

## THE PHILIPPINE ELECTRONICS INDUSTRY

LEONCIO MARCELO and CATHY AQUINO

Economic Development Foundation

Philippines

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### OVERVIEW

#### Historical Development

The Philippine electronics industry refers to the assembly of the electronic components like semiconductor, electronic board products, consumer electronic products, computer hardware and other related telecommunication and industrial products.

The evolution and development of the industry has started in the country in the mid-1970's, boomed in 1975, slowed down in mid-1980's, and is now beginning to look attractive to new investors. The details of these are presented in the discussions below.

#### Early beginnings

Electronics industry in the Philippines began in the mid-1970's when multinational companies decided to establish their semiconductor assembly business in the country. Local entrepreneurs providing assembly subcontracting services had also begun to appear by the mid-1970's.

#### The semiconductor sector emergence

The semiconductor assembly sector started in the mid-1970's. The Philippine subcontractors involved themselves with the semiconductor assembly when the electronic watch industry boomed in 1975 and 1976. This trend developed large semiconductor assembly sub-contracting companies such as Stanford Microsystems.

While the semiconductor industry was growing steadily during this period, the communications industry, the games industry, and the microcomputer industry experienced explosive growth. These companies turned to Hongkong (the free port) on an urgent basis for board-stuffing labour and then for completed boards quoted on a finished and tested basis. Such activities were virtually impossible to undertake in "tariff" countries while the sourcing procedures were being developed.

### **The industry crisis**

When the semiconductor industry experienced a slow down in 1985-1986 the country had no plans to turn or to diversify into other electronic products as other ASEAN countries did. This crash, together with the EDSA revolution, mortally wounded many local entrepreneurs and severely injured others, and set back the indigenous Filipino electronics industry nearly a decade. The revolution caused US multinationals to reassess their expansion plans. Likewise, it virtually stopped all Japanese investments for about two years.

The surge of the currencies of the neighbouring ASEAN countries against the US dollar had caused electronics manufacturers from these countries to move out and expand to countries with low wages. But because of perceived unstable political situation, the Philippines was excluded from this investment opportunity. These factors also limited the use of Filipino subcontractors by Japanese and other foreign manufacturers.

### **Recovery and expansion**

The Philippines is again beginning to look attractive to new investors and those looking for subcontractors because the political system is seen to be stabilizing and labour unrest diminishing. The Uniden and Wescon move into Manila from Taiwan, the use of subcontractors by NEC, the expansions of Texas Instruments and Motorola are good signs of a brighter era for the industry.

### **Current Industry Profile**

The current electronics industry in the Philippines as defined by the Board of Investment (BOI) is composed of electronic components - semiconductor as part of it, consumer electronics, telecommunications and industrial electronics, and computer software/hardware sectors as shown in Figure 1.

