembly and testing belong to the lower segment of the IT production chain, the upper segment being product design and fabrication, the value added of the industry is therefore very low, if not limited to mere labor. Assembly and testing also do not require any sophisticated manufacturing technologies; thus, technology transfer is minimal.

Among its neighbors in the region, the Philippines is the only country where the IT industry is highly concentrated in just *one* major IT segment, i.e., semiconductors (Table 1), for its exports. The implication of this becomes more serious when one considers the country's high dependence on IT for its export earnings, again in contrast to its neighbors, with the exception of Singapore (Table 2). For one, it makes total exports of the country highly vulnerable to the global situation of the IT industry. Two, there will always be competing locations for these types of products as the labor cost in the country becomes relatively more expensive (as is already evident with the Philippines' emerging competitors like China and Mexico). More importantly, the lower level assembly characteristic of the industry serves as a constraint in itself in terms of absorbing new and more advanced technologies, which is *the* critical factor nowadays in maintaining one's competitiveness, given the rapid technological change in the industry. Unless this is addressed, this would put a severe constraint to the long-term growth of the industry.

**Market share.** In terms of market share, the Philippine IT industry has yet to create its niche market. In view of this, the concern for its long-term growth prospects understandably becomes more critical. The country's market share has remained at 1 percent during the period 1990-1997 (Table 3), in contrast to China's and Mexico's share of 2 percent each. These two countries are increasing their stakes in the IT market much faster than any of the ASEAN-Four. The Philippines also had the least percentage (41%) of IT products that managed to increase their market shares during the period 1991-1997 (Table 4). In contrast, 83 percent of China's and 73 percent of Mexico's products have improved their market shares.

The above finding is not surprising. Given that China and Mexico are also low-wage countries and given the increasing wages in the Philippines, these two countries serve as alternative locations for the labor-intensive segment of

**Table 1. Structure of IT Exports, Selected Countries, 1991-1997 (In percent)**

Country	Computer hardware	Semiconductors	Telecommunications	Other IT products	Total IT
Philippines	8.2	80.6	9.2	2.0	100.0
Indonesia	25.2	12.1	39.0	23.7	100.0
Malaysia	24.5	54.4	18.5	2.7	100.0
Thailand	44.0	29.0	14.2	12.9	100.0
Singapore	49.1	29.6	12.2	9.1	100.0
South Korea	19.2	52.0	14.6	14.3	100.0
Hongkong	23.8	34.4	20.7	21.2	100.0
China	25.5	9.7	29.8	35.0	100.0
Mexico	23.5	13.4	19.5	43.6	100.0

Note: Data are not available for the following:  
Malaysia and Korea - 1997; China and Hongkong - 1991; Thailand -1996

Source: Trade and Analysis System on Personal Computer (PCTAS)

the IT production chain. This should serve as a clear signal that unless the country moves away from labor-intensive assembly type of IT products, it would lose its share in the IT market. Competition from low-wage countries would eventually erode the Philippines' comparative advantage unless the country's IT industry shifts towards technology-intensive products. The problem is *not* really the issue of rising wages as shown in the experiences of Malaysia, Thailand and the NIEs where high economic growth rates were attained despite rising wage rates but that of *producing and selling the right products* in the market.

**Revealed comparative advantage (RCA).** Using the revealed comparative advantage (RCA)<sup>2</sup> as an indicator of competitiveness, only 16 out of the 81 5-digit SITC products being exported by the country are shown to be competitive. Of the 16, six are consistently improving on their competitiveness while 10 are in danger of losing their competitiveness as evident in their deteriorating RCAs. Again, as seen in Table 4, compared to the other previously-mentioned countries, the Philippines

had the least percentage (36%) of products that registered improvements in competitiveness between 1991 and 1997.

**Market positioning.** The high level of concentration on one product would not really be a problem for exporting as long as the world demand for that product is growing. Unfortunately, this is not true for the Philippines. Herein therefore lies another danger signal for the country. Much of its IT exports (44%) are accounted for by products that are deteriorating in world trade relative to other products. This means that the country is increasing its share in products whose shares in world trade are falling. Only 42 percent of exports are generated from products that are growing and dynamic in world trade; 12 percent are generated by products whose share in world trade are increasing but which the country is losing its market share; and 1.5 percent are generated by products that

<sup>2</sup>RCA is measured as the ratio of a product's share in a country's exports and the product's share in world trade. A ratio of greater than 1 indicates that a country has a comparative advantage in that product while a ratio of less than 1 indicates the opposite.

