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Cost Structure of Major Thai Industries

Final Report

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BACKGROUND, OBJECTIVES AND SCOPE

This report is based on research carried out on seven industry sectors during August 1999 and mid 2000. It included a series of enterprise reviews (2 companies per sector) by specialist international industry consultants, a questionnaire survey of a wide sample of enterprises (449 with 126 useable responses, mainly face-to-face), and interviews with industry associations and government representatives. The results were presented at a consultative Seminar held in August 2000 primarily to representatives of Thai industry and suggestions received have been taken into account in the final analysis.

The objective is to identify the key factors affecting cost structure and competitiveness, and propose policy measures to improve competitiveness. Factors considered include management, quality, technology, human resource, financial, market, supply chain and input cost factors.

THE SELECTED SECTORS AND COMPANY CASE STUDIES

The industry sectors were selected from the 13 priority sectors of the National Industry Restructuring Plan. Within each industry, two sub-sectors were selected for the detailed enterprise review and survey.

Table S.1. Selected Industries and Sectors using 1996 data

Industry and selected sample sector	No of firms	Employment in the industry	% small firms (<50 employees)	Value added (Bt million)	Output as % of Industry GDP (%)	% Share of exports
Food Processing (Ready-to-Eat meals; Dairy Products[1])	3,140	352,201	75.99	113,563	10.49	46
Electronic appliances (Computer Hard Drives and Micromotors; Automated Office Equipment)	316	592,019	26.90	76,001	7.36	7
Textiles and Garments (Knitwear; Garments (n.e.)	3,381	401,168	64.74	70,134	5.70	13
Automotive parts (Pressed Metal Parts (filters); Pressed Metal Parts (n.e.))	1,095	107,965	73.33	139,653	10.14	N/A
Plastic products (Household Goods; Specialty and Engineering plastic products)	1,272	113,596	61.95	27,039	2.03	0.7
Rubber products (Rubber Gloves; Non-passenger Tyres)	540	79,374	51.11	36,043	3.04	10
Leather products Footwear; Leather Furniture	832	89,531	68.99	15,752	1.05	2

Source : Report of the 1997 Industrial Census Whole Kingdom, National Statistical Office, Published in Mid-1999.
Notes: Dairy products was incorporated and one in-depth study visit of a milk manufacturer was undertaken. No survey was undertaken of firms in this sector.

Some of the key reasons for selection of the sectors are:

- Processed food: Thailand's most successful export industry.
  - ~ Ready-to-eat meals: rapidly growing world segment of the food industry, with the possibility of providing higher value-added for the Thai food sector.
  - ~ Dairy products: there is excess supply of fresh milk, with at the same time imports of dried milk. There are a limited number of dairy products firms.
- Electrical and electronic appliances: a major area of foreign investment, with potential for diversification into other growing product sectors in information technology and telecom equipment

  - Hard disk drives (HDD) and parts: the main export of electronic goods, and growing, but still with mainly imported materials and components.

  - Office automation equipment (fax machines, photocopiers etc): important exports, with several major foreign-owned companies

- Garments (knitwear; other garments): labour intensive, with large number of firms and establishments, but declining exports due to decreasing labour cost advantage. Links with textile production and other sectors, but dependent on imported fibres.

- Pressed metal automotive components: autoparts is one of the biggest industries in terms of value-added, with strong linkages. Filters and other pressed metal parts have a large after-market as well as OEM customers, with growth potential, and the manufacturing technology is simple.

- Plastic products (household goods; specialty and engineering products): large industry with growing demand, moving into higher value specialty and engineering products which is a feeder industry to many other sectors including electrical appliances and automotive parts.

- Rubber goods: based on a major raw material resource; potential for moving into higher value-added goods:

  - latex gloves: raw material advantages, growing world market, and new technologies

  - non-passenger tyres: large user of natural rubber (other rubber goods use mainly synthetic rubber). Brand names are also less important for non-passenger tyres.

- Leather goods: major exporter, with potential for increasing supply of treated hides. Footwear is subject to promotion campaigns; leather upholstery and furniture can benefit from Thai capabilities in wooden furniture

EXPORT PERFORMANCE, COMPETITORS AND COMPETITIVENESS GAP

As indicated by value of exports into the three main trading blocs – NAFTA, EU and Japan, Thailand's main competitors in the seven selected industries are shown in table S.2. Thailand's performance is very creditable: it is in the world's top ten exporters in each of these sectors and most competitors are much larger and more industrialised nations.