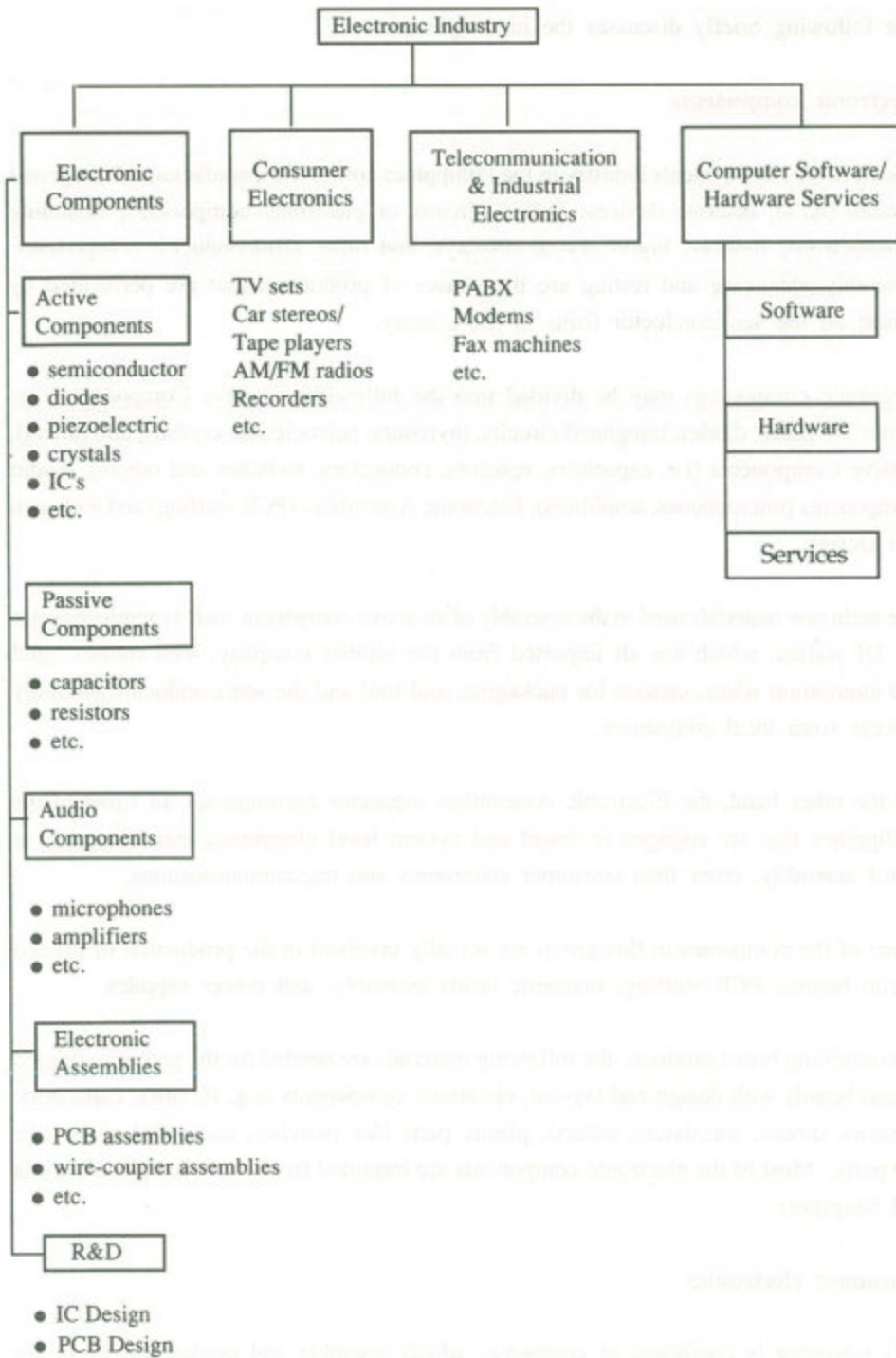


FIGURE 1. ELECTRONICS INDUSTRY TREE



The following briefly discusses the industry sectors:

### **Electronic components**

The electronic components industry in the Philippines covers the manufacture of integrated circuits (IC's), discrete devices, hybrid circuits or electronic components, including optoelectronic devices, liquid crystal displays, and other semiconductor components. Assembly/packaging and testing are the phases of production that are performed by almost all the semiconductor firms in the country.

Electronic components may be divided into the following - Active Components (i.e. colour TV tubes, diodes, integrated circuits, thyristors, piezoelectric crystals, and others), Passive Components (i.e. capacitors, resistors, connectors, switches and others), Audio Components (microphones, amplifiers), Electronic Assemblies (PCB stuffing) and Research and Design.

The main raw materials used in the assembly of an active component such as semiconductor are DI wafers, which are all imported from the mother company, lead frames, gold and aluminium wires, cartons for packaging, and tool and die semiconductor assembly process from local companies.

On the other hand, the Electronic Assemblies subsector encompasses all firms in the Philippines that are engaged in board and system level electronics manufacturing or board assembly, other than consumer electronics and telecommunications.

Some of the companies in this group are actually involved in the production of printed circuit boards, PCB stuffing, magnetic heads assembly, and power supplies.

In assembling board products, the following materials are needed for the process - printed circuit boards with design and lay-out, electronic components (e.g. IC lines, capacitors, resistors, diodes, transistors, others), plastic parts like switches, and metal parts like I/O ports. Most of the electronic components are imported from countries like Malaysia and Singapore.

### **Consumer electronics**

This subsector is composed of companies which assemble and market locally or for export, consumer durables that are electronically operated. Examples of these are video equipment, audio equipment, and other personal electronics.

The basic materials needed for the assembly of Consumer Electronic products like televisions are printed circuit boards, electronic components (i.e. TV valves), plastic casing materials, metal products like antennae, and other accessories.

### **Telecommunications and industrial electronics**

This subsector consists of firms engaged in assembly or manufacture of various telecommunication equipment and peripherals like radio transceivers, modems, telephone sets and other industrial electronic controls, instrumentation and their components.

### **Computer software/hardware and services**

This includes software development, data encoding, computer hardware and peripherals assembly. Although BOI treated this sector as part of the electronics industry, the project group felt that the computer software and services should be discussed independently.

In terms of production, the first group dominates this segment and accounts for about 73% of the Philippine total exports of electronics. This pattern started to emerge in the mid-1970's, when the Philippines harvested most of the second wave of investments from transnationals in the Pacific. The process of expansion eclipsed the efforts of Filipino entrepreneurs in the field, which was pioneered by Stanford Microsystems Inc. (once acknowledged as the biggest third party subcontractor in Asia before it collapsed in 1985).

