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# MARKET STUDY ON THE MEXICAN MARKET

# FOR ELECTRONIC COMPONENTS



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**INDEX**

## 1. BACKGROUND

The Mexican electronics industry represents 2.6% of the country's GDP with a total production of $ million in 1989. This industry has shown one of the highest growth rates in the last decade, averaging 5% annually since 1980, an average significantly above the country's total GDP growth rate of one percent in the same period. For many years, the Mexican electronics industry followed import substitution policies designed by the Government to foster local production. Many sectors were also bound to development plans imposing local content requirements, export to import ratios and other conditions in order to have access to preferential tariffs, import quotas and other incentives. These measures were very successfull in fostering local production of finished products, as well as certain parts and components. Mexico's recent trade liberalization policies have had a major impact on this industry, since they reduced import duties and also eliminated the prior import permit previously required to import components. Preferential tariffs, which had been available to national producers in some segments of the electronics industry, were reduced or completely withdrawn. Presently, the domestic electronics industry relies heavily on imported components. Total imports of components have increased from US$35.4 million dollars in 1977 to $154 million in 1989.

Additionally, the long expected opening of the computer industry was announced on April 3, 1990. These new measures eliminate the prior import permit required on the importation of computers. A 20% import duty was assessed on all automatic data processing machines, while all parts for the manufacture of computers, except modular circuits, pay a 5% duty and modular circuits for retail 15%.

Additionally, the decree for the establishment of fiscal incentives for the promotion of the computer industry was published on April 3, 1990. This program was designed within the new administration's policy of economic internationalization and deregultion in order to strengthen the local computer industry. In consists of a 100% waiver of all import taxes on imported components and equipment. The beneficiaries of these incentives are those companies manufacturing components or finished products in Mexico that are registerd as computer companies with the Secretariat of Commerce and Industrial Development (Secretaría de Comercio y Fomento Industrial - SECOFI). The total value of imports subject to tax incentives may not exceed 80% of the sum of the value incorporated domestically (locally produced sales minus imports) plus net investment in national fixed assets plus two times the investment in research and development made by these firms. Additionally, the value incorporated nationally should at least represent 30% of direct sales of locally manufactured products.

These incentives will continue benefitting the manufacturers previously within the Development plan and will attract some new

firms to register with SECOFI. These measures will both foster continued domestic manufacture as well as an increase in imports of computers, while at the same time sustaining the growth of all related industries, such as the components, software and services sectors. These new developments will open a variety of new alternatives both for domestic computer manufacturers and foreign suppliers to the industry.

## 2. ECONOMIC ENVIRONMENT

With the objective of reducing the inflation rate, the Mexican authorities implemented a stabilization program in 1988, called the Economic Solidarity Pact, which features traditional austerity measures, entailing tight fiscal and monetary policies and unorthodox measures, such as price, wage and exchange rate controls. This program has been the cornerstone of Mexico's economic policy over the past four years and has resulted in a drastic reduction of the inflation rate, from an annual rate of 159.2% in 1987 to 51.7% in 1988 and 19.7% in 1989. Inflation rebounded to 29.9% in 1990 but the Mexican government aims to achieve a 14% inflation rate in 1991, which seems a reasonable estimate based on an annual inflation rate of 13.3% as of October 1991. Along with the objective of consolidating the progress made in price stabilization, Mexico's macroeconomic policy in the short run aims to reaffirm gradual and sustained economic recuperation, basically by establishing the necessary conditions to encourage national and foreign investment and by stimulating local demand.

After the 1986 recession, Mexico's gross domestic product (GDP) increased a moderate 1.7% in 1987 and an additional 1.3% in 1988. Domestic economic activity recovered for the third consecutive year in 1989 with a growth rate of 3.1% and further 3.9% in 1990 to reach $234 billion (1). With an 81.1 million population, per capita GDP was estimated at $2,874 in 1990. Additionally, manufacturing output grew by 5.2% in 1990 in real terms, private investment and consumption expanded 13.6% and 5.2% respectively and public investment was up 12.8%. During the 1991-1994 period GDP is expected to maintain an average annual growth rate of 2.5%-3%. Preliminary figures for 1991 place GDP growth at 4.5%-5% for this year.

In an effort to revitalize and open the Mexican economy, the Mexican Government undertook a series of structural changes, including the accession to the General Agreement on Tariffs and Trade (GATT) on August 24, 1986 leading to an extensive trade liberalization process: import permits were eliminated on all but 198 of the total 11,812 tariff items based on the Harmonized

1. Note: All values in this report, unless otherwise stated (Mexican pesos, Mex$, Canadian dollars, Cdn$, etc) are quoted in United States dollar equivalents.

System adopted in 1988. Official import prices are no longer applicable, nor the 5% export development tax, and import duties were lowered from a maximum of 100% in 1982 to 20% since January 1988. The weighted average tariff rate is now 10.4%. The automotive and computer industries have also been liberalized, through the elimination of prior import permits, to allow free entry of products in these industries. The approval of the North American Free Trade Agreement will further strengthen trade between Canada, the United States and Mexico.

According to official data from the Mexican Secretariat of Commerce and Industrial Development (SECOFI), Mexico's trade balance in 1990 dropped once again to a $3 billion deficit from -$645 million in 1989. Exports increased by 17.5% in 1990, from $22.8 billion to $26.8 billion, while imports grew 27.3%, from $23.4 billion to $29.8 billion in 1990, having already increased 23.8% in 1989 and 54.9% in 1988. As of September 1991, total exports for the year amounted to $20.7 billion and imports to $27.2 billion.

Total Mexican imports from Canada increased 24% in 1989 and decreased 1.5% in 1990. Total Canadian exports to Mexico amounted to Cdn$594 million, while total Canadian imports from Mexico were valued at Cdn$1,730 million in 1990. According to Mexican figures, in 1989, 1.9% of Mexico's imports came from Canada, while 1.2% of its exports were to Canada. This makes Canada Mexico's fifth largest exporter and sixth largest importer.