Table S.2: Thailand's main export competitors
(Value of exports to NAFTA, EU and Japan, US$ million)

Food		Electronics		Knitwear	
Exporter	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**
United States	6,112	United States	22,572	China	8,376
Canada	4,319	Japan	12,275	Mexico	3,334
Thailand	3,585	China	4,699	Hong Kong	3,256
China	2,968	Mexico	4,013	Korean Republic	2,058
Korean Republic	1,430	Canada	2,449	United States	1,929
Indonesia	1,303	Taiwan	1,360	Bangladesh	1,860
Chile	1,179	Korean Republic	1,247	Taiwan	1,525
Argentina	1,043	Singapore	1,136	Thailand	1,335
Taiwan	980	Hong Kong	857	India	1,100
Brazil	819	Thailand	770	Indonesia	988
India	817	Malaysia	719	Macau	898
Mexico	711	Philippines	442	Philippines	893

Other garments		Automotive		Plastic products	
Exporter	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**
China	12,817	United States	196,285	United States	18,019
Mexico	4,508	Japan	147,421	Canada	5,911
Hong Kong	3,648	Canada	89,999	China	4,720
Bangladesh	2,713	Mexico	74,376	Japan	2,649
India	2,116	China	47,171	Taiwan	1,909
Indonesia	2,096	Taiwan	41,374	Korean Republic	1,515
United States	1,825	Korean Republic	38,149	Mexico	1,129
Korean Republic	1,589	Singapore	30,627	Thailand	516
Sri Lanka	1,285	Malaysia	30,189	Indonesia	333
Philippines	1,254	Philippines	14,866	Malaysia	278
Thailand	1,071	Thailand	12,855	Hong Kong	248
Taiwan	826	Hong Kong	6,141	India	198

Rubber products		Footwear		Furniture	
Exporter	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**	**Exporter**	**Exports to 3 Blocs**
United States	5,229	China	11,568	China	7,805
Japan	2,912	Indonesia	1,367	Canada	4,904
Canada	2,273	Brazil	1,174	United States	3,782
Malaysia	1,353	Vietnam	1,063	Mexico	3,687
Thailand	1,265	Thailand	646	Taiwan	2,086
Indonesia	940	Korean Republic	458	Indonesia	1,169
Korean Republic	939	India	441	Malaysia	836
Taiwan	612	United States	255	Thailand	748
Mexico	558	Taiwan	241	Philippines	438
Brazil	362	Hong Kong	164	India	242
China	186	Malaysia	91	Brazil	231
Sri Lanka	166	Philippines	79	Vietnam	176

Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year-end currency exchange rate was used for translation. Notes: It was estimated that the reported data probably includes some double counting of re-exported products. In particular we suspect that exports from countries without manufacturing, such as in the case of the automotive industry in Singapore, may include products shipped from other countries in the region through Singapore or Hong Kong. This must be taken into account when studying the tables of imports into NAFTA, EU and JAPAN.

The performance and challenges of each sector in turn are summarised in the following sections.

FOOD PROCESSING – READY TO EAT MEALS

World market trends, success factors and future challenges

Ready meals are one of the fastest growing sectors of the processed food market, with rapid

product and process developments in both product and packaging. There is little domestic market, so firms depend on the export markets and need to develop their direct marketing capabilities and links to major distributors and supermarket chains. The main problem is lack of international brands.

Company benchmarking

Margins are low on average, but margins at the best firms are comparable to world norms. Product cost tends to be relatively high because of lack of specialisation, and weak procurement and supply chain management.

Table S.3: Benchmarking of Thai food processing companies against best practice

Benchmark	Thai Companies	Best Practice
Quality Control/Quality expenditure	10%	4.9%
Marketing/Sales Exp. (% of gross sales)	1-2%	direct sale
Gross margin	13-22%	13.5 %
Liquidity ratio	3.29 times	2.0 times
Operating cost/Total Cost	77-86%	60-80%
Import tax for materials	12 –20%	5%(Vietnam)

