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2011 Modularization of Korea's Development Experience:

Economic Development Model of the Development in Skill-intensive Textile Industry

2012

Ministry of Knowledge Economy

KIET Korea Institute for Industrial Economics & Trade

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Economic Development Model of the Development in Skill-intensive Textile Industry

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Preface

The study of Korea's economic and social transformation offers a unique opportunity to better understand the factors that drive development. Within one generation, Korea had transformed itself from a poor agrarian society to a modern industrial nation, a feat never seen before. What makes Korea's experience so unique is that its rapid economic development was relatively broad-based, meaning that the fruits of Korea's rapid growth were shared by many. The challenge of course is unlocking the secrets behind Korea's rapid and broad-based development, which can offer invaluable insights and lessons and knowledge that can be shared with the rest of the international community.

Recognizing this, the Korean Ministry of Strategy and Finance (MOSF) and the Korea Development Institute (KDI) launched the Knowledge Sharing Program (KSP) in 2004 to share Korea's development experience and to assist its developing country partners. The body of work presented in this volume is part of a greater initiative launched in 2007 to systemically research and document Korea's development experience and to deliver standardized content as case studies. The goal of this undertaking is to offer a deeper and wider understanding of Korea's development experience with the hope that Korea's past can offer lessons for developing countries in search of sustainable and broad-based development. This is a continuation of a multi-year undertaking to study and document Korea's development experience, and it builds on the 20 case studies completed in 2010. Here, we present 40 new studies that explore various development-oriented themes such as industrialization, energy, human capital development, government administration, Information and Communication Technology (ICT), agricultural development, land development and environment.

In presenting these new studies, I would like to take this opportunity to express my gratitude to all those involved in this great undertaking. It was through their hard work and commitment that made this possible. Foremost, I would like to thank the Ministry of Strategy and Finance for their encouragement and full support of this project. I especially would like to thank the KSP Executive Committee, composed of related ministries/departments, and the various Korean research institutes, for their involvement and the invaluable role they played in bringing this project together. I would also like to thank all the former public officials and senior practitioners for lending their time and keen insights and expertise in preparation of the case studies.

Indeed, the successful completion of the case studies was made possible by the dedication of the researchers from the public sector and academia involved in conducting the studies, which I believe will go a long way in advancing knowledge on not only Korea's own development but also development in general. Lastly, I would like to express my gratitude to Professor Joon-Kyung Kim for his stewardship of this enterprise, and to his team including Professor Jin Park at the KDI School of Public Policy and Management, for their hard work and dedication in successfully managing and completing this project.

As always, the views and opinions expressed by the authors in the body of work presented here do not necessary represent those of KDI School of Public Policy and Management.

May 2012

Oh-Seok Hyun

President

KDI School of Public Policy and Management

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Summary

Korean textile industry sought industrial development by transferring from the initial import substitution system to export industrialization. In other words, Korea was able to enhance its industrial capacity through price and quality competition in the markets of developed countries using abundant low-cost labor force as well as self-supply of raw materials.

In this process, it was possible to enter the overseas market based on initial entrepreneurship and creation of agglomeration effect by establishing specialized production complexes. For example, the Korea expanded export of apparel and sewing products through the establishment of export companies such as Daewoo International (President Kim Woo Jung) and construction of Guro Industrial Complex (mainly apparel and electronic assembly products) in 1967.

Initially, Korea adopted the strategy of phased development (stage of technology import→stage of inherence of capacity→stage of global entry) including global entry as well as external growth through enhancement and establishment of internal capacity based on the import technology from developed countries acquired through technology licensing from developed countries such as Japan and the United States and FDI and joint investment with global corporations.

In addition, it pursued high-end and high value addition based on small quantity production for economy of scale through mass production of small sized products using the strategy of selection and concentration. In other words, it enhanced its product development capacity by transferring from OEM to ODM (Original Design Manufacturing) and OBM (Original Brand Manufacturing) based on self-design and brand. Also, it enhanced its capacity through process innovation. This was achieved by specializing vertically and horizontally among the large corporation and small/medium companies within the production process. Textile material (cotton spinning, chemical fiber) which require large-scaled facility and investment in R&D was managed by large

corporations and areas such as sewing and weavings (fabrics) fields that require skilled labor force were mainly produced by small&medium companies.

Moreover, there was great achievement in the transfer from skilled, labor intensive industry to technology/capital intensive industry through government's active support policy as well as utilization of high-quality human resources based on high education fervor.

Chapter 1

Background

1. Social/Economic/Industrial Environment
2. Motive to pursue the Development of the Textile Industry

Background

1. Social/Economic/Industrial Environment

1.1 General Social, Economic Environment

After being liberated from the Japanese occupation (August 15th, 1945), Korea was one of the poorest country with high poverty and unemployment rate. Immediately after the government was established in 1948 the average income for Korean citizen was 67 USD (1953). This resulted in a poor development in our social system. Especially, the average income per person was less than Uruguay and Argentina from South America and Congo, Gabon, Ghana from Africa. Back then 70% of the population relied on agriculture and due to the industrial underdevelopment such as manufacturing sector there was a shortage in commodities, causing increase in inflation. At the same time, there was a high unemployment rate which did not make things any better creating a vicious circle. On 1948, the consumer price index rose 58.3% (2005 standard) and maintained this level until 1950 when it soared to 167.5%.

To make matters worse 2 years after the establishment of the Korean government the Korean War (June 25th, 1950) had started, making the Korean economic base almost nonexistent. At the time, the civilian death toll reached 1.5 million, 40~50% of the industrial facilities were destroyed causing the GDP in 1953 (1975 standard) which was 27% less than on year 1940 before the independence. Even after the armistice the North Korean's attempt on attaining more land and terrorism had continued. In the center of the peninsula, the capitalism and communism parties started having radical conflicts against one another.

Since the armistice, on 1953 various foreign aid industries became eager to aid post-war recovery and economic development. Until 1957 they mainly focused on recovering the infrastructure and industrial facilities which were damaged during the war.

During 1953~'60, United Nations Korean Reconstruction Agency (UNKRA) and others have provided with approximately 150 million USD, and according to Public Law 480 of the United States the total aid provided including food aid totaled to 1.74 billion USD. These aid funds were mostly granted however during post-war recovery 2/3 of Korea's imports (11% of an ordinary GNP) were the foreign aid funds.

Table 1-1 | Korean Economy at the Time of the Country's Establishment

Current GDP (100million USD)	Per capita income (USD)	Exports (100million USD)	Foreign exchange reserve (million USD)	Development Quantity (100 million KWH)	Number of Motor vehicles (10,000)
13 (year 1953)	67 (year 1953)	0.2 (year 1948)	3.8 (year 1951)	4.8 (year 1948)	1.5 (year 1948)

Source: National Statistical Office, 「Economic, Social Transition Since 8.15 Independence」, 2006.

Table 1-2 | Foreign Aid to Korea

(Unit: 1,000 USD)

	Total	United States		Others	
		AID	PL480	CRIK	UNKRA
1954	153,925	82,437	-	50,191	21,297
1955	236,707	205,815	-	8,711	22,181
1956	326,705	271,049	32,955	331	22,370
1957	362,892	323,267	45,522	-	14,103
1958	321,272	265,629	47,896	-	7,747
1959	222,204	208,297	11,436	-	2,471
1960	245,393	225,236	19,913	-	224
Total	1,869,098	1,581,730	157,722	59,233	90,393

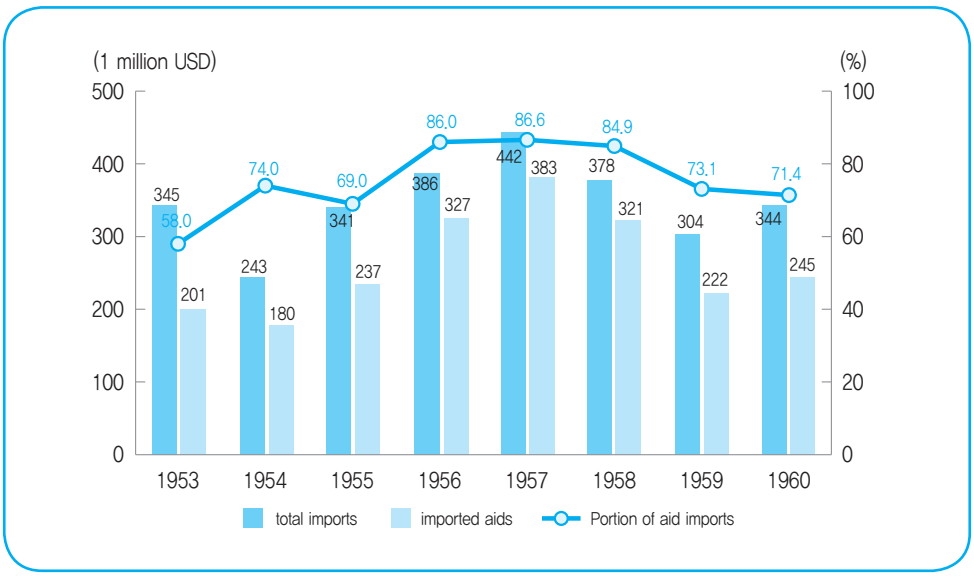
Source: Extracted from Oh Won Cheul's Korean Industrial Revolution

1.2 Industrial Environment

After the 8.15 independence and 38th parallel dividing the peninsula into North, South caused the manufacturing industry shrank significantly. During the Japanese occupation, Korea's main manufacturing sector was made out of light industries such as cotton and food industries. However, even after the 8.15 independence in 1945, due to the lack of raw materials, equipment, technicians and severe lack of electricity production was very poor.

Especially, after the 8.15 independence Japanese technicians, entrepreneurs and business managers immediately left Korea (back to Japan) and therefore making it difficult to operate the machines. Also in the trade sector the reliance on Japan was as high as 80~90%. Therefore after the independence and being separated from the Japanese economy, intermediate supply was disrupted for many industries, which continuously led to loss in the product market creating an obstacle when trying to expand production.

Figure 1-1 | The Share which Aid Import Covers from the Total Import



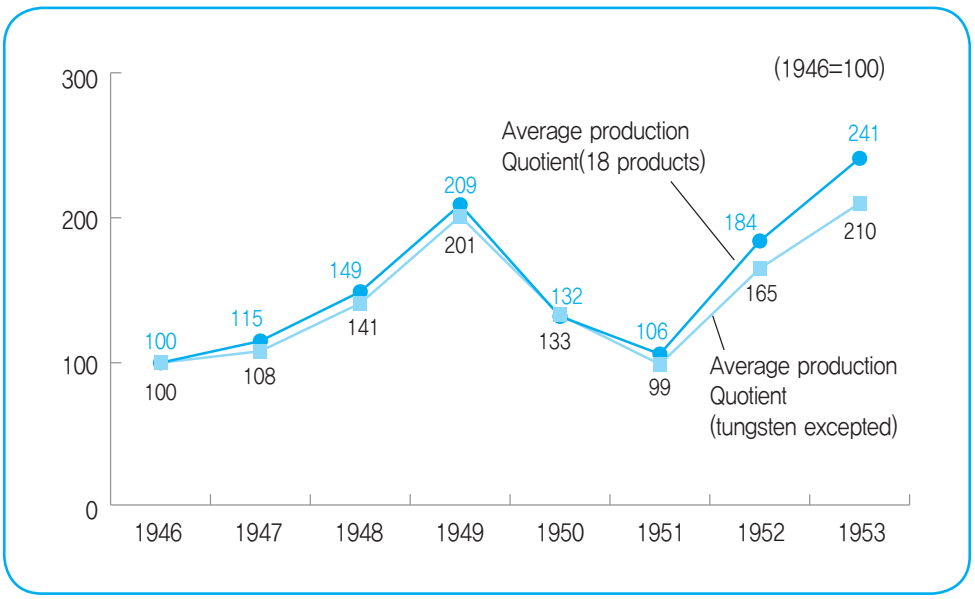
Source: The Korea Development Institute,「Trade, Foreign Aid&Economic Development」, 1980.6.
Footnote: Foreign aid imports are foreign funds from the United States and UN lead CRIK, UNKRA.

Table 1-3 | Comparison of the Industrial Advantage between North, South Korea after the Separation

South Korea	North Korea
Cotton spinning(85%)	Metal(90%)
Machinery(72%)	Chemicals(82%)
Food(65%)	Ceramic(79%)
Printing·Binding(89%)	Gas·Electricity(64%)
Wood products(65%)	
Other industry(78%)	

Source: National Statistical Office,「Economic, Social Transition by statistics」, 1993.
Footnote: figures in ( ) shows the market share they own in each industrial production.

Figure 1-2 | Average of South Korea's Main Production



Source: The Korean Development Institute,「Historical assessment for the last half century and Vision for the 21st century on Korean economy」,1995.12.

Footnote: Tungsten production rate has increased by 192.3% on 1947 in comparison to 1946.

Meanwhile, caused by the separation between north and south, electricity and other raw materials such as iron ore could not be supplied from North Korea. Therefore the South Korean production facilities could not operate. Serious shortage in daily necessities followed; North Korea was well developed in the mining industry hence producing 92% of the peninsula's electricity production, along with coal and iron ore, gold, silver, tungsten and graphite etc. Therefore due after the separation to North and South, South Korea was suffering from an electric power shortage.

During the Korean War (1950.6~'53.7), there was a huge number of casualties and the industrial foundation was burnt to the ground. However with the help of foreign aid expansion in the light industries was carried as part of post-war reconstruction. Since the armistice in 1953, looking through the gross national production at that time, agriculture and the fishing industry covered 47.3% out of the total production. Meanwhile the manufacturing industry was only 9%. Light industries and food&beverage industry back then occupied 79.3% with the cotton spinning industry, chemical industry only had 20.7%.

Since the armistice, with the help of foreign funds our manufacturing industry expanded with our production capabilities improving. The funds for post-war recovery was mainly spent on increased gains such as fertilizer factories, cement which will be used for reconstruction, and plate glass factories. It was also spent on the expansion in chemical industry and cotton

spinning industry. Lastly, they also invested on dyeing&finishing industry and the textile industry. In between 1953~'60 the production rate in heavy chemical industry and the light industry increased by 3 and 2.3 times respectively. However, the light industry's total scale was 3 times more than the chemical industry.

Table 1-4 | Investments Made on Each Industry with the Foreign Aid Fund

(Unit: 1,000 USD, %)

	Textile	Chemical	Machinery	Others	Total
UNKRA Funds	8,987	14,364	728	961	25,140
ICA Funds	3,826	49,920	5,692	200	59,638
Total	12,813 (15.1)	64,284 (75.8)	6,519 (7.7)	1,161 (1.4)	84,778 (100.0)

Source: Asiatic Research Institute, Korea University 「Economy on Korea's Manufacturing Industry」, 1965.12.
Footnote: UNKRA funds (1953~'55), International Cooperation Administration (ICA) funds (1954~'57)

Table 1-5 | Nation's Manufacturing and Production Results and Components

(Unit: 1 million USD, %)

	1953	1954	1955	1956	1957	1958	1959	1960
Light Industry	417 (79.3)	564 (79.4)	632 (81.4)	684 (81.9)	732 (80.4)	811 (79.8)	893 (77.2)	976 (74.7)
Heavy Chemical Industry	109 (20.7)	146 (20.6)	144 (18.6)	151 (18.1)	179 (19.6)	205 (20.2)	264 (22.8)	330 (25.3)
Total	526 (100.0)	710 (100.0)	776 (100.0)	835 (100.0)	911 (100.0)	1,016 (100.0)	1,157 (100.0)	1,306 (100.0)

Source: The Korean Development Institute, 「Trade, Foreign Aid and Economic Development」, 1980.6.

2. Motive to pursue the Development of the Textile Industry

2.1 Increase in Demand on Clothing

Right after the 8.15 independence, there was an increase in demand for western clothing over the traditional Korean clothing. This was influenced by foreign relief supplies, smuggled good from Japan and other nearby countries changing the clothing trend. Especially after the Korean War there was a huge transition in the clothing trend with the introduction of American raw cotton and nylon supplies. It changed to more feminine-focused. Back then it was a dream to even wear a 'Hanbok' (Korean traditional

dress) which consists of skirt and 'Jeogori (Korean traditional jacket)' made out of nylon materials. It was easy to wash and the material was very light. Those wearing clothes made out of Japanese nylons were considered to be the upper class. After 1956, cotton spinning, wool spinning and silk spinning sector were self-sufficient. Therefore the Korean government posed an import ban on cotton, wool, silk and knitted fabrics. This caused people to smuggle luxury wool fabrics from abroad creating side effects.

Table 1-6 | Private Consumption Expenditure

(Unit: 1Billion KRW(whan), %)

	1953		1955	1957	1959		Annual Average ('53~'59)
		share				share	
Food and Beverage	395.0	52.8	428.6	508.8	531.8	51.7	5.1
Clothing	105.8	14.1	100.1	130.7	149.3	14.5	5.9
Light and Heating	75.3	10.1	80.0	90.7	103.8	10.1	5.5
Housing Expenses	34.8	4.7	37.6	40.9	47.5	4.6	5.3
Welfare/ Transportation	41.2	5.5	31.7	51.9	57.4	5.6	5.7
Entertainment	37.6	5.0	32.2	46.8	59.6	5.8	8.0
Others	58.3	7.8	64.4	68.7	79.7	7.7	5.3
Total	748.0	100.0	774.6	938.5	1,029.1	100.0	5.5

Source: National Statistical Office

Footnote: family and non-profit organizations consumer expenditure (1955 standards on constant market prices).

In the early 1960s, through rapid industrialization and modernization, western clothing was spreading fast. With double cultured fashion industry was being formed, manual industry such as tailors and suit shops started appearing, which was a huge help during the development of the local apparel industry. In the late 1960s, locally made suits were being produced fit for the Koreans making it the golden age of tailored suits. Apart from the designs cutting and sewing skills improved rapidly. They started having male models and fashion shows; this was the start for ready-made clothes (After the 8.15 independence, those who wore a suit were frequently called 'Macau gentlemen'. It was because before the specialization in local clothing those who wore suits bought from Macao which was produced by the luxury wool fabrics). Back then as the demand for foreign clothes started increasing in comparison for local clothes, the government have decided to ban imports on foreign clothing in 1961 promoting local clothing and protecting the local manufacturers.

2.2 The Need for the Growth in the Export Industry

Towards the end of 1950, the foreign aid funds started shrinking and the government needed to obtain more foreign currency. The foreign fund which was constantly sent to Korea since the 1953 Korean War started decreasing by 1957. Also import substitution was a priority since the local market was small. This lead to a halt in the economic expansion. Especially between 1958~'60, government pursued the tight-money policy which shrank the import scale and difficulty in obtaining raw materials. This resulted in shrinking of the manufacturing sector which caused difficulty in exporting. Back then they were mainly manufacturing non-durable goods (mill, sugar, cotton spinning etc.), mostly commodities. At the same time the foreign aid was decreasing, causing balance of payment deficit and in order to solve this crisis, obtaining foreign currency was Korean government's main priority. Back in 1960, in the early stages of economic development, the average income per person was less than 100 USD and this made us fall back even more.

The government was planning to grow the textile industry into a strategic export industry in order to increase employment rate. The government decided that the Korean laborers who are more educated and abundant in number could have a comparative advantage in the light industry when competing against foreign countries. Therefore the government actively helped the growth of small&medium enterprise for the textile industry which would increase employment rate and at the same time increase the standard of living. We can see lots of consideration has been put into this decision as it will also induce demands helping the Korean economy. Especially in 1963 the nationwide average unemployment rate was 8% but the in the city it reached up to 16%. However thinking about the latent unemployment in the farm land outside of urban areas, it is assumed that the unemployment rate in and out of the city was about the same.

During the first stages of the 5 year economic development plan (1962~'66) the government focused on increasing exports in the textile industry. This is because Korea relied on importing materials such as cement, manure, oil refining, and chemicals etc. hence expanding social overhead capital. Back then, materials such as cotton fabrics, wool fabrics, silk fabrics etc. were past the self-sufficient level and at their early stages for export.

Table 1-7 | Comparison of Labor Costs between Key Nations (Manufacturing)

(Unit: cent/hour)

	1966	1967	1968	1969	1970
South Korea	10	12	15	18.5	22.5
Japan	56	63	74	86	-
Philippines	22	23	23	24	-
Thailand	20	21	-	-	-
Taiwan	19	21	22	-	-

Source: Oh Won Cheul, 「Korean economic development-Korean Industrial Revolution」, Newstown 2007.

Table 1-8 | Primary Export Items Selected by the Government (Year 1964)

Order	Items	Order	Items	Order	Items
1	Raw silk and Thread	6	Fish, shell fish and mushroom sardines	11	Leather goods
2	Silk fabric	7	Wool goods	12	Handicraft (arrowroot wallpapers included)
3	Ceramic goods	8	Plywood	13	Miscellaneous goods (Western table ware and wigs)
4	Rubber goods (Tires and rubber shoes)	9	Cotton fabrics	-	-
5	Radio and electronic appliances	10	Clothing	-	-

Source: Oh Won Cheul, 「Korean economic development-Korean Industrial Revolution」, Newstown 2007.

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Chapter 2

Details

1. The Beginning and Progress of the Textile Industry
2. Growth in Import Substitution for the Textile Industry (before 1960s)
3. Promotion of Export-led Textile Industry (1961~1979)
4. The Rationalization of Industry and Reinforcement of Competitiveness of Textile Industry (1980-1986)
5. Development in Knowledge Intensive Textile Industry (1987~'90)
6. Development of High-tech Textile Industry (2000)

Details

1. The Beginning and Progress of the Textile Industry

1.1 The Beginning of the Textile Industry

The start of the Korean textile industry was back in 1910 during the Japanese occupation. It was when a modernized industrial cotton spinning factory was built. In 1917, huge conglomerate named Mitsubishi set up the first Chosun cotton spinning corporation in Busan. Later on in 1919 during the 3.1 movement. Kyungsung cotton spinning Corporation (currently named KyungBang Co. Ltd) was set up using domestic capital. Especially with Korea's (Chosun back then) used their labor force and cheap raw materials (raw cotton) to obtain the industrial sites. Their goal was to advance to the Japanese capital with cotton spinning. Back then the Japanese encouraged the Korean agriculture to produce raw cotton and silk worms etc.; something the Japanese did not have enough back at home.

In 1940, the fiber production covered 12.4% out of the total grossed industrial production revenue. In the industrial classification cotton spinning and silk spinning respectively covered 46.5% and 32.3% out of the total textile industry making it a major part of production. During the 8.15 independence in 1945, Korea possessed a large scale of textile factories Three hundred and thirty seven thousand spindles, nine thousand weaving machines. Apart from this there were other small medium factories which produced carded wool, silk, knit. However due to the 1950 Korean War, these facilities were damaged leaving on 98,000 spindles and 3,300 weaving machines.

1.2 Process of Growth and Development of the Textile Industry

In 1953, after the armistice was declared from the Korean War, with the help of foreign aid the textile industry was able to modernize their facilities and with farm surpluses (raw cotton etc.) introduced by the US materials such as cotton, wool etc. replaced imports and reached

the self-sufficient stage. Back then, Koreans suffered from shortage of living essentials. And as it became more serious in order to stop this problem the government started focusing the post-war reconstruction to mainly agricultural and textile industries. For the cotton spinning industry's case, the government implemented 'Emergency Reconstruction Plan for Cotton Spinning(1953~'57)' which helped the reconstruction of production facilities and development much faster.

Table 2-1 | Estimated Domestic Raw-Cotton Production after the Import of the US Raw Cotton

(Unit: ha, 1,000 geun (equilibrate to 600g per geun), %)

	Imported (A)	Output (B)	Cultivated Area	Self-Sufficiency B/(A+B)
1950	24,504	102,517	137,832	80.7
1953	23,401	79,143	124,436	77.2
1955	63,340	97,725	112,779	60.7
1958	81,939	37,545	56,547	31.4
1960	93,492	31,521	50,826	25.2

Source: 60 years National Economic compilation committee, 「Korean Economy 60 years (agricultural sector)」, 2010.9.

The textile industry could reach the self-sufficient stage replacing all the imports was due to sufficient and smooth supply of the production facilities and raw materials (surplus US raw cottons etc.). Along with financial support, affordable yet motivated laborforce was the key to it all.

Also even with a small budget and lack of skills, the textile industry can still be operated and expanded as it is a very easy industry to operate. In 1960, after the government eagerness to purse economic development, raw materials such as cotton and wool (cloth material) reached its self-sufficient stage resulting to successful exports in the textile industry for labor intensified apparel industry. Especially, since 1963 with the start of nylon, production for materials such as polyester and other synthetic fiber supply for various cloth materials became more easily accessible, making a sudden increase in exports for clothes. In between 1963~'79 the added value and output in the textile industry increased in double digits by 34.8% and 33.4% respectively. On top of that clothing exports in 1967 from 640 USD increased to 2.7 billion USD by 1980 recording an annual increase of 30% every year. This was a very high increase rate.

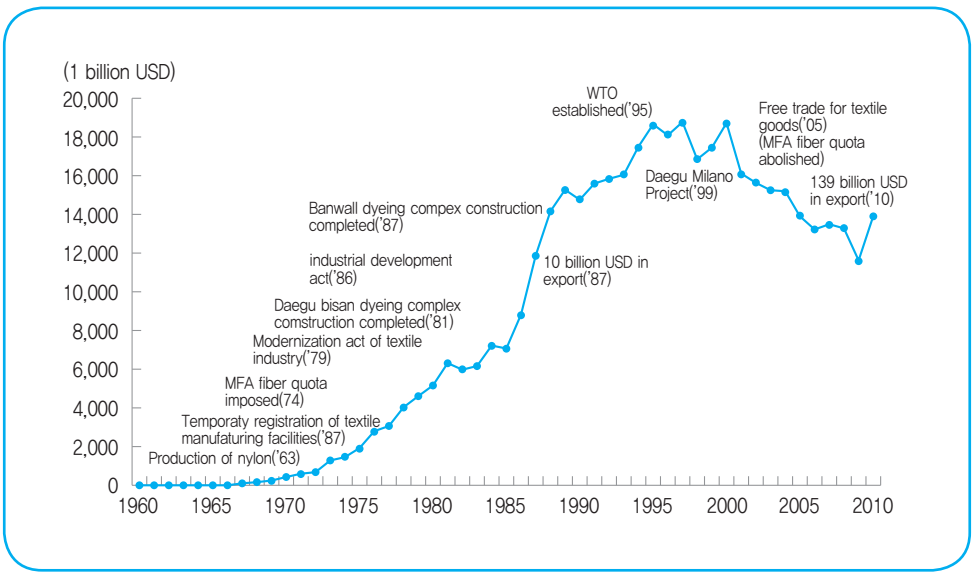
The reason how Korea could achieve such high growth rate was due to the government's active export bans, plenty cheap labors (female laborers) and cheap raw materials (cloth materials) which helped Korea keep a competitive price. Back then Korea had to rely on Japan for the production of synthetic fabrics and chemical fabrics, however after the

introduction (Korea's first nylon production (synthetic cloth) was possible after the founder of Korong group Lee Won Man chairman brought in the manufacturing technology from Toray corporation in 1963. Korea set up their very own nylon factory in Daegu back in August with the name 'Korean Nylon.' This was the first ever nylon manufacturing factory built in Korea. Nylon socks are known to be smooth and at the same time durable, hence there was time when there were scarce nylon socks (Science Times 2011.01.31). With the Japanese technology in our country, we could start manufacturing our own products. Also in the 70s with the creation of petro chemistry after the nationalization of nylon production, development of chemical fibers began. Later on the local production of synthetic fiber rose sharply from 3.7% in 1972 to 41.1% in 1980. Also during the 60s~70s the background to how exports have risen sharply as clothing materials were exported to Japan. With Korea's own production and import (Japan's exports to Korea in 1968 (1 Million Yen, share): Synthetic fiber (198, 9.1%), textile machinery (111, 5.2%), ship (89, 4.1%), trucks (81, 3.7%) etc.) of raw materials (chemical fibers and fabrics) and cheap labors, Japanese trading companies such as Mitsui and Marubeni have expanded bonded processing (exported raw materials are processed under commission which then imported again) in Korea (According to the data from Japan/Asia Economic Research Institute (Development and the growth of Korea's exports on clothing. 1978), by the end of 1960 it is known that 60% of Korea's clothing exports were from bonded processes ordered by the Japanese.