## 3. MARKET ASSESSMENT

Mexico is highly dependent on imported technology to cover its industry's needs for high technology products and inputs. Despite continuous efforts of the Mexican Government to increase the percentage of national integration in the production of electronic products, the Mexican electronics industry still relies heavily on imported inputs, particularly in the high technology area.

Between 1983 and 1988, the total demand for electronic components has increased at a steady annual average rate of approximately 14%, 1988 topping all expectations with apparent consumption valued at $165.2 million, up from $127.0 million in 1987 (see Table 1). 1989, showed a further 5% growth to place total demand at $172.9 million, while in 1990 the market grew 12.3% for a total of $198.1 million.

**TABLE 1**

**TOTAL APPARENT CONSUMPTION OF ELECTRONIC COMPONENTS**
**(million $US dollars)**

| | 1986 | 1987 | 1988 | 1989 | 1990 | 1994[P] |
|---|---|---|---|---|---|---|
| Production | 35.2 | 47.4 | 56.1 | 61.0 | 67.2 | 89.9 |
| + Imports | 116.1 | 97.9 | 132.2 | 141.8 | 166.0 | 255.3 |
| - Exports | 10.1 | 18.3 | 23.1 | 29.9 | 39.1 | 55.2 |
| **TOTAL** | 141.2 | 127.0 | 165.2 | 172.9 | 194.1 | 290.0 |

**Source: Import and export data by SECOFI; author's estimates**

Total demand for electronic components is expected to increase at an average annual rate of 10% in the next four years to reach $290 million by 1994, of which an estimated 87% will be of imported origin, while domestic production grows 7% per annum, mostly to cover increasing exports.

### 3.1 IMPORTS

Imports have played a paramount role in the Mexican market for electronic components. Total imports of components were valued at $35.4 million in 1977. During the 1978-1980 period of economic boom, imports increased 36% per year. With the economic crisis and the limitations on imports, these decreased to $60.1 million in 1983, down from $89.7 million in 1980. 1985 showed an all time high of $119.7 million to cover backlog demand that had accumulated for several years, in conjunction with expectations of a growing economy. In 1986 and 1987 imports decreased slightly, to more stable levels. In 1987, total imports amounted to $97.9 million and grew an unexpected 35% in 1988, to $132.2 million, as a result of Mexico's trade liberalization policies. In 1989, imports increased 7.3% to reach $141.8 million and another 17.1% in 1990 to $166 million. This figure is the highest in the history of Mexico's electronics industry and reflects both, the rapid growth of the industry in the face of a growing and export oriented economy, and a displacement of domestic production of electronic components by imported products as a result of their relatively lower prices, given the large reduction in import duties payable on these items.

Table 2 below, shows imports of electronic components by category. As can be seen, traditionally the most significant portion of imports corresponds to those of passive components, including inductors, transformers, condensers, printed circuits, resistors, capacitors, piezo-electric crystals, connectors, relays and switches. Total imports of these products amounted to $84 million in 1990, 4.5% above 1989 imports. Semiconductors

include transistors, thyristors and diodes and are the second largest segment with imports of $76.5 million in 1990, reflecting a 33% increase over 1989 levels. This sector has been the highest growing import segment, since it increased 34.3% in 1989 and 18.9% in 1988. Finally, valves and hybrid circuits together only represent 3% of total imports, or $5.5 million. Not included in this table (nor in Table 1) are subassemblies for the electronics industry whose imports represented $84.9 million in 1989 and $124.5 million in 1990.

**TABLE 2**

**TOTAL IMPORTS BY CATEGORY**
**(million US$)**

| | 1986 | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|---|
| Passive components | 66.8 | 52.5 | 81.8 | 80.4 | 84.0 |
| Semiconductors | 40.2 | 36.0 | 42.8 | 57.5 | 76.5 |
| Valves | 8.0 | 7.5 | 6.7 | 3.7 | 4.0 |
| Hybrid circuits | 1.1 | 1.9 | 0.9 | 0.2 | 1.5 |
| **TOTAL** | **116.1** | **97.9** | **132.2** | **141.8** | **166.0** |

Source: Secretaría de Comercio y Fomento Industrial (SECOFI)

The U.S. has traditionally been the most important supplier to the Mexican electronics industry, enjoying an overall import market share of 52%, followed by Japan (13.4%) and West Germany (11.8%). Other suppliers include Canada, France, Sweden, Great Britain, Italy, Brazil, Corea, Taiwan and Hong Kong.

Several factors have determined the predominance of the U.S., including the strong presence of major U.S. companies in the electronics industry, particularly in the area of computers; the familiarity of Mexican users with U.S. made components; the geographical proximity, with the resulting reduced freight costs, timely delivery and prompt availability of parts and service. Asian country competitors, in particular Japan, Taiwan and Corea, are marketing their products very effectively in Mexico, based on their relatively lower prices. Their products are predominantly used in the consumer electronics industry and in the manufacture of office equipment, microcomputers and peripherals. European products are relatively expensive, but their quality is perceived as the best. Canadian suppliers could take advantage of their proximity to the Mexican market and of the quality and reliability of their products to increase their share in this market. It is important for Canadian companies to continue reinforcing their marketing efforts in Mexico to maintain and increase their share of the market.

