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Management of Change in the Lebanese Industry

By
Consultation and Research Institute (CRI)

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies
(C.P.S.P.S.)

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MANAGEMENT OF CHANGE
IN THE LEBANESE INDUSTRY

Beirut, October 1995

Consultation and Research Institute (CRI)

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Executive Summary

1. Introduction

1.1 *Industry in Lebanon*

There is a significant number of industrial firms in Lebanon, producing a variety of products. They are mostly small to medium-sized, employing less than 10 employees. The most important of the industrial sectors are involved in the production of foodstuff, metallic products, and clothes and garments. The majority of these firms are located in Beirut and its suburbs.

The Lebanese civil war had a devastating effect on the industrial sector. The activities, modernization, and expansion of firms was hindered. Equipment and plants were destroyed, and the needed basic infrastructure and services were devastated.

1.2 *Industrial Sectors*

The Association of Lebanese Industrialists recognizes the following sectors: food processing, textile and garments, non-metallic, chemical, metallic, machinery and electrical appliances, paper and printing, and furniture industries.

1.3 *This Study*

This study presents the results of in-depth interviews with thirteen Lebanese industrialists. The study is to be presented to the expert group meeting on "Managerial and Entrepreneurial Skills Under Conditions of Change", sponsored by ESCWA, to be held in Bahrain between 20-23 November, 1995.

2. Methodology and Characteristics of the Selected Industrial Firms

2.1 *Methodology*

The sample was chosen in collaboration with the Association of the Lebanese Industrialists. Since the size of the sample was small, the selection of firms was based on the type of production and geographical location. The survey questionnaire was completed with owners and managers of firms.

2.2 *Basic Characteristics of the Sample*

2.2.1 Age of Establishments

The year of establishment of firms varies between 1856-1990. This conforms with the results of the census carried out by the Ministry of Industry and Petroleum that indicates that the majority of firms were established between 1980 and 1992.

2.2.2 Size of Establishments

The majority of interviewed firms have 100-250 employees. The highest percentage of these employees is accounted to skilled and semi-skilled labor.

2.2.3 Products

The products of interviewed firms vary between paper, books, metallic cans, cosmetics, paint, garments, foodstuff, granite, marble, cement, furniture, and electrical cables. Most of these industries did not have any qualitative or quantitative change in their products over the last few years. Some of the firms are shifting to the production of cheaper items to respond to the changes in consumption, income, and revenue patterns of the Lebanese population in general.

3. **Measurement and Sources of Change**

3.1 *Degree of Change*

The majority of industrialists perceive that there has been considerable change, internally and regionally, in the last four years. However, since they currently face fundamental local problems, they are not yet fully aware of the consequences of the international changes on their industries.

3.2 *Sources of Change*

3.2.1 Technology

There has been considerable change in the source of manufacturing technology, the source of product design, and the level of complexity of production. The change in the source of spare parts was insignificant, however the cost of these parts have increased significantly due to international fluctuations in exchange rate and the devaluation of the local currency.

Most of the industrialists do not currently plan any radical changes in the technology of production programs. Industrialists seem to be waiting for clearer strategies and policies on the part of the government.

3.2.2 Equipment

The majority of establishments have tried to shift the type of their equipment from single purpose to labor intensive multi purpose equipment. Since most industrialists are burdened with high production costs, many have changed the source of equipment due to price constraints.

3.2.3 Raw Material

Contrary to the source of raw material that have changed for almost half of the interviewed firms, the type of raw material has remained the same. Firms have changed their source of raw material due to cost constraints.

The main difficulty in importing equipment and raw material was identified as cost. Also, requirements associated with importation are time consuming and lengthy. In trying to address this issue, the government decreased customs paid on raw and intermediate materials.

3.2.4 Market

For the past decade the Lebanese industrialists became heavily dependent on the domestic market. Most of the interviewed firms have followed the same trend during the past four years. This is attributed to many factors such as the decreased competitiveness of Lebanese products in export markets, the demand for international specifications and standards, and the increased prices of Lebanese output.

Before 1992 the highest competition in the local market was from imported products. However, in the past year, firms began to face higher competition from locally produced items. This is primarily due to the opening of the Lebanese domestic market, limiting market fragmentation and decreasing market monopoly. Firms expect fierce future competition both from imported products and Israel.

Some countries have developed several export markets with other countries, out of which the most important were the Gulf and other Arab countries. Other export markets included Europe and to a lesser extent North America. Competition in export markets was equally from local and foreign competitors in those markets.

3.3 *Government Policies*

There is a general dissatisfaction on the part of industrialists from the lack of governmental policies and strategies.

3.3.1 Infrastructure and Services

The severe damages inflicted on the basic infrastructure and service sectors had a crippling effect on industry. In particular shortages in electricity proved to be an extra cost burden on firms. Telecommunication and traffic congestion were also mentioned by most industrialists.

3.3.2 Government Protection

Tariff protection and import control measures used to be important instruments for promoting investment in industry. Competitive import products subject to import duties and licensing offer protection for locally produced products. Such incentives and others are perceived to be needed by Lebanese industrialists.

The protection system in Lebanon has been characteristically modest as compared to other Arab countries. This is why most of the interviewed industrialists claim that the government does not offer any assistance in protecting their industries. They claim that the lack of protection policies increases competition from foreign goods in the local market.

3.3.3 Customs and Tariffs

The government only recently reduced the number of different tariff rates and normalized exchange rates used for duty purposes. Industrialists request more incentives in decreasing customs and tariffs.

3.3.4 Taxation

The industrialists view the tax system as moderate, producing incentives to encourage investment.

3.3.5 Wages

The minimum wage rate has been almost tripled in nominal terms during the past four years. Industrialists view this as a limiting factor, especially its effect on severance indemnity payment.

3.3.6 Licenses, Permits, and Administrative Procedures

The majority of industrialists do not view that there has been significant change in administrative procedures. However, they claim that these procedures are lengthy and costly.

3.3.7 Financing of Projects and Provision of Loans

A very strong plea of Lebanese industrialists is their need for industrial loans and facilities for project financing. They are crippled by their lack of access to medium and long term financing.

Commercial banks provide loans on yearly terms, on a current account basis, and with floating interest rates. The government is planning to restructure the National Bank for Industrial and Touristic Development.

3.3.8 Other Issues

Other issues such as the need for standards and norms, and the need for expert technical human resources were expressed by industrialists.

Moreover, industrialists claim the need for long term planning for a highly integrated export oriented industry. Towards this end, several things should be considered:

- fluctuation and high cost of imported raw and intermediate materials;
- new techniques and training programs;
- product adaptation as appropriate procedures for competition.

4. Effects of Regional and International Factors

4.1 *Effect of Political Stability*

The political stability have impacted all countries of the Middle East to varying extents. However, since Lebanon has not signed any peace agreement with Israel, the impact is still vague. Interviewed industrialists perceive that the peace process decreased export sales to Arab countries, as well as local sales.

4.2 *Effect of Regional and International Factors*

Production in the Lebanese industry has been negatively effected by several regional and international factors, especially the Arab/Israeli conflict, the special accords with Syria, and the Iran/Iraq war. In their opinion factors such as the European Community, the collapse of the Soviet Union, and the international trade agreements have not effected the industrial sector so far.

4.3 *Effects of Peace Process*

The majority of the interviewed industrialists foresee that the peace process will have a negative effect on their industries. They expect fierce competition from Israeli products in the local market. Almost none of these industrialists plan joint investment programs in the West Bank and Gaza strip.

4.4 *Effects of Change*

The industrialists view that the changes in the past few years had a significant effect on:

- increase the prices of raw materials and equipment,
- decreased export of Lebanese products,
- negatively effected labor cost.

4.5 *Strategies to Face Change*

The interviewed industrialists have not yet formulated strategies that they shall follow in the future. However, they have some main initiatives such as securing alternative export markets, concentrating on the local market, and introducing new products.

Chapter 1

Introduction

1.1 Definition

In Lebanon, the Association of Lebanese Industrialists defines an industry as being "any enterprise that employs five or more people, utilizes manufacturing equipment, and produces a product"^{1.1}. For the purpose of this study, the term industry refers to manufacturing plants only, excluding service and agriculture industries.

1.2 Industry in Lebanon

There exists in Lebanon a significant number of small and medium scale industries, estimated by the Ministry of Industry and Petroleum at 23518^{1.2} in 1994. These industries produce a variety of products that mostly target the local market. In 1987, the manufacturing industry was estimated to attribute 14.7 percent of the GDP, and employ 100,000 people.