During 1970~80, with the economy booming all over the world, the demand for clothing increased. Not missing this opportunity exports for clothing have increased to a larger scale. During the 1970s with high export rates for clothing, Korea along with Hong Kong and Taiwan was called the 'Big 3' in clothing exports. Korea's world market share for clothing rose 3 times from 2.0% in 1971 up to 6.4% in 1981. Also during the mid-1980s with the help of '3 low booms' (low international interest rate, low oil prices, low USD against the Japanese yen) in 1987 Korea was able to export 10 billion USD only in one item.

However, towards the end of the 80's due to intense labor management, with a raise in pay and lack of work force, overseas transfers and global development in the clothing industry started to slow down. Especially, after the overseas transfer of the textile industry, clothing such as shirts and other mass production items were produced in areas with cheap labor and Korea started to have domestic enterprises producing luxury fashion items.

Figure 2-1 | Korea's Development and Export Output in the Textile Industry



Source: Written by Korea Institute for Industrial Economics&Trade

Table 2-2 | Analysis of the Growth and Factors in the Textile Industry for Korea and Japan in Each Time Period

	Korea	Japan
Before WWII (Before 1945)	- During the Japanese occupation (36years), Korea acted as the supplier for production textile materials such as raw cotton, silk etc. - Supplied with cheap labor after the Japanese investment to Korea with cotton spinning - Established the first cotton spinning factory with the nation's capital *Beginning of the Korea textile industry	- With the imported of European technology, they maintained high quality and skills - They invested their cotton spinning into Korea using cheap labor and maintaining their price competitive - During 1933~5 Japanese textile exports took up 48.2%(cotton 20.6%, silk 16.3%, rayon fabrics 4.8%, silk fabrics 3.3% and others 3.2%)

	Korea	Japan
After WWII (After 1945)	- After the armistice from the Korean War (July 1953) with the help of foreign aid Korea textile industry has revived * Export of clothing to America has expanded with imported cheap US raw cottons and cheap labor - By the importing synthetic fiber technology and machinery from Japan, synthetic fibers were now produced locally the Korea textile industry develops rapidly * Japanese nylon manufacturing skills have been imported in '57 (by Korong) * 'Second hand machinery from Japan have been imported producing viscose rayon for the first time * With the creation of petro chemistry complex, synthetic fiber is produced on our own - With the 5year economic development plan in 1961 textile exports rises * Through Guro export industrial ('64) we started producing OEM products for Korean based Japanese companies and trading companies * Daewoo industry (Kim Woo Joong rep.) obtains large quantities of the US clothing quotas (Clothing quotas –MFA starts in '74) - After getting rid of excessive and scrap&build of worn-out facilities through structural improvement operation, increase in production and quality	- Through the Korean War, expanded in production facilities for cotton spinning, chemical fiber(viscose rayon) - Starts the production of nylon and chemical fibers funded by the government in 1950 * 'On 1951 nylon was produced with the import of Dongyang rayon from US (Du Pont) technology - Rose to second place after the US in 1970 to be the world's second highest producer of synthetic materials * In 19'72, Japanese production for synthetic fiber was 1.87 million tons; 20 times more than Korea's total production - During their industrial reconstruction such as transferring their chemical fiber sector, they expanded their regions to Korea, Taiwan and other countries - Under the clothing sector, they used Korea's cheap labor and for exports they invested more money in Korea. - Japanese government fixes their emergency quick response during their structural reconstruction * Starts registering of textile facilities in 1952 and structural reconstruction of the textile industry in 1974 and 3rd extension in 1989~1994 etc.

Source: Written by Korea Institute for Industrial Economic&Trade

Also in 1995 with the establishment of WTO, up to 2005 having passed 4 levels of MFA (Multi-Fiber Arrangement) (In 1974 MFA was created by MEDCs (US, EU, Canada, Norway etc.) creating quota for every countries limiting their imports hence protecting international trade.) has caused Korea to be less price competitive with developing countries such as China, creating a downfall in the global market share in the clothing industry.

In 2000, for Korea to maintain their superiority in the global textile industry they started producing high-value added industrial textiles such as carbon-fiber, Nano fiber, medical fibers etc. On the other hand through the expansion of R&D, Korea started the transition for Korea's textile industry to a much higher value and high-tech for fashion designs and the development of high function dyeing technology which could be differentiated with countries such as China or other developing countries.

2. Growth in Import Substitution for the Textile Industry (Before 1960s)

2.1 Background

In 1953 after the armistice has been declared, if we take a look at Korea's industrialization, we can see that Korea relied heavily on imports for parts, materials, etc., raw materials and machinery and other production facilities. Most of the production were leaning towards aid supplies, which are non-durable also known as the '3 White Industry' consisting of flour (wheat), sugar and cotton spinning. Foreign aid played a huge role in the Korean economy by alleviating the scarce food supply, curbing inflation, and increasing industrial production. There was a side effect in the industrial side with the delay of balanced and systematic industrial development. Korea's pursuit to economic development was inevitable back then with lack of resources, capital and skills in the Korean economy, raw materials, intermediary goods etc. needed for the reconstruction of the consumer goods industry was used by import substitutes. The industrial structure for the Korean economy was aid dependent therefore all raw materials and facilities were imported. This recorded an all-time high deficit in the trade balance.

Back then, on our national import list there were rubber, oil, combed yarn (wool), raw cotton etc. which are not produced in Korea. These items were not only introduced to our country via foreign aid. But also items which were produced locally were imported at a cheap price affecting the local industry.

Around 1957, after the US trade balance deteriorated, there was a bigger need for import substitutes due to the reduction in foreign aid caused by USD saving measures in our country and this was a decisive momentum. During 1957 and 1958 Korea's annual export rate in comparison with the import rate was only 4~6% creating a deficit of 380million USD in our trade balance. For aid imports, it covered 80% out of the total imports.

Table 2-3 | Comparison in the Amount of Imports&Exports and Import Components According to Finance

(Unit: %)

	1956	1957	1958
Exports/Imports (1)	6.4	5.0	4.3
Exports/Imports (2)	15.0	16.9	23.2
Import components according to finance			
Civilian Government	14.0	13.4	15.1
Foreign Aid	86.0	86.6	84.9

Source: Korea University ASEAN Research Institute, 「Korean industrial economy」, 1965.12.

Footnote: 1) Comparison of exports and imports under the customs standard (For imports, aid imports are included)
2) Comparison for imports and exports including goods and services

2.2 Phase of Industrial Development

As the Korean textile industry was the highest benefactor for the post-war reconstruction aid fund, with the expansion and reconstruction of the facilities by the end of 1950 import substitutes and self-sufficiency was constructed. In between 1953~'59 the total amount produced in the textile industry (value added test) was at an annual coefficient of 16.9%. And out of the total industry (value added test) the market share they hold increased to 23.4% in 1959 from 19.3% in 1953; making it a 4.1% increase. Especially, for the textile industry with the aid from the government's 'Emergency cotton-spinning reconstruction plan (1953~57)' and foreign financial aid from UNKRA (United Nations Korean Reconstruction Agency) the development within the industry was progressing rapidly.

During the 5 year government plan to reconstruct cotton spinning, they had been able to install 398,000 spindles, 8,552 weaving machines on top of that we produced 101 million and 4 thousand pounds of cotton yarn, 204 million yards of cotton fabrics. Due to this, in 1956 cotton spinning facilities increased to 43,432 spindles, 8,442 weaving machines, and for the production of cotton yarn and cottons fabrics rose annually by 32.7% and 22.9% respectively between 1953~57. This showed signs of high growth. Also in 1956, most cotton spinning co. installed dyeing facilities which was used for bleaching and dyeing hence allowing them to produce cotton goods (cotton yarn&cotton) and at the same time dyeing their products during their production. Tracing back to the history on exporting of cotton goods was started in December 1956 when we first exported 3,000 rolls of cotton fabrics to Hong Kong. On the following year in 1957 cotton goods worth 1.3 million USD were imported to Hong Kong (1,089,000 USD) and the US (181,630 USD).

Table 2-4 | Textile Industry's Performance

	1953	1955	1957	1959	Annual average Growth rate (%) ('53~'59)
Cotton yarn (1,000 LBS)	29,310	58,576	90,918	106,886	24.1
Cotton fabric (1,000Sq/YDS)	86,585	120,960	197,650	231,660	17.8
Rayon fabric (1,000Sq/YDS)	59,961	54,000	51,998	62,500	0.7
Silk fabric (1,000Sq/YDS)	2,002	1,800	3,147	3,575	10.1
Wool fabric (1,000Sq/YDS)	2,938	4,134	4,634	4,760	8.4

Source: National Statistical Office

Table 2-5 | Change in Korea's Industrial Structure (Based in Value Added)

(Unit: 1 million won, %)

		1953		1955	1957	1959		Annual Average growth rate ('53~'59)
			share				share	
Consumer Industry		10,008	79.6	14,153	18,196	20,397	77.3	12.6
	Food and Beverage	3,000	23.9	4,705	5,976	7,208	27.3	15.7
	Tobacco	2,616	20.8	3,025	3,146	3,489	13.2	4.9
	Textile	2,423	19.3	3,860	5,720	6,169	23.4	16.9
	Other	1,969	15.7	2,563	3,354	3,531	13.4	10.2
Production Industry		2,295	18.3	3,619	4,126	5,580	21.2	16.0
	Chemical	634	5.0	890	897	1,081	4.1	9.3
	Metal	401	3.2	493	744	1,078	4.1	17.9
	Machinery	816	6.5	1,152	1,441	1,342	5.1	8.6
	Other	444	3.5	757	1,044	1,685	6.4	24.9
Other		262	2.1	327	385	394	1.5	7.0
Total		12,565	100.0	18,099	22,707	26,371	100.0	13.2

Source: the Bank of Korea

Footnote: Constant prices in 1960

At the time, the production facilities of wool goods (yarns, fabrics) were nonexistent. This is why they focused on the expansion for these production facilities (production facilities for high end wool fabrics). In 1950, Korea's wool spinning facilities were only 4,909 spindles; however later on during expansion they increased it to 10,230 spindles for the woolen spinning facilities and for the worsted yarn spinning facilities it was increased to 48,936 spindle. Following this expansion, the production of wool fabrics in 1953 increased from 2.94 million yards[2] to 4.76 million yards[2] in 1959. There was 8.4% annual average growth rate making these products self-sufficient. In 1958 the government imposed an import ban on foreign wool goods. With such expansion in production and investment facilities in 1960 their production shared 4.4% of the total manufacturing and 17.6% in the total textile industry.

2.3 Main Policies and the Government's Role

2.3.1 Import substitution policy

When the post-war recovery was finished in 1957 with the foreign aid funds, the government was trying to promote investment. The measures they took were strict import restrictions and low interest rate. At the same time they were trying to substitute imports for textiles, food&beverages and other non-durable consumer goods. Due to scarce foreign currency flowing within our country, only products which are not produced locally or goods high on demand could be imported. When importing products which can be produced locally, the government strictly limited the use of foreign currency for such products.

Especially, to helped the food&beverage industry and the textile industry reconstruct and grow. The government imposed import quotas, high tariffs to restrict imports for textiles, food&beverages and other non-durable goods. In case of textile industry, due to the low of quality and lack of the product amount people to smuggle textile goods (luxury wool fabrics etc.) from abroad caused side effects.

2.3.2 Partial Export Incentive Policy

During the 1950s, most of Korea's imports were foreign aid and Korea's trade balance recording massive trade deficits, so apart from the aid, promotion of exports have been a crucial priority. In other words, the government's Export Incentive Policy was enforced due to the reduction of foreign aid by the US government from 1957. Korea's export dropped to its peak in 1956 however, from 1958 there was reversal in a rising trend. Korea's export was 18 million USD in 1955, in 1958 it was 16 million USD and later on in 1960 it rose to 33 million USD. It had a 12.9% annual average growth rate during 1955~60.

Table 2-6 | Comparison of Export Supporting System in the 1950s and 1960s

		1950s		1960s	
Export-Import link system		Special Foreign Exchange System, 'Export goods incentives	May 1951~ Aug. 1955, Aug. 1955~ May 1961	Export-Import link system	Jan. 1963~ Mar.1965
Relief	Export bounty	Export support bounty Issue system	1954, 1960	Export support bounty Issue system	Aug. 1960~ Mar. 1965
	Inland duty aid	Commodity tax exemption	Apr. 1950~	- Commodity tax exemption system - Income and corporate tax reduction system - Business tax reduction system	Apr. 1950~ Jan. 1961~ Dec. 1972 Jan. 1962~
	Tariff aid	Raw materials for exports Tariff exemption system for imports	Oct. 1959~	- Tariff exemption system for imports of raw materials for exports - Tariff exemption for Imports of capital goods for exports	Oct. 1959~ Jun. 1975 Mar. 1964~ Dec. 1973
Financial Support	Short term	Trade finance (Gathering of goods, Shipping finance) Export promotion fund Loan back	Jun. 1950~ Feb. 1961 Nov. 1959~	- Export financing - Export promotion fund - Loan back Foreign currency quotation - Import finance of textiles for export - Export industry upbringing fund Export usance	Feb. 1961~ Nov. 1959~ Sep. 1962~ 1963~ Jul. 1964~ Sep. 1969 1964~
	Long term			Small business export industry Exchange traded fund	Feb. 1964~
Other	Application of actual exports	- Authorization of trade business and maintenance of qualification - Government foreign exchange sale application of actual exports upon import competition	Feb. 1950~ Government non-public sale Jan. 1953~	- Authorization of trade business and maintenance of qualification - Government foreign exchange sale application of actual exports upon import competition	Feb. 1950 ~ Government non-public sale Jan. 1953~
	Other	Discount of rail tariff	Mar. 1958~	Discount of rail tariff	Mar. 1958~

Source: The Korea Development Institute, 「Policy Decision Making During High Economic Growth Period of Korea」, 2008.

Such increase in Korea's export was due to the export incentive policy. The policy had made the trade with foreign countries with a higher and more complex multiple foreign exchange system (Multiple foreign exchange policy is when apart from the actual USD-Won transfer rate, foreign currency's origin is calculated (for the exports, trades with Japan had a different currency rate is applied) hence making it a very complicated foreign exchange policy) and「Registration of importers based on export deficits」. Especially, since 1957, they began registering importers based on their export deficits in order to encourage exports. Back then the deficit had to be 100,000 USD for the importers to register however for the exporters they only needed to have made a 20,000 USD deficit in order to be eligible to register. Also, the multiple currency exchange rate used instead of the official exchange rate played a huge role. It had a higher exchange rate than the official exchange rate and for different areas, different exchange rate was applied. The Export Incentive Policy which helped Korea's textile (cotton spinning) and food&beverage industry and other light industries to beginning export.

3. Promotion of Export-led Textile Industry (1961~1979)

3.1 Background

Until the 1960s, the manufacturing industry of Korea had virtually completed its import substitution of textiles, non-durable consumer goods and intermediate goods used in the production of these goods, and since the domestic market was small, ongoing growth that was centered on import substitution was faced with limitations.

In comparison, the import substitution of machinery, durable consumer goods, and intermediate goods used in the production of these goods was delayed. This was not only due to the limitations from small domestic market and incalculable capital and considerable amount of time required, but also due to the fact that the Economic Development Strategy based on poor utilization of domestic resources made it very difficult to reap the fruits of one's effort in short period of time.

Therefore, the government intended to ease chronic deficit of current balance occurred from foreign aid cuts by acquiring foreign currencies through export of labor-intensive textile products. At the time in Korea, there were vigorous motivations to work and high educational levels, and relatively cheap labor could be ensured. This signifies that labor-intensive textile products had the high ground in the competitiveness of exports.

Also in the late 1950s, in the cases of cotton spinning industry that showed phenomena of excess facilities, the need for the export promotion of the industry increased. In the high inflation situation at the time, the expansion of production facilities such as cotton spinning area caused oversupply of facilities that surpassed domestic demand in 1957 due to increase in purchasing power from fictitious demand.

Especially, in the 1950s and 1960s after World War II, the world economy met its up phase centered on developed countries including the United States, Japan, Germany and Italy, and as a result, favorable condition for increasing exports was created. The United States grew as Korea's main market that took up nearly 35% of total exports of Korea in the year 1965, which was one of the early years of economic development of Korea.

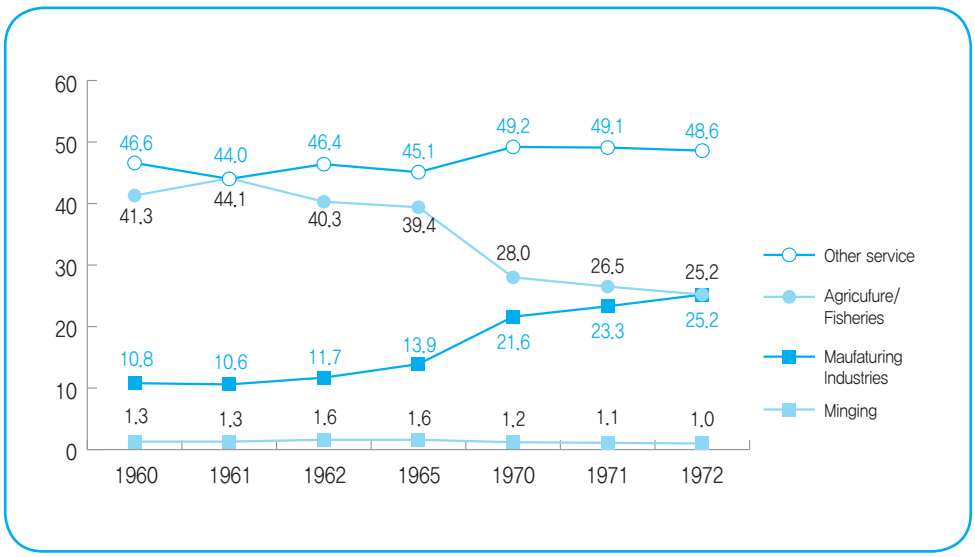
3.2 Phase of Industrial Development

In the 1960s, the promotion of the First and Second 5-year Economic Development Plan started the construction industry of various industrial facilities, and as a result, the industry reached the step of creating the foothold of industrialization, the base for rapid economic growth. In other words, the economy reached the annual average growth rate of 8.5% from 1960 and 1972 and thereby maintained rapid growth rate more than two times the annual average growth rates from 1954 to 1960. Also, the GNP per person grew 3.5 times from 87 USD in the year 1962 to 304 USD in the year 1972.

The reason this rapid economic growth of early period was possible was due to the globalization of industry through the increase of exports and the progress of the enhancement of industrial structure. The average export ratio of all of the industries increased from 2.8% in 1963 to 15.5% in 1973. Also, the export ratio of textiles and other light industry increased from 8.7% to 83.9% over a 10-year period from 1963 to 1973, making the export industrialization of manufacturing sector significant. Industrial development of Korea as such is mainly due to expansion of overseas markets through constant increase in export demands centered on textiles and labor extensive light industry products. The expansion of Korea exporting market became one of the reasons for low wages in the time.

Especially, in the case of textile industry, it was able to grow rapidly as the main exporting industry through growing overseas export demands in the process of industrialization and through the active aid from the government. Also after mid-1960s, chemical fiber such as nylon, acrylic, and polyester started to be produced, and centered on traditional cotton spinning and natural fibers; the export of textile products such as chemical fiber clothing grew rapidly. In other words, self-sufficiency of chemical fiber made stable procurement of raw materials (yarns, fabrics) possible, and as a result, export competitiveness of Korean textile products grew very high. Meanwhile, as the production of chemical fibers increased and the demand for cotton spinning was rapidly replaced with the demand for chemical fiber, there was oversupply of cotton products. To solve this problem, the government passed 「Law of Temporary Registration for Textile Manufacturing Facilities」 in 1967 and initiated a policy against oversupply of facilities (Details shall be explained in Government Policies).

Figure 2-2 | Progress of Changes in Industrial Structure of Korea



Source: Bank of Korea, 「National Income of Korea」, 1973

Footnote: Constant price basis of 1970

Table 2-7 | Progress of Export Ratio of Manufacturing Industry of Korea

(Unit: %)

	1963	1966	1970	1973
Beverage	2.2	5.9	3.7	6.2
Textile	4.8	15.0	26.4	47.2
Other Light Industry	4.1	13.3	22.3	36.7
Chemistry	1.1	5.2	6.2	10.7
Metal Industry	13.2	9.8	7.2	26.4
Mechanic Industry	2.8	5.8	9.5	33.3
Average of All Industries	2.8	6.2	7.5	15.5

Source: Korea Development Bank, 「Industry of Korea I」1973

In 1970s, with increasing production of chemical fiber such as polyester, nylon, acryl import substitution and increasing export of clothing, the textile industry became very important in export and led the domestic economic growth. The number of polyester fiber manufacturer grew from 3 in 1970 to 13 in 1980, and in the same period, the production capacity grew 12.4 times from daily output of 47.5 ton to 589 tons in the same period. The development in chemical fiber industry in Korea was deeply colligated with the development of petrochemical industry that produces raw chemical fiber. This was because since the completion of Ulsan Petrochemical Complex in 1972, the level of dependence for foreign raw chemical fiber (such as TPA, Caprolactam, and Acrylic nitrile) sharply became low. Also, with the completion of Yeocheon Petrochemical Complex in 1979, equipped with integrated production system from base fraction (such as ethylene, polypropylene) to final product (such as LDPE, PP, AN), it became a momentum for increasing procurement for raw chemical fiber within the country. Especially, in June 1969, with the construction of 'Daegu District Industrial Complex', number of chemical fiber businesses that deals with nylon and polyester moved, and as a result, mass production of chemical fabric using domestic chemical fiber started (current Daegu Chemical Fabric Producing District).

At the time, Korea came to be called as 'Big 3' of textile exports with Hong Kong and Taiwan with the increase in exports through competitiveness in price from import substitution of polyester and chemical fiber (yarns, fabrics) and abundant workforce of low wages. Exports of textiles increased as much as 103.9 times between 1963 and 1975 and took up 36.8% of total exports in 1975. Added valuation increased 50.1 times and took up 21.1% of manufacturing industry in 1975. Among this, clothing only exported 5,000,000 USD in 1963 but increased to 214,000,000 USD in 1970, and 2,850,000,000 USD in 1979, a record of 33.3% annual average growth rate between 1970 and 1979. Clothing exports at this time was led by Gurogongdan (Seoul region), Korea's first export industry complex. The exports of apparel products of Gurogongdan took up 44.4% of the complex's total amount of exports for 12 years after the construction of the complex (first complex) in 1967 (At the time, in Guro area of Seoul, Export Industry Complex (also known as Gurogongdan) and it served as export foothold for promoting export of clothing, wig, electronic products by building up knowledge about foreign markets and developed technology. Gurogongdan reached 100,000,000 USD in exports in 1971 and 1,870,000,000 USD in 1980 (annual average growth rate of 36.5% from 1971 to 1980)).

Table 2-8 | Progress of Fiber Consumption per Capita in Korea

		1961	1966	1971	1976	1977	Annual average growth rate ('61~'77, %)
Per capita consumption (kg)		3.0	3.2	4.4	7.8	8.2	6.5
Distribution ratio (%)	Natural fiber	84	75	53	45	45	-
	Chemical fiber	16	25	47	55	55	-

Source: Kim Young-bong, 「Characteristics and Demand Structure of Textiles and Electronic Industries」, 1976.6.

Table 2-9 | The Importance of Textile Industry on the National Economy

		1963	1970	1975	1980	Annual average growth rate (%)	
						'63~'75	'70~'80
Workers (Thousand)	Manufacturing (A)	402	861	1,420	2,015	14.4	8.9
	Textiles(B)	124	265	479	585	13.8	8.2
	B/A(%)	30.8	30.8	33.7	29.0	-	-
Added Value (1 Billion KRW)	Manufacturing (A)	61.5	549.8	2,828.1	1,1856.6	55.0	35.9
	Textiles (B)	11.9	98.9	596.1	2,230.9	54.7	36.6
	B/A (%)	19.3	18.0	21.1	18.8	-	-
Export amount (Million USD)	Total exports (A)	87	835	5,081	17,505	55.6	35.6
	Textiles (B)	18	388	1,870	5,097	60.1	29.4
	B/A (%)	20.7	46.5	36.8	29.1	-	-

Source: National Statistics Office, Mining and manufacturing industries statistical survey report, each years, KOTIS

3.3 Main Policies and the Government's role

At the beginning of the 1960s, the Korean Government actively promoted export promotion policy through the 5-Year Economic Development Plan, and while strictly regulating import, it provided political financial preference to investment enterprises to promote private investment toward social overhead capital and important import substituting industries. Toward foreign capital, the government recommended the method of induction of foreign capital with the government repaying the principal and paying the interest (The government decided to establish law concerning foreign investment in 1959, and revised Exceptions Act regarding induction of capital goods in 1962). The promotion of the 5-Year Economic Development Plan signified change of policy to hyper growth strategy, changing from restoration and import-substituting industrialization to export-led industrialization. Because Korea at the time was in a state of oversupply of highly educated manpower, it was very important to utilize manpower through export-led industrialization strategy focused on labor-intensive textile industry.

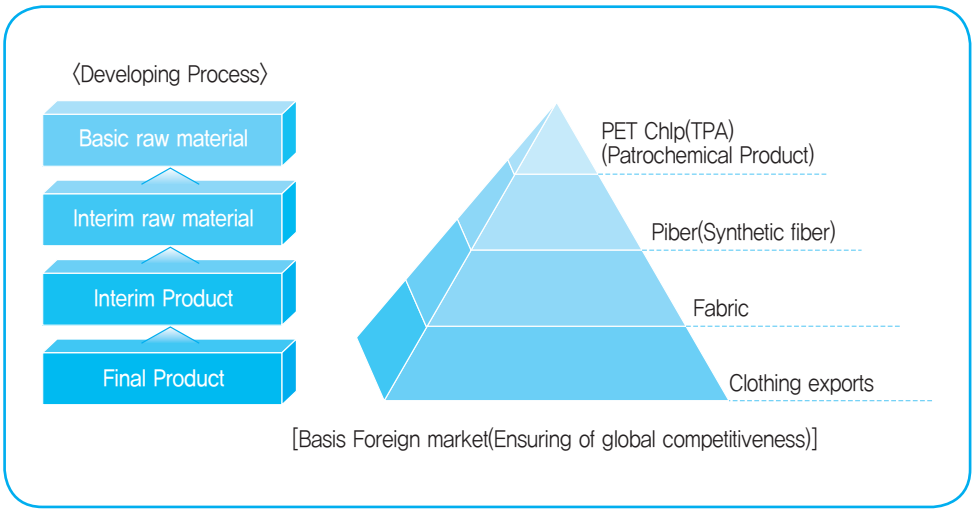
The government actively promoted localization policy of imported raw materials (self-sufficiency) such as expanding of social overhead capital such as cement, fertilizer, petro chemistry, and especially producing chemical fiber that depended on import to expand export of textile industries. This was because, due to the nature dependent form of export industry, the demand for daily necessities such as textile products, shoes, plastic products and agricultural, constructional, and industrial synthetic resins rapidly grew, and the need for import of raw materials to produce these goods inevitably rapidly increased.