**TABLE 3**

**CANADIAN TRADE WITH MEXICO OF ELECTRONIC COMPONENTS**
(Cdn $000)

| | EXPORTS TO MEXICO | | | IMPORTS FROM MEXICO | | |
|---|---|---|---|---|---|---|
| | 1988 | 1989 | 1990 | 1988 | 1989 | 1990 |
| Transformers | 76 | 4 | 49 | 4379 | 1832 | 1949 |
| Static converters | 0 | 116 | 119 | 526 | 233 | 1868 |
| Inductors | 61 | 34 | 0 | 865 | 988 | 1229 |
| Parts | 88 | 180 | 594 | 725 | 652 | 868 |
| Capacitors | 0 | 90 | 74 | 3847 | 4952 | 7347 |
| Resistors | 8 | 11 | 216 | 1636 | 1867 | 1815 |
| Printed circuits | 141 | 30 | 22 | 899 | 1713 | 589 |
| Apparatus to protect elec. circuits, relays | 717 | 2017 | 1193 | 9755 | 18478 | 11588 |
| TV tubes, valveS | 11322 | 12057 | 11697 | 6 | 4065 | 1406 |
| Diodes | 0 | 2 | 139 | 1443 | 1670 | 1956 |
| Transistors | 25 | 1 | 56 | 932 | 840 | 1398 |
| Semiconductors | 48 | 136 | 78 | 1006 | 2338 | 3178 |
| Piezo electric crystals | 0 | 0 | 30 | 14 | 139 | 188 |
| **TOTAL** | **12486** | **14678** | **14267** | **26033** | **39767** | **35379** |

Source: Statistics Canada - International Trade Division

Based on data published by Canadian authorities, total Mexican imports from Canada have fluctuated only slightly in the last four years, Total imports amounted to Cdn$14.3 million in 1990, down from Cdn$14.7 million in 1989. The largest export category has clarly been cathode ray tubes for televisions, which account for 70% of total exports.

Over 90% of Canadian imports from Mexico, which increased from the Cdn$26 million of 1988 to Cdn$39.8 million in 1989 and then fell to Cdn$35.4 million, are from the maquiladora industry, most of which is located on the Mexico-U.S. border. The maquiladora industry operates under a special legal status, basically importing materials in-bond, assembling them locally and subsequently exporting them, having basically no access to the domestic market. The number of maquiladora firms has increased rapidly since 1965. The most important segment of the maquiladora industry has been the "electrical-electronics sector" accounting for approximately 30% of the number of firms (or 300 companies), 40% of employment (or 88,000 persons) and 44% of total value added by the industry (or $1.3 billion). Sourcing by maquiladoras is almost totally done abroad. The total consumption of materials by the electronic maquiladoras is about 15 times greater than the consumption of the electronics

manufacturers supplying the domestic market. Of the total consumption, 36% is composed of electronic components.

Canadian products with best sales prospects in Mexico include: power supplies, bare boards, cable harnesses, integrated circuits, multilayer circuit boards, electronic tubes, cable and connectors, multiple connectors, relays, switches, resistors, capacitors, semiconductors, transistors, inductors and diodes

### 3.2 DOMESTIC PRODUCTION

Manufacturers of electronic parts and components grew under the import substitution policies, almost totally oriented to supplying the consumer electronics industry. Therefore, the displacement of production by imports and the reduction of the domestic content requirements on locally manufactured products in all segments of the electronics industry have had a negative effect on them.

Since 1981, 19 manufacturers of electronic components for consumer electronics have stopped production. The total number of manufacturers has not changed significantly, because new plants have appeared thanks to the growth of other sectors. Of the 32 firms identified in 1988, 21 are of recent formation and 12 fabricate printed circuit boards, mainly for computers and telecommunications equipment. Employment in local component manufacturing has decreased substantially, since the new plants are small

Domestic production of electronic components presently represents 16% of total demand, down from 23% in 1987 because of the increased competition from foreign products. In 1990, local manufacture of components was estimated at $71.2 million, of which $39.1 million were exported. Among the products manufactured in Mexico are cables, power supplies, external metal and plastic parts, packaging material, electronic sub-assemblies, printed circuits, integrated circuits, screws, capacitors, condensers, resistors, potentiometers, diodes, switches, transistors. Many of these are produced by foreign companies with manufacturing plants in Mexico, such as Motorola, Texas Instruments and Toshiba. Parts and raw materials used in the local production are mostly imported.

## 4. END USERS

The most important end user sectors for electronic components, are the local computer, telecommunications, consumer electronics and office machine industries. Each one of these four sectors will be analyzed separately below.

## 4.1 COMPUTER INDUSTRY

In 1981, the Mexican government established the Computer Industry Development Plan, which defined a complete set of objectives including the formation of an internationally competitive local industry to be increasingly oriented towards exports, as well as the promotion of industrial linkages to increase local contents and the investment in research and development to improve the control of technology and strengthen competitiveness. In order to achieve these objectives, the plan established a comprehensive set of policy instruments, such as fiscal incentives, import controls and preferential tariffs, financial support, government procurement and foreign investment regulations.

Gradually, these incentives have been reduced. In 1985, imports of parts, components and subassemblies were freed from import licenses and a reduction of tariffs occurred. These liberalization measures resulted in an increasing supply of products imported as semi-knocked-down kits, or partly disassembled equipment, by firms operating outside the plan. The Salinas Government has ended the provision of preferential tariffs for the import of parts and components by manufacturing firms operating within the Plan. It has also announced the liberalization of the computer sector, still protected by import licences, within the next few days. This plan contemplates establishing 20% import duties on finished products, 10% on imports of parts and components manufactured in Mexico and 5% on those not produced locally.

The Mexican market for computers has grown rapidly in the last six years despite the crisis. The fastest growing segment has steadily been the microcomputer market. In 1985, total production amounted to $171 million and in 1989 it reached $617.2 million, of which 53% were exported ($327 million). This growth was mainly derived from the microcomputer and peripherals segments, which increased 5.2 times in that period, as compared to 1.6 times for minicomputers. As a result, the share of production for micros and peripherals grew from 37% in 1983 to 66% in 1988. During 1990, local production of computers fell significantly to $358.3 million, of which 56.5% or $202.4 million were exported. This reduction was a result of two factors: on the one hand the large increase in imports of computers as the prior import permit was eliminated, and on the other hand, the confusion brought about by the new regulations affecting the industry as described in section 1. It is expected, however, that local production will increase again in the years to come as the market stabilizes. The Mexican computer industry is one of the most dynamic industries in the country. It is expected to continue growing at an average annual rate of 12%, mostly in the manufacture of microcomputers and their peripherals.