According to the sample survey, conducted in 1994, by the Ministry of Industry and Petroleum in Lebanon, the main characteristics of the Lebanese industrial sector can be outlined as follows^{1.3}:

- i) Most of the industrial firms are small and employ less than 5 employees. Moreover, 84% of the firms employ less than 10 employees, while only 4% of the surveyed industries employ more than 20 employees, and only 41 enterprises have more than 250 employees.
- ii) About 96% of the surveyed firms are concentrated in the manufacturing activity sector. The most important of the industrial sectors are found to be those that include foodstuff and agricultural products, followed by furniture and wood industries, metallic industries, and clothes and garment industries.
- iii) The majority of industrial firms are located in Mount Lebanon, especially in Beirut's suburbs (45% of the total number of firms and 56.7% of the total number of employees). The least percentage of industrial firms are located in South Lebanon (8.7% of the total number of firms and 5.8% of the total number of employees).

^{1.1} Association of Lebanese Industrialists

^{1.2} "The Industrial Survey in Lebanon", Ministry of Industry and Petroleum, 1994.

^{1.3} *ibid.*

- iv) Only a minimal percentage of the surveyed firms (10%) take the form of an association, whereas the majority of the firms are registered in the name of individuals (86% of the total number of firms).
- v) A very low number of surveyed firms include a contribution of Arabic and foreign capital. Only 56 firms are, in majority, owned by non-Lebanese and 89 firms are equally owned by Lebanese and non-Lebanese.
- vi) Almost 60% of the surveyed firms were established between 1980 and 1990, whereas 30% were established after 1990.

The prolonged period of the Lebanese civil war, a war that prevailed in the country between the years 1975-1991, had a devastating impact on the industrial sector in the country. The activities, modernization, and expansion of industrial firms have been remarkably hindered by this war. Equipment and plants were destroyed and the much needed basic infrastructure and services were devastated. Moreover, availability of raw materials, spare parts for equipment, marketing opportunities, sources of financing, adequate human resources, adequate public services, and others proved to hinder the industrial development during that period.

Moreover, supply problems in imported equipment, raw material, intermediate products, and spare parts were unavoidable by most industries during the war. This has led to a capability of adaptation on the part of industrialists.

Industry in Lebanon is almost entirely a private entity. The industrialists only need interference by the government that would enable them to carry out their production under fairly normal circumstances.

1.3 Industrial Sectors

The classification of industrial manufacturing branches recognized by the Association of Lebanese Industrialists are the following:

- i) Food Processing Industry, including the processing of local crops and all types of processed food items, ice-cream, sugar, coffee, oil derivatives, alcoholic beverages, non-alcoholic beverages, meat, mineral water, grains, tea, and others
- ii) Textiles and Garment Industry, accounting for a high percent of the manufacturing industry. This type of industry depends both on the local market and on export sales.
- iii) Non-metallic industry, including the manufacturing of marble, ceramic, jewelry, Crystal, cement, and bricks.
- iv) Chemical Industry, including the production of plastic, cosmetics, pharmaceuticals, paint, polyethylene, tapes, gas, oxygen, detergents, soap, and others.

- v) Metal Products Industry, such as building materials, iron, silver, aluminum, and other similar products.
- vi) Machinery and Electrical Industry, including agricultural machinery, pumps, cables, air conditioners, refrigerators, and others
- vii) Paper and Printing Industry
- viii) Wood and Furniture Industry

1.4 This Study

This study presents the results of in-depth interviews with some Lebanese industries. The main objective of the study is to determine and analyze the effects of international and regional economic and trade changes on the Lebanese manufacturing industry. Survey findings are based on 13 in-depth interviews with managers and owners of industrial firms. This study is to be presented to the expert group meeting on "Managerial and Entrepreneurial Skills Under Conditions of Change" to be sponsored by ESCWA, and to be held in Bahrain between 20-23 November, 1995.

It shall be clear that all views expressed throughout this report are those of the Lebanese industrials interviewed in the process of the study. They do not necessarily reflect the opinion of the consultant.

Chapter 2

Methodology and Characteristics of the Selected Industrial Firms

2.1 Methodology

The results of the study are based on in-depth interviews with a sample of thirteen Lebanese industries. The sample was chosen in collaboration with the Association of Lebanese Industrialists. A decision was taken to eliminate very small industries and focus on what is rated as "first category" establishments. A comprehensive list of the Lebanese industrial firms registered in the Association was obtained and stratified by sector and geographical location to ensure that the selected industries would somehow represent the sectoral and geographical distribution of industries in the country. It was very clear that since the sample was very small, its representativeness was not the consultant's main concern. Rather the selection of the firms was used to highlight the major constraints and challenges that effect industry in Lebanon.

The official register of the Association of Lebanese Industrialists revealed the following stratification:

Table 2.1 Approximate Number of Officially Registered Industries in Lebanon (1995)

Type of Product	Approximate No. of Industries	% of the total
Foodstuff	136	12%
Non-metallic	161	14%
Chemical	177	15%
Leather by-products	40	3%
Wood and Furniture	76	7%
Paper and Cartoon	71	6%
Textiles and Clothing	297	26%
Metallic	78	7%
Machines and Electrical appliances	69	6%
Others	50	4%
Total	1155	100%

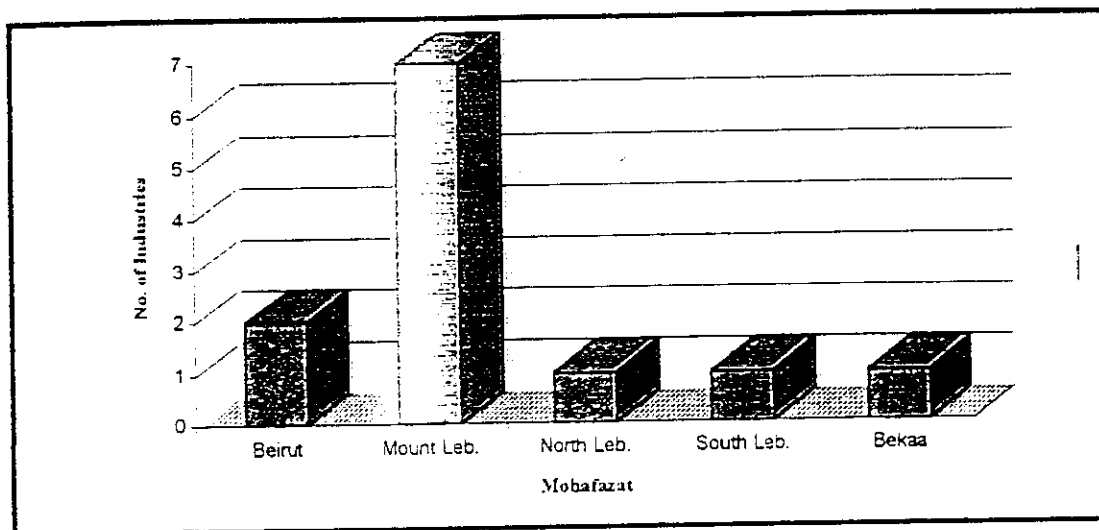
The sample was chosen in accordance with the distribution in Table 2.1 as follows:

Table 2.2 Distribution of the Sample Based on the Type of Products

Type of Product	No. of Industries	% of Total
Textiles	3	23%
Foodstuff	2	15%
Non-metallic	2	15%
Chemical	2	15%
Wood and Furniture	1	8%
Paper and Cartoon	1	8%
Metallic	1	8%
Machines and Electrical appliances	1	8%
Total	13	100%

The geographical distribution of the sample was as follows:

Figure 2.1 Geographical Distribution of the Sample



Once the final sample was identified, the consultant confirmed appointments with managers and owners of chosen firms (Refer to Appendix A.1). An interviewer spent 1-2 hours with each of the interviewees completing a survey questionnaire designed to elicit qualitative information about the effects of relevant regional and international changes on respective firms. Managers were assured of confidentiality, however, some questions arose guarded answers.

2.2 Basic Characteristics of the Sample

(Refer to Appendix A.2)

2.2.1 Age of Establishments

The year of establishment of the various industries varies between 1856 and 1990, however, the majority of these industries were established in the 1980's. Consequently, the age of the establishments vary between 138 years and 5 years.