**Table 2. Share of IT to Country's Total Exports, Selected Countries, 1991-1997 (In percent)**

Country	1991	1992	1993	1994	1995	1996	1997	Average
Philippines	38.0	26.3	29.4	34.5	41.8	51.1	58.3	39.9
Indonesia	0.7	1.4	1.5	2.7	3.0	4.2	3.9	2.5
Malaysia	22.8	24.2	27.4	30.1	33.3	37.2	-	29.2
Thailand	14.9	16.2	16.8	19.1	20.7	-	22.1	18.3
Singapore	31.5	43.6	39.2	51.6	50.3	52.7	53.0	46.0
South Korea	17.4	18.4	18.7	21.1	24.1	23.3	-	20.5
Hongkong	-	21.5	22.1	22.3	23.6	22.6	22.1	22.4
China	-	5.6	6.5	8.0	9.6	10.9	11.7	8.7
Mexico	4.8	14.9	15.1	16.8	16.3	16.3	18.3	14.6

Note: Data are not available for the following:  
Malaysia and Korea - 1997; China and Hongkong - 1991; Thailand -1996

Source: Trade and Analysis System on Personal Computer (PCTAS)

need some restructuring. And while the latter looks small in percentage, the amount of resources involved could be large. Efficiency in the economy could therefore be improved by moving away from the production of these products and reallocating their freed resources to where they could be used more efficiently.

A comparison with the other countries also shows that the Philippines is not positioning its markets as best as the others. Majority of the exports of the other ASEAN, the NIEs, China and Mexico are accounted for by products that are growing in world trade. In short, they are exporting the right products.

A further analysis of the products where the Philippines is losing its market opportunities shows that these are the same products where the country's competitors (Indonesia, Mexico and China) are gaining market shares. Unless the country regains or improves on its competitiveness on these products, its competitors will eventually eat up whatever small market share remains for the country.

**Table 3. Market Share for IT Exports, Selected Countries, 1991-1997 (In percent)**

Country	1991	1992	1993	1994	1995	1996	1997	Average share 1991-1997	Change 1997-1991
Philippines	1.0	0.7	0.8	0.9	1.1	1.6	2.2	1.2	1.2
Indonesia	0.1	0.1	0.1	0.2	0.2	0.3	0.3	0.2	0.3
Malaysia	2.4	2.6	3.1	3.5	3.9	4.3	-	3.3	2.0
Thailand	1.3	1.4	1.5	1.7	1.8	-	2.1	1.6	0.8
Singapore	5.6	7.3	7.1	9.9	9.5	9.5	10.4	8.5	4.8
South Korea	3.8	3.7	3.8	4.0	4.8	4.3	-	4.1	(3.8)
Hongkong	-	1.7	1.6	1.3	1.1	0.9	0.9	1.2	(0.8)
China	-	1.3	1.5	1.9	2.3	2.4	3.2	2.1	2.0
Mexico	0.4	1.8	1.9	2.0	2.1	2.3	3.1	1.9	2.7

Note: Data are not available for the following:  
Malaysia and Korea – 1997; Thailand – 1996; Hongkong and China – 1991

Source: Estimates of the author using PCTAS.

### Issues confronting the Philippine IT industry

What are the reasons behind this worrisome prospect for the Philippine IT industry?

Below are a number of factors that may explain this, some of which are systemic in nature. Infrastructural and institutional bottlenecks, and the inadequacy of the educational system to meet the technical human resource requirements of the industry are among those that have remained critical constraints to the industry's further growth.

\* *Lack of political will to implement a comprehensive policy to promote IT as an industry.* As an industry, semiconductor has been identified as an export winner. But apart from the BOI incentives for semiconductor firms, there is no comprehensive and clear policy to promote IT as an industry. *IT21*, the country's IT action agenda for the 21<sup>st</sup> century, lacks focus. Its vision of transforming the country into "Asia's Knowledge Center," while ambitious by itself, is not realistic considering the current state of the industry. Moreover, government efforts in promoting IT are fragmented, as shown by the numerous offices in charge of policymaking and promotion of IT in the country.

\* *Investments in R&D: too little.* There is a general consensus that for high tech industries, investment in R&D is, at least, of equal if not greater, importance to those

**Table 4. Percentage of Products with Improved Competitiveness, 1991-1997 (5-digit SITC)**

Country	Market Share	Revealed Comparative Advantage
Philippines	40.7	35.8
Indonesia	87.0	87.0
Malaysia	83.2	77.1
Thailand	78.0	64.5
Singapore	79.4	72.5
South Korea	50.4	48.8
Hongkong	27.2	42.0
China	82.6	64.4
Mexico	72.9	84.5

Source: Austria, 2000

related to production (Ernst and O'Connor 1992). Investment in R&D has become a source of competition for IT firms, considering the speed of technological obsolescence. Product development has therefore become an essential factor to remaining competitive and a source of temporary technological monopoly rents until the new technology becomes obsolete or better technologies are developed.