Imports of parts and components for the computer industry have grown steadily since 1983, while imports of finished products have grown at lower rates. This trnd, however, has been reversed

with the liberalization of the industry. The source of parts and components is the same than of technology. Therefore local sourcing remains rather low. Even in the case of Mexican product technology, sourcing is done abroad because the fabrication of parts and components in the domestic market is scarce. The domestic contents of computer manufacturing does not exceed 25%, when measured in terms of the cost of parts, while the remaining 75% is imported, mostly directly from the parent company or through local distributors, as well as directly from foreign suppliers.

As a result of the growth in domestic consumption, the Computer Industry Development Plan and the response of national and foreign firms, the number of manufacturers of computer equipment has increased 14 fold since 1981. The level of employment in the computer industry has grown from 2,750 to 10,500 between 1983 and 1990. Eighty percent of the manufacturers registered under the plan were oriented to the production of peripherals and microcomputers. Of the remainig twenty percent, eleven firms were large corporations manufacturing minicomputers as well as other types of equipment. A large number of small to medium sized firms participate in micros and peripherals as opposed to minis, where 20% of the number of firms occupy 49% of the people employed by the computer industry. In the same way, these firms hold a 77% share of the capital investment of the industry.

Approximately 60% of all firms in this industry are 100% Mexican owned, 25% are joint-ventures and 15% are foreign owned. The main source of foreign capital has always been the United States, with firms such as IBM, Unisys, NCR, Control Data, Honeywell, Data General, Digital Equipment, Hewlett Packard, Tandem and Wang. Capital from Asian and European sources is virtually non-existent. Technology and product design are determined by the parent company abroad, however operational decisions and budget are usually managed independently in Mexico, as well as a significant proportion of purchase decisions.

The participation of Asian and European technology is larger than the presence of capital from these sources. Although American technology still predominates, many Mexicans firms obtain their technology from other sources particularly Asian (Japan, Corea, Taiwan, among others).

Among the most important computer companies manufacturing in Mexico are:

| NAME | LOCATION OF PLANT | TYPE OF EQUIPMENT |
|---|---|---|
| IBM | Guadalajara | Mini and microcomputers, peripherals |
| HEWLETT PACKARD | Guadalajara | Mini and microcomputers, peripherals |

| | | |
|---|---|---|
| WANG | Guadalajara | Mini and microcomputers, peripherals |
| UNYSIS | Guadalajara | Mini and microcomputers, peripherals |
| NCR | Puebla | Minicomputers |
| DIGITAL EQ. | Chihuahua | Minicomputers |
| PRINTAFORM | Sonora | Microcomputers |
| SIGMA/COMMODORE | Mexico | Microcomputers |
| MICRON | Irapuato | Microcomputers |

## 4.2 TELECOMMUNICATIONS

Import substitution policies stimulated the domestic production of a wide range of equipments, from telephones to public switches to satisfy internal demand during the 1970's and early 1980's. Suppliers of telecommunications equipment had to fulfill a set of requirements to operate in Mexico, including minimum local contents and exports and technological development, in order to be allowed to import parts and components, to obtain preferential tariffs for those imports, to be elligible for fiscal incentives and to obtain other benefits offered by the government. In order to fulfill the local content requirements imposed by the government, manufacturers had to invest in the production of parts and components. The liberalization of the domestic market and the elimination of preferential tariffs and fiscal incentives have recently reduced the government's capacity to influence the telecommunication equipment manufacturers. However, the concentration of the market in the public sector is making it possible for the government to favor local manufacturers.

The Mexican telecommunications industry is undergoing fundamental changes. New policy initiatives are opening opportunities to foreign companies wishing to enter the market, both as suppliers and manufacturers. The Mexican Government has gradually been changing its policies regarding the telecommunications sector, which is now considered of priority interest for Mexico's development and growth, in particular through the privatizatin of Telefonos de Mexico, the central telephone company and through modernization and expansion programs which cover virtually all areas of telecommunications services in Mexico. This will translate into increased investments in this sector during the near future, representing excellent opportunities for Canadian suppliers in the electronics industry.

The telecommunication equipment market has registered greater rates of growth than those of other manufacturing sectors. The level of domestic production increased significantly when manufacturing of digital switches started in the early 1980's. Production in 1985 was 1.7 times greater than in 1982. Since then, production has registered lower rates of growth. Local production of telecommunications equipment, including telephone, telex, telegraph, radio, video and TV broadcasting, transmission and data communications equipment is estimated at $435.8 million

in 1990 as compared to $396 million in 1989. As a result of the measures described above, domestic production in this sector has played an important role, accounting for 52% of total apparent consumption. This predominance of local production is most significant in the area of telephone equipment, which accounts for approximately 60% of total production of telecommunications equipment, followed by transmission equipment (30%). The third most important segment has usually been mobile radio equipment, followed by data communications equipment. Telex and broadcasting eqipment production is only marginal.

Import substitution policies pushed the local content to high levels. Electromechanical equipment such as switches, PBX's and telephones reached 40% to 80% proportions of local integration, calculated in terms of the cost of parts. Local contents have dropped with the introduction of digital and other advanced technologies. At present, it is estimated that between 65% and 70% of inputs (excluding labor) for this industry are imported and only 30% is locally manufactured. Of this, a large proportion are electronic boards bought from third suppliers which do not have many local components.

Mexico has a well developed telecommunications equipment manufacturing industry, mostly based on multinational firms. The number of manufacturing firms has not increased significantly in the last three years, although in 1988 the number was 1.4 times greater than in 1981. The telecommunications equipment industry is very concentrated; the two largest firms, Ericsson and Indetel/Alcatel have net revenues equivalent to over 50% of the domestic market.