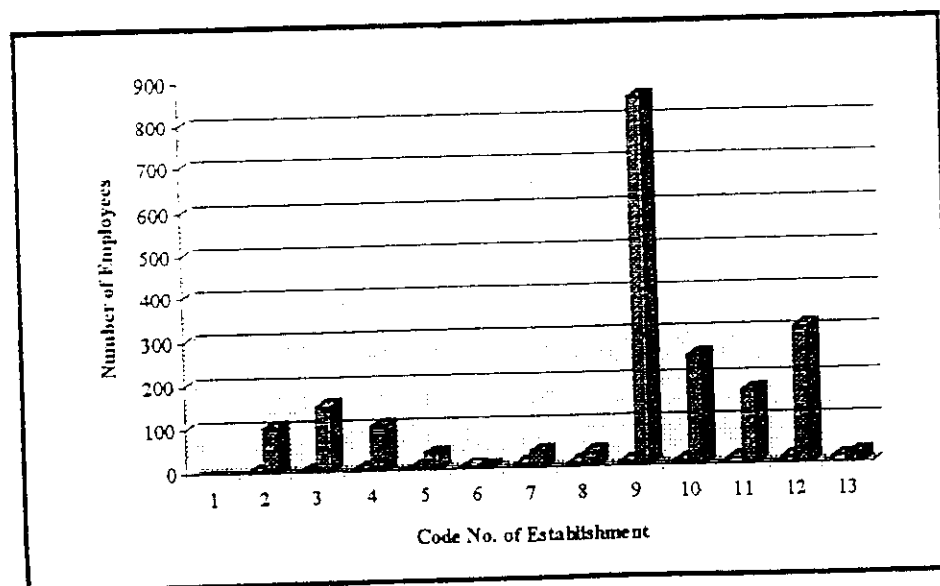
The results obtained on this issue conform with the results of the census carried out by the Ministry of Industry and Petroleum in 1994. The census revealed that 30% of the firms were established after 1990, while the majority of industries were established between 1980 and 1992.

2.2.2 Size of Establishments

The majority of the interviewees were reluctant to express the amount of nominal capital invested in their industry.

The number of employees varies as shown in Figure 2.2. Only three of the establishments have more than 250 employees, whereas 6 have 100-250 employees and only 4 have less than 50 employees.

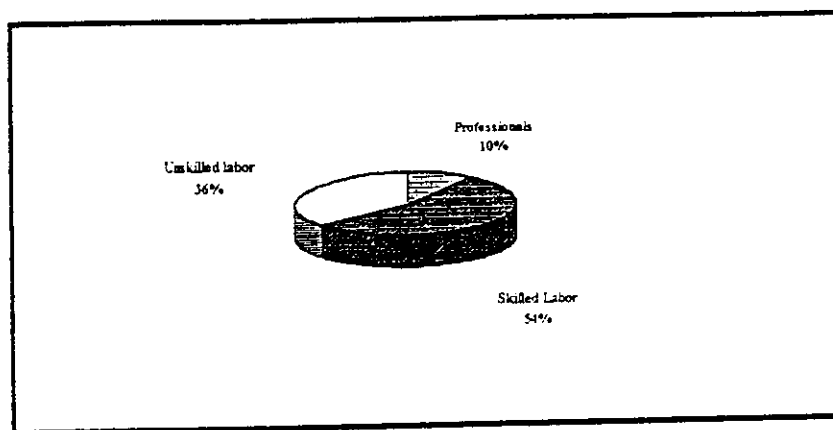
Figure 2.2 Number of Employees in Interviewed Industries



In the majority of interviewed industries the highest percent of employees is accounted to skilled and semi-skilled labor, whereas the lowest percent is for professionals as shown in Figure 2.3.

In construction industries, such as those producing metallic items and granite, the number of unskilled labor is higher than that for skilled employees.

Figure 2.3 Percent of Skilled, Unskilled, and Professionals in Interviewed Establishments



2.2.3 Products

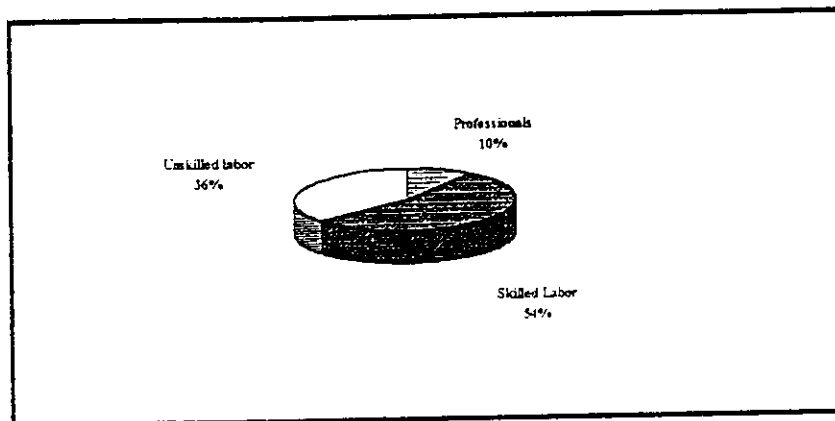
The products of interviewed establishments vary between paper, books, metallic cans, cosmetics, paint, garments, foodstuff, granite and marble, cement, furniture, and electrical cables. Most of the industries indicated that there was neither qualitative nor quantitative change in their production after 1991. However, some increased the number and types of products, others decreased the variety of production, whereas some were shifting to cheaper products more suitable to the actual needs of the local market.

The shift of the majority of industries to the production of cheaper products reflects the changes that occurred in Lebanon during the past two decades. These changes includes alteration of the patterns of consumption, income, and revenue patterns of the Lebanese population and reflects the relative impoverishment of the Lebanese in general, and the middle and lower social strata in particular. Moreover, the past twenty years have significantly effected the purchasing power of the Lebanese national currency. A higher percentage of the Lebanese population demand cheaper products.

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Figure 2.3 Percent of Skilled, Unskilled, and Professionals in Interviewed Establishments



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Chapter 3

Measurement and Sources of Change

3.1 Degree of Change

Only one of the thirteen establishments regard the changes that have occurred in the last four years as moderate changes, whereas all the rest regard these changes as radical. These changes include changes in terms of labor, market, production programs, technology, sales and revenues, and others.

Most of the surveyed establishments are inclined to perceive high changes in the short run. Their perception of these changes indicates that they link the causes of change to local short-term sources only.

3.2 Sources of Change

3.2.1 *Technology*

(Refer to Appendix A.3)

The majority of establishments consider that there has been considerable change in the following:

- the source of manufacturing technology
- the source of product design
- the level of complexity of production, whereby most enterprises tried to modernize their equipment and production programs accordingly

Only one of the interviewees consider that there has been a change in the level of local innovation. It should be mentioned that local innovation was basically weak before the war, and was further weakened during the past two decades.

The source of spare parts have not changed for the majority of enterprises, however, the cost of spare parts have significantly changed due to international fluctuations in exchange rates and internal inflation and devaluation of the Lebanese currency.

Considering that the improvement in technical capacity of staff is a part of the general economic recovery in the country, most establishments indicated that this capacity has improved during the past three years.

It is evident that the majority of the interviewed Lebanese industrialists do not, currently, plan any radical changes in the technology of production programs. They seem to be waiting for stable economic and social policies and for clearer strategies on the part of the government. Only three of the establishments are planning to increase their production levels and expand their production programs. These comprise mainly those big industrial firms that employ a relatively high number of labor, especially those industries that produce construction materials such as "Sibline Cement Industry" that is planning to increase its production from 350,000 tons annually to more than one million tons per year. Also, the "National Cement Industry" in Chekka is planning to increase its production from 700,000 tons to 1.3 million tons per year. These firms feel that this increase in production is needed to cope with the reconstruction process in Lebanon.

Other industrial firms, especially those with low production basis, are hesitant to increase their production and await future motives.

Some of the industries, such as the one involved in the production of furniture, are planning to stress on the manufacturing of cheaper products that would fit with the market demand in Lebanon.

3.2.2 Equipment

(Refer to Appendix A.4)

Most of the interviewed enterprises (10 out of 13) have tried, in the past four years, to shift the type of their equipment from single purpose to capital intensive multi purpose equipment. Although the huge inflation rates in the country (110% between the years 1984-1992) resulted in a decrease in real wages, factors such as social security and severance payments, as well as the difficulty in laying off employees, have encouraged industry to move to labor intensive technology.

Moreover, less than half of the interviewed establishments have changed the source of equipment. This shift has been made from the United States of America and some European countries to Korea, Romania, and other cheaper countries. The main reason is cheaper prices.

Most of the industrialists are burdened with high production costs, and consequently high output prices. This is resulting in the loss of a main part of the export market to cheaper products. This is also resulting in a loss of a part of the internal domestic market for the same reason. For example, Lebanon recently began to import products, previously exported to Saudi Arabia and the Gulf, from these countries.