SWOT analyses

Table S.4: SWOT analysis of Ready-to-Eat Meals

Strengths	Weaknesses
• Companies are experienced exporters • Good management, engineers and skilled labour • Good quality products at competitive prices • Some firms with good gross margins • Capability to continuously upgrade itself	• Small domestic market; • Average poor margins • Lack of brand names: mainly subcontract supply to international brand names or private labels • Many small companies with niche markets which are disregarded by international distributors • Lack of appropriate manpower training • Slow to adopt new processing techniques
Opportunities	**Threats**
• Rapidly growing world market • Development of larger companies capable of competing internationally • Sales to food services such as restaurants and deli counters • Use of versatile equipment to produce a wide range of recipes without additional investment and develop economies of scale	• Acquisitions by international brands to gain market share in high-end products • Price wars in branded ranges (rather than own labels) • Increasing number of international standards, certifications and labelling requirements to be met • NAFTA member countries (mainly Mexico) as competitors in the US • Countries with ACP status enjoy 16-24% tariff advantage

ELECTRONIC APPLIANCES

World market trends, success factors and future challenges

The market for electronic hardware is growing rapidly, but not as rapidly in the past, because new technology reduces hardware requirements. Thailand has many competitors at similar levels of labour cost and development, but the range of products is enormous with room for specialisation.

The computer industry is driven by cost reduction, and firms have to continuously and rapidly improve productivity and control their supply chain. The main challenges are to improve productivity through investment, R&D, and human resources development; to improve efficiency in materials usage and recycling; and to develop co-operative agreements both between local producers, and with international manufacturers.

Company benchmarking

Table S.5: Benchmarking of Thai electronic appliance companies against best practice

Benchmark	Thai Companies	Best Practice
Claims Received	6 Per Month	2 Per Month
Claims Resolved	100%	100%
Recruits Staying 1 Year	70%	98%
Product Cost / Sales	72%	60%
Invoices Paid within 60 days	85%	98%
Maintenance Headcount	1%	2%
Stock Turn over (times)	10	24
% Rejection Rate	4%	0.5%
Indirect Hours	24%	12%
Average Age Equipment	4 Years	2 Years
Customer Contact Time	6%	32%
Inspection/Direct Labour	30%	6%
Labour Turnover	14%	2%

The main problems are high labour turnover leading to low skills and productivity, high rejects and claims, and low level of customer contact.

SWOT analyses

Table S.6: SWOT analysis of Hard Disk Drive Companies

Strengths	Weaknesses
• Good worldwide market shares • Financial backing by international Parent companies • Located close to customer • Cheap labour costs • Leading product technology from parent company • ISO systems implemented • Good internal technical training • Simple production and purchasing planning • No material shortages	• Lack of professional marketing • High labour turnover • Low margins • Long lead times for purchasing • High inspection costs (30% labour) • Poor management skills/training
Opportunities	**Threats**
• More automation to de-skill/remove labour • Develop new markets and new applications	• Single source for specialised raw material • Computer prices falling further • Competitors setting up in China (cheaper)

Table S.7: SWOT analysis of Office Automation Equipment Companies

Strengths	Weaknesses
• Cheap labour costs • Many customers world-wide • ISO certified and use of quality improvement concepts • Possibility of 100% exporting of output • Excellent sales growth prospects	• Some dated products • Some very long lead time purchases • Low value added • Some business functions duplicated due to strong control from overseas partners/ headquarters • Some single source suppliers • Lack of skilled engineers
Opportunities	**Threats**
• Possible to increase Thai components purchase • Diversify into other electronic products	• Production moving to lower costs suppliers (e.g. China)

GARMENTS

World market trends, success factors and future challenges

In garments, Thailand competes with some large very low cost countries (India and China) and some large, quality manufacturers (Europe and USA). Market growth is low, so competition is fierce. Global companies shift subcontract manufacturing around the world to the lowest cost source. Cost, delivery times and reject rates are critical competitiveness factors, unless producers can add value through integrating into design and distribution. Thai companies need to develop flexibility, design and branding, and introduce state-of-the-art technology. Environmental and ethical standards are also becoming important selling factors.