The NIEs invested a lot on R&D to develop their technological capability. In contrast, a study by Cororaton (1998), using UNESCO data, shows that the Philippines' ratio of investment to GNP—at 0.2 percent in 1992—is far below the maximum of 3 percent among the countries studied.

\* *Lack of specialized skills for high value added IT products.* The skill requirements for work beyond final assembly have become greater. However, the country's engineers do not have the specialized skills for high value added IT products. Companies have to spend a lot to send their manpower to the United States for training. Such a high cost erodes their price competitiveness. Compounding the situation is the fact that the average stay of this kind of manpower is only 2 years since they are being pirated by companies overseas.

\* *Infrastructure and institutional bottlenecks.* Inadequate infrastructures, particularly in transportation and telecommunication, and congestion in the metropolis have always been the perennial problems of the country. Furthermore, there is the high cost of doing business caused by delays in the processing of papers and graft and corruption. High infrastructure costs and delays erode profitability and competitiveness.

One clear institutional bottleneck affecting the industry is the apparent absence of a complete and accurate database for IT services and software. Exports and imports of IT services are recorded under the "services" account classification of the Bangko Sentral ng Pilipinas (BSP) that includes all other types of services. The other official statistical gathering bodies like the National Statistics Office (NSO) and National Statistical Coordination Board (NSCB) also do not distinguish IT services and software from others under their existing classification of accounts or industries. The absence of such database makes industry analysis difficult, if not impossible.

\* *Inadequate support industries, including those providing support services.* The high import content of the country's IT industry is also caused partly by the inadequate support industries and services in the country that are supposed to allow the primary production activities to take place without interruptions and to adapt and expand.

\* *Demand for IT applications: Is there a solid market base?* Despite the growth in demand for IT products as a result of the increase in per capita income in recent years and the deregulation of the telecommunication industry, the current domestic market has still remained small. However, it has a great potential for expansion. The public service sector could give the industry a big boost if only it would increase its demand for IT. The computerization of public services in the NIEs has not only improved the delivery of public service but has also created a huge domestic demand for IT which in turn led to the industry's growth and expansion. In the Philippines, while there is admittedly a marked increase in the computerization of projects of the government, the state of technological advancement in the public sector nonetheless remains low.

## Action agenda

Technology advancement in the IT industry is very fast. However, the limited capability of the industry in the country in terms of skills and facilities has somewhat limited the continued transfer of process technologies from multinational companies. Unless the industry improves on its local capability to absorb and cope with new and advanced technologies, the long-term competitiveness of the industry will be at risk especially as the country's competitors are increasing their stake in the world IT market much faster than the country.

The main agenda at the turn of the century should therefore be to transform the Philippine IT industry from a labor-intensive low-skill industry to a knowledge- and technology-intensive industry. The industry needs to capitalize on IT services as this appears to be its greatest strength. However, in order for the country to upgrade its competitive position in the industry amidst the accelerating global technology race, a number of cross-cutting strategies to lessen or overcome such difficulties may be considered:

**a) Implementation of a comprehensive IT policy**

- \* Private sector to identify the industry's niche products and services which will become the focus of efforts on R&D, manpower development and investment
- \* Review policy gaps in IT
- \* Fast track e-commerce bill and other technology-related bills
- \* Strengthen the National IT Council (NITC) as a government agency in charge of promoting IT industry by giving it a regular annual budget to carry out its function

**b) Investments in R&D**

- \* Private sector to take a greater role in R&D for the industry, given the constraints in the government's budget
- \* Focus R&D on high value-added IT products, product design and process
- \* Enforce intellectual property rights (IPR)


**c) Development of specialized skills for high value-added IT products**

- \* Incorporate IT in all levels of education (primary, secondary and tertiary) in order to create an "IT culture" in the mindset of the future workforce and prepare them for the greater skills requirements of globalization
- \* Re-design engineering and other natural sciences curriculum by putting emphasis on developing the capability, creativity and attitude of students to design and develop new products and processes
- \* Invest in specialized technical training schools to elevate the technical competencies of the labor force

**d) Development of a national information infrastructure**

- \* Invest in telecommunication infrastructure by building public telecommunication and specialized networks that could make IT accessible to everyone
- \* Harmonize classification of IT services by the statistical gathering government bodies by following the GATS Services Sectoral Classification
- \* Build a database for IT services by including IT services in the existing government statistical system accessible to the public

**e) Role of government in IT diffusion**

- \* Create an enabling environment for IT diffusion by making access to information technology cheaper
- \* Utilize local IT consultants instead of foreign consultants in providing IT services in government projects. 

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