At present, 53% of locally manufacturing firms are national, 38% are joint ventures and 9% are foreign. However, the largest plants for the manufacturing of telecommunications equipment have usually been either foreign or joint ventures. Ericsson and Indetel are both foreign. Ericsson, a Swedish firm, started as a provider of telephone services at the beginning of this century and is firmly established in the Mexican market as the main supplier of TELMEX. Indetel, for many years a joint venture between Mexican investors, a state bank and the American conglomerate ITT, now is a French firm owned by Alcatel and is the second most important firm in Mexico. These two companies supply all public switches. They manufactured electromechanical switches until the beginning of the 1980's, when they introduced digital switching technology.

The second tier of manufacturers are medium sized companies, such as NEC (a joint venture between with the Japanese group), Telectra (a joint venture between Mexican industrialists and the German Siemens), TSP (a joint venture between Mexican industrialists and the Dutch Philips) and TELETTRA (a fully Italian firm). In the area of transmission equipment and cable, domestic production covers approximately 70% of total demand. Mexico is practically self-sufficient in the area of coaxial

cable, presently supplied by Conductores Monterrey, Conductores Guadalajara, Condutel and Condumex, who also produces fiber optic cable.

A third tier of manufacturers are in the mobile radio segment and in the private telephony market. The leading manufacturer of private branch exchanges is MITEL (a joint venture between TELMEX and the Canadian firm of the same name). Motorola, an American firm, is manufacturing mobile and cellular radio equipment. The rest are small to medium sized enterprises, owned by Mexicans, engaged in the private market for key systems and PBX's. The most important are Grupo Sit and Rolm. Other products manufactured in Mexico are telephones, key systems, satellite antennas and receptors, and transmission equipment ranging from radio and microwave links to digital multiplexors.

Since the development of domestic technology, with a few exceptions, is rare, trends in technology sourcing are similar to those of capital. Public switches are dominated by Swedish and French (until recently American) technologies. Several international leaders are interested in the Mexican market and some have already established a presence in this market, such as ATT, NEC, Northern Telecom and Siemens. Transmission markets are dominated by Japanese, Dutch, German, Swedish and French technology. PBX's are mainly Canadian, American and Swedish.

### 4.3 CONSUMER ELECTRONICS

Electronic consumer goods was the first sector of the electronics industry which developed in Mexico. The import substitution policies established by the Mexican Government, which included import controls through licences, high tariff barriers, fiscal incentives, export promotion and financial assistance, promoted the production of radios in the late fourties and subsequently that of televisions and stereo equipment in the fiftees and sixties. These measures translated into a rapid growth of this industry to supply the growing national demand. This in turn resulted in the establishment and growth of many suppliers of parts and electronic components. The high local content requirements that accompanied import substitution policies brought about 100% local content levels in the manufacture of radio and TV equipment.

During the oil boom (1978/81) the Government opened the market for imports by eliminating import licences, while keeping high tariff barriers (70%-100%). When the price of oil dropped in June of 1981, import licences were restored on all items of trade. In 1985, all parts, components and later, subassemblies, were changed from import licenses to tariff controls, and manufacturers were practically freed from all content requirements.

In October 1987, the Mexican government opened the market for finished goods and reduced tariffs on imported goods by 50%. In 1989, tariffs for the importation of parts and components were increased, although tariffs for finished goods were left intact. This has put further pressure on the remaining local component manufacturers.

Until recently, this sector was the largest of the Mexican electronics industry. The number of manufacturing plants decreased by 13% between 1981 and 1985 as a result of the crisis in the domestic market. Subsequently the number dropped again between 1985 and 1988 by 59%. Several companies manufacturing television sets and audio equipment have had to either close their operations in Mexico, or are producing under the in-bond status, establishing joint ventures with foreign companies, in particular Asian companies, or distributing imported products. This transition will most probably translate into new investments to adapt existing plants to the more competitive situation now facing this market segment. Assembly plants under the in-bond status are expected to be the fastest growing segment.

Employment in the consumer electronics sector is estimated at 4500 employees. Approximately 75% of the companies are fully owned by Mexicans. The most important firms still manufacturing are the Grupo Majestic, Panasonic, Clarion and Zonda. Majestic controls close to 75% of the domestic market for colour TV's and consists of several fully national firms which have technology agreements with Japanese and Korean firms. Panasonic is a fully Japanese owned firm with Japanese technology. Clarion is a joint venture with Japanese capital and technology. Finally, Zonda is a fully national firm with some audio and TV equipment designed in Mexico, which is also importing and assembling Japanese products since the liberalization of the market.

The recent liberalization has stimulated the total market, which grew to an estimated value of $700 million in 1990, the highest since 1982. The market share of Mexican producers was at a record low of 42% in 1989, while imports grew 140% between 1987 and 1989. The displacement of local production has been more acute in the audio segment, than in the video equipment segment, basically due to the expansion of domestic color TV manufacturing and a slower growth rate of video imports. In the case of audio, imports represented 90% of local consumption; in the case of video, they represented only 33%.

In 1990, Mexican suppliers produced 666,617 television apparatus, up from 436,363 the previous year. In the area of audio equipment, including radios, recorders and hi-fi systems, production grew from 162,700 apparatus to 468,633. The domestic consumer electronics industry uses approximately 60% of imported components in the manufacture of their products. Following are data on the local production of consumer electronics between 1987 and 1990, measured in units, as reported by the National Chamber

for the Electronics and Electric Communications Industry (CANIECE):

| ITEM | 1987 | 1988 | 1989 | 1990 |
|---|---|---|---|---|
| Black & white TV's | 381,682 | 302,989 | 163,939 | 134,649 |
| Color TV sets | 380,364 | 405,741 | 272,424 | 531,968 |
| Hi-fi systems | 229,163 | 158,908 | 104,682 | 278,948 |
| Audio components | 10,121 | 2,372 | 0 | 0 |
| Radios (incl. car) | 220,803 | 91,873 | 0 | 0 |
| Radio/recorders | 157,300 | 93,788 | 57,986 | 189,685 |
| Video cassette | | | | 238,149 |
| Video cameras | | | | 13,317 |
| Compact disks players | | | | 68,759 |

Source: CANIECE

## 4.4 OFFICE EQUIPMENT

There has never been a specific government plan for the development of this industry. Import substitution policies helped build this local industry, as is the case for the other electronic sectors. However, from its inception in the 1960's, the office machinery sector was affected by government policies which emphasized the promotion of exports through incentives. This sector is thus export oriented and dominated by foreign firms. The preferential tariffs for trade between Latin American countries established by ALADI further promoted export strategies.