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3.2.3 *Raw Material*

(Refer to Appendix A.5)

The types of raw materials have not significantly changed in the last four years (3 out of 13 establishments). This is primarily in contrast to the source of raw material that has changed for almost half of the interviewed establishments. Again, the main reason behind the change is the cost.

Most of the industries that have shifted the source of raw material have done so to decrease their production costs. Changes were in general from international to local sources, and from European countries to Korea and other South-Asian countries.

Only two of the industries have changed the type of intermediate products used, while three have changed the source of intermediate products for the same aforementioned reasons. It should be noted that most establishments depend heavily on imported raw materials and equipment, whereas they sell mainly to local domestic markets.

The most important difficulty in importing equipment and raw material is identified as cost. The requirements associated with importation are time consuming due to bottlenecks in custom procedures and delays in receiving clearances. Also, industrialists claim that there are no transparent rules for importing equipment and raw materials.

It should be mentioned that only recently (September 1995) the Lebanese Government has effected a decrease in customs paid on some raw materials and intermediate products imported for industrial purposes. The aim of the government is to assist the industrialists in decreasing their production costs, thus gaining a higher percent of the domestic and export markets. The only constraint put by the government is that industrialists are not allowed to raise their output prices in the short term. The Prime Minister has threatened that such measures shall be reversed if the commodity prices are increased by industrialists.

3.2.4 *Market*

(Refer to Appendix A.6)

3.2.4.1 Local Market

During the pre-period substantial growth in commodity exports was evident. However, during and after the civil war the Lebanese industries became very largely dependent on the domestic market.

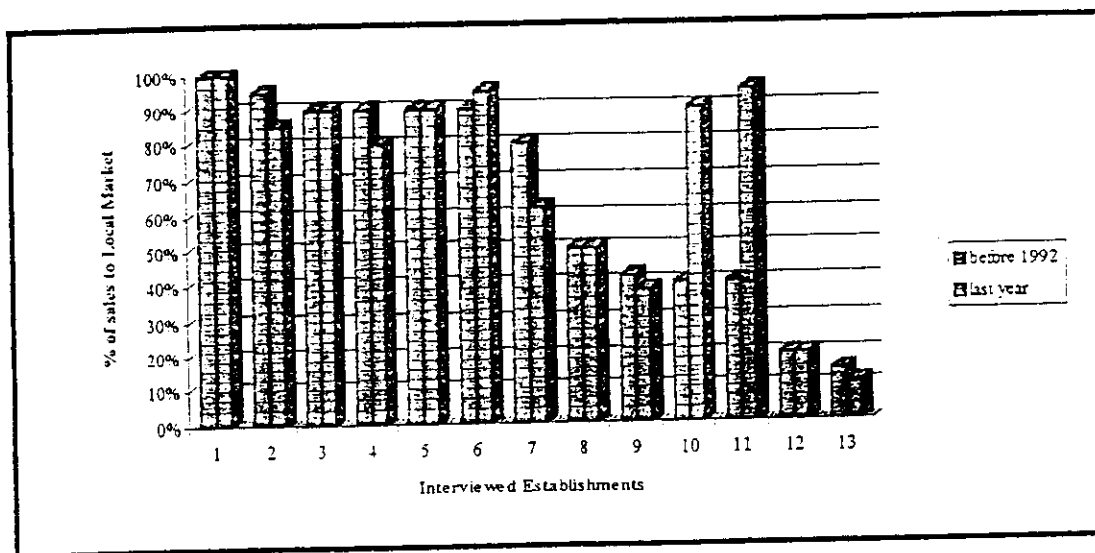
Only five specialized companies decreased their dependence on domestic sales. Among these was one company that produces chemical products, another specialized in electrical products, and a third specialized in the production of cement. However, even these companies that decreased their dependence on the local market did this with very low percentage change (ex. Conserves Chtaura local sales decreased from 42% before 1992 to 38% last year; Cement Sibline decreased its local sales from 15% before 1992

to 11% last year). It should be noticed that these firms are large in terms of production scale and number of employees.

On the other hand, other firms have significantly increased their dependence on the local market with very high margins. For example, a printing industry reported that the share of the local market increased from 40% to 90%, another industry specialized in the production of garments indicated that this share has increased from 40% to 95%.

This is shown in the responses of firms graphed in Figure 3.1.

Figure 3.1 Share of Local Market to Total Sales



The increased dependence on the local market is attributed to the following factors:

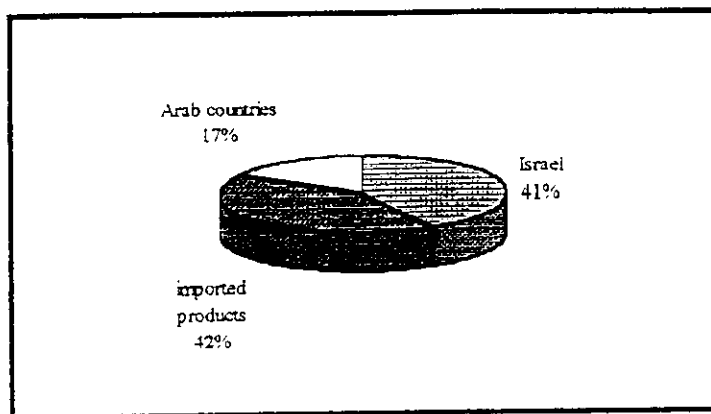
- The decreased competitiveness of the Lebanese products in the export market has created additional difficulties for export of the Lebanese products;
- The demand of export markets for international specifications on imported products is becoming a must;
- The dollar inflation in Lebanon after 1992 (estimated at 15% per year in between the years 1993-1995) has increased the prices of the Lebanese products.

Before 1992, the toughest competition to products in the local market came from imported products, a clear indicator of import penetration and the collapse of custom protection during the seventeen years of war.

During last year, some of these firms began to face higher competition from locally produced items. This is attributed to the end of the war that resulted in opening the different Lebanese domestic markets, limited the market fragmentation, increased competition from locally produced items, and decreased market monopoly.

Establishments are afraid of future competition from two main sources; imported products and Israel. They view that the peace process, when complete, will increase the competition in the local market especially from Israel. This is shown in Figure 3.2, as follows:

Figure 3.2 Future Competition in the Local Market



3.4.2.2 Export Market

Some industries have developed export markets with some countries, out of which the most predominant were the Gulf and other Arab countries such as Iraq, Jordan, and Syria. Other export markets, especially for garments, leather goods, and plastic products have included Europe and to a lesser extent, North America. The Gulf war had a serious negative impact on exports of Lebanese goods.

The competition in export markets was equally from local competitors in the export market and from imported competitors in that market.

Several weaknesses characterize the Lebanese export market. These include the following:

- i) The strong development of competitive local industries in countries which constitute Lebanon's traditional export markets for manufactured products;
- ii) Additional to the loss of markets during the civil war, Lebanese products face strong competition in their export markets from cheaper products, especially from developing countries;
- iii) Most of the Lebanese industries do not have proper production plans and organize their production programs on short term demand, a hindering factor to export growth.
- iv) The lack of adequate industrial policy in Lebanon.
- v) The lack of needed human resources and expertise.

3.3 Government Policies

There is a general dissatisfaction and frustration on the part of the industrialists from the lack of government policies and strategies that enhance the Lebanese industrial manufacturing sector.

The industrialists claim several issues of importance:

3.3.1 *Infrastructure and Services*

The severe damages that were inflicted on the infrastructure and service sectors due to the war had a crippling effect, especially on the industrial sector. In particular electricity was mentioned by most interviewees as a much needed service that is currently very costly. Power shortages and interruptions continue to be a constraint. This requires industries to have back-up generators in order to assure continuous operation of production programs, which is proving to be an extra cost burden on these industries, in terms of fuel, maintenance, and stand-by generators. Some of the interviewees even complained of the low voltage of the government electricity, a fact that inhibits the usage of government electricity even when available.

Another less persistent but important problem is that of telecommunication. The telecommunication system was severely damaged during the war. Managers and businessmen now resort to using the costly services of cellular telecommunication systems.

A third crippling factor to the industrial sector in the country is the transport system. Traffic congestion leads to losses of time, fuel wastage, pollution, and a high level of frustration.

Although services and basic infrastructure have been improving for the last few years, there is much more to be done.