Company benchmarking

Table S.8: Benchmarking of Thai Garment Companies against Best Practice

Benchmark	Thai Companies	Best Practice
Efficiency	35% to 52%	85%
Lead Time (Manufacture to despatch)	15 to 20 days	5 days
Fabric Lead Time	45 to 60 days	15 days
Rejects (% of finished product)	0.0%	0.1%
Ratio of indirect to direct labour (Mfg)	1 : 1	1 : 20
On time delivery	100%	100%
Order fulfilment %	90%	100%
Operation skills per operator	1-2 skills	5 to 6 skills
Direct labour excesses	65% to 45%	65% to 45%
Marker Utilisation	85-90%	88% - 90%
Standard minutes per Unit		
1. Trousers	42	29
2. Shirts	32	19
3. Sportswear	12	6
World-wide competitive cost	Not applicable	$0.05 to $0.10

Thai companies fall very far behind best practice in almost all indicators of productivity. Indirect labour is extremely high, manufacturing efficiency is very low, and standard times are high. This is partly because there is poor line balancing and labour is not multi-skilled - although individual labour skills are acceptable.

SWOT analyses

Table S.9: Summary SWOT analysis of the Thai Garment Industry

Strengths	Weaknesses
• Suitable geographical location of Thailand in the Asia Pacific region. • Abundant supply of skilled labour. • Wages are not excessively high whilst skill content is good. • High degree of vertical integration. • Good collaboration amongst companies and between the private and public sectors. • Purchasers trust the quality and timely delivery of Thai products.	• High number of SMEs, which are inefficient and not effectively managed. • Lack of information especially on the rivals' cost and products and of export possibilities for SMEs. • Lack of high skill in production and marketing • No multi-skilling • Lack of information and networking in sourcing materials and products from overseas. • Poor R&D in the designing stage of production. • Use of outdated equipment and technologies. • High tariffs for raw materials and machinery lead to prices marginally higher than those of competitors. • No strong world-wide brandnames.
Opportunities	**Threats**
• Export of high-end products where the cost of production is relatively higher elsewhere. • Many quota categories are under-utilised due to poor quality. • Exploit the short-term benefits of currency devaluation by looking at medium and long-term benefits of creating brandnames in the export markets. • Use of direct marketing channels to enhance the earnings accrued to producers.	• Quota allocation under the MFA which sometimes limits the ability to expand the export volume. • The manufacturers' lack of awareness of code of conduct of major brands buyers. • Additional product certification including EN ISO 9000 and EN ISO 14000. • Fast track tariff reduction (to 0% and 5% by the year 2000) industry within ASEAN. Low-end garments will face stiffer competition from Indonesian and Vietnamese factories.

AUTOMOTIVE PARTS – PRESSED METAL GOODS

World market trends, success factors and future challenges

Although world automotive markets are growing, the after-market demand for autoparts is affected by increasing life and reliability. The components industry is restructuring to increase efficiency, driven by improvements in supply chain management by the big auto manufacturers. There is rapid consolidation, increasing technical alliances and joint ventures, relocation of subassembly and parts plants to be near vehicle assemblers for JIT delivery, and creation of a network of super-suppliers who will dominate the auto components industry in the next century.

The technology of filters is developing, driven by environmental concerns. Thai manufacturers need to invest in R&D to keep products up to date and improve efficiency and cost.

Company benchmarking

Table S.10: Benchmarking of Average Thai Companies against Best Practice

Benchmark	Thai Pressed Metal Part Companies	Thai Filter Companies	Best Practice
Stock turns (for OEM customer)	11:1	Not applicable	15:1
Stock turns (for after-market)	Not applicable	4:1	12:1
Lead time (manufacture)	3 days	2-3 days	<24 hrs
Tool Change time	7-10 minutes	20-30 minutes	<10 minutes
Customer Rejects	Approx. 1%	<1%	0
On time delivery	Approx. 97%	Approx. 70%	100%
Absenteeism	6%	3%	<1%
Productivity (value added per employee)	$12,181	$16,624	>$60,000

SWOT analyses

Table S.11:Summary SWOT analysis of the Thai Pressed Metal Auto Parts Industry

Strengths	Weaknesses
• Modern equipment. • Good relationship with OEMs. • Good support from Joint Venture partners. • Some high margin products. • Strong presence in the after-market sector. • Local stockists can supply steel. • Brands being developed.	• A high percentage of raw materials have long lead times. • Workforce not well educated or experienced. • Lack of shop-floor involvement. • Over-manning. • Limited production management expertise. • Some critical raw materials supplies from overseas. • High inventory levels. • Poor customer service. • Domestic market saturated.
Opportunities	**Threats**
• Overseas OEMs. • Growing after-market. • Large export market. •	• Dependency on local OEMs. • New Japanese competition about to enter Thailand. • Development of car industries in developing countries. • Pirate products.