For example, by examining the localization promotion strategy for imported raw materials of the Korean government, in the case of the production of exported dress shirts, the first step was to establish clothing factories with the latest equipment for the localization of imported materials. The second step was to extend original spinning factories or establish synthetic fiber factories for localization of needed fiber (yarn). The last third step was to construct petrochemical plants to produce raw materials such as synthetic fiber, synthetic rubber, and plastics for light industries and constructing integrated steelworks to produce steel, machines, metal, and cars for heavy industries.

The full-scale export promotion policy for export-led industrialization of the government started with the reformation of exchange rate system and the promotion of overall supporting system of exports during the Second 5-Years Economic Development Program. In other words, devaluation of KRW through reformation of exchange rate system (USD/ Appreciation of KRW) and instead of abolishing multiple exchange rate system that has been initiated since the 1950s, the government chose the unitary fluctuation foreign exchange system and it became a stepping stone in increasing price competitiveness of domestic exporting products. Also, the government abolished the promoted payment of subsidization (export bounty) toward exports export-import link system, and instead strengthened export related finance banking and tax system such as support for export financial preference, reduction of tariff and inland duty toward import of raw materials for exporting products, and allowance of accelerated depreciation toward fixed assets of export industries.

Meanwhile, with first and second oil crisis (1973 and 1979) in the 1970s the textile industry faced difficulties from sharp increase in the price of raw materials of chemical fiber, strengthening of import control of developed countries toward textiles (MFA- Fiber Quota), developing countries' catch-up (MFA(Multi-Fiber-Arrangement) is an agreement regarding multi fiber trade, and it has been used as means of direct textile goods import control by developed countries from 1974, according to GATT escape clause (Article 1 Item 7)). However, from January 1st 2005, textile trade liberalization has been initiated). The government legislated 「Promotion Law for Modernization of Textile Industries」 and aided for strengthening the competitiveness of textile industries. The government greatly alleviated regulation of facilities such as allowing the establishment/ extension of production facilities for inducing free competition of textile industries, and promoted innovative reinforcements such as installing modernization fund of textile industries, financial aid to individual decrepit facilities, technical development, and training of manpower. The government had already legislated and initiated 「Law of Temporary Registration for Textile Manufacturing Facilities」 (1967~1979) that mainly focused on authorization and registration of installing facilities for suppressing oversupply of facilities and suppression of new participants in 1967.

Figure 2-3 | Localization of Raw Materials
(Also known as Pyramid Development Strategy)-Textile Example



Source: Excerpt from the content of Industrial Revolution of Korea of Oh Won Cheu

Pyramid-Type Economic Development Strategy

In a nutshell, the Pyramid-Type Economic Development Strategy is a strategy nurturing national competitiveness in all stages. In the initial stages of economic development, labor intensive clothing products were the main export items but later exports of raw materials such as fabrics increased due to the increase of labor wages. In other words, it was successful to not only increase the price competitiveness of export products but exportation of raw material itself by supplying export oriented raw materials at international price.

First, the development stage of Pyramid-Type in textile industry is as following:

Stage 1: Stage of exportation of labor intensive clothing and textile goods-fabrics was imported and processed before being exported. As a result, clothing exports amount reached 6.1 billion USD.

Stage 2: Stage of fabric factory construction-imported fabrics was now produced domestically and exported. Not only was it possible to domestically supply fabrics but was able to reach 9.9 billion USD in exports in 1995.

Stage 3: Stage of construction of synthetic fiber factory-Supply and export of fibers for fabrics manufacturing. fibers were supplied domestically as well as exports reaching 2.3 billion USD in 1995.

Stage 4: Domestication of raw materials needed such as polyester and nylon which are necessary in manufacturing synthetic fibers– these raw synthetic fiber materials are organic compounds (final product of petrochemistry) that are produced in petrochemical factories. At this time, they were directly exported as well as being supplied at international price, even when local exporting.

In other words, the final goal of the Pyramid Type Economic Development is the establishment of petrochemical industry. Thus, Ulsan Petrochemical Industry Complex was constructed in 1972 and Yeocheon Petrochemical Complex was constructed with integrated production system in 1979.

〈Excerpt from "Korean Economic Construction-Korean Industrial Revolution", by Won Cheul Oh (Former Senior Secretary for Economic Policy)〉

4. The Rationalization of Industry and Reinforcement of Competitiveness of Textile Industry (1980-1986)

4.1 Background

After the first oil crisis in 1973, the global depression caused exports of developed countries to weaken and protectionism to come to the fore, and continuous economic development became difficult. Also after mid-1960s, the need for domestic production of capital goods such as machine equipment and basic materials such as petro chemistry and steel due to changes in Korean export products from non-durable consumer goods to durable consumer goods and capital-intensive intermediary goods.

Therefore, the government declared heavy chemical industrialization in 1973 during the Third 5-Year Economic Development Program (1972~1976), selected 6 strategic industries-steel, chemistry, nonferrous metals, mechanic shipbuilding, and electronics and intensively injected colossal fund in these industries with various government aid such as banking, tax, finance, and technical support. As explained, policies toward heavy chemistry industries were enthusiastically promoted in the 1970s, but the government had to readjust the investment plan of heavy chemical industries in 1980 because starting with the second oil crisis in 1979, overlapping and over investment and insolvency became social problems.

The cause for this was that there were overlapping and over investment due to investment competition among enterprises that aimed for government granted favors, and following the second oil crisis in 1979, there were decreases in rate of operation and oversupply of facilities in areas such as power generation, automobiles, and machine industries from skyrocketing interest rate of induction of foreign capital and global economic depression (Heavy chemistry industry investment modification part is consisted of 7 parts- power facilities, construction heavy equipment, automobiles, heavy electric machine, diesel engine, electronic exchanger,

copper refinement- and specialization and unification has been promoted). Also in 1983, rationalization of industries in partly structurally unfavorable conditions from decrease in export demand, catch-up of developing countries became the main policy task.

Most of these smokestack industries and insolvent enterprises were industries and enterprises that rapidly grew with fabric manufacturing industries, dyeing and finishing industries, shipbuilding industries, shipping industries, and foreign construction industries from the concentrated aid and policies of the government in the process of export industrialization and heavy chemistry industrialization in the 1960s and 1970s. Among these industries, shipping industries and foreign construction industries became targets of rationalization of smokestack industries of the government based on 「the Regulation Law on Tax Reduction and Exemption」, and fabric manufacturing industries and dyeing and finishing industries were appointed as types of industries of rationalization and received financial aid of the government for such as worn-out facilities based on 「Law of Industrial Development」 (Industry Improvement Act abolished 7 Laws of Promotion of Special Industry in 1986 and changed to functional industry improvement promotion policy and was established to expedite improvement of industry technology and production and rationalization of industry).

In case of textile industries, there were souring establishment and extension of facilities centered on fabric manufacturing industries and dyeing and finishing industries following authorization of establishment and extension of facilities and inducement of free competition from the promotion of 'Promotion Law for Modernization of Textile Industries' in 1979, but rate of operation of facilities greatly decreased due to export demand slump following global economic depression in the 1980s. The global competitiveness of textile industries at the time greatly weakened due to government policies toward heavy chemical industries, difficulties in ensuring trained craft workers, and rising labor cost; export of textile goods even recorded negative growth rate in 1982 and 1985.

Table 2-10 | Progress of Investment in Facilities of Textile Industries

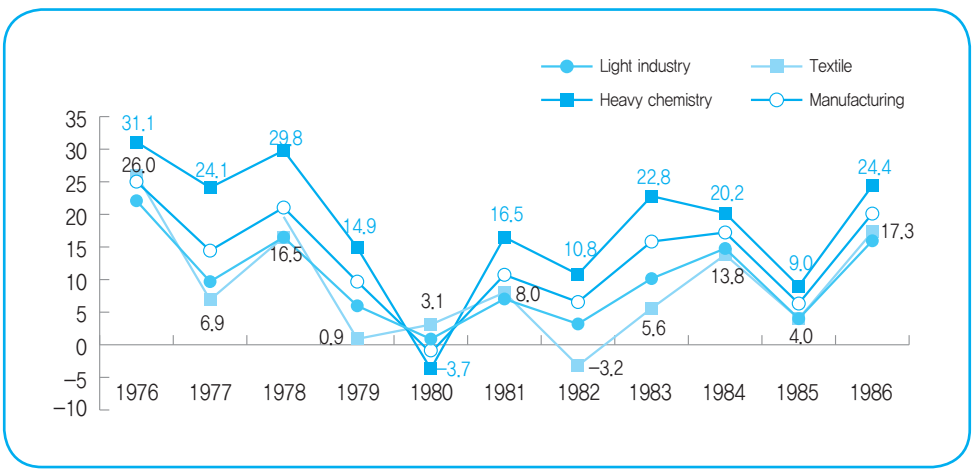
		1977~1979 (A)	1980~1982 (B)	1983~1985 (C)	Growth Rate	
					B/A	C/B
Invested amount in facilities (hundred million KRW)		7,176	3,951	7,436	-44.9	88.2
Component ratio (%)	Scrap&build of worn-out facilities	16.7	38.5	37.1	-	-
	Modernization of facilities (Automation, Elimination of labor)	20.8	26.8	37.9	-	-
	Expansion of facilities	62.5	34.7	25.0	-	-

Source: The Commerce- Industry Ministry, Korea Federation of Textile Industries(KOFOTI), 「7-Year Plan for Improving the Structure of Textile Industries」, Sep. 1989

4.2 Phase of Industrial Development

For changes in Korean industries in the 1980s, the economic growth rate record negative percentages such as-1.2% growth rates of industries in 1980 due to impact of global economic depression following the second oil crisis (1979) and domestic political problems. Especially, heavy chemical industries that recorded nearly 30% growth rate in 1978 recorded-3.7% growth rates in 1980 due to reduction in production from overlapping and over investment. On the other hand, the growth rate of textile industries that fell short compared to heavy chemical industries by recording-3.2% in 1982 with the influence of reduction in export demand and strengthening of protectionism of developed countries, but recorded high growth rate from expansion of exports following '3 lows' (low international interest rate, low oil price, low USD against Japanese yen) in 1986.

Figure 2-4 | Progress of Growth Rate of Each Industry before and after Investment



Source: Bank of Korea

Footnote: Leather products included in textiles

Table 2-11 | Changes in 5 Main Export Industries for Each Year

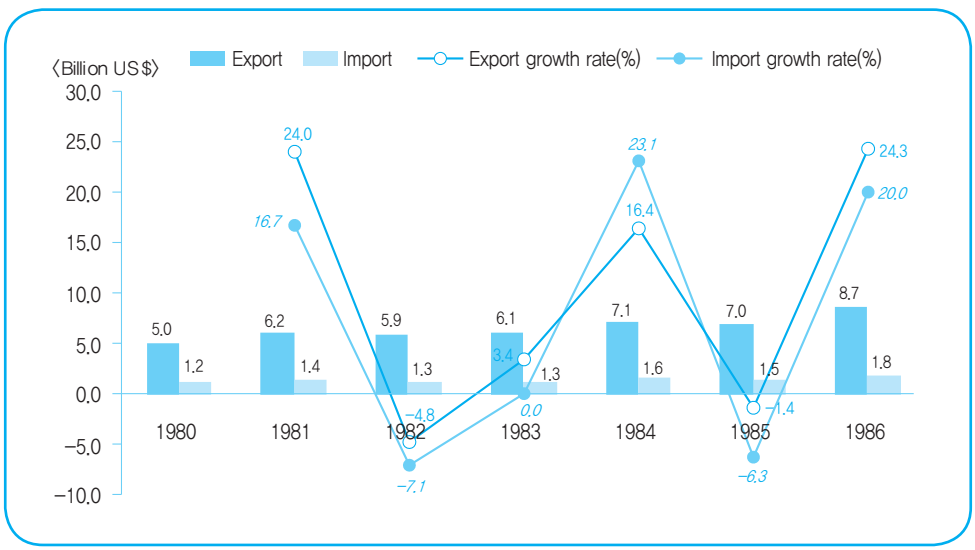
Year	Ranking				
	1	2	3	4	5
1977	Woven clothing	Knitted clothing	Ship	Other shoes	Plywood
1980	Woven clothing	Knitted clothing	Other shoes	Ship	Polyester fabric
1985	Ship	Textile clothing	Knitted clothing	Other shoes	Integrated circuit

Year	Ranking				
	1	2	3	4	5
1990	Integrated circuit	Sports shoes	Textile clothing	Ship	Knitted clothing
1995	Integrated circuit	Sedan	Ship	Polyester fabric	Other electronics

Source: Korea Foreign Trade Association

Footnote: Standard of MTI 4 unit

Figure 2-5 | Progress of Exports and Imports of Textiles of Korea



Source: The Commerce-Industry Ministry,「Export Statistics」each years.

Examining the progress of Korea's textile goods trade, exports recorded negative growth rate in 1982 and 1985 but increase at the annual average growth rate of 9.7% from 5,000,000,000 USD in 1980 to 8,700,000,000 USD in 1986. On the other hand, textile industries did not have large import amount because the imports of raw materials for exports took up most part and also had the structure that imports increased with the increase in exports. The surplus scale of trade balance of textile industries increased 1.8 times from 3,800,000,000 USD in 1980 to 6,900,000,000 USD in 1986.

Also, the share of Korea's textile goods exports take up in global textile exports grew 5.2% point from 1.6% in 1970 to 5.0% in 1980 and 6.8% in 1985, and recorded the fourth place following Italy, Hong Kong, and Germany (the Federal Republic of Germany) in world textile exporting country in 1985. Especially, among global textile exporting countries, China showed annual average growth rate of 5.4% between 1980 and 1985 with 6,500,000,000 USD in 1985, showing a small difference with Korea in the size of exports and growth rate.

Table 2-12 | World Ranking for Textile Exports

(Unit: 100 million USD, %)

	1970	1975	1980	1985	annual average growth rate	
					1970~'85	1980~'85
Total World Exports	247	536	991	1005	9.8	0.3
Italy	18	40	91	105	12.5	2.9
Hong Kong	10	26	69	101	16.7	7.9
West Germany	22	49	101	98	10.5	-0.6
Korea	4	19	50	70	21.0	7.0
	(1.6)	(3.5)	(5.0)	(7.0)		
China	5	16	50	65	18.6	5.4

Source: Korea Federation of Textile Industries, 「Handbook on textile industries」, 1992.

Footnote: figures inside ( ) shows the percentage of world market share

4.3 Main Policies and the Government's Role

The heavy chemical industry had problems; the amount of demand, the facilities overlapped and were excessive. Therefore the government pursued the industrial rationalization by adjusting investments to the industry and getting rid of unpromising industries and poorly managed companies. In order to carry out the industrial rationalization process more efficiently in 1986 the Individual Industry Foster Legislation was divided and the 'Industrial Development Legislation' (The 7 industrial promotion law: Machine industrial promotion law (established 1967), Ship building industrial promotion law (1967), Electronic industrial promotion law (1969), Modernization of textile industry law (1979), petro chemistry industrial promotion law (1970), Steel industry promotion law (1970), Nonferrous metal business law (1971)) was established. Under the 「Industrial Development Legislation」 the government wanted to stay competitive during market intervention therefore in order for them to stay competitive the government pursued a temporary rationalization plan known as 'Industrial Rationalization on Designated Business System.'

The Industrial Rationalization on Designated Business System would designate unpromising businesses or declining businesses or promising businesses and during the industrial rationalization process the government would fund them with their financial needs and helped them with tax problems temporarily. These industries were designated under a certain standard. On the other hand for the companies which were not designated by the government could not intervene in new markets or restricted from getting new equipment or an extension. This Industrial Rationalization on Designated Business System was

managed up to 1997, after 1986 the total number of industries designated under this system were 9 industries. The businesses which needed protection in their competitiveness were automobiles, construction equipment, diesel engines for ships, heavy electric machinery etc. making it 4 businesses. For businesses with a loss in competitiveness were alloy irons, fabrics, dyeing&finishing, manure, shoes making it 5 businesses. These businesses were designated temporarily once every 2~3 years.

Especially, fabric manufacturing industry unlike other industries, from July 1986 up to June 1989 in the course of 3 years worn-out weaving machines were scrap&build who had to shut down or occupational change were provided with government support. Later on through 3 stages of extension registration for new comers or pre-existing was very restricted.

Also for the dyeing&finishing industry, from January 1987 up to December 1988 over the course of 2 years worn-out facilities were scrap&build needed to register their new or existing dyeing machine.

On the other hand, the rationalization of smokestack industry went side by side with the government's insolvent industry's cleanup was pursued based on 「Regulation Law on Tax Reduction and Exemption (revised on 1985.12.23.)」 and Industrial Rationalization Standard. The revised 「Regulation Law on Tax Reduction and Exemption」 strengthened the supports from the previous industrial rationalization (Passed on 24th of February 1986 during Presidential Committee meeting for Industrial Policies). The support each designated companies could receive was being exempt from transfer tax and acquisition tax after businesses merge, apart from this they could still benefit from tax reduction and exemption. Also the standard for industrial rationalization was supported by 「Industrial Development Legislation」 created on July 1st 1986. It was created to clean up insolvent companies and for industrial reconstruction. The selection process through these standards ① Industrial reconstruction, ② Expediting small companies which are interrelated with large conglomerates, ③ Owned by the bank or with high debt. According to this on May 1986 up to mid 1988, 78 companies including the MyungSung Group were straightened up from an insolvent company. Out of these companies, 21 of them were shipping industries and overseas constructions. These companies were implemented under industrial rationalization supplement measures.

Table 2-13 | Designated period and contents on Rationalized Industries under the Industrial Development Law

Rationalized Industry	Designation Period	Information on Rationalization measures
〈Maintaining Competitiveness〉		
Automobile	1986.7~ 1989.6 (3 years)	· Limiting of new investments (Specialization of commercial and personal vehicles)
Construction Equipments	1986.7~ 1988.6 (2 years)	· Limiting of new comers (5 other industries along with bulldozers etc)
Diesel Engines for Ships	1986.7~ 1989.6 (3 years)	· Specialization in production (More than 6,000 horse power etc)
Heavy Electric Machine	1986.7~ 1989.6 (3 years)	· New participation on extra-high voltage section·limitations in extension · Supported Hyosung Heavy industries when they were insolvent
〈Loss in Competitiveness〉		
Alloy Iron	1986.7~ 1989.6 (3 years)	· Specialization and production adjustments for each items
Fabric	1986.7~ 1989.6 (3 years)	· Scrap&build of Worn-out weaving machineries and modernization · Supporting of occupational change and closed down companies
(1st extension)	1989.7~ 1992.6 (3 years)	· Financial supports for scrap&build of worn-out weaving m/c · Registration of weaving machineries
(2nd extension)	1992.7~ 1995.6 (3 years)	· Limitations and registrations for new and pre-existing machineries
(3rd extension)	1995.7~ 1997.12 (2 and a half years)	· Limitations and registrations for new and pre-existing machineries
Dyeing Process	1987.1~ 1988.12 (2 years)	· Financial supports for scrap&build of worn-out machineries · Limitations and registrations for new and pre-existing machineries
Fertilizer Production	1987.12~ 1990.11 (3 years)	· Liberalization of the sale for fertilizers, privatization of fertilizer companies. · Importing of chemical fertilizers were allowed, lowered customs tax
Shoes	1992.3~ 1995.1 (2 years 11 months)	· Financial aid for old machinery and automation.

Source: Lee Byung- Ho (2000)

5. Development in Knowledge Intensive Textile Industry (1987~'90)

5.1 Background

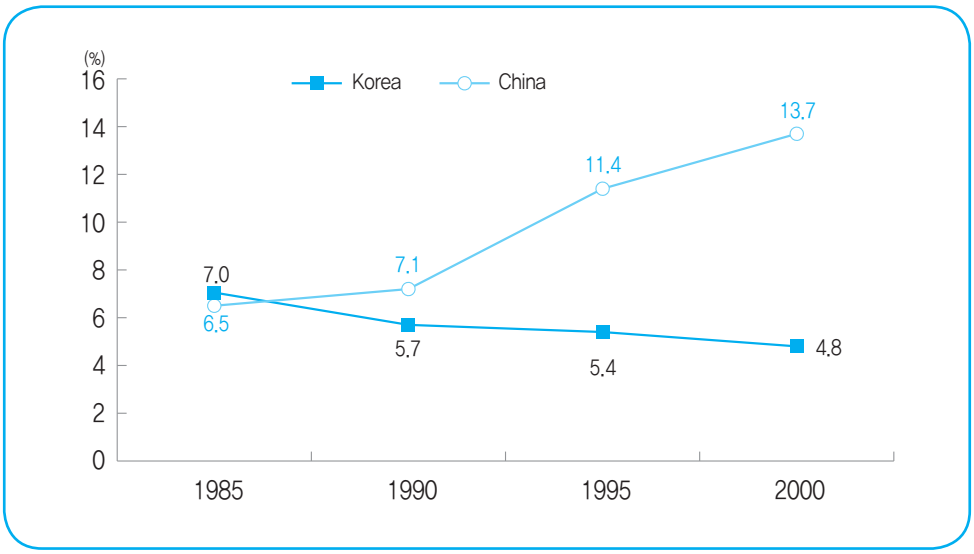
Until the mid-1980s, Korea's industry grew with the help of low interest rate in which the light industries benefitted such as textiles and electronics were at a comparative advantage, also with the help enormous amount of investments made to the heavy chemical industries this helped Korea grow. However due to the change in the foreign and domestic environment the growth hit the limit. In order to react to this environment after the mid-80s the government realized that for the economic development, unlike the past, design and technology was the key factor. If we take a look at the factors in our domestic and foreign environmental factors firstly, the comparative advantage obtained from a lower interest rate was actually a loss.

In between 1960 and 1970, the population moving into the cities from the farm lands were significantly high therefore lower interest rates could be maintained, however as the number of people moving in to the cities started to decrease it was harder to maintain a low interest rate. Secondly, after 1987 (Liberalization Line on June 29th, 1987) through the strengthening of the labor unions, the wage level increased rapidly; therefore, with such high wage levels, our competitiveness over other less developed countries were beginning to be threatened in the global market.

Thirdly, in 1985 due to the Plaza Agreement, the Japanese Yen revaluated and because of this Japanese lost competitiveness. Japanese companies officially started producing their products in China and South East Asian countries and through this the Chinese and South East Asian industrialization progressed later on making the competition between these countries much more intense. Textile goods which were on the main export items started being pushed aside by the Chinese in the competition towards the end of the 1980s and in 1985 Korea's textile goods share in the world export market fell from 7.0% in 1985 to 5.4% in 1995. On the other hand during the same period of time the Chinese market share rose from 6.5% to 11.4%. Also, it was known through a research that Korea fell behind Japan and Hong Kong and other competing countries when it came to understanding competitiveness. It is an essential part for the globalization of brands. The government decided that Korea's textile industry needed to transfer from creating existing OEM manufacturing base to an independent brand marketing knowledge-intensive high added value industry.

Fourthly, during the '3 Low Boom' between 1986~'89, the trade balance increased, creating a stronger trade pressure from the US and other developed nations. On top of this with the establishment of WTO system and register as an OECD member our global competition intensified. In other words, US exempted Korea and other newly industrialized Asian countries from GSP (Generalized System of Preferences), and with the establishment of WTO layers of MFA was abolished. Therefore it became more difficult for government to directly intervene and provide subsidies and at the same time as an OECD member country. Hence, opening our markets to the world accelerated.

Figure 2-6 | Change in the World Trade Market Share between Korea and China's Clothing



Source: Korea Federation of Textile Industries, 「Monthly report on the textile industry statistics」, 2007.3/4.

Table 2-14 | Development of theLiberalization of Imports and Custom Tariffs for Imports

(Units: %)

	1982	1984	1986	1988	1990	1992	1994	1996
Liberalization of Imports (%)	76.6	84.8	91.5	95.3	96.3	97.7	98.6	99.3
Custom Tariffs for Imports (%)	23.7	21.9	19.9	18.1	11.4	10.1	7.9	7.9

Source: Park Sang Tae, 「Transition and evaluation of the Tariff Policy」, Korea Institute of Public Finance, 1997.)

Table 2-15 | Global Comparison for More Knowledge-Intensified Textile Industry (Year 2002)

	1st	2nd	3rd	4th	5th	6th
Quality superiority	Japan	Korea	Hong Kong	Singapore	Taiwan	China
Design packaging	Japan	Hong Kong	Singapore	Korea	Taiwan	China
Development of new products	Japan	Hong Kong	Singapore	Taiwan	Korea	China
Obtaining of Small Orders	Japan	Taiwan	Singapore	Japan	China	Korea
Export Marketing	Japan	Hong Kong	Taiwan	Singapore	Korea	China
Total Evaluation	Japan	Hong Kong	Taiwan	Singapore	Korea	China

Source: Japanese Economic Times, 「Textile」 Future Fashion Strategy Planning Group, 「New challenges in the textile fashion industry」, 2003.4

5.2 Phase of Industrial Development

The structure of Korea's industry started to transition rapidly to a much more technology-intensive industry compared to the 1970s and the 1980s. Towards the end of 1980s the industrial structure transition at a much faster pace. The most representative technology-intensive industry was metal assembly and machinery where the production rate rose from 26.6% in 1980 to 37.7% in 1990. However on the other hand labor-intensive industry which is textiles industries decreased by 8.8% from 30.9% to 22.1%.

Especially, at the end of the 80s, with the rise of labor costs Korean companies such as clothing, shoes, toys and other light industries along with electronic components' assembly etc. moved their manufacturing factories to developing countries like China and South-east Asia where there were cheaper labor costs. This was in order to maintain their price competitiveness. The foreign investments made by the textile industries were at an all-time high until the early 1990s with large investments and new corporate merges however after 1994 the scale of this investment decreased. The reason to its decrease was due to the Korea. Since China's diplomatic establishment in 1992, the rate of investment by the Chinese into the clothing sector has risen sharply.

Examining the progress of textile production structure, after 1995 there is a decrease in the production ratio for clothing and other textile products however on the other hand with the help of exports of synthetic fibers and polyester filament fabrics etc. the production ratio of yarns and fabrics have increased. In other words, production quantity

for chemical fiber clothing such as acrylic sweaters etc. from 1970s have expanded in a large scale due to the increase in demand for chemical fiber clothing influenced by exports. And during the 1990s, the production of polyester fabrics, knitted fabrics etc. has expanded enormously driven by the exports.