The liberalization of parts, components and finished products was implemented earlier for this sector than for the rest of the electronics industry, in 1985. Manufacturers faced foreign competition without support from the government via fiscal incentives or any other plans. It was not until the beginning of 1987 when preferential tariffs were made available for manufacturers of office machinery. These tariffs have been increased to 10%, significantly diminishing their attractiveness.

Local production of office machines and equipment is estimated at approximately $175 million in 1990, satisfying around 70% of total demand. Production reached its peak of $298 million in 1981, which has not been recovered. Part of this trend is explained by the stopping of production by some firms, that were affected by the introduction of electronics and by the opening of the domestic market to imports.

Local content requirements brought about a percentage of national integration of up to 60%. The local contents of office machinery dropped with the adoption of digital electronics. The new technology and the opening of the market forced government officials to relax regulations. At present, local contents of electronic office machinery is estimated at 27%. Only one

Mexican firm develops its own product technology (Logica Digital), the rest depend entirely on Asian sources, mostly Japanese. Foreign firms have their own technology, so sourcing trends follow capital.

There are approximately ten manufacturers of office equipment. Of these firms, 50% manufactured typewriters, 30% calculators, 30% cash registers and 20% photocopiers (obviously firms manufacture more than one type of product). This sector is dominated by foreign firms. In 1988, 25% of the number of firms were 100% national, 15% joint ventures and 60% foreign. The majority of foreign firms and of joint ventures manufacturing in the domestic market have American capital. Other sources of capital have been Germany, Italy, Sweden and Japan.

Among the most important companies operating in Mexico in the production of photocopying machines, microfilming equipment, calculators, accounting machines and electric typewriters are Hugin, IBM, Kodak, Logica Digital, Nashua, Olivetti, Olimpia, Printa Bowmar, Printaform, Sweda and Xerox.

## 5. MARKET ACCESS

As a result of Mexico's accession to GATT, the Mexican government has gradually opened the economy to international markets. Tariffs have been lowered from a maximum 100% in 1983, to 20% since December, 1988. The official price system has been totally eliminated and import permits are required on only 198 of the total 11,812 items in the Mexican Harmonized Tariff System.

The import climate for electronic components has improved significantly as a result of this commercial liberalization. Therefore, imports in this industry are subject to an ad valorem duty of maximum 20% assessed on the invoice value. Most electronic components, after having been exempted from the duty payment during 1988, have now been assessed a 5% tariff rate. In addition, a customs processing fee of 0.8% is assessed on the invoice value. A 10% value added tax (recently reduced from 15%) is then assessed on the cumulative value of both taxes in addition to the invoice value. Some manufacturers who use imported inputs for their products under a Mexican Government approved manufacturing plan may have the duty and/or VAT waived or rebated. Raw materials, intermediates and machinery for use in manufacturing or assembling products for export are generally eligible to be imported either duty free or under bond.

Formerly, in order to bid on tenders and sell to a government agency or decentralized company, foreign manufacturers required having a local resident agent and to have the foreign supplier registered and accepted by the Secretariat of Planning and Budgeting (Secretaría de Programación y Presupuesto - SPP). As of July 1991, the above requirement for prior registration with SPP has been eliminated.

The new procedures now in force require the foreign supplier to have a local agent or representative and it has to be registered through his local representative as an accepted supplier with each government ministry and/or decentralized agency according to the international tender requirements under review.

International tenders financed by the World Bank or the International Development Bank are open to all member countries of these institutions. More recently, the World Bank, where its credits are involved, has required that bid documents should also include an affidavit confirming that the Canadian company is a bona fide Canadian company with an official residence in Canada and that Canada is recognized as a contributing member to the World Bank.

There are no official metric requirements applicable to imports into Mexico. However, since the metric system of units is, by law, the official standard of weights and measures in Mexico, importers will usually require metric labeling for packaged goods, although the English system is also used. Dual labeling is acceptable. Imported products should be labeled in Spanish containing the following information: name of the product, trade name and address of the manufacturer, net contents, serial number of equipment, date of manufacture, electrical specifications, precautionary information on dangerous products, instructions for use, handling and/or product conservation and mandatory standards. Mexico adheres to the International System of Units (SI). Electric power is 60 cycles with normal voltage being 110, 220 and 400. Three phase and single phase 230 volt current is also available.

Prepared by:
Caroline Vérut for the
Canadian Embassy
Mexico City
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Updated December 1991

To call all telephone and fax numbers listed below from Canada, unless they are preceded by a different area code, dial 011-525 first, otherwise dial 011-52-(area) number.
NOTE: The information on companies not located in Mexico City was not confirmed.