PLASTIC PRODUCTS

World market trends, success factors and future challenges

The markets for plastic products are growing worldwide, as plastic products substitute for many other materials – particularly metals and timber – in many applications, including construction and vehicle manufacture. This is accompanied by an increase in the use of high

specification and high performance plastics, particularly engineering plastics.

Thai best practice injection moulding is probably somewhere around the 1970's "state of the art". It is likely that the average company is typical of even earlier stages. Technology needs to be updated, including increased moulding speeds, use of multi-cavity tooling, more automated product handling and finishing, robot moulding extraction. Modern machines are dedicated, faster, more efficient and consistent, and include techniques such as moulding in two materials. Firms need to be more specialised by product or by industry. Better blending processes are also needed. Process control and quality control also needs improving.

There have been many joint ventures with foreign technological know-how as a means to sourcing these expensive technologies, but technological transfer is far from complete

Company benchmarking

In many firms, performance is comparable to best practice, but there is wide variation. In general reject and scrap rates are too high, and production runs too short to be competitive. Companies enjoy very low labour costs. However, raw material costs are around western levels and power charges are higher than western. The plastics industry world-wide aims at a gross margin of at least 50%. Product costings in the industry reveal very low gross margins, sometimes barely acceptable. It appears that companies should overhaul their pricing estimation methods: some companies would have to charge up to 50% more to obtain positive margins. Ultimately, the market dictates the sale price, so firms must cut costs or move up-market.

Table S.12: Benchmarking of Thai Plastic Moulding Companies against Best Practice

Benchmark	Thai Companies	Best Practice
Number of employees	288-337 staff	250-300 staff
Capacity utilisation	40-85%	60-85%
Customer order to delivery	15-30 days	Up to 30 days
Delivery time of raw materials	2-90 days	Average 7 days
Stocks of raw materials	Up to 38 days	Max 20% of raw materials needed for 60-90 days
Stocks of finished goods	15-56 days	Up to 30 days
Typical injection run length	Too short (e.g. 2 days)	Depends on tool set up time and urgency in production
Product defect	2.5%-3%	1%
Scrap rate	0.5-5%	Max. 1-2%

SWOT analyses

Table S.13: Summary SWOT analysis of the Thai Plastic Products Industry

Strengths	Weaknesses
• Spare capacity. • Quality certification for specific markets (e.g. UL listing for exporting to the US).	• Lack of mould making technology in Thailand. • High production costs, resulting from small orders and therefore higher set-up costs. • High raw material costs • High working capital, due to paying cash for materials, but sales on 60 days credit terms. • wide variety of products, and lack of specialisation leading to rather high losses. • Specialty and some other resins have to be imported.
Opportunities	**Threats**
• The number of competitors is decreasing due to harsh economic conditions. This is a favourable trend for the expansion of Thai companies' customer base, both domestically and abroad. • Increased substitution of plastic material for other substances.	• Downstream integration of pellet and resin manufacturers into moulding. • The cancellation of Local Content regulations in the year 2000 • slowdowns in the automotive industry • high prices for domestic raw materials • high import duties for raw materials • price-cutting by competitors to get work. • technology development of materials and conversion processes is based firmly in Northern and Central Europe.

RUBBER GOODS

World market trends, success factors and future challenges

Tyres: The world tyre industry is worth $50 billion a year. 5 big groups dominate the industry but they are increasingly being challenged from manufacturers from emerging countries (South Korea, India and China). Tyre companies have been faced with cost-cutting programmes in an over-supplied industry, while making better and safer tyres. Mergers and acquisitions have been increasing in recent years and further rationalisation of the branded world tyre industry is expected. For the Japanese manufacturers, the trend towards increasing export volumes has forced them into alliances to avoid the costs of building additional factories and sales networks.

Because of the proliferation of vehicle models and manufacturers, tyre makers have been developing new technology for more automated and more flexible tyre factories. Thai manufacturers cannot compete in car tyres without alliances with the market leaders. The cross-ply tyres produced in Thailand still have a market in the industrial and agricultural uses,

but Thailand needs to move into radial-ply tyres, which requires much higher capital investment and more advanced technology.

Latex gloves: Thailand has increased latex goods production capacity and is attracting international manufacturers to relocate production from USA and Europe, but exports to the US and Europe are proving difficult. In the case of latex gloves, growing concerns over allergies to latex have led to a move towards powder-free medical gloves, dermashield processing technology, as well as polyurethane gloves. The Thai producers need to develop these new technologies and move in to higher value products, as well as reducing costs through improved productivity.