Table 2-16 | Structural Transition of the Korean Manufacturing Business

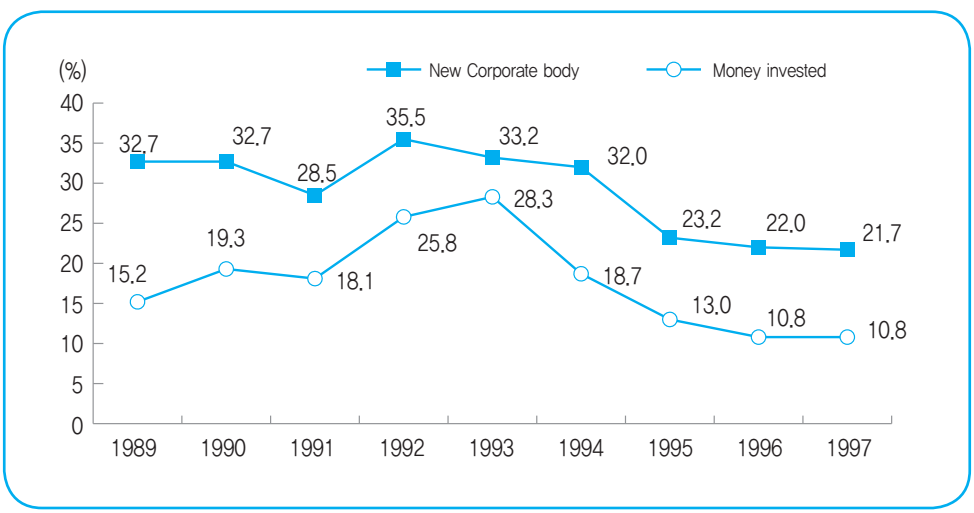
(Unit: %)

Types of Business	1980	1985	1990
Food. Beverage (31)	9.0	8.1	7.1
Textiles. Clothing (32)	**30.9**	**28.1**	**22.1**
Wood and Furniture (33)	3.3	2.7	2.9
Papers. Printing. Publications (34)	4.5	4.4	4.5
Petro-chemical. Plastic (35)	13.2	13.2	14.4
Non-metallic Minerals (36)	4.7	4.6	4.2
Metals (37)	4.5	4.1	4.0
Assembled metals. Machinery (38)	26.6	31.0	37.7
Others (39)	3.5	3.9	3.1
Manufacturing Business Total	100.0	100.0	100.0

Source: Korea Development Institute, 「Half-century Korean Economy」, 1995.

Footnote: Figures inside the ( ) are standard industrial classifications.

Figure 2-7 | Weight of Foreign Direct Investments in the Textile Industry (Outbound) (In Comparison with the Manufacturing Business)



Source: Export-Import Bank of Korea

Also, Korea has reached the 10 billion USD mark in exports for the first time for a single item in 1987 thanks to the '3 low boom' towards the end of the 1980s, and together with telecommunication equipment and automobiles we have recorded a large scale surplus. The scale of increase in surplus for the textile increase rose from 6.4 billion USD in 1985 to 14 billion USD in year 2000; a 2.2 times increase. For individual items the fabrics covered about 2/3 of the trade surplus with 8.7 billion USD in 2000, while clothing and other textile products had a trade surplus of 3.4 billion USD and 1.1 billion USD respectively. The trade surplus for clothes was at its peak in 1990 with 7.5 billion USD but it was constantly decreasing since then, it was as the developing countries started eating their way into the global clothing market hence making Korea's exports slowdown. On the other hand, for chemical fiber and chemical yarn and chemical fabrics and knitted fabrics, these are products which require great deal of manufacturing skills, experience and know-hows hence it was consistently recording surplus in the trade market. But for products such as cotton yarn and wool yarn and fabric, the trade market surplus decreased in a large scale.

Especially, exports for clothing have diminished largely in the 1990s but for textile materials such as polyester filament fabrics and knitted fabrics, Korean raw materials(fibers, fabrics) will be sent to foreign countries such as China and South-east Asia where factories have been set up only to be processed into the final goods(clothing) and exporting to the US, Japan, EU etc. and some of the products imported by Korea.

Table 2-17 | Change in the Textile Production Structure

(Unit: %)

	1991	1995	1997	2000	Fluctuation ('00/'91)
Synthetic Fiber	8.6	12.9	13.8	11.6	3.0
Spinning	17.5	10.1	11.0	12.9	-4.6
Cotton	5.8	3.2	3.1	3.1	-2.7
Wool	1.9	2.1	1.3	1.2	-0.7
Chemical filament	8.5	3.2	4.9	6.2	-2.3
Weaving	22.5	19.2	19.6	18.4	-4.1
Cotton	2.4	2.0	1.7	1.9	-0.5
Wool	2.7	1.4	2.1	2.0	-0.7
Chemical filament	15.3	14.3	14.1	13.5	-1.8
Knitted	0.7	1.0	2.0	3.4	2.7
Others	2.8	2.8	2.7	3.9	1.1
Dyeing and finishing	10.8	13.1	12.1	13.1	2.3
Clothing	31.1	33.5	31.8	28.0	-3.1

	1991	1995	1997	2000	Fluctuation ('00/'91)
Suits	8.5	14.7	15.0	10.6	2.1
Shirts, Track Suits	4.4	4.4	4.8	5.1	0.7
Knitted clothing	5.7	3.5	4.3	5.0	-0.7
Other Textile Products	6.0	7.5	7.1	8.8	2.8
Total	100.0	100.0	100.0	100.0	-

Source: National Statistical Office, Statistical Reports on the mining and manufacturing industries, each years.

Footnote: 1) Other fabrics consists of narrow fabrics, non-woven, surface treated fabrics etc.
2) Basic on an amount of money.

Table 2-18 | Progress of the Korean Textile Industry's Trade Balance

(Unit: 1 million USD, %)

	1985	1990	1995	1998	2000	Fluctuation	
						'95/'85	'00/'95
Chemical Fiber	-8	119	778	632	697	786	-81
Yarn	401	253	-233	543	10	-634	243
Cotton	145	18	-137	-80	-399	-282	-262
Wool	65	84	-11	38	-24	-76	-13
Chemical	39	9	-11	656	589	-50	600
Fabric	1,230	3,513	8,149	8,017	8,746	6,919	597
Wool	21	-73	-69	67	12	-90	81
Cotton	106	159	132	213	366	26	234
Chemical	774	2,222	5,069	3,745	3,429	4,295	-1,640
Knitted	0	311	1,175	1,864	2,426	1,175	1,251
Clothing	4,228	7,462	3,700	3,895	3,410	-528	-290
Knitted	1,447	2,539	2,015	2,019	1,999	568	-16
Woven	2,205	3,073	1,451	1,732	1214	-754	-237
Leather	576	1,850	234	144	197	-342	-37
Other products	514	1,103	1,048	953	1,131	534	83
Total	6,363	12,450	13,442	14,040	13,995	7,079	553

Source: Written at Korea Institute for Industrial Economics&Trade with KOTIS Database

Table 2-19 | Change of the Export Structure in the Textile Industry

(Unit: %)

Rank	1980		1990		1995		2000	
	Items	Part	Items	Part	Items	Part	Items	Part
1	Woven Clothing	31.4	Woven Clothing	21.3	PET Fabrics	24.3	PET Fabrics	16.3
2	Knitted Clothing	16.6	Knitted Clothing	17.5	Knitted clothing	12.7	Knitted Fabrics	13.4
3	PET Fabrics	8.8	Leather Clothing	12.6	Woven Clothing	10.8	Knitted clothing	13.0
4	Other Fabrics	7.6	PET Fabrics	12.6	Other Fabrics	7.5	Woven Clothing	10.6
5	Leather Clothing	6.5	Other Fabrics	8.7	Knitted Fabrics	6.6	Other Fabrics	7.9

Source: Written at Korea Institute for Industrial Economics&Trade with KOTIS Database

Footnote: PET fabric is a polyester filament fabric.

5.3 Main Policies and the Government's Roles

In 1986, during the transition to a functional support eliminating the industrial policy's specificity through the establishment of Industrial Development Legislation, the government pushed ahead with funds for development and private businesses, rationalization funds for slumping and declining industries designated through the industrial rationalization and the growth of potential infant industry. Especially, the point for functional aid is to pursue Technological Development Support Policy for the development of industrial technology and increase in production. The Industrial based Technological Improvement Plan was established and announced for this. The government also directly aided the development of technological development through「Industrial based Technological Development Business」. Industrial Technological Development Business has done research on the demands and through that the government has paid 50~60% of the cost for technological developments.

Also in order to improve the balance trade for parts and material towards Japan in the mid-1980s, the government set up a 5 year plan (1986~1990) for the localization of machinery and parts and materials such as automobile parts, ship building equipment, electronic electrical instruments and components, materials (textiles etc.). They devised support methods financially and politically through the Industrial Development Fund. Especially, in the 1970s, textile industry for instance, with the localization of textile materials such as synthetic fibers, the exportation of clothing products could be carried out successfully.

Apart from this, for the development in the fashion design sector, anyone purchasing equipment and facilities for a fashion business and fashion design or research, the Korea Federation of Textile Industries (KOFOTI) used their own funds to loan it out at a low interest rate. Back then the amount of finance provided was 1.2~1.3 billion KRW (Korean Won) annually and each person was limited to 0.2 billion KRW.

On the other hand, through the '3 Low Business Boom (1986~'88)' the exportation of textile goods increased in large quantity, in order to rescue and develop the textile industry into a more well developed structure and technology-intensive, the government came up with a 7 year plan to develop the textile industry. In order to seek transition with in the industry, the government and businesses and academia agreed upon this plan. The government wanted to escape previous traditional methods of production no different from the developing countries and move on to small quantity batch production system which is more skill and knowledge based; more developed country industrial structure. In other words, through this our target was set to create Korea's textile industry on par with Italy, France etc. in quality and at the same time be the number one exporter for textile goods, on top of that like Milan, Paris, New York, Tokyo and other major fashion capitals, it was in Korea's mind to make Seoul the next fashion capital in the world.

Table 2-20 | Record of the Support Provided by Industrial based Development Business in the Textile Industry

(unit: Case, 1 million KRW)

	Research on Demand	Selected Tasks	Finance Supported	Situation		
				Total	Completed	Continued
1998	26	18	3,181	18	18	-
	(12)	(6)	(1,310)	(6)	(6)	
1990	27	27	5,178	27	27	-
	(9)	(9)	(2,457)	(9)	(9)	
1991	140	62	8,352	62	34	28
	(73)	(31)	(4,677)	(31)	(16)	(15)
1992	155	35	2,726	35	-	35
	(70)	(21)	(1,919)	(21)		(21)
1998~'92	348	142	19,437	142	79	63
	(164)	(67)	(10,363)	(67)	(31)	(36)

Source: Korea Federation of Textile Industries, 「Handbook for textile industry」, 1993.

Footnote: Inside the ( ) is the textile material (fibers, fabrics) category

Table 2-21 | Situation on the Local Development of the Components & Materials Industry

(Unit: Cases)

	1987	1988	1989	1990	1991	1992	1993	Total
Total	851	808	694	757	728	801	505	5,144
Machines and Components	217	201	260	354	376	467	291	3,071
Car Parts	175	261	99	69	126			
Ship Building Equipment	46	34	35	32	28			
Electronic and Electrical Instruments and other components	317	245	202	183	157	299	170	1,573
Materials	96	67	98	119	53	35	44	512
Textiles	6	1	1	2	1		18	29
Fiber (Raw Materials)	2	1					3	6
Spinning					1		13	14
Textile goods (clothing)	4		1	2			2	9

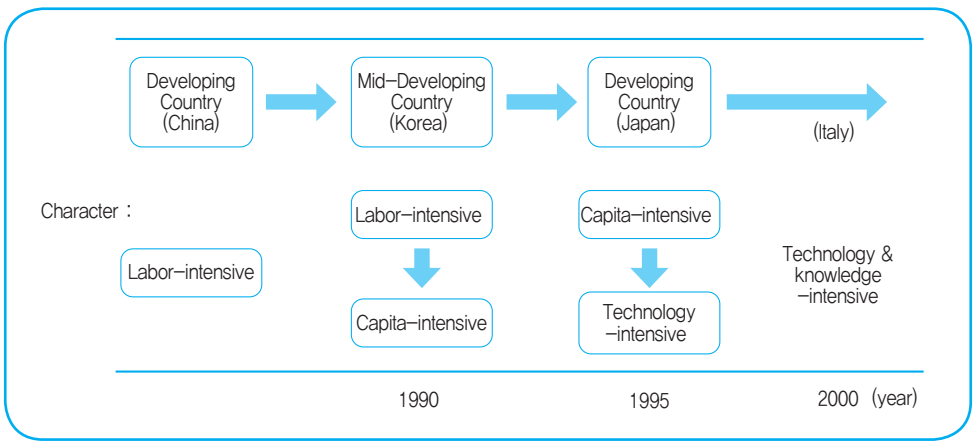
Source: Korea Federation of Textile Industries, 「Handbook for textile industry」, 1993.

To make it a more specific business, they promoted the development of new textile materials and upcoming young designers; pursuing Korea to become more globally known in fashion and technology. Also they planned to change the manufacturing process from the traditionally skill dependent man power to automated manufacturing equipment and instead of producing and exporting OEM, they transitioned to ODM, OBM, (ODM-Original Design Manufacturing, OBM-Original Brand Manufacturing) and in the clothing exports, the factors in between technology and capital-intensive are industrial textiles such as fabric; hence expanding exports for textile materials were also important.

Also on September 1999 the government pursued the creation of fashion, design and apparel industry mecca as Daegu since it was the area of production for chemical fabrics. This is also known as the Milano Project. Back then after 1993, Kyungbuk province in Daegu increased exports for polyester fabrics in large amounts to China (also known as Special China) creating a high-function loom known as the Water-Jet Loom, later on China was able to be self-sufficient therefore the exports to China started to decrease affecting our production to decrease as a result the textile industry's economic recession persisted. The

Milano Project since 1999 to 2003 during 5 years, a total of 680 billion KRW (government expenditure 367 billion Won, city's expenditure 51.5 billion Won, individuals expenditure 261.6 billion Won)was invested. The main businesses were gentrification of textile products and adding value (6 businesses),

Figure 2-8 | Policy Targets on Advanced Structures of the Korean Textile Industry



Source: Korea of Institute for Industrial Economics&Trade, 「Advanced structure in the textile industry in 2000s」,1990.5

Vitalizations of the fashion design business (3 businesses), creating an infra for the textile industry (2 businesses), strengthening of safe business and support (6 businesses) etc. hence formed under 4 categories and 17 individual businesses. The first stage of the Milano Project was the establishment of specialized center and construction of equipment; mostly infra based businesses, the second stage which was the Post Milano Project which was the development of the constitution for technological innovations for new fiber developments, increasing competitiveness through overseas marketing and training was the main business priority.

Table 2-22 | Scrap&Build Plans for Worn-out Facilities

(Unit: 100 million KRW)

	unit	Worn-out Facilities ('88 year)			'89~'95 year		Deterioration (%,'95)	'95~'00 year		Deterioration (%,'00)
		Total Facilities	Old Facilities	Deterioration(%)	Scrap&build Facility	Capital Requirements		Scrap&build Facility	Capital Requirements	
Chemical fiber	Ton/ day	3,519	1,935	55.0	527.0	3,530	40	352.3	2,360	30
Cotton spinning	1,000 spindle	3,868	3,126	80.8	418.4	5,050	70	870.0	9,000	50
Loom	1,000 unit	182	90	49.5	26.3	1,500	35	13.7	780	20
Knitting Machine	1,000 unit	76.5	39.9	52.2	9.3	1,000	40	11.6	1,280	20
Sewing Machine	1,000 unit	280	106.5	38.0	22.5	200	30	42.0	380	20
Dyeing Machine	unit	8,244	3,731	45.0	845.6	450	35	618.3	310	20
Total	-	-	-	53.0	-	11,730	42.5	-	14,110	30

Source: Ministry of Trade and Industry, 「7 year plan to develop and rescue the textile industry」, 1989.9.

Footnote: Worn-out facilities are facilities determined only by its age, standard for cotton spinning is by the spinning machine

However, the Milano project has evaluated that the business outcome in comparison to its investment is rather poor. It is due to lack of participation of businesses during the 1st stage; building infrastructures. Also with the lack of cooperation between the production streams and the participating institutes there was a halt in product diversification and high added value products. Also, due to the unfolding of chemical fabrics businesses in Gyungbuk Daegu area, which was the main hub for these materials, the ripple effect towards not only Seoul but the whole nation was insignificant.

Table 2-23 | Development Business in the Area's Textile Industry (Milano Project)

	Stage 1 (Milano Project)	Stage 2 (Post Milano Project)
Target	- In transition to produce high added value textile goods, creation of research&development infra for OEM processing and mass production system of the regional textile industry	- With the usage of regional specialized center, technical development based product planning, creation of prototype products, marketing support etc was pursued

	Stage 1 (Milano Project)	Stage 2 (Post Milano Project)
Period	1999~'03 (5 years)	2004~'08 (5 years)
Costs	680 billion KRW (government expenditure 367 billion Won, city's expenditure 51.5 billion Won, individuals expenditure 261.6 billion Won)	198.6 billion KRW (government expenditure 139.5 billion Won, city's expenditure 30.5 billion Won, individuals expenditure 28.6 billion Won)
Business Contents	- Number of businesses: 5 categories, approximately 17 businesses Research infra construction (6), technological development (3), human resource developing (1), providing of information (2), loans (5)	- Number of businesses: 5 categories 20 businesses Research&development (6), human resource developing (1), loans (1), software for business support (8), infra establishment (4)
Business Outcome	Infra construction (establishment of apparel valley, textile development&research and dye technology research)	R&D (increase in added value, product variety, change in production items, base for fusion industry is created)

Source: Korean Textile Development Institute「Strategies to grow the textile industry in kyugbuk Daegu with a new vision」, 2009.3.

6. Development of High-tech Textile Industry (2000)

6.1 Background

During the 2000s, automobile, ship building, steel, petro chemistry, textiles, electronic equipment etc. which are the foundations of the Korean economy were entered during the late period of growth or maturity; hence not being able to produce something new with more value. Therefore they were stuck at a very difficult position. The main industry's products were worsening due to the intense competition from overseas, and by this as the profit making ability starts to decline from main industry, it means there is a problem with the overall Korea's economic growth.

Therefore the government discovered a new engine for growth, they government was in a rush to improve the growth of the economy hence in the 2000s in order to obtain strength and technical capabilities new industries were formed with new technology via IT, BT, NT and they pursued promotion and knowledge services on high-tech components and materials. Especially, not only in the electronic telecommunication, but also for automobiles, machinery, appliances, clothing etc. the government judged that the knowledge intensive finished product industry, occurs with the development on components and materials. In the 21st century, to strengthen the industrial competitiveness the components and materials industry was actively promoted (*February 2001 a special legislation on components and materials was established).

Table 2-24 | The Ratio of Net Profit to Net Sales for Main Force Businesses

(Unit: %)

	1998	2000	2002	2004	2005	2006	2007
Textiles	-6.9	-1.0	0.1	1.5	-0.6	-0.7	1.7
Clothing	-9.9	-0.1	3.0	1.1	3.1	2.5	1.4
Chemical Products	0.0	0.4	4.9	6.8	6.8	5.3	6.1
Steel	0.1	-5.6	5.2	11.8	10.7	8.0	7.8
Machinery	-3.9	3.8	3.5	5.3	4.4	3.5	5.9
Computer	-11.0	5.3	-9.8	-0.2	-4.6	5.6	0.4
Semiconductor	1.2	7.6	7.3	14.5	9.2	7.6	6.6
telecommunication Device	-7.9	4.0	0.9	-3.0	-0.8	-5.2	1.5
Appliances	-0.9	4.0	-1.2	5.1	2.0	0.2	3.7
Ships	2.0	-19.2	1.3	2.3	1.7	4.1	8.4
Automobiles	-44.3	-37.1	38.6	4.4	5.4	3.6	3.8
Total manufaturing	-4.4	-2.0	6.3	6.2	5.3	4.5	4.9

Source: Bank of Korea, company's business analysis (economic statistics system)

Footnote: Fur is included under clothing

Table 2-25 | Mid-long Term Plan for the New Growth Engine Business

Short Term (3~5 years growth engine)	Mid Term (5~8 years growth engine)	Long Term (around 10 years growth engine)
· Renewable energy (aid deduction) · Broadcasting Fusion Industry · IT Fusion System · Global Healthcare · International Convention Tourism · High-tech Green City	· Renewable energy (Solar Fuel Cell) · Water Conditioning · Carbon Reduction Energy (Original Plant) · High Added Value Food Industry · Light Emitting diode (LED) · Global Education Service · Green Finance · Contents · SW	· Renewable energy (Marine bio fuel) · Carbon Reduction Energy · Green Transportation System · Robot · New Material. ĐNano · Bio-Medicine · Medical Equipment

Short Term (3~5 years growth engine)	Mid Term (5~8 years growth engine)	Long Term (around 10 years growth engine)
· Application skills developed · Improvements in the system · Create an investment environment	· Acquire the main technology · Creation of market etc.	· Acquire the original technology · Training new work force

Source: Ministry of Strategy and Finance,「Strategy for development with a new vision」, 2009. 1. 13.

For the textile industry, towards the end of 1997, after the IMF financial crisis there was a reconstruction in the company's structure where the business areas were reduced and readjusted During the restructuring process for the companies, some textile related companies were broken up or reduced. Lots of textile companies were under legal management or in the state of work out. Especially, for the chemical fibers, some of their worn-out facilities were sold overseas. For the cotton spinning industry their assets and locations were sold off by real estate's hence decreasing their debt during the reconstruction. However, if the company did not have a fixed field of industry or the rate of profit was low or none; these companies were all shut down, and through management profit was increased through high added values and differentiation. Back then textile material companies for chemical fiber, cotton spinning etc had to stop production of the regular items or increase their foreign production rate but on the other hand they increased the production of highly functional high-tech textiles such as industrial textiles and such, increasing the added value and differentiation. Also in 2005, due to the abolishing of MFA quota, the world textile market was having a price based competition from countries such as China and other developing country. The competition was fierce due to their low prices; therefore instead of trying to survive the competition, Korea's textile industry had to go all-in on highly functional textiles and high-tech textiles which had a lower competition. Recently due to the change in lifestyles the automobile, ship building, electronic, airline, commodities etc. industry started the production of highly functional filters, blockage from UV rays, sterilization, fragrant fiber, carbon fiber, high strength polyethylene fiber etc. This increased the demand for industrial textiles and medical textiles motivating the development of high-tech textile industry.

6.2 Phase of the Industrial Development

6.2.1 High-tech Textile Industry

It shows that the patent cases for high-tech textiles in Korea largely rose after the early-1990s. Compare with the number of patents between the US and Japan, in case of the US; they had a lot of registration towards the end of 1990s, however overall they

are just maintaining their current the number of patents. On the other hand Korea and Japan showed an increase during the mid-1990s and Japan had about 8.8 times more than Korea, in 2000 as Korea's patents registration started increase the difference is known to have decreased to only 1.4 times. However, for the patents in high-tech textiles in Korea, obtain 4,751 patents owning 18% of the market share on the other hand, Japan and the US both have over 40% market share.

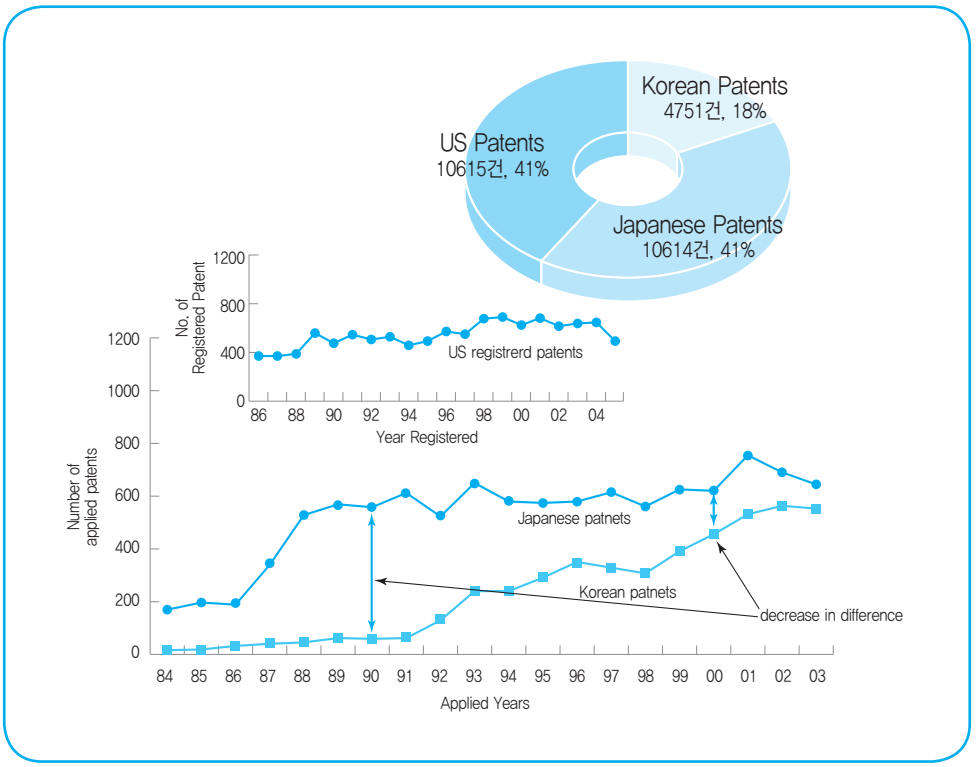
Patent cases in Korea for strategic products especially, for intelligent smart fiber and high functionality high-tech textile have increased noticeably. On the other hand for the US and Japan's patent registration and application they were both being tied up towards the late 1980s, however it is known that futuristic new textile for the US and high functionality high-tech textiles for Japan has been relatively high in the number of registrations and applications.

Especially, for Korea and Japan, the market share for high functionality high-tech textiles are high however, the market share for LOHAS fashion is relatively low; on the other hand, the US has the highest number of shares for futuristic new textiles but has the lowest for intelligent and smart textiles. Also the past patents for Korea,US and Japan can be put as the subject and analyze the patent ownership rate and increase rate for each strategic products.

The result shows that patents for Korea's high functionality high-tech textiles and intelligent smart textiles are relatively much more active. For the US, high functionality high-tech textiles have the highest activity for patents and for Japan intelligent and smart textiles are the most active. However for the LOHAS fashion and futuristic new textiles Korea, Japan and the US are all relatively dull.

Examining the focusing sectors of the high-tech textile industry in the leading countries, Korean transportable durable textile, non-toxic fire proof fibers, smart PET fibers and eco-friendly bio fiber skills are almost equal. US are putting their priority on Nano applied fibers, medical fibers, hygienic and healthy fibers, non-toxic fire proof fibers. Japan is focusing on developing futuristic high functionality fibers such as the next generation extreme functionality super fibers, non-toxic eco-friendly fibers, and structural complex fibers. Apart from these countries it is known that the British and French etc. are focusing on working on next generation extreme functionality super fibers, temperature control smart fibers. The Germans are focusing on developing eco-friendly industrial textiles, ultra-light interior textiles, ubiquitous textiles.