## APPENDIX I:
## INDUSTRIAL CHAMBERS AND ASSOCIATIONS

**ASOCIACION MEXICANA DE FABRICANTES**
**DE CONDUCTORES ELECTRICOS A.C. (AMEFACE)**
ELECTRIC CONDUCTION EQUIPMENT MANUFACTURERS
Sonora 166, Piso 1
Col. Hipódromo Condesa
06100 México D.F.
Phone: 533-44-41 207-22-54
Fax: 286-77-23
Contact Ing. Edgar Ubbelohde
Presidente

**ASOCIACION MEXICANA DE INGENIEROS EN**
**COMUNICACION ELECTRICA Y ELECTRONICA (AMICEE)**
ELECTRIC AND ELECTRONIC COMMUNICATIONS ENGINEERS
Balderas 94
Col. Centro
06070 México D.F.
Phone: 512-53-00 510-31-42
Fax: 510-3142
Contact Ing. Diódoro Guerra Rodríguez
Presidente

**ASOCIACION NACIONAL DE IMPORTADORES Y EXPORTADORES**
**DE LA REPUBLICA MEXICANA (ANIERM)**
IMPORTERS AND EXPORTERS
Monterrey 130
Col. Roma
06700 México D.F.
Phone: 564-86-18 584-95-22
Fax: 584-53-17
Contact: Sr. Ernersto Warnholtz
Presidente

**CAMARA NACIONAL DE LA INDUSTRIA ELECTRONICA Y DE COMUNICACIONES ELECTRICAS (CANIECE)**
ELECTRONICS AND ELECTRIC COMMUNICATIONS
Guanajuato 65
Col. Roma
06700 México D.F.
Phone: 574-74-11
Fax: 554-80-53
Contact: Arq. Federico Ruíz Sacristán
Presidente
Phone: 574-74-11
Lic. Jorge Guevara
Economic Studies

**CAMARA NACIONAL DE LA INDUSTRIA DE RADIO Y TELEVISION (CIRT)**
RADIO AND TELEVISION INDUSTRY
Horacio 1013
Col. Polanco - Reforma
11550 México D.F.
Phone: 250-22-21 250-25-77
Fax: 545-67-67
Contact: Sr. Adrián Aguirre Gómez
Presidente

## APPENDIX II:
## USEFUL MEXICAN GOVERNMENT MINISTRIES AND DECENTRALIZED AGENCIES

**MITEL DE MEXICO, S.A. DE C.V. (MITEL) (SCT)**
TELEPHONE MANUFACTURER
Av. Oleoducto 2810
Col. Parque Industrial El Alamo
44490 Guadalajara, Jal.
Apdo. Postal: 91081
Phone: 39-75-20
Fax: 35-56-11

Sr. Peter Conlon
Director General
Phone: 39-75-20 39-74-41

Ing. Miguel Angel Romera Herrera
Director de Operaciones
Phone: 39-75-20

**CONSEJO NACIONAL DE CIENCIA Y TECNOLOGIA (CONACYT) (SPP)**
NATIONAL SCIENCE AND TECHNOLOGY INSTITUTE
Circuito Cultural Universitario
Edificio Conacyt
Col. Cd. Universitaria
04515 México D.F.
Apdo. Postal: 20-003
Phone: 665-11-77 655-32-77
Fax: 655-39-06
Telex: 017-74-521

Dr. Fausto Alzati Araiza
Director General
Edificio A - Piso 3
Phone: 665-40-43 665-47-93

Lic. Luis F. Basteris Canton
Director Adjunto de Modernización Tecnológica
Edificio B - Piso 1
Phone: 665-11-77 ext. 3461

Act. Alfredo Phillips Grenne
Director de Asuntos Internacionales
Edificio A - Piso 2
Phone: 665-24-11 ext 2621

Ing. Sergio Flores Flores
Director del Centro de Cómputo
y Telecomunicaciones
Edificio A - Piso 1
Phone: 665-11-77 ext 1681

## APPENDIX III:
## DISTRIBUTORS OF ELECTRONIC COMPONENTS

**AES PRINTAFORM, S.A. DE C.V.**
Colima 439
Col. Roma Norte
06700 México D.F.
Phone: 553-95-46
Fax: 553-90-80 286-19-30
Contact: José A. Sánchez
Vicepresidente

**ALMACENES ECONOMICOS DE MATERIAL ELECTRICO, S.A. DE C.V.**
Blvd. Adolfo López Mateos 798
Col. Bella Vista
Mexicali, B.C.N.
Phone: (65) 54-13-11
Fax: (65) 54-27-30
Contact: Ing. Manuel Félix Valenzuela
Gerente General

**APTTE, S.A. DE C.V.**
Providencia 801-16
Col. del Valle
03100 México D.F.
Phone: 536-43-03
Fax: 543-96-90
Contact: Lic. Enrique Cuéllar
Director General

**AT & T MICROELECTRONICA DE MEXICO, S.A. DE C.V.**
Norte 7 y Av. Lauro Villar 4
Col. Cd. Industrial
88000 Matamoros, Tamps.
Phone: (891) 365-06 602-00
Fax: (891) 605-20
Contact: William T. Yeates
Director General

**CAPACITORES COMPONENTES DE MEXICO, S.A. DE C.V.**
Av. de la Industria y Amperes
Col. Parque Industrial Antonio J. Bermudez
32320 Cd. Juárez, Chih.
Phone: (16) 18-02-62 18-04-36
Fax: 775-64-99
Contact: José R. Benki
Presidente

**DELTRONICOS DE MATAMOROS, S.A. DE C.V.**
Sendero Nacional Km 3.5
Fracc. Parque Industrial del Norte
87300 Matamoros, Tamps.
Phone: (891) 373-33
Fax: 541-44-59
Contact: David Hendrickson
Director General

**DICOPEL, S.A. DE C.V.**
Tochtil 368
Fracc. Industrial Sn. Antonio
02760 México D.F.
Phone: 561-32-11
Fax: 561-12-79
Contact: Claudio Bortoluz
Director General

**DISTRIBUIDORA TECNOLOGICA, S.A. DE C.V.**
Av. Cuauhtémoc 1218-A
Col. Sta. Cruz Atoyac
03310 México D.F.
Phone: 604-45-07
Fax: 604-58-23
Contact: Aurora Ruíz

**ELECTRONICA BRK DE MEXICO, S.A. DE C.V.**
Fernando Borreguero y López Mateos
Parque Industrial Juárez
32630 Cd. Juárez, Chih.
Phone: (16) 16-30-90
Fax: (16) 16-24-28
Contact: Tomás García
Gerente General