3.3.2 *Government Protection*

Tariff protection and import control used to be important instruments for promoting investment in industry. Competitive imports subjected to import duties and import licensing offer protection for locally produced products. Such incentives and others like exemption and lower import duties on imported raw materials are perceived to be needed by Lebanese industrialists.

The protection system in Lebanon has been characteristically modest compared to other Arab countries. Duties are defined in specific rates, and tariff structure is not uniform. The country has used import control only moderately.

Most of the industrialists claim that the government does not offer any assistance in protecting the industries and encouraging higher production outputs. They claim that the lack of protection policies increases competition of foreign goods in the local market, thus decreases the chances of higher sales for Lebanese industries. (In new policies issued, the government tried to address these obstacles)

Only four of the interviewees see that there has been a change in the level of government protection to the industry, however, they view that this change has had a negative impact on industry. Others do not foresee that there has been any changes, but perceive that the government policy towards this matter had been negative all along. (It should be noted that these interviews were conducted before the recent government measures).

On the other hand, the government propaganda is committed to promoting all measures that will generate efficient and competitive market conditions, and support all measures that reinforce price competition. The government aims at reducing trade barriers. Moreover, it has been doubling its efforts to decrease monopoly and increase competition in the hope that this might decrease prices of goods and services. However, industrialists feel that these are only political statements that have not been effected.

3.3.3 Customs and Tariffs

As is the case with the government policy on protection of industries, the government only recently reduced the number of different tariff rates and normalized exchange rates used for duty purposes. Duties had been based on a value of the goods using an exchange rate that was only half the real rate.

Duty is recoverable on goods that are re-exported. For materials used in manufacturing, duty is payable on raw materials. Used machinery need an import license to monitor the need of such machinery, however, all machinery enters duty-free.

Almost 50% of the interviewed industrialists claim that there has been changes in the customs paid on raw material and machinery, and they perceive that they change has had a negative effect on their production programs.

3.3.4 Taxation

The industrialists view the tax system as moderate, producing incentives to encourage investment. Only recently the tax rates on corporation net profits were reduced to only 10%. The lowering of taxes is intended to increase actual government revenues, attract new investment, and encourage competition through the production of new goods and services.

The majority of interviewees have said that taxation has been changed positively during the last four years.

3.3.5 Wages

Due to inflation and the devaluation of the Lebanese currency against the US dollar, and due to the paralysis of relevant Ministries to monitor pricing and protect consumer rights, the labor unions have fought to increase the minimum wage rates for employees of the public and private sectors. Consequently, the minimum wage rate has been almost tripled in nominal terms during the past four years.

The industrialists view this as a limiting factor, and they insist that these changes had a negative impact on production, especially their effect on severance indemnity payments. Some of these industrialists even said that they try to avoid employing Lebanese workers because citizens of other countries such as Syria can be employed at cheaper wages (believed to be lower by 30%). Also, employing foreigners, especially Syrians, would decrease the liability on the owner of the industry towards the payment of Social Security, indemnity, and severance payments.

3.3.6 Licenses, Permits, and Administrative Procedures

The majority of industrialists do not view that there has been significant change in the administrative procedures involved in obtaining licenses and permits. However, the procedures involved in completing the needed administrative proceedings are very lengthy, time consuming, and costly due to several factors such as red-tape corruption, limited number of employees in relevant Ministries, and others. The government, on the other hand, has been initiating measures through the Ministry of Administrative Reform, to decrease these obstacles, especially in customs and other public departments.

Most of the interviewees do not find remarkable changes in these procedures for the past few years.

3.3.7 Financing of Projects and Provision of Loans

A very strong plea of Lebanese industrialists is their need for industrial loans and facilities for project financing. They are crippled by their lack of access to medium and long term financing for their much needed rehabilitation, renovation, and modernization projects. They need funds to replace outdated equipment, to expand their production programs, to support business development, and cover increases in working capital.

Commercial banks provide loans on yearly terms, on a current account basis, and with floating interest rates. Most of the interviewed industrialists find these rates unaffordable for long term financing of industrial development programs. It should be

noted that the industrial sector, in general, did not comprise more than 12-15% of total bank credits.

Formerly, the "Banque Nationale de Developpement Industriel et Touristique" provided long term loans to industries. However, this bank has lost its capital, and is practically un-operative for the time being. A plan to restructure the bank was approved by a government committee. This revision included increasing the capital of the bank and decreasing the state's share-holding in the bank to 20% (formerly 51%), with the balance to be held by the private sector.

3.3.8 *Other Issues*

3.3.8.1 Standards and Norms

Most of the industrialists are pressing for the need of adopting national standards for production, and increasing the adaptability of products to international standards such as ISO 9000. Moreover, they are eager for these standards to have conformity over all the Lebanese industries. This is an important issue that reflects on the ability of Lebanese products to compete in export markets. Lebanese industrialists cannot compete internationally if their products do not conform to international standards. Currently, the Lebanese standards are in most cases classified as "voluntary". Hence, there is no regulation of standards and norms.

Some of the Industrialists are requesting that the government assist in the rehabilitation and enforce the role of the following two industrial institutes:

- The Industrial Research Institute, established in 1953, jointly between the governments of Lebanon and the USA and the Association of Lebanese Industrialists. It became a national non-profit organization in 1955. The Institute provided professional services on a fee basis in the areas of laboratory analysis, field inspection and testing, applied research and consulting. This Institute was destroyed during the war, and is currently paralyzed.
- Lebanese Standards Institution (LIBNOR) is the only institute that can issue standards, however, currently, it has no actual existence. It should be reactivated to monitor standards of production and enhance the industry's competitiveness.

Both of these institutions are currently under reform.

3.3.8.2 Human Resources

Prior to the war Lebanon had a well-trained labor force. The war caused extensive damages to the educational system and resulted in severe loss of skilled and professional labor force. In addition, labor productivity decreased due to lower

education and less investment in human resource development. Moreover, real wages also declined significantly.

Industry faces the problem of attracting skilled and professional expatriates and securing well trained locals. Trained expatriates are very expensive to attract, and skilled local expertise is relatively hard to find within current conditions.

The need for trained technicians and skilled labor to work in specialized industries was expressed by industrialists. The educational system does not foster any links between technical education and industrial needs for technicians. This problem may be solved through the enforcement of technical schools and raising the awareness of the Lebanese to the needs of the labor market in terms of expertise.

Chapter 4

Effects of Regional and International Factors

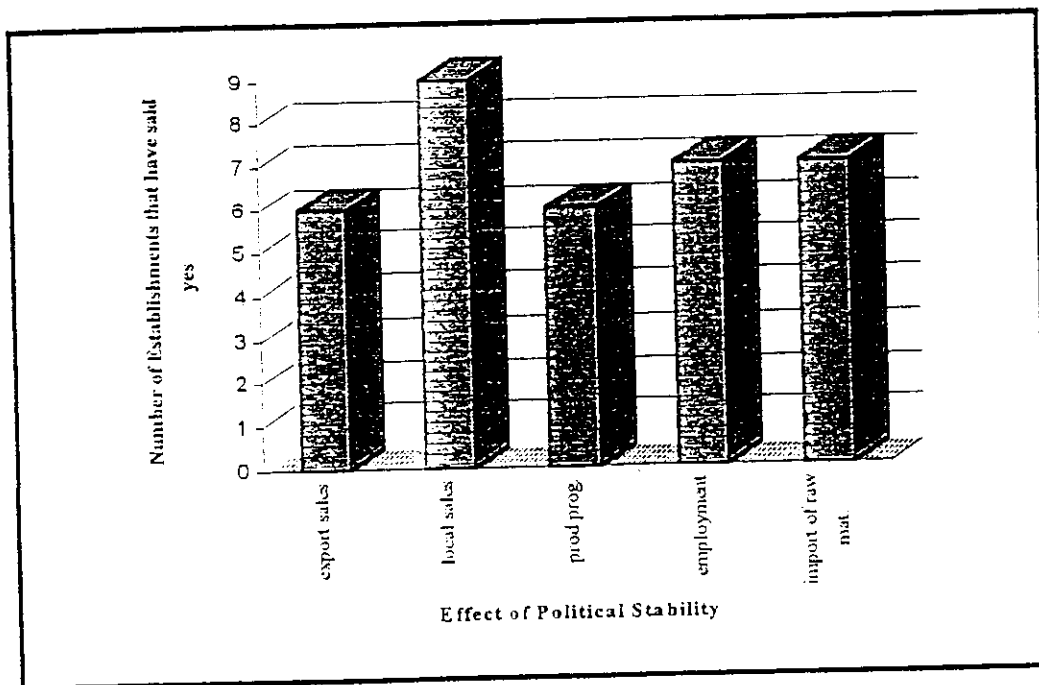
4.1 Effect of Political Stability

(Refer to Appendix A.8)

The political stability in the Middle East have not directly impacted the Lebanon industrial sector as much as it has had an effect on other Arab countries such as Jordan and Egypt. This is mainly due to the reason that Lebanon has not yet finalized any peace process with Israel. It is true that peace negotiations are being held, however, the security situation has not improved.