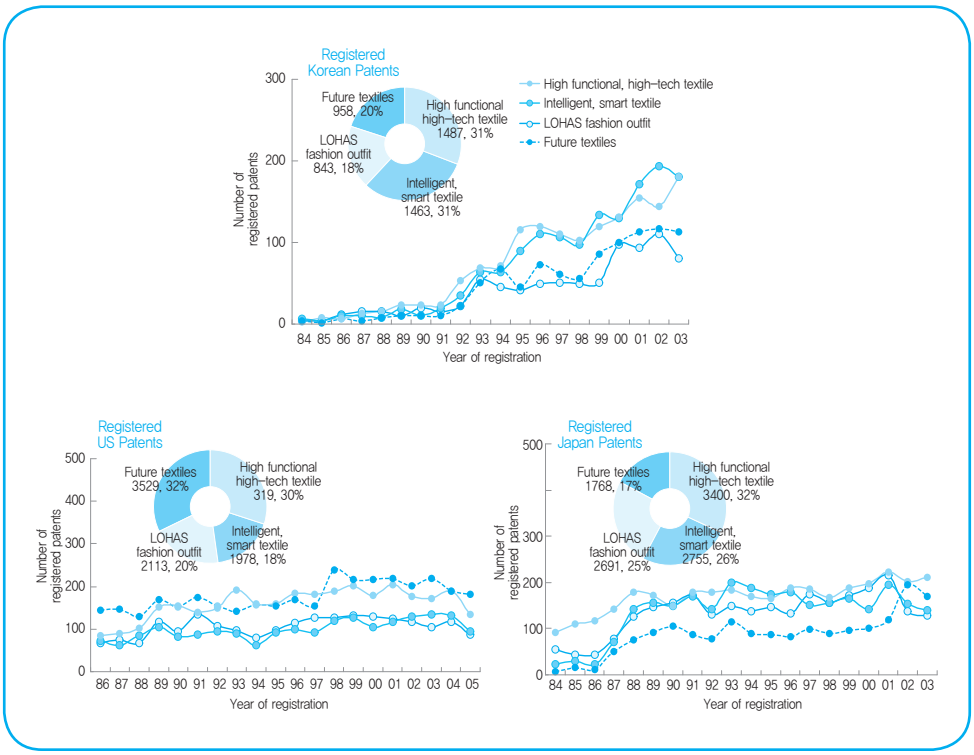
Figure 2-9 | Progress on Korea, US, Japan's Patent Shares and Application (Registration for High Tech Textiles)



Source: Ministry of Commerce, Industry and Energy, 「Analysis of competitiveness in the textile industry and revolutionary strategies」, 2007.6

Footnote: analyzed area ; Korea, Japan patent '84~'03.12 (year applied), US patent '86~ '05.12 (year registered)

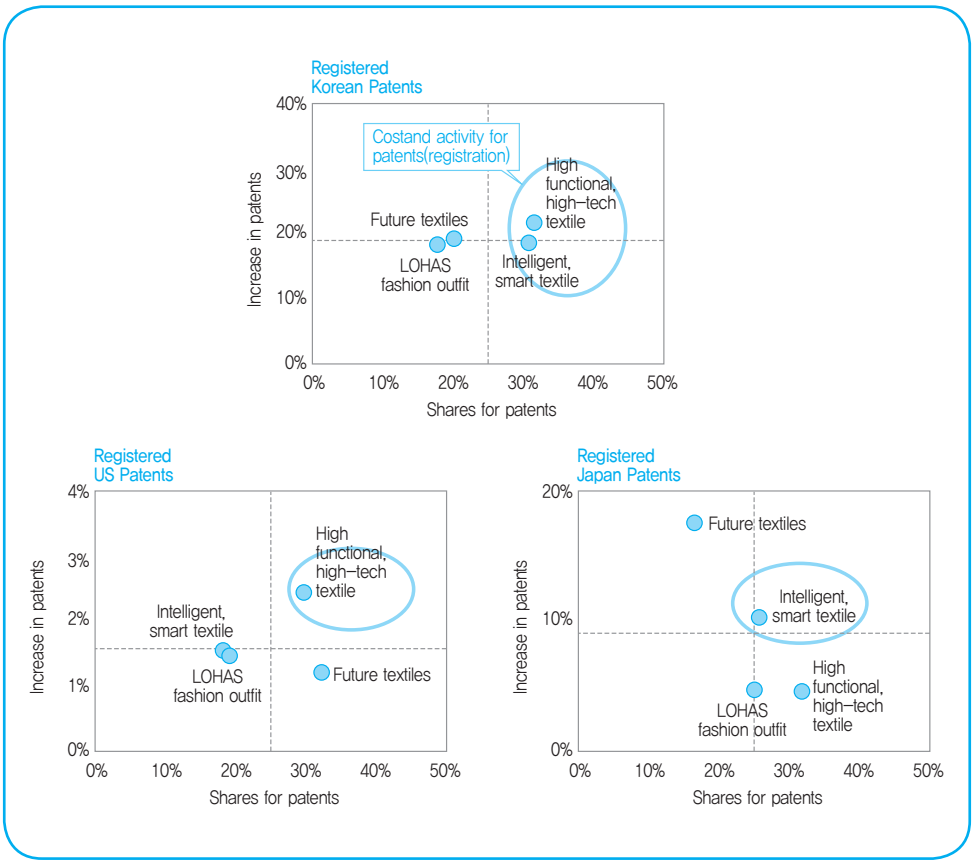
Figure 2-10 | Annual Development for Patent Application for Strategic Products Text in the Textile Industry



Source: Ministry of Commerce, Industry and Energy, 「Analysis of competitiveness in the textile industry and revolutionary strategies」, 2007.6

Footnote: analyzed area ; Korea, Japan patent '84~'03.12 (year applied), US patent '86~ '05.12 (year registered)

Figure 2-11 | Technological Competition between Korea, US, Japan's Strategic Products in the High Tech Textile Industry



Source: Ministry of Commerce, Industry and Energy, 「Analysis of competitiveness in the textile industry and revolutionary strategies」, 2007.6

Footnote: analyzed area ; Korea, Japan patent '84~'03.12 (year applied), US patent '86~ '05.12 (year registered)

6.2.2 Textile materials industry

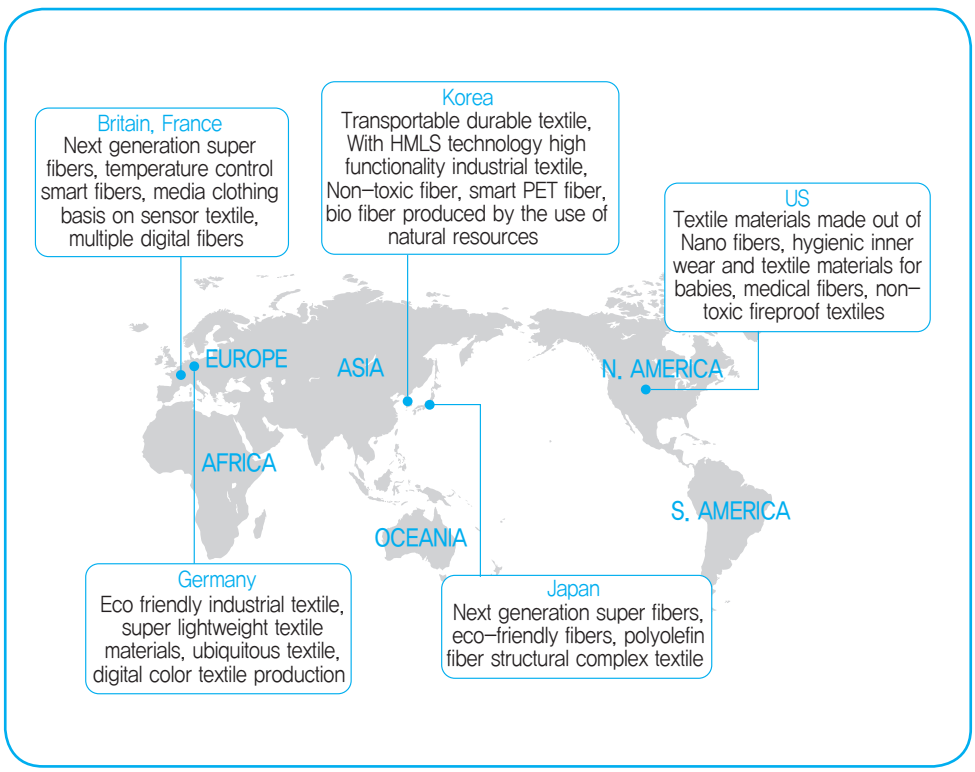
(Includes the chemical fibers in the textiles materials industry spinning, weaving, dyeing&finishing and fabric goods (bedding, curtain, braided products except), other textile products (carpet, rope, fishing net except)

Korea's textile material industry, with the help of government's parts and material industry growth policy and foreign demand increase such as China, it grew rapidly as an export industry and currently in 2009 it takes up (Since the parts and material special legislation established in February 2001, including the Korean textile material industry, the parts and material industry is creating a foundation. As of 2007, Korea owned over 40% market share for parts and materials production, employment and exports) 86% of the total

textile production. Such textile material industry could grow rapidly due to the increase in exports after advancing manufacturing factories to countries with cheap labor costs such as China, Indonesia, Vietnam etc. This transition occurred after the 1990s with the increase in labor costs resulting to a fall in the labor force. Therefore exports for Korea's textile materials (yarn, fabrics etc.) have increased in a very large scale.

As a result, the exportation for completed clothing has decreased in a large value and every year trade deficit is increasing, therefore from what was the clothing exporter have transitioned to an clothing importer.

Figure 2-12 | Focusing Sectors in the High Tech Textile Industry for Different Leading Nations



Source: Ministry of Commerce, Industry and Energy, 「Analysis of competitiveness in the textile industry and revolutionary strategies」, 2007.6

Footnote: US patent registration standards: It is determined through Activity Index, AI

Table 2-26 | Change of Production Structure of Textile Materials Industry

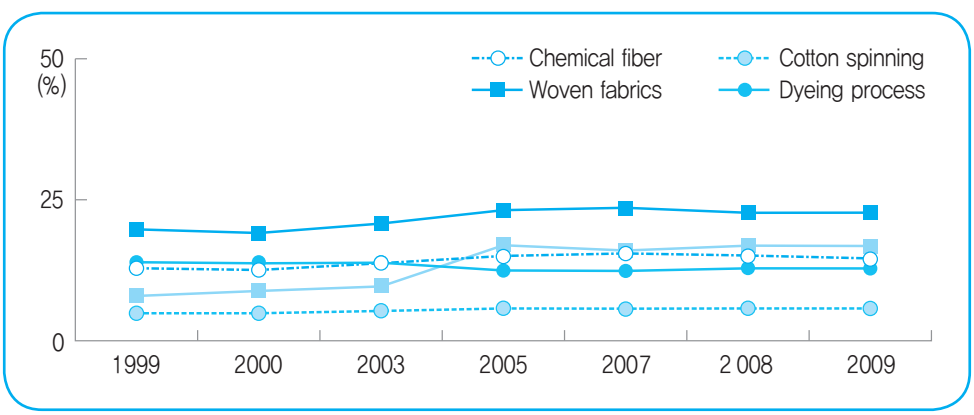
(Unit: %)

	1999	2000	2003	2005	2007	2008	2009	Fluctuation ('09/'99)
Synthetic Fiber	13.0	12.6	13.9	15.1	15.7	15.1	14.9	1.9
Spinning (yarns)	14.2	13.7	15.2	16.5	17.1	16.5	16.3	2.1
Cotton	5.0	4.8	5.3	5.8	6.0	5.8	5.7	0.7
Wool	1.6	1.5	1.7	1.9	1.9	1.9	1.8	0.2
Chemical	5.4	5.2	5.8	6.3	6.5	6.3	6.2	0.8
Weavin (Fabrics)	19.8	19.1	21.1	23.0	23.8	22.9	22.7	2.9
Cotton	1.4	1.4	1.5	1.7	1.7	1.6	1.6	0.2
Wool	1.4	2.2	1.7	1.6	1.5	1.4	1.4	0.0
Synthetic	16.1	15.5	17.2	18.7	19.3	18.6	18.4	2.3
Knitted	0.0	3.1	0.0	3.1	2.7	2.4	2.7	2.7
Dyeing&finishing	13.8	13.8	13.8	12.3	12.5	12.7	12.9	-0.9
Other Textile Products	8.1	9.1	9.6	16.8	16.2	17.0	17.1	9.1
Total	100.0 (69.0)	100.0 (71.4)	100.0 (73.6)	100.0 (86.8)	100.0 (88.0)	100.0 (86.5)	100.0 (86.7)	-

Source: National Statistics Office, Mining and manufacturing industries statistical survey report, each years

Footnote: 1) The total figure for the textile industry is the combination of textile materials and finished products (clothing).
2) Other textile products consist of woven fabrics and other textile products (finished products are not included).
3) The figures inside ( ) shows how much the textile share it owns.

Figure 2-13 | Change of Production Structure of Textile Materials Industry by Business Category



Source: National Statistics Office, Mining and manufacturing industries statistical survey report, each years.

In case of textile manufacturing, Korea maintains high production share thanks to upswing exports of polyester fabrics and knitted fabrics etc. Other than that, production of other textile products including fabric products such as tire cord, felt etc. have been of great importance. Production rate of spinning industry, chemical fiber has been tied up or becoming lower because of the increase of yarn imports such as cotton yarn from china and South-east Asian countries.

Also, according to the trade balance of textile materials industries, it seems to be showing trade surplus; however, surplus jump has decreased after 2000. It seems trade surplus of textile materials industries has increased from 9.45 billion USD in 2000 to 70.2 billion USD in 2010. Especially, trade deficit of textiles such as cotton, wool, and etc. is deepening because trade balance of woolen goods and cotton goods records deficit or the range of surplus has decreased.

Comparing RCA index change of textile materials industries of S. Korea, China, Japan and USA, have comparative disadvantage, while China is enjoying comparative advantage. Especially, it shows that S. Korea is rapidly losing its comparative advantage after 2001.

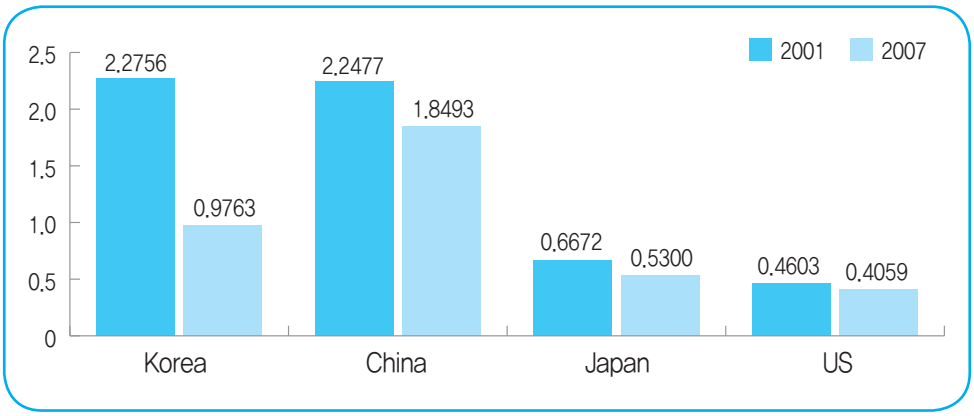
Table 2-27 | Trade Balance Transition of Textile Materials Industries

(Unit: 1 million USD, %)

	1985	1995	2000	2005	2010	Fluctuation	
						'00/'85	'10/'00
Chemical fiber	-8	778	697	744	863	705	166
Yarn	401	-233	10	-41	-658	-391	-668
Cotton	145	-137	-399	-370	-668	-544	-269
Wool	65	-11	-24	-11	-14	-89	10
Chemical filament	39	-11	589	651	437	550	-152
Fabric	1,230	8,149	8,746	6,567	6,816	7,516	-1,930
Wool	21	-69	12	-26	-21	-9	-33
Cotton	106	132	366	231	10	260	-356
Chemical filament	774	5,069	3,429	1,772	1,706	2,655	-1,723
Knitted	-	1,175	2,426	2,613	3,593		1,167
Others	161	1,329	2,261	1,765	1,386	2,100	-875
Total textile materials	1,623	8,694	9,453	7,270	7,021	7,830	-2,432
Total textile industries	6,365	13,442	13,995	7,180	3,975	7,630	-10,020

Source: Written by Korea Institute for Industrial Economics&Trade using KOTIS Database

Figure 2-14 | Transition of RCA Index for Korea, China, Japan, USA Textile Materials Industries



Source: Ministry of Knowledge and Economy, 「Parts and Materials statistics DB」

Footnote: If RCA index (Revealed Comparative Advantage Index) is upper than 1, it has a comparative advantage.

Textile materials industries occupy about a half of total textile industries as far as the number of the employee, occupying 65.8% of productivity of added value and 80.2% of the amount of exports. About 103,000 number of the employee engaging in textile material industries has decreased to currently 86,000 (in 2009).

Reason why decreasing rate of the number of textile materials industries employee is higher than that of total textile industries is because of its production reduction of regular textile materials and capital-intensiveness and equipment industry's feature which led to introduction of the latest automated system resulting in reduction of labor. Though productivity of added value of textile materials industries has been tied up or decreased after 2000, they occupy high weight in total textile industries because total size of the productivity of added value has diminished. Also, the amount of exports of textile materials industries is 11.15 billion USD, accounting for 80.2% of total textile goods exports and recorded annual average growth rate of 1.4% in 2005-2010 year, thanks to upswing exports of chemical fiber, cotton yarn and knitted fabrics etc.

Henceforth, Korea's textile material industries are planning to develop new technology and process, invest in R&D such as new fibers and design development, and reinforce researcher capability by converging, combining combine textile materials industries with the high technology such as IT, BT, NT and that will lead to more value-added and differentiated Korean textile material industries. Increased demand for industrial textile especially will lead to development, advancement of not only automobile interior materials, civil and architecture, agricultural field but also new fibers for aerospace and medical field such as artificial skin.

To explain Korean textile materials level of technology, currently, tier cord and spandex (Hyosung) technology level is ranked the first and second worldwide and the Nano

technics company developed the world's first Nano fiber and Korong (Company name) is ranked the 1st for Island-in-sea type fiber (Super fine chemical fiber). Other than that, Korea developed the latest high-performance, high-strength fibers such as carbon fiber and aramid fiber successfully.

According to stages of economic growth by item, high-tech, high-performance textiles such as carbon fiber and aramid fiber were just developed or in growing stage, and industrial textiles, etc. were in growing stage or market-expanding stage. Some generic textile materials have passed maturity and is located in re-cycle or decline phase (reimport) while trying to add value and differentiate chemical fiber and fabric, knitted fabrics through developing new fibers and high-performance dyeing&finishing technology.

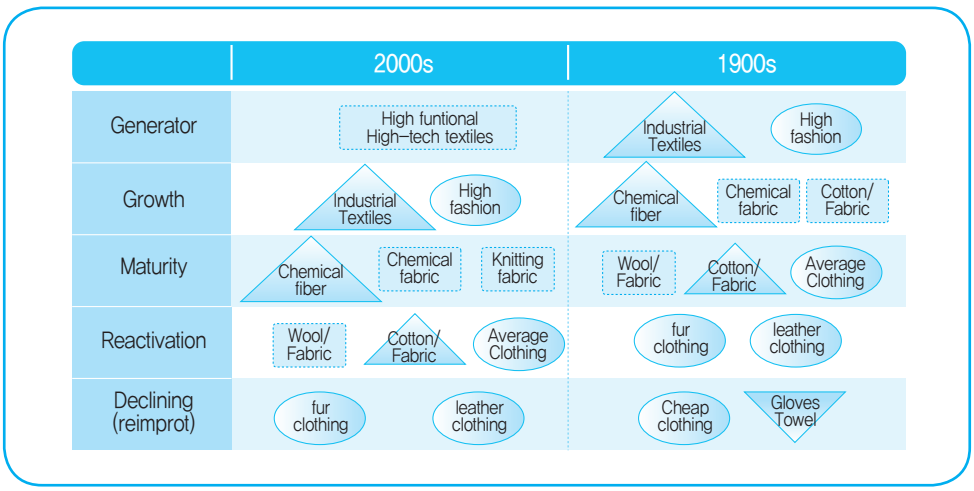
Table 2-28 | Share Transition of the Korea Textile Material Industries

		1999	2000	2005	2007	2009	Annual average growth rate (%)	
							'00~'09	'05~'09
Employees (1,000 people)	Manufacturing industries (A)	2,190	2,311	2,443	2,508	2,453	0.7	0.1
	Total textiles (B)	332	338	211	190	173	-7.2	-4.8
	Textiles materials (C)	178	189	111	94	86	-8.4	-6.2
	B/A (%)	15.2	14.6	8.6	7.6	7.1	-	-
	C/B (%)	53.6	55.9	52.6	49.5	49.7	-	-
Added value (₩1 billion)	Manufacturing industries (A)	188,673	205,187	291,153	329,011	374,501	6.9	6.5
	Total textiles (B)	15,295	15,408	12,147	10,815	11,423	-3.3	-1.5
	Textiles materials (C)	10,402	10,993	10,525	10,032	10,334	-0.7	-0.5
	B/A (%)	8.1	7.5	4.2	3.3	3.1	-	-
	C/B (%)	68.0	71.3	86.6	92.8	90.5	-	-
Amount of Exports ($1 million)	Total exports (A)	143,685	172,268	284,419	371,489	466,384	10.5	10.4
	Total textiles (B)	17,424	18,783	13,946	13,446	13,899	-3.0	-0.1
	Textiles materials (C)	11,535	12,657	10,381	10,447	11,153	-1.3	1.4
	B/A (%)	12.1	10.9	4.9	3.6	3.0	-	-
	C/B (%)	66.2	67.4	74.4	77.7	80.2	-	-

Source: National Statistical Office, 「Statistical Reports on the mining and manufacturing industries」, each years, KOTIS

Footnote: More than 10 employee basis after 2000, Export of 2009 basis on 2010

Figure 2-15 | Growing Stage Transition of the Korea Textile Industries by Item



Source: Korea Institute for Industrial Economics&Trade, 「Korea Industries: Development History and Future Prospect-Textile Industries」, 1997.9

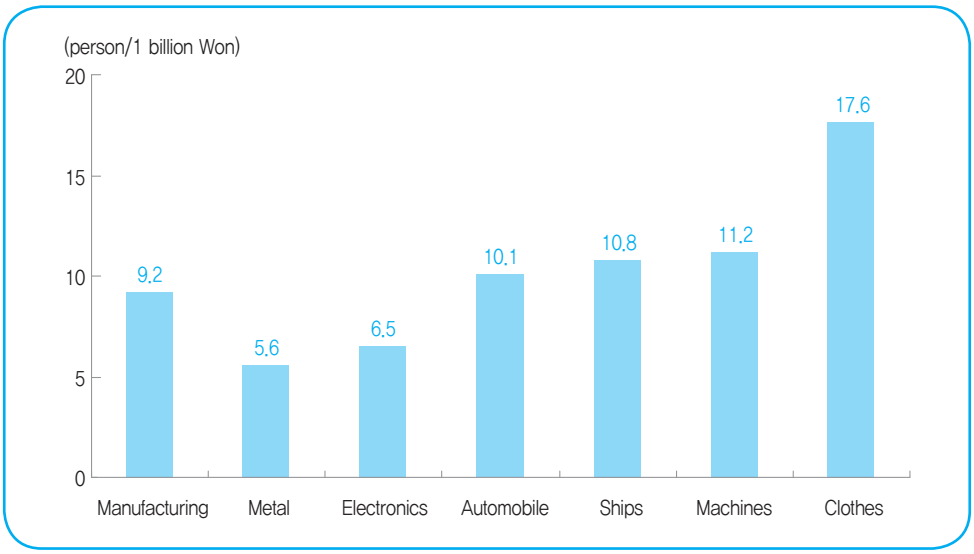
6.2.3 Fashion Clothing industry

So far, Korean fashion clothing industry has not only acted as a Cash Cow for making foreign currency with large-scale surplus of trade balance but also contributed for creating many jobs. The number of jobs made per 1 billion KRW of added value is currently 17.6 employment (in 2007) which is about a double of that of manufacturing industries (9.2 employment/1 billion KRW), and also is about 3.1 times more than that of primary metal business (5.6 employment/1 billion KRW), and 2.7 times more than that of electrical and electronic industries (6.5 employment/1 billion KRW).

Korean fashion clothing industry have showed deindustrialization after late 1980 because of weakened international competitiveness, however, have been growing thanks to increased domestic demand since 2000. In other words, Korea fashion clothing industry made a progress in low and middle priced clothing exports from 1970 to 1980; however, after 1988 Seoul Olympic, Korea got larger domestic market which led to improvements for income level and leisure, sports industry revitalization.

Korean fashion clothing industry's number of business and employee showed decreasing trend since 2000 by the influence of overseas production expansion and imports increase which happened from rise in labor costs and manpower shortage. On the other hand, production and added value each recorded 5.6% and 6.4% growth rate annually from 2000 to 2009 because industrial structure got reorganized to domestic field expanding high-quality production. Korea fashion clothing industry's foreign direct investment (outbound) diverted to decreasing trend with china as a main drop since the mid-2000's. Size of foreign direct investment reached its peak in 2005 with 301 million USD and dropped to current 46 million USD (in 2009).

Figure 2-16 | Comparison for Job-Inducing Measure among Major Kinds of Jobs (Year 2007)



Source: written using the Bank of Korea inter-industry relation table

Table 2-29 | Status of Fashion Clothing Industry

(Unit: %)

	2000	2003	2005	2008	2009	Annual average growth rate	
						'00~'09	'05~'09
Number of companies	4,660	3,642	3,198	2,891	2,801	-5.5	-3.3
Number of Employees	138,959	111,172	90,580	79,577	79,340	-6.0	-3.3
Production output (1 billion Won)	10,016	12,829	12,448	14,760	16,303	5.6	7.0
Added value (1 billion Won)	4,476	5,609	6,001	7,041	7,802	6.4	6.8

Source: National Statistical Office, 「Statistical Reports on the mining and manufacturing industries」, each years,
Foodnote: More than 10 employee basis

According to Korea fashion clothing industry structure, it's reorganizing with the center of small-scale companies with the trend of small quantity batch production and specialization between goods and process. Rate of small companies with less than 10 employees increased 3.8% point from 83.5% in 2000 to currently 87.3% in 2008. In addition, the number of employee working in small companies with less than 10 employees also increased 6.1% point from 2000 to currently 41.0% in 2008.