Company benchmarking

Table S.14: Benchmarking of Average Thai Rubber Goods Companies (qualitative indicators relative to best practice)

Benchmark	Glove Companies	Tyre Companies	Best Practice
Efficiency	0.85-0.90	Not available	1
Equipment	0.85	0.60	1
Human Resource	0.90	0.40	1
Technological capability	0.85	0.60	1
R&D capability	0.80	0.40	1
Rejects	1	0.90	1
Production management	1	0.30	1
Quality system	1	0.65	1

The profit margin for latex products companies is around 10-15%, which is about the industry norm. Companies have reasonable efficiency rates, slightly below best practice. However, production overhead expenses are considerably higher than would be expected. Tyre companies reported low profits margins (about 5%) which is well below those of best practice. Although most raw materials are acquired from local sources, long lead-times for both local and imported materials still causes high working capital costs.

SWOT analyses

Table S.15: Summary SWOT analysis of the Thai Rubber Products Industry

Strengths	Weaknesses
• Thailand has an excess supply of rubber, at lower cost than in Malaysia. • Thai producers have foreign partners in the production of rubber tyres, condoms, and rubber gloves. • Thai producers are experienced and will perform better with support from the government	• Small-scale rubber plantations hinder quality control. • Shortage of good technicians. • Lack of good R&D and slow product development amongst SMEs. • Underdeveloped infrastructure. • Shortage of synthetic rubber technology. • General lack of access to financial markets. • Lack of technical support for SMEs • Narrow range of rubber grades available to producers.
Opportunities	**Threats**
• There are opportunities for those producers willing to embrace environmental issues. • Malaysia's reduction of rubber planting areas. • A softer Baht should provide short-term benefit to exporters. • The importing countries continue to grow • Room for further value-added by processing rubber into rubber products.	• Price intervention in the rubber market causes irregular supply of latex, and increases latex prices. • Tariffs on raw materials and chemicals do not encourage production of rubber products. • Certain types of products require a foreign partner to provide both technologies and brand names. • Interventionist policies and political change make long term planning difficult

LEATHER GOODS

World market trends, success factors and future challenges

World trade of **footwear** is around US$40 billion. The main footwear producing regions are:

Region	Share of world production
Asia	47%
Europe	24%
Americas	18%
Other	11%

Producers in developed countries have virtually abandoned the low end of the market. They continually consolidate and restructure their manufacturing facilities to produce higher-quality products for niche markets, so there are growing opportunities for low cost producers.

The main challenges for the footwear industry are to upgrade skills in production workers in order to create new market opportunities; develop strategic alliances with footwear producers in other countries; and provide firms to access to up-to-date market intelligence.

Leather upholstery for both **furniture** and **automobiles** is a growing industry world wide.

Many changes are taking place in the furniture industry. The most important, is innovative ways of marketing to reduce the cost of floor space in shops. The furniture industry by-and-large is not a brand driven industry, so schemes such as co-operative advertising and show rooms are quite successful.

The main challenge is the application of industrial engineering techniques to manufacturing. These include the use of automated production lines, production cells, inventory control, tracking labour productivity, and optimising material usage.

Leather supply also needs to be improved. Poor quality local hides show putrefaction, parasite attack, bad preservation, poor flay and damage from hand fleshing. Many hides for upholstery are imported, as local hides are too small.

Company benchmarking

Table S.16: Benchmarking of Footwear Companies against Best Practice

Benchmark	Thai Footwear Companies	Best Practice
Supplier lead Times (scores)	NA	3.2
Lead time – Order processing (days)	14-21	4.4
Lead time – manufacturing (days)	NA	8.8
Despatch time (days)	30 (by sea)	3.8
Despatch cost (%)	NA	0.9
On-time deliveries (%)	NA	91.8
Production per hour (sq. ft/ hour/man)	160	110
Plant utilisation (%)	95%	80%
Value added per direct employee	Baht 300	Baht 4 million
Sale returns (%)	0.5-0.6	1.5
Rate of stock turnover	2.4	8
Raw material costs (%)	65%	62
Direct labour costs (%)	7%	6.5
Lead time for new product development (days)	2-3 Weeks	Not measure
Wastage level of leather	45%	10%

Leather companies have relatively high standard costs per unit. Margins per unit are around 4-11% against international averages of 10%. Mainly because leather wastage can be as high as 45% in some areas of the shoe manufacturing sector. Marketing activity and intelligence is also low.