The interviewed industrialists perceive that the peace process has had a main impact on export sales. This is shown in Figure 4.1 as follows:

Figure 4.1 Effect of Political Stability



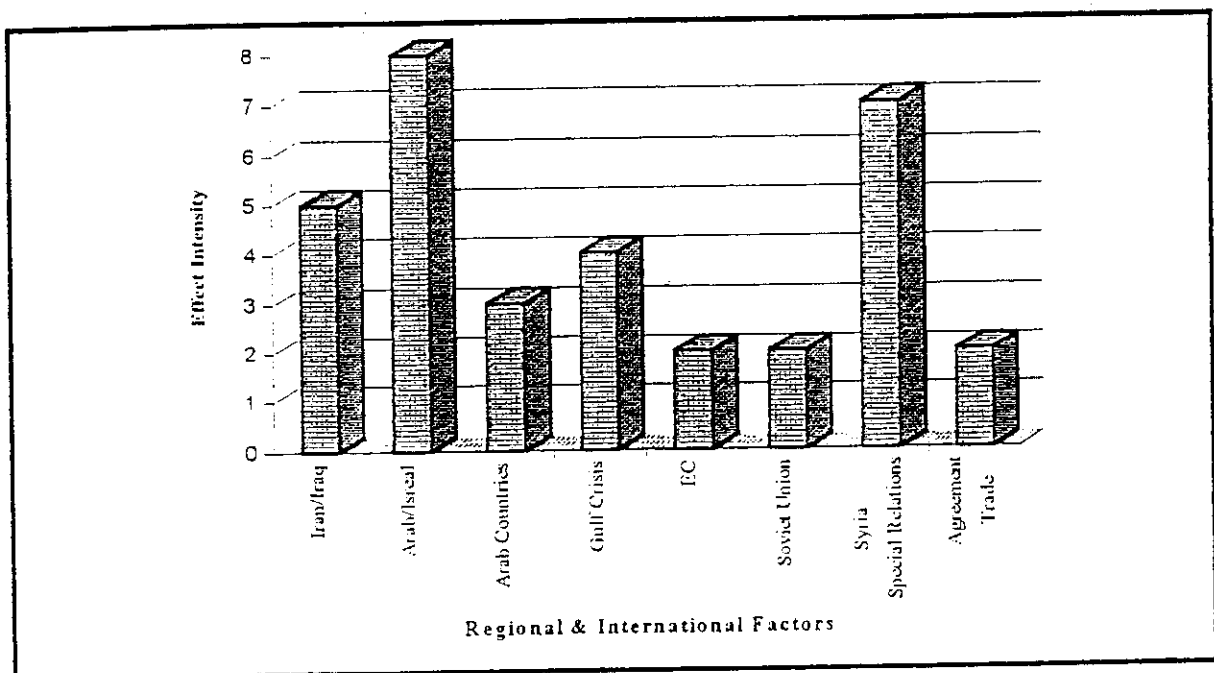
They perceive that the political stability has decreased export sales of Lebanese products to Arab countries that have signed peace treaties with Israel. The industrialists also perceive that the lack of a peace treaty with Israel has affected the internal security situation in the country, thus, has, among other internal factors, assisted in the decrease in local sales. The decline in local and export sales has forced many industries to decrease employment levels.

It should be noted that only three of the interviewees indulged in the production of metallic items (Light Metal Products), paper and printing (Technopress) do not perceive that the political stability have so far effected their export and local sales. Another large food industry (Ghandour Industries), and firms producing non-metallic items (Najem Group and Cement Sibling) have indicated that the peace process has effected only their local sales.

4.2 Effects of Regional and International Factors

The Lebanese industrialists feel that their production has been affected by several of the factors outlined in the questionnaire, especially the Arab/Israeli conflict, the special accords with Syria, and the Iran/Iraq war. These are shown in Figure 4.2 as follows:

Figure 4.2 Effects of Regional and International Factors



Both the Arab/Israel conflict and the special relations with Syria has had the highest effect on the Lebanese Industry. It is the opinion of the majority of industrialists that factors such as the European Community, the collapse of the ex-Soviet Union, and the international trade agreements have not yet effected the Lebanese Industrial sector.

The Iran/Iraq war and the Gulf Crisis have considerably produced a decrease in the export sales of some industries to Iraq. It should be mentioned that many of the Lebanese industries regarded Iran and the Gulf as main potential export markets. It is noticed that all those firms that produce garments and textiles reported that they have been severely affected by this factor.

The relationship with other Arab countries have not significantly changed over the past few years, and have not affected the Lebanese industry.

Only three of the interviewees foresee that the internationally signed trade agreements shall effect the Lebanese industry. These are either big industries (such as Conserves Chtaura) or industries producing specified technical products (such as Lebanon Cables). This indicates that the Lebanese industries are not yet aware of the consequences and effects of the international markets on their production processes, especially in terms of quality and specifications.

It is the unanimous belief of interviewed industrialists that the special relationship with Syria have resulted in a draw-back to the Lebanese industrial sector. They say that these newly adopted measures have resulted in the flood of cheap Syrian products into the Lebanese domestic market, reducing the local sales of Lebanese industries. Moreover, these industrialists are frustrated that they cannot export to the Syrian market likewise.

Interviewed industries do not foresee that any of the listed factors; namely the Iraq/Iran war, the Arab/Israel conflict, the Gulf crisis, the relationship with other Arab countries, the special accords with Syria, the European Community, the collapse of the Soviet Union, and trade agreements, have had any positive impact on industry in Lebanon.

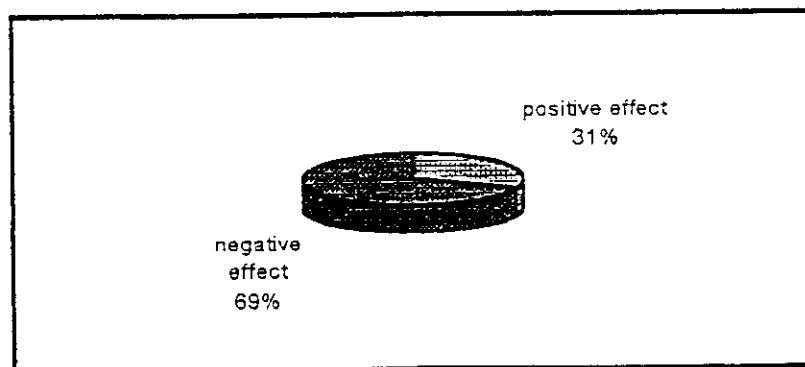
Some of the industrialist have added an internal factor, the Lebanese civil war as another adverse factor affecting the Lebanese industry.

4.3 Effect of Peace Process

Whether the peace process in the Middle East will be accomplished soon or not, there is a tendency towards economic conformity between the countries of the region. The conformity is a result of the need for market expansion, decreasing costs, and increasing the efficiency in the utilization of financial and human resources.

The majority of interviewed industrialists foresee that the peace process will have a negative effect on their industry, as shown in Figure 4.3.

Figure 4.3 Effects of Peace Process



The majority believe that the expected peace process will yield the following results (refer to Appendix A.9):

- There will be a significant expansion in the market for products, especially to the newly opened Palestinian state. However, these industrialists foresee that the Lebanese products shall not have a high percentage of these new markets, nor will their products be able to compete with Israeli products.
- On the other hand, the Lebanese industry will face fierce competition from Israeli products both domestically and in the export market, especially in the Arab countries and the Gulf areas. Only two of the firms, both producing non-metallic products, do not share this perception.
- The interviewees do not expect increased competition from non-Arab and Arab Countries. They expect the level of competition to remain the same.
- Almost none of the industrialists plan joint investment programs in the West Bank and Gaza Strip.

Only four of the firms regard that the peace process will have a positive effect on industry in Lebanon. Two of these industries produce chemical products, one produces non-metallic products, and one produces electrical products. Three of these firms are relatively big in size (employing between 100-510 employees). They agree with other industrialists that the peace process shall bring an expansion in the market and that they will face increased competition from Israeli products. However, they think that their share in the local and export market will not be significantly affected, and that they can produce competitive products.