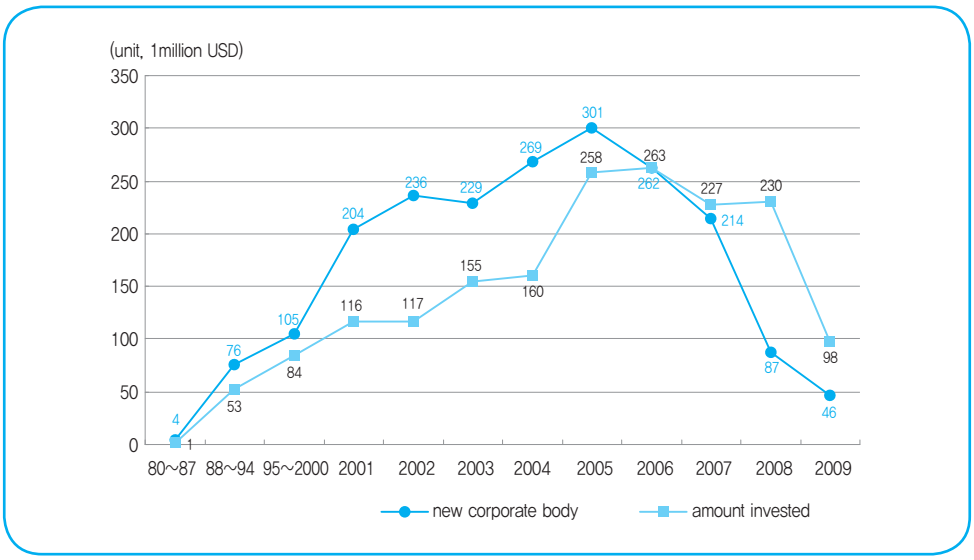
Regional distribution of Korea fashion clothing industry is concentrated on capital area (Seoul, Gyeonggi province) because of its labor-intensiveness. Rates of the number of companies and employees in Seoul, Gyeonggi, Incheon area increased 2.7% point and 7.4% point each from 2000 to currently 77.0% and 74.3 % in 2008. Besides, Busan area is concentrated with export business mainly, whereas Honam area (Jeollabukdo) is concentrated with knitted underwear (lingerie) companies.

According to Korea fashion clothing industry production composition by item, production rate of formal dress, uniforms, and sportswear showed increase. Production of formal dress, uniforms each increased 8.8%, 10.5% annually from 2000 to 2008 and the rate of production in overall clothing production increased 13.5%, 1.3% point each from 2000 reaching currently 56.4%, 3.9 %(2008). On the other hand, overall production size of knitted clothing, underwear, baby clothing, leather garments, etc. seems to be diminishing or stagnating with decrease of overseas export demand and domestic demand. Formal dress, sportswear share soared to 41.8% and 25.6% share each while size of the number of employees by clothing types recorded heavy decreasing rate.

Meanwhile, according to fashion clothing industry trade balance, Korea revealed continuous trade balance surplus by 2000. However, with rapid increase of china clothing, showed larger trade balance deficit. Trade balance deficit size of fashion clothing industry got expanded 5.6 times from approximately 500 million USD in 2005 to about 2.8 billion USD in 2010. Especially, in case of knitted clothing trade balance deficit seems to be expanded after 2005 while trade deficit of woven clothing is getting worse.

Also, Korea fashion clothing domestic market size became smaller by the influence of economic recession since 2000, however, turned to increasing trend after 2005, recording currently 28 trillion and 198 billion KRW (in 2010) which should be 6.6% annual average growth rate from 2005 to 2010. By clothing types, casual wears are occupying 37.1% of total fashion clothing market in 2010 followed by man's wear (17.9%), woman's wear (10.9%), and sportswear (13.6%).

Figure 2-17 | Trend of Fashion Clothing Industry Foreign Direct Investment (Outbound)



Source: Export-Import Bank of Korea

Table 2-30 | Structural Transition of Fashion Clothing Industry by Region

(Unit: %)

	Number of Companies		Number of Employees		Production output	
	2000	2008	2000	2008	2000	2008
Seoul	57.4	59.6	49.6	59.4	66.4	79.0
Gyeonggi, Incheon	17.3	17.4	17.3	14.9	14.5	7.8
Yeongnam area	14.7	15.0	20.2	18.0	10.4	10.0
(Busan)	10.3	9.0	15.4	12.1	6.2	7.3
Honam area	7.4	5.4	8.2	4.3	6.0	2.3
Chungcheong, Gangwon	3.2	2.6	4.7	3.3	2.6	0.9
Total	100.0	100.0	100.0	100.0	100.0	100.0

Source: National Statistical Office, 「Statistical Reports on the mining and manufacturing industries」, each years.

Footnote: 1) Statistics in based on clothes, clothes accessories and fur pieces
2) More than 10 employee basis

Korean fashion clothing industry's competitiveness is evaluated to be a middle rank compared to advanced countries such as Italy. It was because they mainly focused on the subcontracting (mainly OEM) products from developed country such as the US, Japan and Europe. Also the implementation of export drives such as the export incentives provided during the export deficit between 60s~70s have made mass productions possible hence playing a big role in expanding our exports through price competitiveness. As a result, independent designs and brands are at a weak state. Korea fashion clothing industry might have to transition from current production and export system to development of functional textile materials with global brands, training marketing specialists and exporting based on ODM (Original Design Manufacturing), OBM (Original Brand Manufacturing)

Table 2-31 | Structural Transition of Fashion Clothing Industry by Items

(Unit: 1 billion Won, person, %)

	Production output			Number of employees		
	2000	2008	rate of increase	2000	2008	Annual average growth rate
Formal dress	4,198 (41.9)	8,240 (55.8)	8.8	50,544 (36.4)	33,293 (41.8)	-5.1
Sportswear	1,748 (17.5)	2,358 (16.0)	3.8	37,479 (27.0)	20,376 (25.6)	-7.3
Knitted clothing	1,318 (13.2)	1,396 (9.5)	0.7	10,749 (7.7)	4,497 (5.7)	10.3
Underwear	584 (5.8)	586 (4.0)	0.0	13,730 (9.9)	5,150 (6.5)	-11.5
Baby clothing	412 (4.1)	299 (2.0)	-3.9	4,398 (3.2)	1,735 (2.2)	-11.0
Leather garment	366 (3.7)	65 (0.4)	-19.4	1,426 (1.0	401 (0.5)	14.7
Uniforms	255 (2.5)	568 (3.8)	10.5	6,596 (4.7)	5,112 (6.4)	-3.1
Clothing accessories	798 (8.0)	1,026 (7.0)	3.2	9,857 (7.1)	7,404 (9.3)	-3.5
Others	337 (3.4)	222 (1.5)	-5.1	4,180 (3.0)	1,609 2.0	-11.2
Total	10,016 (100.0)	14,760 (100.0)	5.0	138,959 (100.0)	79,577 (100.0)	-6.7

Source: National Statistical Office, 「Statistical Reports on the mining and manufacturing industries」, each years.
Footnote: More than 10 employees basis

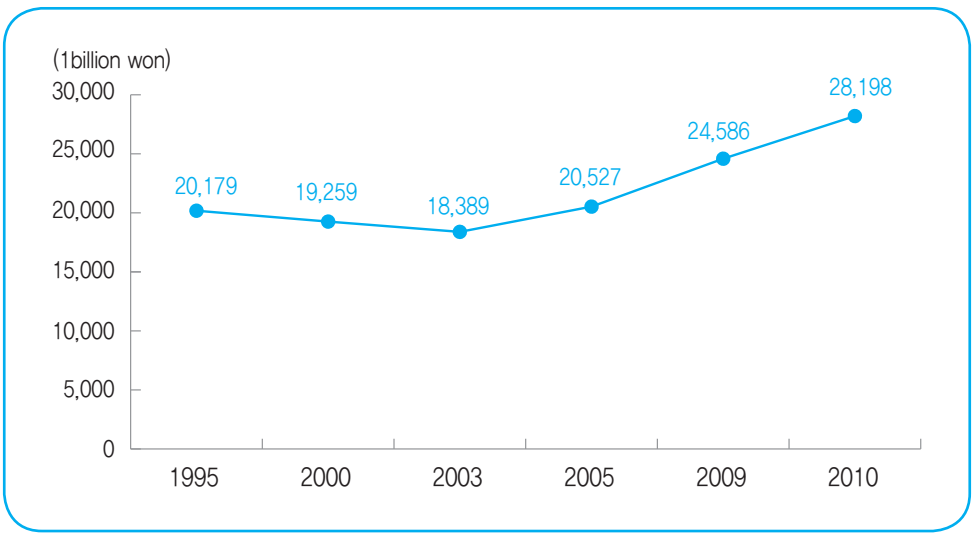
Table 2-32 | Progress of Fashion Clothing Industry Trade Balance

(Unit: 1 million USD, %)

	1985	1995	2000	2005	2010	fluctuation	
						'00/'85	'10/'00
Woven clothing	2,205	1,451	1,214	-909	-2,077	-991	-3,291
Knitted clothing	1,447	2,015	1,999	485	-597	552	-2,596
Leather clothing	576	233	197	-75	-111	-379	-308
Total in the fashion Clothing industry	4,227	3,700	3,411	-498	-2,785	-816	-6,196
Total in the textile industry	6,365	13,442	13,995	7,180	3,975	7,630	-10,020

Source: Written by Korea Institute for Industrial Economics&Trade getting a reference from KOTIS Database

Figure 2-18 | Change of the Korea Fashion Clothing Domestic Market Size



Source: Korea Federation of Textile Industries, Korea Fashion Association

Table 2-33 | Comparison between Major Countries Fashion Clothing Industries Competitiveness

Evaluating factor	Italy	France	USA	Japan	Taiwan	Korea
Level of fashion design	100	100	90	80	60	60
Development of related industries	100	90	90	80	70	70
Building brand image	100	100	95	90	50	50
Marketing, Commercializing	100	80	90	85	70	65
Domestic market (Scale. Buying power)	90	80	100	90	60	65
Level of consumers	100	100	90	90	50	60

Source: Ministry of Knowledge Economy,「Analysis of global Fast Fashion industries」, 2010.8.

6.3 Main Policies and the Government's Role

Governments stated the plan for 'New textile strategic technology development project' such as super fiber, Nano fiber, smart fiber etc. so as to create future growth engine. 'Analysis of textile industries competitiveness and innovation strategy' report (Jun 2007) apart from policy for developing parts and materials industries by 'A special law supporting parts and materials industries' (legislated in Feb 2001) (Main contents of special action law concerned with Parts and Materials Specialized Companies Support are Parts and Materials Development Planning, Parts and Materials Specialized Companies Promotion, Parts and Materials Technology Development and Commercializing, Infrastructure for promoting reliability, etc. Also, The 1st Parts Materials Development Base Plan (2001.7) 5 primary tasks based on the law are ① Supporting specialization and enlargement of Parts and Materials Companies, ② Improving technical skills of Parts and Materials Companies, ③ Supporting reliability improvement of developed parts and materials, ④ Exports promotion and investment promotion support for primary parts and materials industries, ⑤ Systematic information-oriented support for parts and materials industries and so on. The objective of this project is from obtaining core original technology to promoting efforts such as building infrastructure, training personnel, standardization overlay and strategically. Also, promoting development of high-strength for composite fiber such as carbon fiber, and next generation high-tech textile materials can be used for the manufacture of aerospace, wind power plant, golf club.

Especially, selecting future promising field to promote textile manufacturing base, converging innovated textile technology by super fibers convergence with IT, BT, NT(high-tech technology), invigorating industrial textile industries through building infrastructure for industrial textiles are all expected. For technology advance by super materials convergence, commercializing newly growing industries by supporting development of new technologies

and fusion products in conjunction with other growing industries such as electronics, semiconductor, automobile, shipbuilding by applying high-tech textile technologies is encouraged. Project for Commercializing Super-materials-converged Products requires total amount of 140.4 billion KRW(Government expense 88.2 billion won, Regional expense 16.6 billion won, Civilian sector 35.6 billion won) from 2010 to 2014 (5 years). This project is composed of 3 business; Super materials, Convergence-based technology, Fusion products development and Research-based Building Business such as Research Center for Converged materials and Research Center for Converged process (2 business) (*business promoted by Daegu city).

Government is also promoting business for building carbon valley (Jeonju, Jeolla province) with local governments to establish carbon fibers fount, develop applied technology and build research base. It requires 350 billion KRW (Government expense 215 billion won, Regional expense 15 billion won, Civilian sector 120 billion won) in total to establish carbon valley from 2011 to 2015 (5 years). And high-tech medical fiber materials development plan got decided as a national project investing 100 billion KRW from 2011 to 2015 (5 years). This project includes business for researching and developing fiber materials for treatment/exports and healthcare/hygiene and establishing infrastructure such as related-equipment and medical test platform (Gyeongbuk TP supervises the project). Also, government is expanding financial support for technology development as far as textile stream field and fashion stream field each to enlarge coordination among textile streams. Government contributions 53.2 billion KRW got invested from 2007 to 2009 for this plan, and found and supported 67 collaborative tasks among streams.

Processing Color, distribution, process control by On-line through providing supports to converge dyeing process with IT, Reorganizing toward eco-friendly industries through clean dyeing process technology development are promoted. Government supported 4.7 billion KRW from 2005 to 2010 (6 years) to establish digital dyeing Pilot platform. Besides, instead of traditional complicated printing process, government is supporting process reduction, blocking waste water, and high-quality through new DTP (Digital Textile Printing) system which operates with IT.

Meanwhile, with the global stream of globalization, government (Ministry of Knowledge Economy) suggested a way to reinforce domestic fashion clothing industries through promoting total fashion focused global brand. In other words, with the purpose of creating jobs through preoccupying advanced countries manufacturing platform and fostering total-fashion brand, government fosters and supports skill-intensive fashion industries with fashion-connected jobs such as clothing, textile materials, shoes, jewelry, glasses, etc. as a main. Promoting strategies include; firstly, creating Asian Top 10 fashion brand; secondly, reinforcing fashion stream technology competitiveness; thirdly, stable supply of skilled manpower; and fourthly, reestablishing high-quality production platform, etc.

Also, Culture Ministry and Ministry of Knowledge and Economy and Seoul City supports promotion for high-value fashion industries such as designer and brand to promote

all-ministry level of fashion industries development, which will help improve efficiency of policy towards fashion designer and companies. Hence, Ministry of Knowledge and Economy focuses on promotion for fashion industries and job creation, and Culture Ministry concentrates on popularization of fashion culture and spread of Korean wave, and Seoul city, focuses on creation for design fashion city.

Table 2-34 | Major Supporting Field for Fashion Industries by Each Ministries

	Ministry of Knowledge and Economy	Culture Ministry	Seoul City
Promotion purpose	· fostering industry (textile + fashion) · Job creating	· Popularization of fashion culture · Spreading Korean wave	· Design. Fashion City
Target	· Fashion companies (plan, produce, brand) · Fashion manpower	· Contents. Arts · Creative designer	· Fashion designer · Dongdaemun companies

Source: The 1st Fashion Industries Policy Conference data (2011.5.11)

Chapter 3

Promotion Method

1. Statute and Body of Promotion Relating Fostering of Textile industry
2. Construction of Infrastructure for the Development of Textile industry
3. Human Resource Development Project
4. Development Support Enterprise in the Foreign Market
5. International Trade Co-operation

Promotion Method

1. Statute and Body of Promotion Relating Fostering of Textile Industry

1.1 Statute Relating Fostering of Textile Industry

The government's main policies for fostering the textile manufacturing is the basis for the quick growth and development of the Korean textile industry. In 1960's, the government drifted from its original industrialization policy that was focused on economic stability and import substitution and instead promoted export-led high growth strategy including the application of export oriented strategy in labor intensive light industry. In other words, textile industry was selected as the export oriented strategy in the process of promoting government's economic development strategy (5 Year's Planning of Economic Development) and export support as well as various support measures were established to fostering the industry.

The government's main policies for fostering textile industry include the conduction of initial export promotion policy for export industrialization as well as reorganization such as restraint of excess capacity, protection of domestic textile market, promotion of facility modernization, and assignment of industry for rationalization. For example, during the facility expansion period from 1967 to 1979, the government induced a balanced expansion by restraining excess capacity and enacting the 'Temporary Registration on Textile Manufacturing Facilities.' From 1979 to 1986, it led free competition by relieving facility regulations and liberating new construction and expansion of facilities with the enactment of 'Textile Industry Modernization Promotion Law' (Law No. 3180, Dec. 28, 1979) that promotes the modernization of textile industry. Also, it promoted projects such as loan for worn-out facility renewal as well as technology development, human resource development, and aid for international commerce activity by establishing textile industry modernization fund.

In addition, the government enacted the 'Industry Development Law' in 1986 which integrates support policies of individual industries such as textile industry as one and provided prohibition of entry of new businesses and worn-out facility renewal fund by assigning weaving and dyeing industry as rationalization industry.

On the other hand, the government conducted export promotion policy and at the same time protected domestic textile market through annual import and export notice. Such promotion of government's policy to develop the textile industry had benchmarked Japan's reorganization of its textile industry which had succeeded in export industrialization before Korea. For example, Japan experienced great increase of production in cotton spinning and chemical fiber industries due to the Korean War (Jun. 25, 1950 to Jul, 1953). However, after the war, Japan experienced excess production and closed down facilities using government aid as well as enacting Temporary Registration on Textile Manufacturing Facilities (1956 to 1964).

During the early stages of growth of Korea's textile industry, have benchmarked Japan's 'Temporary registration on the textile manufacturing facilities' (1964~'70) and 'Temporary registration on improving the structure of specific textile industries' (1967~'74). And through this benchmark, Korea were able to establish 「Temporary registration on the textile manufacturing facilities」 (1967~'79) and 「Textile industry modernization promotion law」 (1979~'86) etc, suppressing excessive facilities, providing financial support to individuals owning worn-out facilities (Loans with low interest rate). Therefore the government was able to assess that these actions helped the modernization of textile facilities and the restructuring of the textile industry. Japan for instance, have been pursuing policy support (New Textile Vision) on textile industry up to 2007 however, in case of the Korea, due to the establishment of 「Industrial Development Legislation」 (1986) it has become harder to establish industrial policies specifically for the textile industry.

Table 3-1 | Government's Main Fostering Measures Relating Textile Industry

Period	Regulation	Objective	Main Contents
1967~'79	Temporary Registration Textile Manufacturing Facilities	To restrain excess production facilities of textile goods	- Facility adjustment in 6 industries including spinning industry and weaving industry for revitalization of textile exports and promotion of renewal of worn-out facilities - Installation approval and registration of facilities - Restraint on new participation
1967~	Trade Law and Annual Import and Export Notice	To protect domestic textile market	- Limitation of importing textile material and goods for domestic market *Liberation of textile imports: 80.4% in 1983, 93.1% in 1985, 99.4% in 1988 - Promotion of purchase of domestic raw material: Introduction of Link import system

Period	Regulation	Objective	Main Contents
1979~ 1986	Textile Industry Modernization Promotion Law	Promotion of modernization of textile industry	- Alleviation in new construction and expansion of facilities: To induce free competition - Installation of Textile Industry Modernization Fund (25 billion KRW) - Loan for renewal of worn-out facilities (301.3 billion KRW) - Technology development, human resource development, support for commerce activities
1986~	Industry Development Law (1986) (Later amended as Industry Development Law (1999))	Promotion of balanced development and rationalization of industry	- Prohibition of entry of new businesses by assigning weaving and dyeing industry as rationalized industries and funding for worn-out facility renewal - Improvement of facility for weaving preparation and renewal of worn-out weaving machines - Expansion of dyeing wastewater facilities - Purchase of equipment for fashion design training - Funding for overseas market development
	- Customs Law (1967~) - Regulation Law on Tax Reduction and Exemption (1981~) - Trade Act (1967~)	Policy for promotion of export	- Financial aid for various import and export (Average of 350 billion KRW per year) - Tariff exemption to facilities for acquiring foreign currency *Size of tariff exemption: Average of 63 billion KRW per year - Stable supply of exporting raw materials - Price forecasting system for domestic raw materials - Tariff exemption for exporting raw materials - Recognition of high loss in exporting raw materials
1966~	Law Concerning Foreign Investment	Promotion of technology import and foreign direct investment	- Technology import (1962 to 1988): 286 items - Foreign direct investment (1962 to 1988): 210 items

Source: Supplemented contents of 「7 Year Plan for Organizational Improvement of Textile Industry」 (1989.9), Korea Federation of Textile Industries, Commerce-Industry Ministry

1.2 Body of Promotion

The promotion of government's main fostering measures relating the textile industry was initial focused on reorganization such as scrap&build of worn-out facilities using subsidies or low-interest rate/long-term policy fund (loan) and improvement business. Later, 'Korea Federation of Textile Industries (KOFOTI)' was established for 'Promotion Project of Modernization of Textile Industry (1979 to 1986)' and promoted development of new technology and new textile materials, human resource development, development in fashion design field, and support projects for commerce activity.

KOFOTI was established in 1979 as the body for managing the operation of the modernization project of textile industry based on Article 17 of Textile Industry Modernization Promotion Law. The General Assembly of Korea Federation of Textile Industry gathers the regular representatives consisted of 28 organizations, general members consisted of 20 organizations, and 2 auditors.

KOFOTI is currently acting as a center for the textile organization in establishing policies for the textile industry along with its implementation process. Their main task is to understand the difficulties and suggestions by the government along with organizing domestic and international textile exhibitions such as PIS (Pre-review in Seoul), PIC (Pre-review In China). They are currently working together with the government on FTA, established the cooperation of textile industry between Korea, China, Japan, etc, hosting trade activities and international cooperation meetings, carrying out textile, fashion specialists classes, providing scholarships for university students, and PR businesses for the people.

On the other hand, in case of KOFOTI, as their business territory is expanding and as their organization is becoming more corpulent, it is feared that original business territory of the individual textile industries might shrink, such as cotton spinning industry, chemical fiber industry, wool spinning industry, fashion and apparel industry etc.

2. Construction of Infrastructure for the Development of Textile Industry

2.1 Establishment of Industrial Complex

The development of industrial complexes began after 1960's by the government to establish the foundation for industrialization and, since then, industrial complexes have acted as the important bases of revitalization of national and regional economy. Guro Industrial Complex (first complex was constructed in 1967 and its size was 430,000㎡) was the first industrial complex dedicated to textile and sewing and was established to be used as an export base as well as to attract Japan-based companies (18 Japan-based companies, 11 domestic companies, and 2 foreign companies had entered the complex). For 12 years since the construction of Guro Industrial Complex (Complex 1), textile and sewing was responsible of 44.4% of total exports and, at the time, national export was focused on the

field of light industry including textile and sewing, wigs, and electric. The core success factor of Guro Industrial Complex was the network effect following low-cost, low-regulation, and integration which was possible through mass supply of low-cost, apartment-type factories. Especially, the attraction of Japan-based companies allowed the accumulation of advanced technology and know-how of overseas markets. Moreover, chemical fiber industry and home appliance industry flourished due to the construction of Complex 1 of Gumi National Industrial Complex in Gumi, Kyungbuk area, which was focused on textile and electronic industry during 1969 to 1973. Large companies such as Kolon, Cheil Synthetic fibers, and Korea Polyester entered the complex and led the development of chemical fiber industry. Especially, the entry of Korea Polyester in 1971, a large corporation in the chemical fiber industry, had great effects in the formation of future entry of chemical fiber companies as well as the formation of large-scale fabrics cooperation complex. Gumi region not only has an advantage of being located near Daegu and Ulsan, allowing high accessibility for supplying synthetic fibers and raw material of synthetic fiber, but also lowers logistics cost due to short traveling distance.

In 1980's, the construction of dyeing complex was constructed in Daegu, Kyungbuk (Bisan Dyeing Complex) and Gyeonggi (Banwall Dyeing Complex) region which allowed cost reduction through combined treatment of dyeing wastewater as well as making a great contribution in the advancement of dyeing technology that was relatively weak compared to other textile fields. Daegu Bisan Dyeing Complex, which was completed in 1981, consists of 85,000 ton wastewater processing facility, a cogeneration plant with a capacity of 39,400 km, 110 dyeing companies (mainly chemical fibers), and 14,500 workers. In addition, Banwall Dyeing Complex, which was completed in 1987 in Gyeonggi-do, consists of combined wastewater treatment facility as well as a cogeneration plan and mainly dyeing and supplies cotton fabrics or knitted fabrics to nearby region in Seoul (Dongdaemun market).

Through dyeing developments, cogeneration and joint wastewater treatment will not only prevent environmental pollution and reduce cost but also it can be assessed that through the bottle-neck solution within the value-chain of the textile industry, this has played a huge role in increasing the export of fabrics.

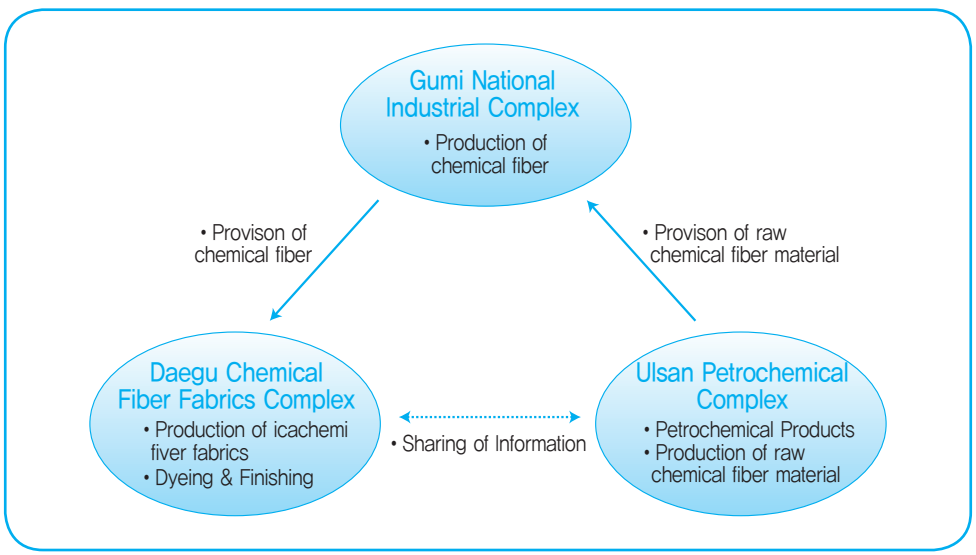
On the other hand, through the government's industrial location policy in the 1970s, from large scale industrial developments, in the 1980s it was restructured to create small and medium sized industrial complexes on different locations. Hence many textile businesses moved into these small and medium sized industrial complexes. Especially, after the 1998 IMF foreign exchange crisis, cities such as Seongnam and Bucheon which are located in the outskirts of Seoul have been creating apartment-style factory basing off the industrial complex (average size of 300㎡). They have utilized the advantage of easier access to the market and labor. This was the time these cities started to boom with apparel companies moving in. In 2011 near Dongdaemun Market in Seoul, an apartment-style sewing factory which is a high-tech clothing center has been built. It will play a huge role on the production base for apparel industry.