SWOT Analysis

Table S.17: Summary SWOT analysis of the Thai Leather Footwear Industry

Strengths	Weaknesses
• Modern equipment. • Good relationship with international brands. • Good support from suppliers • Some high margin products. • Brands being developed.	• High inventory levels: A high percentage of raw materials have long lead times. • Some critical raw materials supplied from overseas. • Mostly low margin products • Very poor material usage
Opportunities	**Threats**
• Large export market. • Use of locally treated leather	• Dependency on international orders • Dependency on cheap labour • Development of footwear manufacturing in other developing countries. • Pirate products.

Table S.18: Summary SWOT analysis of the Thai Leather Upholstery Industry

Strengths	Weaknesses
• Use of established furniture marketing channels	• Poor quality of local raw hides • Old equipment • High cost of imported hides • No original design • Low volumes • Industry dominated by families in the tannery business • Dependency on foreign know how and technology
Opportunities	**Threats**
• Highly skilled labour force in furniture design and production – could be transferred to upholstery design • Large export market. • Use of locally treated leather, if quality is improved • Some high margin products.	• Further cost reductions in leather upholstery manufactured, particularly in Eastern Europe • Increasing establishment of larger competing manufacturers that have links with large retailers in target markets

In **Footwear**, the managerial skills of Thai businessmen and the manual and manufacturing skills of labour force are world class. The level of quality available in the finished article is high. Where there has been partnership between manufacturer and customer, best practices and current technology has been acquired. There are high standards of production control. These products are marketed by the brand owner for premium prices, but manufacturing is globally a high-volume, low-margin

Companies have spare manufacturing capacity. Using this potential is prevented by poor

commercial expertise, including lack of know-how, market intelligence, and vision, with a relaxed attitude to the overheads burden of unused factory space and a failure to demand a return on investment. Volumes can be increased by marginal costing goods and even loss-leaders.

In **Upholstery Manufacturing**, although the export market shows high potential, lack of original design and international marketing skills hamper the prospects of Thai upholstery companies. Designers concentrate on copying European styles rather than developing own models. This results in companies not being able to take advantage on this trend in exports, because not all have skills in international business.

CONCLUSIONS ON COST STRUCTURE AND COMPETITIVENESS

Compared to world best practice, most Thai firms have low margins because of:

- Low levels of skilled labour. This keeps them in labour intensive and old technology, and leads to high reject rates and poor quality
- Products in low quality ranges, with low value of output
- High materials cost because of high reject rates and poor material yields
- Some good technology but generally technology of the 1970s and 1980s.

These translate into increased production costs for industries in relation to those of their main competitors, shown in Table S19. The table above shows the comparison of Thailand with specific countries. In particular, it shows that:

- the share of materials and utilities costs are higher than for competing industries in all industries shown except for leather products (excluding footwear)
- the share of labour costs is quite similar to competing industries, except for leather products.

As Thailand has the lowest operating surplus as percentage of total output, for the industries studied excluding leather products (without footwear), the industries are facing strong challenges even before taking into account differences in marketing and administration charges and practices– and in taxation and financial charges.

Table S.19: Rough Benchmarking of Cost Structures - % of Output for latest year available

Industry/Country	Materials and Utilities (%)	Labour (%)	Operating Surplus (%)
Food Processing			
Thailand	73.0	5.8	21.3
Korea	60.7	8.5	30.9
The Philippines	64.3	5.7	30.0
Garments			
Thailand	71.4	19.2	9.3
Korea	50.9	17.3	31.9
Mexico	46.0	25.5	28.4
Indonesia	60.8	12.3	26.8
India	71.2	5.7	23.1
Plastic Products			
Thailand	68.0	9.8	22.2
Korea	57.6	9.0	33.5
Malaysia	64.1	11.9	23.9
Rubber Products			
Thailand	78.9	4.6	16.5
Korea	52.3	13.3	34.3
Malaysia	71.4	8.3	20.3
Indonesia	79.5	4.5	16.0
Leather Footwear			
Thailand	55.6	19.2	25.2
Korea	53.3	19.4	27.3
Leather products			
Thailand	55.3	15.7	29.0
Indonesia	64.0	7.8	28.1
Korea	66.6	10.1	23.3
India	88.1	4.4	7.5

Source: Several Industrial Statistical Sources
Note: Lack of recent data for many competing countries resulted in the use of mostly 1996 for consistency reasons. Data for Auto Components and Electric appliances was too incomplete.