4.4 Effects of Change

The industrialists view that the changes in the past few years have had a significant effect on the following:

a) Prices of Raw Material and Equipment

Most interviewed industrialists view that the domestic and regional changes in the last few years have significantly and negatively effected the prices of raw materials and equipment. Moreover, the devaluation of the Lebanese currency have added to the increase in these prices. A minimal number of these industries view that the changes have affected securing raw material and equipment.

b) Marketing, Export, and Sale Efforts

Gulf and other Arab countries such as Syria, Egypt, and Jordan form important export markets for Lebanese industrialists. During the past few years several regional changes have affected these countries. On the one hand, these

changes have opened several markets for the Israeli products, decreasing the export of Lebanese products to these markets. On the other hand, the Gulf crisis have decreased the export of Lebanese products to these markets.

c) Labor Cost

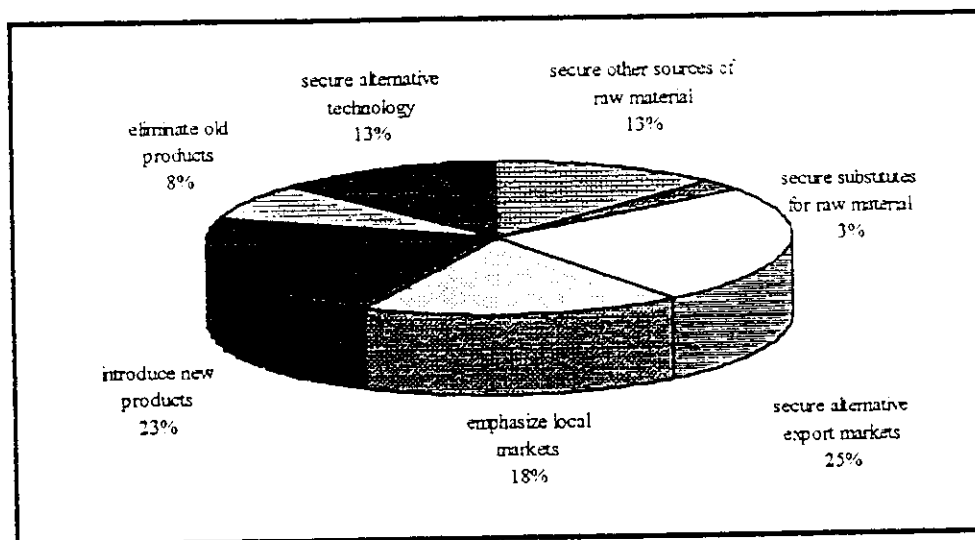
The industrialists foresee that Lebanon has a unique case in the labor cost and productivity issues. The internal changes in the country in the last few years have increased the minimum wage rates declared by the government. Industrialists are finding these wages high. The regional effect of the special relationship with Syria has directly affected the labor cost. Industrialists are finding it cheaper to employ Syrian unskilled labor.

The regional changes have not significantly affected securing the raw material, securing equipment, or the manufacturing process itself.

4.5 Strategies to Face Change

The interviewed Lebanese industrialists have not yet formulated strategies that they shall follow in the future. However, the majority of these industrialists have some main initiatives, such as trying to secure alternative export markets, concentrate on the local market, and introduce new products. The responses of the industrialists are shown in Figure 4.4.

Figure 4.4 Strategies to Face the Changes



Around 25% of the managers view that their most important strategy in the near future is to secure alternative export markets and increase their export growth and activities. They also view that the introduction of new products might assist them in securing larger shares of the export and local markets.

Chapter 5

Conclusion

During the past twenty years Lebanon's economy has undergone several changes. The transit trade that was one of the most important features of the country was lost, and many other harbors in the Arab countries and Gulf regions were developed. The short term prospects for the Lebanese economy are for strengthening and growth of the manufacturing industry, slow recovery of the service sectors, and slower growth in the agricultural sector.

The global economy has undergone several changes that will impact industry in developing countries. Among these changes were the emergence of new market economies, the constitution of central regional blocks, international trade agreements, and the adoption of several international standards such as ISO 9000.

Although the Lebanese industrialists know that these changes, as well as regional changes, shall affect their production, the government has not yet addressed such issues. Moreover, since these industrialists are very preoccupied with their immediate local problems, they have not yet reviewed their production patterns, nor have they seriously considered restructuring their firms to adapt to the changing regional and international environments.

Furthermore, the Lebanese industrialists are certain that the regional changes, especially the peace process with Israel, shall impact their production and market patterns. However, since this peace process have not been concluded yet, they are not certain of the effects of these regional variations on their respective industries.

We perceive that the uncertainty of interviewed industrialists is highly attributed to the absence of clear governmental industrial strategies, especially policies that address recent global and regional changes.

Appendices

APPENDIX A.1

LIST OF INTERVIEWEES

Code No.	Date of Interview	Name of Company	Address	Phone	Fax	Type of Products
1	13-Jun-95	Technopress	Bir Hassan/Beirut	01-823457	01-823458	paper and press
2	29-Jun-95	Light Metal Products	Choueifat/ Mount Lebanon	01-433010		metallic products
3	3-Jul-95	Cosmatine Industries SAL	EI Meiri/ Mount Lebanon	01-888306	01-885350	chemical products
4		Sipes Int'l Manufacturing Plant Co.	Kfardé/ Mount Lebanon	01-813822	01-603011	chemical products
5	3-Jul-95	Wahid Trading Company	Haret Hreik/ Mount Lebanon	01-631810	01-630110	textiles
6	21-Jul-95	Attallah Manufacturing Company	Iddeleh/ Mount Lebanon			clothes
7	22-Jul-95	Troussardiy Co.	Haret Hreik/ Mount Lebanon			clothes
8	5-Jul-95	Ghandour Industries	Choueifat/ Mount Lebanon	01-868729		foodstuff
9	19-Jul-95	Conserves Chitaura	Ctraur/Begaa	01-842450	01-602093	foodstuff
10	22-Jul-95	Lebanon Cables		01-350040	01-863974	Electrical cables
11	14-Jul-95	Najem Group	Mschbeh/ Beirut			Granite and marble
12	23-Jul-95	Cement Sidline	Sidline/South Lebanon			cement
13	18-Jul-95	Regal Industry	Tripoli/North Lebanon	06-663068		furniture

APPENDIX A.2

BASIC DATA

Code No.	Year of Est.	Age of Est.	Capital	# of Employees	Professionals	Skilled Labor	Unskilled Labor	Products before 1991	Products After 1991	Recent changes
1	1973	23	6M US \$	100	30	30	40	books, magazines	books, magazines	none
2	1957	38	12 M LBP	148	15	30	100	metallic cans		none
3	1987	14	50 M LBP	100	1			cosmetics		increased items
4	1956	39		35	8	20	7	Paint		specialized coating for wood and metal
5	1978	17		120-130	50	25	25	mixed garments		none
6	1986	9		35	5	28	2	Clothes	Clothes	none
7	1990	5		30	4	20	6	Clothes	Clothes	none
8	1857	138		850	50	500	300	different foodstuffs		decrease in some products
9	1961	35		250	8	232		foodstuff	new products	added new products
10	1967	28	1.8M M LBP	510				tele. & electric cables		added new items of production
11	1981	14	1.1M 450,000	165		65	100	Granite & Marble	additional artworks	added artworks
12	1975	20	1.1M M 6080	309				Cement	Cement	none
13	1987	8	0.5 M \$	20	3	15	2	furniture		cheaper furniture

* Est. refers to Establishment

APPENDIX A.3

**DEGREE AND SOURCES OF CHANGE
TECHNOLOGY**

Code no.	Degree of Change*	Technology**											planned change	
		Source of Tech.	Source of design	Production complexity	level of innovation	source of spare parts	cost of spare parts	technical capacity	improvement					
1	3	0	1	0	0	0	1	1	1	1	1	1	1	1
2	3	1	0	1	0	0	1	1	1	1	1	1	1	1
3	3	1	1	1	0	0	0	0	1	1	1	1	1	1
4	2	1	1	1	1	1	1	1	1	1	1	1	1	new factory
5	3	1	1	0	0	1	1	1	1	1	1	1	1	0
6	3	1	1	0	0	0	0	1	1	1	1	1	1	none
7	3	0	0	0	0	0	0	1	1	0	0	0	0	none
8	3	1	1	1	0	0	0	1	1	1	1	0	0	0
9	3	1	1	1	0	1	1	1	1	1	1	1	1	expansion programs
10	3	0	0	1	0	0	0	0	1	1	1	1	1	computerization
11	3	0	1	1	0	1	1	1	1	1	1	1	1	1
12	3	0	0	0	0	1	1	1	1	1	1	1	1	increase production
13	3	0	0	0	0	0	0	0	0	0	0	0	0	cheaper products