Table 3-2 | Change of Top 3 Exporting Industries in Guro Complex

Rank	1969	1970	1972	1976	1980	1985
1	Textile/ Sewing	Wigs	Textile/ Sewing	Textile/ Sewing	Textile/ Sewing	Electric/ Electronic
2	Electric/ Electronic	Textile/ Sewing	Wigs	Electric/ Electronic	Electric/ Electronic	Textile/ Sewing
3	Wigs	Electric/ Electronic	Electric/ Electronic	General Merchandis	General Merchandis	Chemical

Source: Korea Industrial Complex Corporation

Figure 3-1 | Network of Textile Industry Among Gumi, Daegu and Ulsan Region



Source: Korea Institute for Industrial Economics&Trade

2.2 Establishment of Textile Research Institute

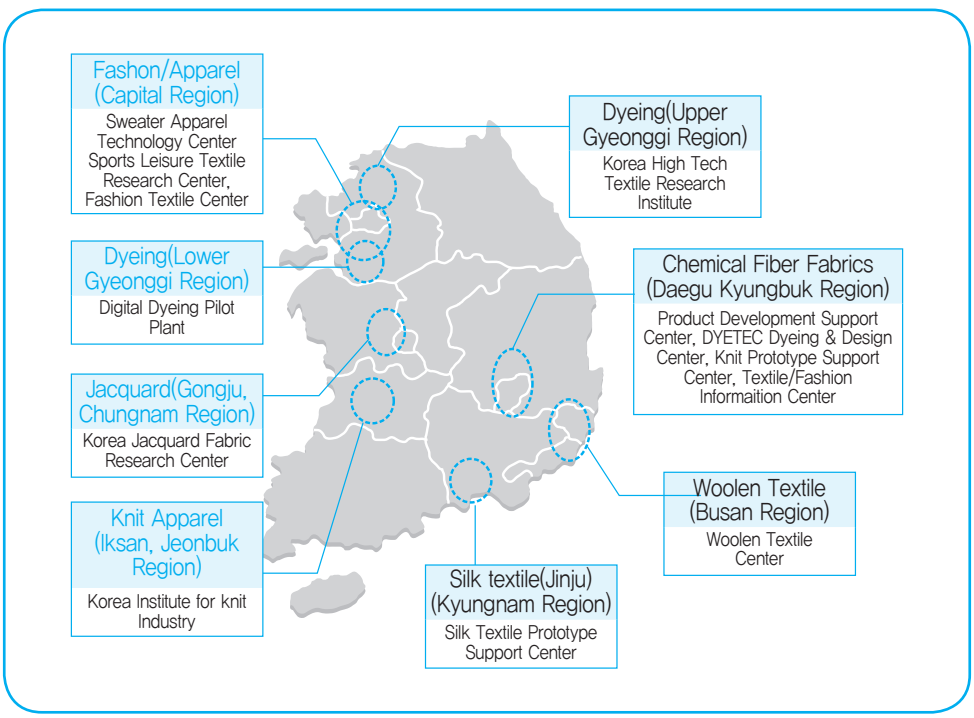
Textile research institutes were established in the late 1970's to train technicians and craftsmen in the textile industry as well as to conduct technological guidance projects for small and medium companies. In Daegu's chemical fabrics producing complex, 'Textile Technology Training Institute' (regional institution in Kyungbuk, Sep, 1977), the predecessor of current Korea Textile Development Institute, was established and later Korea Dyeing Technology Center (Dyetech21) was established in 1997.

Also, Korea Textile Inspection and Testing Institute (established in Feb. 1963), Korea Apparel Testing and Research Institute (established in Dec. 1964), and FITI Testing and

Research Institute (established in Apr. 1969), were established as institutions for textile export inspection in accordance to the Export Inspection Law. The main tasks of these institutions are testing and inspecting textile goods requested by foreign buyers, providing quality assurance for the protection of consumers, conducting international authentication, as well providing as technological diagnosis/guidance and conducting human resource training projects. Regional textile research institute and prototype support centers were established in 3 Sector development system where the central government (national funding), regional government (regional funding), and private capital (private funding) engage in joint investment.

As the research institutes and prototype product support centers started to expand in their respective areas based on textile producers, there has been inspirations and desire by small and medium companies to start on technical developments through testing and analyzing and producing of prototype products. It plays a huge role on the development of textile industry in their respective areas. However, regarding the operation of regional textile research centers due to expansion of income with profit based business layouts, there are concerns that they might be deviating from their establishment purpose.

Figure 3-2 | Status of Regional Textile Research Institute and Prototype Support Center



Source: Ministry of Knowledge Economy

3. Human Resource Development Project

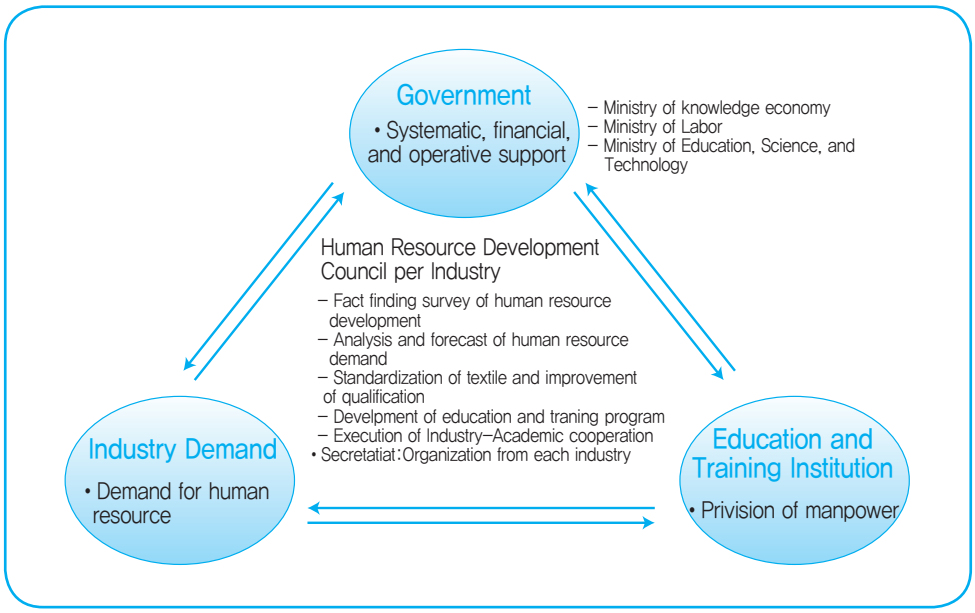
3.1 Field Oriented Technical Manpower Development Project

Unlike other industries such as electronic assembly or molding industries, it is very important to develop field oriented technical manpower in the textile industry because the quality and production varies greatly depend on the worker's skills such as techniques and abilities. Thus, textile research institutes and prototype support centers that are established by regions take command to conduct such human resource development projects. The training and education includes various fields from planning/designing stages to manufacturing and selling stages such as material/processing technology, high-tech textile technology education, apparel (clothing) and fabrics design, patterning and sewing technique, production and quality management, fashion distribution, and global marketing.

Especially, the government is enforcing education/training and job arrangement to expand the supply of new manpower so that the sewing companies, which are the backbone of fashion industry, can acquire competitiveness. To do so, it is establishing and operating sewing education programs for idle manpower including women, crippled people, and North Korean defectors. Also, the government is developing education/training programs led by 'Korean Apparel Industry Association' as well as constructing database of sewing companies that require manpower as well as projects to arrange job those who have completed the training programs.

The education/training projects for developing human resources in the field of textile/fashion are carried out by 'Sectoral Human Resource Development Council of the textile industry' (Secretariat: Korea Federation of Textile Industries) which is a private human resource development institution. The main functions of Sectoral Human Resource Development Council are as following: first, establishment of basic strategy of Sectoral Human Resource Development; second, composition of roadmap for textile/fashion manpower; third, various research and improvement of systems for effective supply of human resources; fourth, development of field oriented manpower by improving university education; fifth, development of technical manpower for the textile industry and construction of infrastructure.

Figure 3-3 | Network Among Organization for Human Resource Development of Each Industry



Source: Secretariat of Korea federation of Textile Industries

In order to re-educate the existing labor and to produce new workforce for the textile industry, we need image reforms and regional specialized training program through the development of the work environment. Also in order to vitalize the operation of human resources consultative group, we need to work closely with government branches in order to expand financial and policy supports.

Table 3-3 | Construction of Regionally Specified Human Resource Development system

Focus Region	HR Development Model Name	HR Development Institution	Development Type	Field of Specialization
Seoul	Market Leading Type Fashion Apparel HR Development	Korea Institute of Industrial Technology (Sweater Apparel Technology Center) Korea Society of Clothing and Textile Yuhan Design HR Development Center KIFI	Market Leading Type	Fashion Sewing Marketing

Focus Region	HR Development Model Name	HR Development Institution	Development Type	Field of Specialization
Gyeonggi	New Technology Fusion Type Dyeing&finishing HR Development	Korea Institute of Industrial Technology (Siwha dyeing&finishing center)	Technology Leading Type	Dyeing& finishing
Daejeon, Chungnam	Future Oriented Industrial Textile HR Development	Korea Institute of Industrial Technology (Industrial Textile Research Center)	Technology Leading Type	Industrial Textile
Jeonbuk	Field Oriented Knit Industry HR Development	Korea Institute for Knitting industry	Market Leading Type	Knitted fabrics
Daegu, Kyungbuk	Stream Integrated Type Textile Fashion HR Development	Korea Textile Development Institute Korea Dyeing Technology Center Fashion Center Korea Keimyung University Korea Textile Machinery Research Institute	Technology Leading Type	Textile Fashion
Kyungnam	Fashion-Focused fabric Design HR Development	Korea Silk Research Institute	Market Leading Type	fabric Design

Source: Ministry of Knowledge Economy

Strategy for the Development of Technicians during 1960 to 1970

□ Korean Government; Concentrated administrative efforts to develop craftsmen and technicians that are necessary for economic development through vocational training

- To acquire the workforce necessary for economic development, the government enacted the Vocational Training Law (1967) and established the Central Vocational Training Center during the initial period of industrialization in 1960's. In 1970's, it established public vocational training centers by regions.

* Technical human resource refers to manpower which possesses wide-scoped knowledge and skills relating the corresponding tasks and directly produces products or contributes in the production. It is differentiated from simple workforce.

- During the industrial period that was focused on light industry (1960's to 1970's), the training of technicians relating textile industry ranked highest compared to other industry's vocational training

* Provided about 225 technicians, equaling to 23% of total technical human resource

〈Results of Training of Technical Human Resource for Textile and Electronic Industry〉

(Unit: Number of Persons, %)

	1967~71	1972~76	1977~81
Textile	17,928	89,647	110,381
Percentage from total technical human resource	18.9	29.0	22.3
Electronic	4,232	33,777	28,708
Percentage from total technical human resource	4.5	10.9	5.8

Source: Excerpt from Gender Politics in the Labor Market, Kyung Ah Shin

□ Industry; Acquisition of human resource through the establishment of industrial educational class and industry-attached schools

- Industrial education class was established for those working in the industry among existing middle and high school under the condition of the industry bearing the costs for basic schooling.

- Industry-attached schools were usually operated by large corporations directly receiving approval for school establishment and conducting formal middle and high school level education to their employees.

* Established Industry-Attached Schools: Hanil Synthetic Fiber's Hanil Vocational Girl's High School, Kabool Textiles' Yihyun Girl's Vocational High School, and Cheil Industries' Sungil Vocational Girl's High School

* In 1988, industry-attached schools focused in cotton spinning companies and number of schools reached 41 and students 470,000.

- This system provided employees who chose to work instead of studying due to household reasons with opportunity to pursue their studies while working. Also, it is evaluated to have contributed greatly in reducing the jobless rate.

3.2 University Education

The first college level education on textile industry began when Department of Textile Engineering was established with the launching of College of Engineering in Seoul National University in 1946. During the Japanese occupation period, the number of alumni who have graduated the Department of Spinning and Weaving in Tokyo Institute of Technology and other specialized schools (such as Tokyo Technical High School) in Japan reached two digits and those who have graduated from Department of Spinning and Weaving of Kyeongseong Higher Industrial School in Korea numbered close to 90 by the year of 1945. Especially, due to the promotion of Five-Year Economic Development Plan in the early 1960's expanded the textile industry, many textile engineering departments were established in universities all throughout the country to suffice the necessary human resources. Currently, there are 20 specialized and general universities relating the textile industry and about 1,400 students graduate from these departments every year. Moreover, the annual number of graduates from textile/fashion fields exceeds 3,000 when including apparel departments, a field relating fashion design.

Such establishment of textile engineering departments in universities allowed the acquisition of human resources in middle-tier management and technical/research positions that were necessary in the initial development stages of the textile industry. Moreover, the university-focused activation of academic research on textile engineering contributed greatly in the technological advancement of domestic textile industry. In Dec. 1961, the Korean Fiber Society was established and consisted of textile engineering professors as well as textile companies or organizations relating fibers and published academic papers including theses relating fibers.

When observing the universities' textile related curriculum during 1960's to 1970's, they were mainly focused on textile engineering such as spinning, weaving, knitting, dyeing, synthesizing and polymerizing of polymer materials, and production and spinning of synthetic fibers. During 1980's to 1990's, there was a greater understanding of automation and consecutive processing of fiber manufacturing based on electronic engineering as well as comprehension of the composition and property of polymer materials. Therefore, some universities changed their departments' names from Department of Textile Engineering to 'Department of Polymer Engineering.'

After the 1990's, only a few universities maintained (established) departments relating textile engineering, but most of their education is focused on polymers and education relating fashion and textile materials. This trend stands parallel with the changes taken place in Korea's textile industry where there was a high increase of demand in areas including planning and designing of textile goods as well as textile material development and marketing. Moreover, measures such as 'Certification of University Student Fieldwork (Internship)' for alleviating the mismatch between the necessity in the industry and academic society regarding university students' fieldwork and the given human resource. Also, other measures such as 'Academic-Industrial Cooperative Project' were actively being promoted for the development of human resource in R&D areas.

Table 3-4 | Status of Domestic Universities Relating Textile and Their Number Students

Classification	Relating Division/Department (Entry Quota)	Number of Students	Year of Establishment of Textile Engineering Department	Remark
Konkuk University	Department of Textile Engineering	50	1968	-
Kyunghee University	Department of Polymer Science and Engineering	150	1969	-
Dankook University	Department of Engineering (500)	50	1968	Major selected during 2nd semester of sophomore year
Busan University	School of Applied Chemical Engineering (200)	40	1953	Major selected during sophomore year
Seoul National University	Department of Materials Science and Engineering (100)	30	1946	Major selected during junior year
Sungkyunkwan University	Department of Textile System Engineering	50	1968	-
Soongsil University	Department of Textile and Fashion Engineering	110	1967	Daytime/Nighttime
Yeungnam University	School of Textiles	150	1960	Major selected during sophomore year
Inha University	Division of Chemical Engineering (Department of Textile Engineering)	60	1970	Since 2001
Chonnam National University	School of Applied Chemical Engineering (190)	50	1952	Major selected during sophomore year
Jeonbuk University	Department of Textile Engineering	50	1962	-
Chungnam National University	School of Advanced Material Engineering (300)	60	1954	Major selected during sophomore year
Hanyang University	Division of Applied Chemical Engineering (215)	50	1958	Major selected during sophomore year
Kyungil University	Department of Chemical Engineering and Textile Fashion (300)	120	-	Major selected during sophomore year
Sangju National University	Department of Textile Engineering	70	-	-

Classification	Relating Division/Department (Entry Quota)	Number of Students	Year of Establishment of Textile Engineering Department	Remark
Miryang National University	Department of Textile Engineering	50	-	-
Kyungpook National University	Department of Textile Dyeing and Engineering	44	-	-
Chungwoon University	Department of Fashion Textile Engineering	40	-	-
Bucheon University	Textile Department	140	-	Daytime/Nighttime
Hyejeon College	Textile Department	120	-	Major selected during sophomore year
Total	-	1,374	-	Major selected during sophomore year

Source: Korea Federation of Textile Industries

4. Development Support Enterprise in the Foreign Market

4.1 Delegation of Foreign Market Development Team

In between 1970~80s as the dependency in exports in comparison to other competing countries started to intensify towards more economically developed countries, in order to diversify the export market development teams were pursued eagerly towards central and South America, ex-Soviet Union, Middle East etc. These were foreign markets controlled by both the people and the government. Back then, the dependency of the textile exports were 68% (1988) towards USA, Japan and EC while our competing nations were 64% (1987), 60% (1987) and 46%(1987) by China, Taiwan and Hong Kong respectively. Korea had a higher dependency in comparison with these countries.

Recently in order to promote the export of new items and high-end clothing, the central government (MKE, SMBA) and the local government have strengthened funding the participation of famous overseas exhibitions. MKE (Ministry of Knowledge Economy) have been pursuing the participation of textile exhibitions in major cities within developed countries such as New York through KOTRA (Korea Trade-Investment Promotion Agency) which is an affiliated organization. Also, for the local autonomous entity, in order to increase their exports they partially fund the participation of famous exhibitions promoting their local textile companies.

Table 3-5 | Outline of Foreign Exhibitions Funded by the Government

Category	Name of Exhibition	Supporting Institution
Korea Federation of Textile Industries (Ministry of Knowledge Economy (MKE) 4, Small and Medium Business Administration (SMBA) 1)	EAST CHINA FAIR (Shanghai, China) Winter ISPO (Munich Germany) Industrial Textile Exhibition in North America (Atlanta USA) Spring TEXWORLD (Paris France) Autumn TEXWORLD (Paris France)	SMBA MKE 〃 〃 〃
Korea Fashion Association (MKE4, SMBA2)	Spring FASHION SHANGHAI Autumn Tokyo International Fashion Far Spring prêt-à-porter (Paris France) Autumn prêt-à-porter (Paris France) Spring MAGIC SHOW (Las Vegas USA) Autumn MAGIC SHOW (Las Vegas USA)	SMBA 〃 MKE 〃 〃 〃
Korean Apparel Industry Association (MKE1, SMBA1)	SIMM (Madrid Spain) CHIC (Beijing China)	SMBA MKE
Korea Textile Trade Association (MKE2, SMBA2)	Tissue Premier (Lille France) Autumn FABRIC START (Munich Germany) Spring Moscow Textile/Light Industry exhibition Autumn Moscow Textile/Light Industry exhibition	SMBA 〃 MKE 〃
Daegu Kyungbuk Textile&Weaving Association	INTEX (India) INTERSTOFF RUSSIA	MKE 〃
Korea Fashion Textile Materials Association (MKE8, SMBA3)	CANTON TEXTILE (Guangzhou China) SICT (Shanghai China) JAPANTEX (Tokyo Japan) HEIMTEXTIL (Frankfurt Germany) Autumn MATERIAL WORLD (New York USA) Spring MAGIC SHOW (Las Vegas USA) Autumn MAGIC SHOW (Las Vegas USA) Spring INTERSTOFF ASIA (Hong Kong) Autumn INTERSTOFF ASIA (Hong Kong) Spring INTERTEXTILE (Beijing China) Autumn INTERTEXTILE (Shanghai China)	SMBA 〃 〃 MKE 〃 〃 〃 〃 〃 〃 〃

Source: SMBA, MKE, 「Analysis of the competitiveness in the textile industry and revolutionary strategy」, 2007.6

4.2 Hosting an International Textile Exhibition

Domestically, we host an international fashion show annually in order to attract foreign buyers and to promote our products. The most representative International Textile Material Exhibitions are PIS (Preview In Seoul) and PID (Preview In Daegu). It is an exhibition where global trends and sentimentalism is combined. These exhibitions are held twice a year, the spring exhibition is held in Kyungbuk, Daegu (PID) and the Autumn exhibition is in Seoul (PIS). Also, in order to improve our Seoul Collection image towards the international fashion shows, we allow them to benchmark Italian, French etc. collections also new collections are well supported. For the famous local designers, the Seoul Collection (supervised by Korean Fashion Association) is held during Seoul Fashion Week and it is held twice a year S/S and F/W.

Actually, government and local governments are currently supporting the participation of international exhibitions, however, a performance in obtaining contracts from domestic and international exhibitions are insignificant. Especially, the domestic fashion shows hosted are not events to attract foreign buyers but instead it has just become no different from entertainment events. Also, not only is there a lack of independent designs and brands but also it is because of lack of information about foreign buyers and foreign market. On the other hand, since the 2000s, with the expansion of Korean wave and export of high-end clothing to China and South East Asian countries, Korea textile industry is getting a good response from Chinese, Japanese and other Asian buyers through exhibitions such as PIS, PID which are mainly based on textile materials (yarns, fabrics etc.).

Table 3-6 | PIS (Preview In Seoul) Hosting Situation (year 2011)

Period	2011, August 31st (Wed) ~ 2011, September 2nd (Fri) (09:30~1800)
Location	COEX, 1st floor, B Hall
Exhibition Size	252 companies, 416 booths (foreign: countries 15, companies 83, booths 117) *2010: 231 companies 390 booths (foreign: countries 7, companies50, booths 65)
Event Layout	Exhibition, Seminar (12 times), Trade Show (4 times), Business Tour with byers (2 times)
Visitor&Order	Visitor: 9,037 persons (foreign 1,016, Korean 8,021) Order: 500 million USD
Host&Sponsor	Host: Korea Federation of Textile industries (KOFOTI), Sponsor: MKE, Daegu, KOTRA

Source: PIS secretariat

5. International Trade Co-operation

5.1 Responding to Import Restriction of Foreign Countries

Along with the expansion of exports on Korean textiles, antidumping law etc and other import regulations are being intensified. There were 27 cases in between 1999~2005 (January to June) regarding Korean textiles on foreign imports. Such foreign import regulation actions were categorized under items, chemical fibers had 17 cases from this actions from 10 different countries, apart from this fabric (5 cases), special yarn(1 case) etc.

If there is any unfair import regulation being reported to the government (MKE), there will be a formal complaint by the government. This is to protect local businesses from getting treated unfairly and becoming a victim. Hence when such problem occurs, attempts on solving the matter early is in effect. Also the Ministry of Foreign Affairs and Trade offers diplomatic and government action plans through diplomatic offices trade law support team, directing local areas. Also while dealing with foreign import regulations; taking actions between two countries, the costs for hiring lawyers and other specialists will be partly funded by the government (MKE and Ministry of Foreign Affairs).

5.2 Supporting of the Trade Relief System

Affiliated with the MKE, Trade Committee (established on July 1987) is in charge of deciding and recommending relief systems such as Safeguard actions on anti dumping tax, countervailing duties. Also intrusion of intellectual property rights, violation of stating the country of origin will be investigated and remedial actions (fines, penalty etc) will be taken for unfair trade act. Recently the Trade Committee has been more alert through the strengthening patent offensive and increased imports in fake merchandise. This concerned the local businesses resulting to a more efficient surveillance and exposure towards unfair imports on top of that they have created a complaint center where they receive reports regarding unfair trade acts and other establishments which breach the agreement.

As for the textile industry (clothing), Korean Apparel Industry Association has been appointed as the complaint center for unfair trade act therefore they are monitoring violation of the trademark rights and intellectual property rights and violation of stating a different country of origin. Recently they terminated the imposition of antidumping taxes (2009) on foreign polyester filament fiber which were from Taiwan, China and Malaysia. And for PET F (POY) it is planned to be terminated on January 20th, 2012.

Trade relief steps such as the import control measures on Korean textiles in the foreign market and anti-dumping duty imposed on foreign textiles in our domestic market is very important for the expansion of exports and to protect our domestic market. Especially the actions taken on import controls, for instance, the window is connected together with the Ministry of Knowledge Economy and the Ministry of Foreign Affairs; therefore, when problem occurs, actions cannot be taken swiftly. Therefore, we need to come up

with countermeasures by forming a TF team which consists of the business, Ministry of Knowledge Economy and Ministry of Foreign Affairs. Also as we predict the expansion of imports on textiles from China and other developing nations in Asia, in case of unfair imports, we need trade remedy policies which can be vitalized and if lawsuits regarding anti-dumping arises, we need to get rid of the public hearing hence simplifying the operation procedures.

Table 3-7 | Anti-Dumping Taxes Imposed on Foreign Textiles (3 Countries, 2 Cases)

Category	Related Countries	Actions Taken	
		Custom Tariff (%)	Period Imposed
PET F (Drawing Textured Yarn)	Taiwan, China, Malaysia	2.6.~8.69	'06.10.20~'09.10.20 (3years)
PET F (POY)	Taiwan, China	2.97~6.26	'09.1.21~'12.1.20 (3years)

Source: Trade Committee

Chapter 4

Assessment and Implication

Assessment and Implication

1. Assessment

1.1 Results and Tasks on Import Substituting Textile Industries

During the post-war recovery industrialization, Korean textile industry was rebuilt with the help of foreign aid creating the most efficient industry. Towards the end of 1950s import substitutions and self-sufficient base has been created. Back then we possessed a significant amount of production facilities and skilled workers, hence for the cotton spinning industry with the help of the government's foreign currency loan and the foreign aid from UNKRA and UNCURK, new facilities were rebuilt and expanded helping the cotton yarns and fabrics to be self-sufficient and even ready for exports.

It can be assessed that the success was mainly created by the government's support through foreign currency loans spent on actively reconstructing facilities, on top of that foreign import limitations policies were the causes. Back then, the textile industry was able to produce enough raw cotton, wool and other natural fibers to be self-sufficient to substitute imports, on top of that they were even able to export these fibers. However, due to the government's eagerness in the growth of the textile industry, after the mid-1950s the textile productions surpassed the local demands, which created a phenomenon of over production which necessitates restructuring in future.

Back then, the consumer industry and textiles etc. have intensified the industry structure to be unbalanced, caused by rapid expansion. It cause heavy reliance on imports for natural raw materials and facilities. This was one of the causes worsening our international balance of payments. Also in order to protect the local industries, import limitation actions have been taken, which led to distribution of natural raw materials to rely heavily on import substitutions. This created a side effect which created a decrease in exports.

Results and Tasks

○ Results

- Cotton, Wool and natural fibers etc. have reached the self-sufficient stage and able to substitute imports
- Some cotton yarns and fabrics are ready for exports

○ Tasks

- The need of reconstruction due to over production and investments on cotton spinning etc.
- Worsening of trade balance due to the import of fiber raw materials and facilities
- Production of chemical fiber s were poor

1.2 The Results and Tasks on the Growth of Export based Textile Industry

During the 1960~70s, Korea's sharp economical growth can be analyzed as the industry was globalized through exports and advancements in the industry's structure. It means that the development in Korea's industry got a big boost from the textile and light industry products with the increase in exports for these products. This helped expand foreign trade markets which played a huge role. Low interest rates played a role in helping the expansion of foreign markets. During the 1970s Korea's textile industry, with the increase in exports for apparel industries and being able to substitute import of polyester and other synthetic fiber, the export ratio increased hence creating our country's economy into a Cash Cow. Out of the total exports, textiles covered 38.2% in 1967, 42.3% in 1971, and 29.9% in 1979. For clothing products, the exports reached approximately 5million USD in 1963, 214 million USD in 1970, 2.85 billion USD in 1979; in between 1970~79 there was an annual increase of 33.3%.

Textile industry was able to grow to become an export based industry, because of cheap and sufficient labor. During this process, insufficient textile materials (chemical fibers and fabrics) were succeeded through the bottom-top method. Especially, in the early 1960s with the implementation of chemical fiber technology such as nylon from Japan helped our country to start producing our own production line for the chemical fibers. Japan was more developed in the chemical fiber sector. Since then, with the completion of the petrochemistry complex in Ulsan (1972) and Yeocheon (1979), the local production was made possible. Also during the transition to international division of labor, due to the high costs in Japanese labors and while Korean laborers were cheap, this helped Korea expand the clothing exports to Japan in a large scale. The Japanese imports from Korea was 1.3million USD in 1967

which increased to 120 million USD in 1970, and 600 million USD in 1979. In between 1967~'79 the annual growth rate was at 67.2%. Also while constructing infra to increase exports, the creation of Guro apparel industry and invitation of foreign business (usually overseas Korean companies) aided the expansion of the exports. Together we are able to assess that the expansion of exports was highly influenced by prioritizing the imports of raw materials for exporting companies and financial support for exports etc. and many other financial benefits for exporting companies.

Also, it can be assessed that the first restructuring policy (temporary registration on textile manufacturing facilities: 1967~1979) to reduce the overproduction in the textile industry (textile manufacturing), registration of facilities and entry of new products were banned which played a big role in the reform. Back then, with the increase in the production of chemical fibers, the demand for cotton products both international and domestic shrank sharply therefore resulting in an overproduction. However after the 1979 'Modernization of the textile industry act' (1979~'86.6), the permit to install new facilities etc. eased the regulations on the facilities and later on weaving, dying facilities etc. were over produced appointing it to be the rationalization of industry.