### **Geographical Concentration**

Most of the firms in the four sub-sectors of the industry are situated within the Metro Manila and nearby provinces like Laguna, Cavite, Bulacan and Rizal.

The industry chose these areas for assembly and manufacture of products for easy access to the relevant industries and business organizations. Also, these areas are considered as environmentally suitable for production.

## **ECONOMIC VALUE OF THE INDUSTRY**

### **Export Performance**

Electronics leads the non-traditional export of the Philippines. In 1992, the Bureau of Export Trade and Promotions (BETP) reported that export receipts of electronics

amounted to US\$2.77 billion which accounts for 28.26% of the country's total exports for the same period.

The total export performance of the Philippine electronics has grown 173% in the last twelve years - from US\$700 million in 1980 to US\$2.777 billion in 1992 as recorded by Department of Trade (DTI) and BETP.

The exemplary performance of electronics in recent years, with its registered growth of 17.21% from 1986 to 1990, has made an important investment totalling to US\$117.86 million.

Semiconductors put in the best export performance, accounting for 77.76% of total electronic exports in 1992. Translated in monetary terms, this amounts to US\$1.96 billion. Philippines is now the third largest assembler of semiconductor devices for the American market. Products include passive, active and liquid crystal devices.

Telecommunications and sound recording apparatus and appliances earned US\$390 million in 1992, an impressive increase over 1986 figures which amounted to mere US\$19.01 million. Insulated electric wires, cables, bar and strips accounted for the biggest share of export in this group.

### **Employment and Skills Development**

The electronics industry has shown impressive gains in labour generation brought about by the continued operation and expansion of existing companies as well as by the entry of new firms.

The industry manpower, as one of the major factors that contribute to the sector's development, has indicated parallel growth to the export performance. The total employment of 1990 has grown to 61,304 from 27,276 of 1986, fifty percent (50%) of these were from semiconductor sector. As shown in Table 1, the employment trend from 1986 has slowly picked up, which indicates a good push to the industry.



## DOMESTIC MARKET SITUATION

### Participants

Currently, the Board of Investment (BOI) registered approximately 200 electronics manufacturers/exporters and 23 firms with the Export Processing Zone Authority (EPZA). Twenty-two percent (22%) of these are registered as Semiconductor firms, 44% are on Consumer Electronics, and 34% belongs to Rest of Electronics sub-sector.

**TABLE 1**  
**EMPLOYMENT GENERATION**

SECTOR	YEAR				
	1986	1987	1988	1989	1990*
Semiconductor	21,026	22,207	23,542	26,828	27,703
Computer	1,345	2,658	7,347	8,863	9,098
Consumer Durables	3,679	5,230	5,947	8,528	12,171
Telecom & ROE	1,226	1,907	5,419	10,883	12,332
<b>Total</b>	<b>27,276</b>	<b>32,002</b>	<b>42,255</b>	<b>55,102</b>	<b>61,304</b>

\* BOI registered firms only  
Source: Philippine Board of Investment

Groups and associations recognized by the industry are formed by these companies. Among these are the Semiconductor Electronics Industry Foundation, Inc. (SEIFI) which has a current membership of 44 companies, the Electronics Industries Association of the Philippines, Inc. (EIAPI) with 37 members, the Consumer Electronic Products and Manufacturing Association (CEPMA), the Philippine Electronics and Telecommunications Federation (PETEF), Association of Semiconductor Manufacturing Engineers of the Philippines (ASMEP) and the Electronics Kapihan which has 30 members.

Two types of companies exist in this electronics segment - the CAPTIVE MANUFACTURERS (63%) which are wholly or majority foreign owned and their output is primarily purchased by parent companies which cater to the requirements of the latter, and the MERCHANT MANUFACTURER (37%) representing the local subcontractor firms who have to find their own markets.

**Sales of Semiconductor**

Almost all of the semiconductor firms in the country are assembling for their respective foreign mother companies. There are already target markets outside the country for the ICs assembled in the Philippines. Hence, no domestic sales are performed by this set of companies. A big domestic demand exists in this line of products and all of the electronic components used in local assembly are imported.

**Local Content / Value Added**

**Local content**

A big percentage of the total basic materials used in the production of the local electronic products are imported specially for the semiconductor industry. The raw materials used for manufacture of these basic materials were taken from the Philippines, like the gold ingots for production of gold wire, and copper for production of copper wire, and other relevant electronic components.

**Local value-added**

The total electronics value-added is estimated at 11% to 15%.