**ELECTRONICA NSC DE MEXICO, S.A. DE C.V.**
Juventino Rosas 118 - Piso 2
Col. Guadalupe Inn
01020 México D.F.
Phone: 524-99-96 524-97-57
Fax: 524-93-42
Contact: Ing. Jorge Gallegos Reyes
Director General

**ELECTRONICA RADEL, S.A. DE C.V.**
Av. Azcapotzalco 662
Col. Azcapotzalco
02000 México D.F.
Phone:
Fax: 561-13-28
Contact: Ing. Humberto Cuevas
Director General

**ELECTRONICA RYZENMANS, S.A. DE C.V.**
Aldaco 6, Local 7
Col. Centro
06080 México D.F.
Phone: 709-21-62
Fax: 709-21-62
Contact: Ignacio Ryzenmans
Director General

**ELECTROPARTES DE MATAMOROS, S.A. DE C.V.**
General Lauro Villar Km. 4, No. 700 H
Cd. Industrial
87390 Matamoros, Tamps.
Phone: (891) 318-54
Fax: (891) 611-38 (ext. 4199)
Contact: Leslie Douglas Harris
Director General

**ELECTRO-SEMBLIES DE MEXICO, S.A. DE C.V.**
Av. Alvaro Obregón 54
Col. Jardín
87330 Matamoros, Tamps.
Phone: (891) 333-74
Contact: Ramón Esquivel Santana
Gerente General

**ERIEZ EQUIPOS MAGNETICOS, S.A. DE C.V.**
Ejército Nacional 752
Col. Chapultepec Morales
11550 México D.F.
Phone: 531-30-13
Fax: 531-66-81
Contact: Ing. V. Carreto de la Mora
Director General

**MANUFACTURERA DE CHIHUAHUA LAS AMERICAS, S.A. DE C.V.**
Prol. las Américas s-n
Col. Panamericana
31220 Chihuahua, Chih.
Phone: (14) 14-37-28 14-37-29
Fax: (14) 13-40-12
Contact: Ing. Giacomo Francescutti
Director General

**MYCROS ELECTRONICA, S.A. DE C.V.**
Dante 26 Bis
Col. Anzures
11590 México D.F.
Phone: 255-33-89
Fax: 208-86-25
Contact: Ing. Daniel Valencia R.
Gerente General

**OLPEX DE MEXICO, S.A. DE C.V.**
Cerro del Otate 133
Col. Pedregal de Sn. Francisco
04320 México D.F.
Phone: 554-92-55 658-00-71
Fax: 658-17-99
Contact: Ing. Oscar Luna Pérez
Director General

**PANAMERICANA DE TECNOLOGIA, S.A. DE C.V.**
Av. Unión 163-402
Sector Juárez
44100 Guadalajara, Jal.
Phone: (36) 30-30-29
Fax: (36) 30-31-15
Contact: Ing. Roberto Matt Konigs
Director

**PARTES DE TELEVISION DE REYNOSA, S.A. DE C.V.**
Carr. a Matamoros y Brecha E-99
Reynosa, Tamps.
Phone: (892) 277-11
Contact: Gary Soliner
Gerente de Operaciones

**PORTA SYSTEMS, S.A. DE C.V.**
Carr. Lauro Villar Km. 8.5
Cd. Industrial
87390 Matamoros, Tamps.
Phone: (891) 645-18 664-16
Fax: (891) 661-16
Contact: Ing. Fabio Ramos Pardo
Gerente General

**PRODUCTOS MAGNETICOS DE CHIHUAHUA, S.A. DE C.V.**
Miguel de Cervantes 140
Complejo Industrial
31109 Chihuahua, Chih.
Phone: (14) 766-00
Contact: Bill Turner
Gerente de Operaciones

**QUIMETAL PEMDER, S.A.**
Calle 8 No. 125-2
Col. Granjas San Antonio
09070 México D.F.
Phone: 582-20-56
Fax: 581-71-41
Contact: Jorge M. Cherizola S.
Gerente General

**RADIO SURTIDORA, S.A.**
Uruguay 25
Col. Centro
06000 México D.F.
Phone: 512-71-66
Fax: 518-57-56
Contact: Ing. Alejandro Margules
Gerente General

**SISTEMAS Y CONEXIONES INTEGRADAS, S.A. DE C.V.**
Carr. Internacional Km. 6.5
Parque Industrial Terrazas del Cid
84000 Nogales, Son.
Phone: (631) 215-20
Fax: (631) 281-10-02
Contact: Perry S. Melton, Jr.
Gerente General

**TDK DE MEXICO, S.A. DE C.V., DIV. C**
ohm s.n
Parque Industrial A.J. Bermudez
32470 Ciudad Juárez, Chih.
Phone: (16) 518-40-66
Fax: (16) 549-46-89
Contact: Osamu Tazaki
Director General

**TELSON, S.A. DE C.V.**
Calle 17, Av. 6 y 10 s-n
Agua Prieta, Son.
Phone: (633) 801-45
Contact: Ken Kroge
Gerente de Operaciones

**TEXAS INSTRUMENTS DE MEXICO, S.A. DE C.V.**
Alfonso Reyes 115
Col. Hipódromo Condesa
06170 México D.F.
Phone: 515-64-03
Fax: 515-41-78
Contact: Ing. Adolfo Díaz de la Vega
Director General

**THOMAS Y BETTS DE MEXICO, S.A. DE C.V.**
Arellano 6 - Piso 4
Cto. Centro Comercial
Cd. Satélite
53100 Naucalpan, Mex.
Phone: 393-85-10 562-30-07
Fax: 572-72-35
Contact: Ing. Emilio Pazos Parente
Gerente General

**ZENCO DE CHIHUAHUA, S.A. DE C.V.**
Carr. Panamericana
Parque Industrial Aeropuerto
32690 Cd. Juárez, Chih.
Phone: (16) 798-08
Contact: Arlo Albers
Gerente de Operaciones