On the other hand, during the late 1970s due to the high-ranking government official's announcement, banks and other financial agency were not allowed to loan money to the textile companies, and focusing chemical fibers and cotton spinning towards large companies. These diversified the industry and this created a phenomenon which was limited, creating trend of specialization in the textile industries. Especially, the major companies diversification on textile materials such as chemical fiber, cotton spinning, etc. was reduced through the 1998 IMF foreign exchange crisis, part of the industry was sold, and merged hence another restructure was formed.

On October 1977 the Minister of Commerce and Industry Jang Yea Jun has announced 'Textile is a sun-set industry therefore it need to rush occupation change and in the future expansion of textile facilities need to be suppressed since it is very limiting and instead I am planning to change the local industry structure to machine, electronic based heavy and chemical industry.' this was after his inspection on European areas.

Results and Tasks

○ Results

- Increase the share of textile exports out of the total exports (1967 38.2%→1971 42.3%)
- Creation of chemical fiber based production, substituting imports and expanding exports
- Creation of balanced production system with lower stream/middle stream/upper stream

○ Tasks

- As the growth was based on exports, the increase and decrease in demand from developed countries have caused overproduction

* Need for a restructure was crucial

- Partial imports on textile materials and facilities worsened the trade balance
- Limitations in the growth of quality due to the subcontract production of the developed countries

· Absence in independent designs and brands due to exports of OEM products caused by MFA

1.3 Results and Tasks on the Rationalization of the Industry and the Competitiveness in the Textile Industry

Entering the 1980s due to the 2nd oil crisis (1979), the world economic recession and decrease in demands, and developing country's catch-up showed that the foreign conditions were in a poor state. Therefore heavy and chemical industries and the textile industries needed restructuring through the rationalization of the industry.

The government in 1970s was eagerly pursuing the growth of heavy and chemical industries. However, due to the 2nd oil crisis in 1979, the induction of foreign capital was hit with a high interest rate and with the world economic recession, installation of generators, automobiles, machine industry etc. faced a fall in production and excess capacity. Especially, in the heavy and chemical industries sector, there were lots of companies trying to benefit from the government's favors, hence creating a large competition in the investments leading to excessive investments.

Also in the textile industry during 1979, 'Modernization of the textile industry law' large scales of new and extensions for weaving and dying facilities were allowed and also facilities were supported. However as we entered 1980s, with the world economic recession, there was a fall in foreign demands etc., this caused a fall in the production rate therefore experiencing a structural recession. Back then the textile industry was facing a hard phase

as the government was more eager to pursue the growth of heavy and chemical industries. This resulted a fall in investments and employing skilled workers due to the increase in labor costs. Along with this the world economy was in turmoil, resulting to this, in between 1982 and 1985, exports for textiles recorded a negative.

Ever since 1986, through the 'Industrial Development Law' they have restructured by shutting down under achieving companies and appointing industrial rationalizations to textile industries and heavy and chemical industries which were suffering from over production due to low demands and investment adjustments. The result to this action was an improvement in the productivity and development on new products for the weaving and dyeing industries. Also with the help of designated industrial rationalization worn-out facilities were scrap and build. However, there were still some problems with the investments and excessive facilities due to insufficient follow-up measures. Especially during the rationalization of the weaving industries, the shuttle looms were switched to WJL (Water Jet Loom=shuttleless loom) however, during the process the worn-out weaving machines were not disposed properly leading to an oversupply.

Interview with the expert

- Please tell us about the operation and results through MFA.

In comparison with other competing countries, Korea obtained a lot of textile quarters, and this reflected positively when it came to the exports in textiles for our country. This is because, on January 1st 2005, the textile quarters were abolished (textile trade liberalization). And ever since then, the Chinese started taking over our markets. This clearly shows the quarters protected our exports.

However, even though we may have benefited by getting protection in our export quantities, we might have neglected on technology developments and marketing etc. Even for the United States, they were preparing for the textile trade liberalization, however after the abolishment of the quarters they expected inevitable issues due to textile industry policies. Through the statistics produced by the Ministry of Labor of US, a month after the textile quarters were abolished in 2005, it is known that 12,200 workers were laid off from the textile clothing industry.

Especially, right before the abolishment of the textile quarters, Chinese clothing in the US market held 15% of the market share,; on the other hand, the US expected this number to increase up to 70% after the trade liberalization however it did not happen as they were forecasting. For our country's textile industry after the textile trade liberalization, our textiles exporting businesses were directly hit as the market structure was leaning towards basic items.

Usually the textile exports were mainly based on SMEs (small&medium enterprises). However, the textile quarters structured it to lean towards around 10 major companies and 40% in the enterprise of middle standing therefore resulting to

the SMEs becoming a subcontractor. Also it was an era where major companies had the image where they would receive Quarter charge and banking profits by selling quarters.

Back then, as Korea's textile export business was still guaranteed up to a certain level, for the employees to be appreciated for their work in SMEs, obtaining textile quarters were better than to work overseas.

Truthfully, this association received lots of criticism. Since then, MKE has improved the operation methods hence improving many other problems however there were far too many problems. The most representative case study was when the MKE officer had a hard time as people posted civil complaints through the 'Blue House' web site.

〈Introduction of Interviewer〉

Lee Jung Ki, Executive Director, Korea Textile Trade Association

Results and Tasks

○ Results

- Contributing to the increase in productivity through rationalization for weaving and dyeing sectors by replacing worn-out machines to automated machines
- Becoming the 1st in 1987 after beating Japan for the production of synthetic fabrics

○ Tasks

- The subsidy policy was impossible through the 'Industrial development law' which combined the traditional individual industry support measures and therefore it did not match the textile industry's characteristics.
- Excessive production was induced during the rationalization of clothing industry as automated machines were installed (WJL etc.) and with the delay in the disposal of old machines.
- Intensified excessive competition between Korea companies in the world market.

1.4 Results and Tasks on the Development of Knowledge-Intensive Textile Industry

During the 1970s~80s the Korean textile industry pursued a restructure in a various perspective in order to deal with the change in industrial environment. However, Korea textile industry was not able to deal with it effectively as lacked competition factors such as technical skills in comparison to developed countries and also inefficiency in industrial structure still existed.

Hence, excessive production was constantly being repeated as it was leaning more towards the expansion of production facilities, fulfilling quantity. In order to resolve this issue, old machines needed to be replaced. Hence restructuring was needed for the funding of this process. Also as the labor unions strengthened towards the end of the 1980s, there was a rapid increase in wages along with high cost structure of the Korean economy leaving domestic companies no choice but to go overseas.

In the highly competitive global market, such labor intensive industries were forced to compete. Therefore the government started to support the development of global competitiveness by making it the priority to develop new technology. The amount of fund supported by the government between 1988~192 for the textile industry's technology development business was a total of 19.437 billion KRW (142 projects). We can determine that as the companies actively developing new technology has made a huge impact on the transition to technological and knowledge intensive industry. Back then with the help of the government, the technological investments have increase largely in size however companies were aiming for short term results. Also even for the government support, instead of funding the mid-long term foundation and technological development, they were also focusing on short term hence making it difficult to close a technology gap with developed countries.

Among the government's active technological development policies, in 1981, the government imposed a policy where researchers will be exempt from their mandatory military service and it is believed that this has helped obtain lots of valuable researchers within this industry. The researchers military exemption policy would not require the outstanding researchers to serve their country however they need to work at least for 5 years at an research institute (affiliated business research centers included), also from the companies perspective, they were able to employee skillful researchers for a certain amount of period (3 years) at low cost.

Results and Tasks

○ Results

- During the 3 Low Boom (1986~1988) with a single item, textile exports reaches 10 billion USD (1987)
- Boost a mind of technological development as active supports are provided to the industry's technological developments

○ Tasks

- Transition to an improvement in quality by product differentiation higher added value
- Strengthening the design brand, marketing for ODM, OBM exports
- Strengthening of the Korea clothing manufacturing foundation

1.5 Results and Tasks of Development of High-Tech Textile Industry

The Korean textile industry's financial strength improved greatly when the government led the execution of disorganization of businesses that lacked profit or reorganization of companies to downsize business scope during the IMF foreign exchange crisis in 1998. In 1990's, the governments active support allowed technological development of companies as well as technological integration due to the acquisition of core technologies in companies' main business fields.

Especially, patent application in the field of high-tech textile industry such as smart fiber and high-performance fiber increased. Such increase is evaluated to have contributed greatly in acquiring technological competitiveness in the field of industrial textile including carbon fiber and aramid fiber areas. When observing the growth stages, high-performance fiber fields including carbon fiber and aramid fiber are in the period of introduction or growth and general industrial textile are in the stages of growth and market expansion due to increase of demand in areas such as automotive interior and parts, industrial filter, as well as construction and engineering.

The field of Korea textile materials expanded in its external size due to increase of demand of Korean apparel companies that have entered developing countries such as China and Vietnam as well as the provision of development aid of parts and material industry by the government. However, there are still insufficiencies in terms of high added value and product differentiation based on development of high-performance technology when compared to other developed countries such as Japan and Italy. Also, the fashion clothing industry was an exporting industry during 1970's to 1980's and continued growing. However, it transferred to supply predominantly for Korea's domestic demand

after the 1990's and relied on most of low-cost apparels to imports due to factors such as rise of labor costs. On the other hand, Korea apparels are also evaluated to have acquired greater recognition due to the entry in Chinese market using the Korean Wave as well as M&A with global brands.

Results and Tasks

○ Results

- Acquisition of core technology in industrial textile field such as high-tech textile and expansion of demand

· Textile Material: World's number 1 and 2 in fields of tire cord and spandex, number 1 in superfine (sea-island type filament), and first to develop Nano fiber by Nano Technics

- Entry to Chinese market using Korean Wave and partial progress for brand globalization

○ Tasks

- Requires development of new textile materials and functional dyeing technologies to achieve product differentiation and high-added value

- Revitalization of field of industrial textile by introducing high-technology such as IT, BT, and NT

- Promotion of brand globalization based on self-design and self-marketing

2. Implications

2.1 Role and Development of Textile Industry for Initial Industrialization

Korea's textile industry realized economy of scale based during the early 1960's on small items and mass production using its abundant extra-low labor cost. In other words, it was able to acquire price competitiveness by achieving mass production through large-scaled investment on facilities and equipment based on selection and concentration strategy. Moreover, it developed its industrial capacity through price and quality competition aiming developed markets including the United States, Japan, and Europe because the domestic market was too small.

In other words, in the case of apparel, Korea enhanced its internal capacity and constructed an industrial environment by expanding exports. This was possible through OEM (Original Equipment Manufacturing) upon obtainment of fiber quota (MFA) in developed markets such as the US and Europe as well as engaging in exports to Japan. Moreover, in the case of textile material (chemical fiber) Korea sought for phased development including global entry through capacity inherence and construction of industrial environment based on the introduction of advanced technology from Japan. This led to the achievement of becoming world's number 1 and 2 in fields of partial products such as tire cord, spandex,

and superfine (sea-island type filament). The motivation behind such development in the of chemical fiber industry in the 1970's were factors such as domestication of parts and material industries as well as expansion of social infrastructure including petrochemical complex (raw synthetic fiber materials).

In particular, the development of domestic talents such as engineers based on establishment of textile engineering departments in various universities during the period from 1960's to 1970's is evaluated to have greatly contributed in the improvement of capacity of textile technology including introduction and inherence of advanced technology. On the other hand, the revitalization of non-apparel textile materials area was delayed due to the expansion of demand focused on apparel-related textile materials following the initial apparel-centered export industrialization. Currently, the percentage of non-apparel textile materials such as industrial textile for Korea is 30% whereas in other developed countries is 60 to 70%. In addition, the apparel field was delayed from brand globalization due to lack of self-design and self-marketing because of the major OEM exports. This is due to fiber quota focused on developed countries. Recently, ODM and OBM exports is increasing due to independent design and marketing and brand globalization is partially being carried out through M&A as well as active entry of national brand to Chinese market using the Korean Wave.

2.2 Results and Tasks of Policies for Developing Korea Textile Industry

2.2.1 1950's to 1960's, Transfer of 'Development→Mediation' Centered Industrial Policy

The development policy of Korean textile industry progressed from import substitution in 1950's and export industry development in 1960's to regulation policies due to overheated competition. The government's initial restructuration is evaluated to have had effect by restraining excess textile production by promoting scrap and build of worn-out facilities and facility adjustment for the cotton spinning industry following decrease of cotton goods due to production of chemical fibers. The temporary registration on textile manufacturing facilities (1967 to 1979) of the time was focused on restructuration including restriction of new entry as well as approval and registration of facility installation which was aimed to control excess production of textile on 6 industries such as cotton spinning industry and weaving industries.

2.2.2 Late 1970's, Transfer to 'Quantitative→Qualitative' Industrial Policy

In the 1970's, industrial policy transferred from quantity-focused to quality-focused through promotion of modernization of textile industry, which occurred in accordance to increasing competition in the global market due to enforcement of import regulation of developed countries as well as development of textile industries in developing countries. In 1979, Textile Industry Modernization Promotion Law (1979 to 1986) paved way for projects such as technological development, human resource development, and commerce activity support, in addition to loaning for scrap and build of worn-out facilities aimed for the promotion of modernization of textile industry. Moreover, Korea Federation of Textile Industries (KOFOTI) was established to operate and manage execution plans for the modernization of textile industry.

On the other hand, the 2nd Restructure (1979 to 1986) based on Textile Industry Modernization Promotion Law greatly relieved new installation of facilities restrained by the 1st Restructure and later resulted in excess production following structural depression in the weaving industry.

2.2.3 Mid 1980's, Transfer of Focus of Industrial Policy as Functional Market-leading Support and Restore through Designation of Rationalization Businesses

In the 1980's, the excess and repetitive investment and insolvency of heavy and chemical industry that was developed by the government's selective intervention resulted in the reconsideration of the government's support policy for specific industries as well as acting as a momentum of seeking for rationalization of industry-supporting policy. The Industry Development Law (1986) (amended in 1999) was enacted in 1986 which focused on functional support that follows the principle of market economy and civil autonomy. This was a change from the original method of supporting specified industries (7 industries) such as the Textile Industry Modernization Promotion Law.

Especially, the fabric manufacturing businesses that have been assigned as rationalization industry of structural depress based on Industry Development Law (1986). In the case of these businesses, the worn-out facilities and equipment have not been discarded in the process of exchanging with automated equipment (water jet loom). Also, the number of high-producing automated equipment (WJL) increased. Such events led to great increase of production and failed in relieving excess production through abolishment of worn-out facilities. Moreover, the promotion of industry based technology development project, which was based on the industry development fund, improved the technical and qualitative level of textile goods and contributed greatly in strengthening competitiveness. However, it was insufficient to close the technical gap with developed countries, because it was focused on short-term technology development rather than development of mid/long-term oriented base/original textile technology.

2.2.4 2000, Focus on Developing Industrial Textile Industry and Skill Intensive Fashion Industry Including High-Tech Textile to Motivate New Growth Engine

Conventionally, the government promoted industrial policy to enhance competitiveness through restructuration. However, profit decreased due to fierce global competition in the 2000's. Thus, it is actively seeking for a growth engine of the textile industry such as high-tech textile by merging and mixing high technologies including IT, BT, and NT. To achieve such progress, the government is promoting 'New Textile Strategic Technology Development Project' for super fiber, Nano fiber, and smart fiber so that it may acquire core high-tech textile technology which will allow the promotion of establishment of industrial textile production complexes as well as future profit.

In terms of the industry, there is expection for a great expansion of the industrial textile field in the future, due to active investment for commercialization following the successful development of high-tech textile including carbon fiber and aramid fiber. Toray, a Japan-based world-class carbon fiber producing company, is in the process of constructing a carbon fiber factory in Korea. Also, Hyosung, TK Chemical, Woongjin Chemical and other Korea chemical fiber companies are expanding their production of high-tech textile such as carbon fiber, high density polyethylene fiber, and aramid fiber. Recently, the trend of Korea's patent application in the field of high-performance high-tech textile field and smart fiber is increasing due to increase of demand of high-performance industrial textile and medical fiber. This is because of sophistication of the industry as well as change in lifestyle.

Moreover, the government is actively seeking to develop skill-intensive fashion industry focused on 5 industries including apparel, textile, shoes, jewelry, and glasses to realize creation of jobs as well as high added value and differentiation of the fashion clothing industry. Specific promotion strategies include creation of global brand, enhancement of technological competitiveness among fashion streams, and re-establishment of high-end fashion production.

2.3 Cooperation between Developing Countries by Sharing the Experience of Textile Industry Development

2.3.1 Capital Cooperation

Korea should come up with measures to enhance exports to developed countries such as EU, US etc. in the clothing sector with the help of increased foreign direct investment (outbound) on the developing countries which have inexpensive and abundant labor force. Especially, African nations have preferential trade agreements for products of primary industries with former suzerain states like France, the Great Britain, and other European states. Tariff for their products are exempted by these agreements. They also relish exemption of tariff and quota for exports towards the United States by AGOA (African Growth and Opportunity Act, came to effect in May 18th, 2000)

In the mid-long term, these countries should enter fiber and fabric industry including chemical fiber in order to substitute imports of fiber and fabric by manufacturing them on their own and enhance export.

Motivator of Growth of Korean Textile Industries

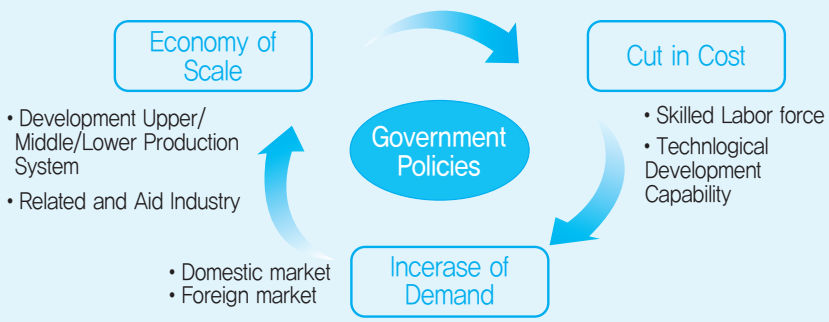
□ Starting with the export of clothing industry with the possibility of prime cost revolution, accumulation of experience and increase in size of production and business territory

- Based on cheap personnel expenses, security of advantage over price competitiveness by optimizing price compared to quality, matching the demand of market segment
- Self sufficiency of textile material field (chemical fiber) led to cut in price (prime cost of production)→increase in demand (demand of exports)→development of virtuous cycle among economy of scale (mass production)
- Development of balanced production system between streams from the lower stream to middle stream to upper stream
- Increase in shares in market segment through expansion of prime cost revolution through high value products such as small line (mass production) →batch production (small quantity), labor intensive (low cost regular products)→technology intensive (high-tech special products)

□ Shift from early period 'promotion→modification' oriented industrial policies to 'quantity→quality' aimed industrial policies

- Related to modification of industrial structure such as over investment following structural recession. Creation of direct effect through promotion of aided industry and improvement of technical developments through R&D investment by the government

Price revolution→Increase in demand→Virtuous cycle system among economy of scale



Interview with the expert

□ Please tell us about the outcome of textile industry policy as the policy maker and the executor

We have established policies to foster textile industry based on the industry environment at that time. Temporary Registration for Textile Manufacturing Facilities in 1967 could be a good example. Government has set the limit for production capacity for business sectors each year. I believe it has largely contributed on the stable production by resolving overheated competition and improving international competitiveness with the preferential approval on the export-oriented companies and the scrap and build of worn-out facilities.

Plus, Modernization and Promotion of Textile Industry Act in 1979 was enacted to foster the textile industry as the export-oriented industry. It had set special funds for the modernization of textile industry co-raised by government and individuals to start the project to develop the new technology, train people, implement high-end strategy to improve quality, and to develop design fashion. However, companies were not willing to participate since these projects were mainly operated by the government, causing the increased investment on factories and facilities due to the deregulation on the facility. It made companies unavailable to actively deal with changes of world business.

Also in 1986, aiming for privately led industrial policy, the government legislated 'Industrial Development Law' that integrated laws such as Textile Industry Modernization Promotion Law and supported output control and funding for scrap and build of worn-out facilities by designating rationalization businesses such as weaving and dyeing business that faced loss of competition and oversupply to prevent over-competition between corporations and deterioration of pay ability.

Especially, the 3-sector Milano Project participated by the government, local government, and private enterprises propelled businesses to shift from mass production policies to small quantity batch production policies to strengthen the competitiveness of Daegu Chemical Textile Complex.

The first phase, infrastructure construction project, did not receive much support but the second phase contributed to technical development of small and medium businesses and increase in marketing abilities.

Phase 1 ('99~'03): expansion of related textile institute's function for establishing technical infrastructure and construction of fashion apparel valley for increasing demand of textiles

* Main infrastructure: Prototype Product Development Center, Dye Design Commercialization Center, Knitwear Prototype Manufacturing Factory, Fashion Design Development Center

Phase 2 ('04~'08): Support for technical development of small and medium businesses to increase manufacturing power and marking power through the infrastructure developed in the first phase

〈Introduction of Interviewer〉

Bae Seung-Jin, Korea Federation of textile industries (KOFOTI) Director

2.3.2 Technical Cooperation

Developing countries are lack of technologies and know-hows in their textile industries required to guarantee the quality of their products, unable to manufacture good products. These countries are especially weak in fiber and fabric sector, both of which are components of value chain that need technologies and experiences for better products. They highly rely on the imported raw material (yarns, fabrics) to manufacture average and high quality products.

The 'Special Task Force for Technology Development of Textile Industry' must be formed to provide technical consult to developing country's textile businesses, helping to improve technologies and product quality. This special task force should be formed with both private and government personnel and establish its main office at Korea Federation of Textile Industries (KOFOTI). As mid-long term measures, official development assistance (ODA) fund from Korean government should be provided to fund the establishment of vocational training facilities for textile industry in order to support training of technical and skilled personnel. Korea will dispatch faculty members and provide know-hows needed to operate vocational training facilities for textile industry.

2.3.3 Measures to Expand Exports

General trading companies such as Daewoo International and Samsung C&T had played a major role in enhancing export for Korean textile industry. Fostering such companies could be the way to increase export of developing countries. Korean general trading companies would put their effort to enhance the market at the beginning stage while using this opportunity to foster local general trading companies by providing know-hows.

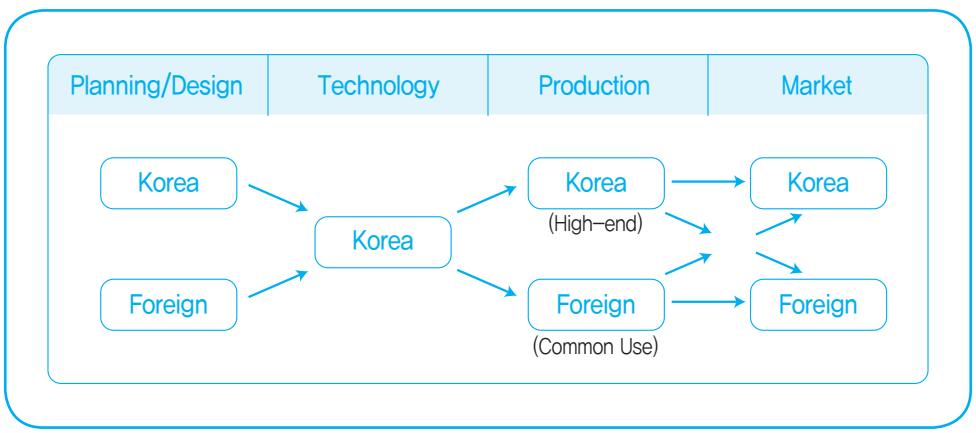
Plus, with the strategic alliance between developing country's sewing firms and Korean companies in textile raw material such as cotton spinning, chemical fiber, and fabric sectors, they seek for export opportunities in other countries. They should group sewing businesses, like building apartment type sawing factories near the large cities, to support sewing business complexes and increases in exports. Korea Industrial Complex Corporation provides its grouping know-hows and construction of apartment type sawing factories.

2.4 Implementation of Efficient Industry Policy for Korea Textile Industry and Its Future

2.4.1 Initiation of Industry structure Advancement during the Transition of International Division of Labor through the Construction of Global Net-work

Korea textile industry should equip itself with more global competitiveness through global network to lower the cost by improving response capability for global clients, steadily obtaining market, and conducting joint research and development project. It means the construction of global network from obtaining supply line for textile raw material to manufacturing, logistics, and sales of finished goods through strategic alliances like M&A and entry of foreign market. As it look over the global motivator of Korea textile industry, influences of government motivator has decreased dramatically due to the lowered tariff and non-tariff barriers through liberalization of textile trading and Free Trade Agreement. However, competition motivator and market motivator are both increasing though the appearance of global competitors, global clients, logistics channel, and the globalization of companies.

Figure 4-1 | Diagram of Global Net-work of Textile Industry



Source: Korea Institute for Industrial Economics&Trade

2.4.2 Construction of Production System for Differentiated and High-Value Added Products by Strengthening Cooperation between stages in Value Chain

The quality of fiber and fabric should be improved to strengthen the competitiveness of Korean products against China and other participants in the market of advanced economies. Korea textile industry also need differentiated, high-value added clothing

with independent design and brand marketing. This includes the expansion of ODM (Original Design Manufacturing), OBM (Original Brand Manufacturing) export and the development of high-tech textile materials such as chemical fiber with functions of natural fiber, highly functional or highly sensible fibers, Cool&Warm fibers, and high power or highly functional nylon.

The business should be expanded with chemical fibers, fabrics, and apparel producers through the expansion of government-driven, inter-stream cooperative business to achieve this goal. Textile material businesses should put a considerable effort for the out of commoditization, using selection and concentration strategy, cross-producing products between businesses, and thus obtaining the economy of scale.

2.4.3 Fostering the Business Producing Industrial Textile Like High strengthen or Highly Elastic Super Fiber as Future Growth Engine Industry

Korea textile industry should invest more to develop core technology for high strengthen or highly elastic super fiber such as carbon fiber, high molecular polyethylene fiber, and aramid fiber and to commercialize them. While Korea is still at the development or initial investment stage on carbon fiber, high molecular polyethylene fiber, and aramid fiber, China has already constructed mass production system for those fibers.

Korea textile industry should engage in strategic alliances and M&A with foreign firms in developed countries to gain and commercialize the core technology for industrial textile like super fiber. Korea textile industry is also recommended to enter markets of China and other developing nations.

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i Sectoral Human Resource Development Council (foundation based on Clause 2, Article 12 of Industrial Development Law (1999)) is consisted of industrial organizations, flagship companies, education and training institutions, and research institutions for each industry. It is a civil human resource development council established to induce and promote human resource plans that meet with the demand of corresponding industries through continuous consultation among supplier and demanding organizations within developing industries.

ii During the textile manufacturers under industrial rationalization ('86.7~'89.6), 49,000 old machines were disposed and 31,000 new (WJL etc) automated machines were installed. However around 88,000 (49% of the total facilities) old machines were still kept 〈Ministry of Trade and Industry, Korea Federation of Textile Industries「7year plan to rescue/develop the textile industry」(1989.9)〉

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