* 1 refers to little or no change ** 0 refers to no

2 refers to moderate change 1 refers to yes

3 refers to high change

APPENDIX A.4

SOURCE OF CHANGE
EQUIPMENT

Code No.	Equipment*						main difficulties to import equipment
	nature of single purpose equip.	nature of multi purpose equip.	shifting from single to multi purpose	source of equip.	identity this change		
1	1	1	1	0		securing needed capital	
2	0	0	0	0			
3	1	1	1	1	Italy to Germany	cost and procedures	
4	1	1	1	1		cost	
5	1	1	0	1	USA to Korea		
6	1	0	1	0		cost	
7	1	0	1	0		cost	
8	1	1	1	0		cost	
9	1	1	1	1	USA to Europe	cost	
10	0	0	0	0		cost	
11	1	1	1	0		less difficulty in procedures	
12	0	0	0	0		cost	
13	1	0	0	1	Italy to Romanian	cost	

to no; 1 refers to yes

APPENDIX A.5

**SOURCES OF CHANGE
RAW MATERIAL**

RAW MATERIAL*									
Code No.	type of raw materials	how	source of raw mat.	how	type of int. material	how	source of int. material	how	
1	0		0		0		0		
2	0		0		0		0		
3	0		0		0		0		
4	1		1		1		1		
5	1	better quality	1	from local to internal	0		1	from European to Syrian	
6	1	Decrease in quality	1	Italy to Korea and Asian countries	1	decrease in quality	1	Germany to Malasia	
7	0		0		0		0		
8	0		0		0		0		
9	0		1	from imported to local	0		0		
10	0		0		0		0		
11	0		1	added new sources	0		0		
12	0		0		0		0		
13	0		0		0		0		

* refers to no. 1 refers to yes

APPENDIX A.6

SOURCES OF CHANGE
MARKET

Code No.	local market to total sales			share of export market to total sale			Toughest Competition		locally*	most imp. export market	highest competition		
	before 1992	last year	future	before 1992	last year	future	before 1992	last year			before 1992	last year	future
1	40%	90%	90%	60%	10%	10%	1	1	Israel	gulf & Arab	1	1	
2	90%	90%	90%	10%	10%	10%	1	1	other Arab	other Arab	0	0	
3	90%	80%	75%	10%	20%	25%	0	0	imported	gulf	0	1	
4	90%	90%		10%	10%		0	0	imported	Arab countries	1	1	
5	20%	20%	20%	80%	80%	80%	0	0	Israel	gulf & Arab	1	1	
6	40%	95%	95%	60%	5%	5%	0	0	Israel	Other Arab	0	0	
7	50%	50%	50%	50%	50%	50%	0	0	Israel	Other Arab	0	0	
8	90%	95%	95%	10%	5%	5%	0	0	Arab & non Arab	Eastern	0	1	
9	42%	38%	40%	58%	62%	60%	0	both	foreign countries	Gulf & Europe	0	both	
10	80%	62%	70%	20%	28%	30%	0	both		Arab & West Africa	0	1	
11	95%	85%	75%	5%	15%	25%	0	0	imported products	gulf & Arab	1	0	
12	15%	11%	33%	85%	91%	67%	0	1			1		
13	100%	100%	80%	0%	0%	20%	both	1	imported products		gulf	0	0

1 refers to "from local competitors in the export market"

"from imported products"

0 refers to "from foreign competitors"

APPENDIX A.7

GOVERNMENT POLICIES

Code No.	Government Policies*																
	protection level*	how**	customs on raw materials*	how**	customs on equipment*	how**	customs on int. materials*	how**	taxes*	how**	wages*	how**	others*	licence*	how**	finance & loans*	how**
1	0		0		0		0		1	1	1	0	0	0		1	1
2	0		0		0		0		1	0	0		0	0		0	
3	0		0		0		0		0		0		1	1		0	
4	0		0		0		0		0		1	0	1	1		1	0
5	1	0	1	0	1	0	0	0	1	0	1	0	0	1	0	1	0
6	0		1	0	1	0	1	0	1	0	1	0	1	0		1	0
7	0		1	0	1	0	1	0	1	0	1	0	0	0		1	0
8	0		1	0	1	0	1	0	1	1	1	0	0	1	0	0	0
9	0		0		1	0	1	0	1	1	1	0		0		0	
10	1	0	1	0	1	0	1	0	1	0			1	0	0	1	0
11	1	1	1	1	1	1			1	1	1	0	1	1	0	0	0
12	1	0	1	0					1	0	1	0					
13	1	0	1	0	0		1	0	1	0	1	0		1	0	1	0

(C.P.S.P.S.)

Republic of Lebanon
Office of the Minister of State for Administrative Reform
Center for Public Sector Projects and Studies

refers to yes

** 1 refers to positive change

) refers to no

0 refers to negative change

APPENDIX A.8

EFFECTS OF POLITICAL STABILITY

Code No.	Effect of Political Stability*					Other Regional & International Factors**									
	export sales	local sales	prod, prog.	employment	import of raw mat.	Iran/Iraq	Arab/Israel	Arab Countries	Gulf Crisis	EC	Soviet Union	Special Relations Syria		Trade Agreement	Civil War
1	0	0	1	1	1										1
2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3	1	1	1	1	1	1	0	0	0	1	1	1	1	1	0
4	1	1	1	1	1	1	1	1	1						1
5	1	1	0	0	0	1	0	0	1	0	0	1	1	0	1
6	1	1	0	1	1	1	1					1			1
7	1	1	0	0	0	1	1		1			1			
8	0	1	0	0	0	0	1	0	0	0	0	1	0	0	1
9	1	1	1	1	1	1	1	1	0	1	1			1	
10	1	1	1	1	1	1	0	1	1	0	0	1	1	1	
11	0	1	1	1	1		1	1	0			0			
12	0	1	1	1	1	1	1					1			
13	0	0	0	0	0	0	1	0	1	0	0	1	0	0	

refers to yes ** 1 refers to positive effect

refers to 1 to no refers to negative

APPENDIX A.9

EFFECTS OF PEACE PROCESS

Code No.	Peace Process**					
	will it have an effect*	expansion**	Israel competition**	non-Arab competition**	Arab competition**	Investment West Bank**
1	0	1	1	1	1	0
2	0	0	1	0	0	0
3	1	1	1	0	0	0
4	1	0	1	1	0	
5	0	1		1	0	0
6	0	0	1	1	0	
7	0	0	1	0	0	
8	0	1	1	1	0	0
9	0	1	1	1	1	0
10	1	1	1	0	0	0
11	1	1	0	1	0	0
12		1	0	0	1	0
13	0	0	1	0	1	0

* 1 refers to positive effect
 0 refers to negative effect

** 1 refers to yes
 0 refers to no

APPENDIX A.10

EFFECTS OF CHANGE

Code No.	Effects of change*							
	securing raw mat.	prices of raw mat.	Manufacturing Process	marketing & export	Securing equipment	prices of equip.	labor cost	
1	0	1	1	1	10	1	1	0
2	0	1	0	0	1	1	1	1
3	0	1	0	1	0	0	1	1
4		1	1	1		1	1	1
5	1	1	0	0	0	1	1	0
6								
7								
8	0	1	0	1	0	1	1	0
9								
10	0	1	0	1	0	1	1	1
11	0	0			0	0	1	1
12								
13	0	1	0	1	0	1	1	1

*0 refers to no

APPENDIX A.11

STRATEGIES TO FACE CHANGE

Code No.	Strategies to Face Change*										main strategies
	secure raw mat. sources	secure raw mat subst.	alternative exports	local markets	new products	eliminate old products	alternative technology	others			
1	0	0	1	1	1	0	0			computerization	
2	1	0	0	0	0	0					
3	1	0	1	0	1	1	1				
4	1	1	1	1	1	1	1				
5	0	0	1	0	1	0	0				
6	1	0	1	1	0	0					
7	0	0	1	1	1	0					
8	0	0	1	0	1	0	1				
9	1	0	1	1	1	0	1			strategic alliance with Arab countries	
10	1	0	1	1	1	0				competitiveness, cost effectiveness	
11	0	0	1	1	1	1				upgrading equip. & process	
12											
13	0	0	1	1	1	0	1			decrease production costs	

* 1 refers to yes; 0 refers to no