The estimated cost structures of the industries studied are shown in Table S20, as a percentage of reported revenue. The data are drawn from case study companies visited and from survey data, but after rejected any survey data which was not considered reliable.

Table S.20: Estimated 1998 Cost Structure of Thai Industries (% of Revenue)

Industry/ Cost Item	Material	Direct labour	Energy	Indirect Labour + OH	Selling	Admin.	Financial charges	Profit after interest
Plastics – engineering	75.50	6.05	3.52	2.04	1.53	5.13	8.66	-2.43
Rubber – NPC tyres	67.04	4.12	12.1	5.00	2.51	6.1	19.1	-15.97
Garments –Knit	63.75	9.11	0.67	3.18	7.53	1.23	0.6	13.93
Garments – woven	59.75	15.03	4.56	0.98	3.66	9.02	0.01	6.99
Auto - Pressed	58.53	5.98	3.09	7.86	8.49	5.83	9.57	0.65
Plastics – household	57.60	9.40	5.43	4.86	13.79	8.78	9.57	-9.43
Auto – filters	56.64	10.94	1.31	15.17	6.17	4.69	2.73	2.35
Leather – furniture	47.70	8.72	2.23	5.64	9.36	4.77	6.05	15.53
Electronics – OA	46.97	1.61	0.4	41.55	0.83	0.57	0.41	7.66
Leather – footwear	46.45	3.15	0.22	1.64	1.73	1.6	3.78	41.43
Electornics – HD	45.81	4.86	2.17	12	0	10.51	4.03	20.62
Food –RTEM	38.87	27.13	0.18	11.38	4.12	6.07	0	12.25
Rubber – Gloves	31.45	12.15	18.02	4.97	2.82	9.98	1.09	19.52

Source: Information provided by case studies and companies surveyed by WS Atkins.

Past industry policies favoured investment in labour intensive, low capital and ageing technologies because of Thailand's low labour cost and technology heritage. Labour costs are rising rapidly but technology and management systems are not advancing because of dependence on foreign technology sources and lack of R&D and qualified scientists and engineers. Consequently labour costs per unit of output are already as high as Taiwan and Korea and sometimes as high as Japan – and much higher than China, India and some other ASEAN nations. If labour costs increase without continuous improvement in productivity and quality, Thailand will become increasingly uncompetitive.

INDUSTRIAL POLICY, IMPACT AND RECOMMENDATIONS

The AFTA agreement is opening up the ASEAN market to free internal trade, but there is still protection from non-ASEAN imports. Thailand has moved from an import substitution policy in the 1980s to an export promotion policy during the 1990s. There are still elements of domestic protection, however, which create additional costs for exporters, through duties on imported materials and higher prices of inputs from protected domestic suppliers.

BOI incentives for new investors (mainly corporate tax holidays and import duty exemptions, along with other benefits and protection) have in the past favoured industries dependent on

imported materials and components and fostered industrial development unsustainable in the long term. Regulations on local content requirements ameliorated to some extent the dependency on imported raw materials.

The basis for industrial restructuring is the Industrial Restructuring Plan, approved in April 2000, with programmes for productivity, technology, labour skill enhancement, SMEs, product development, job distribution, foreign investment, and pollution reduction. It identifies 13 priority sectors (seven of which are in this study). BOI incentives are being adapted to these new sectoral and geographical priorities. The SME programmes are of special relevance to the selected sectors. It seems, however, that programmes for relocation, upgrading and skills development have had a slow uptake due to the cost and availability of financing especially for SMEs, the poor financial situation of firms, and the complexity of the support programmes.

Companies were concerned about the impact of the withdrawal of their existing BOI privileges (at the end of the incentive period, or because of changed priorities) on:

- cost of imported materials (especially for electronic appliances, leather goods, and plastic products)
- cost of imported equipment (especially for garments, electronics and plastic products), and
- corporation tax (all except electronics and plastic products).

This is a symptom of the development of inappropriate investment, too heavily reliant on imports, without adequate improvement in their own performance during the start up years and without adequate development of feeder industries. Wholly Thai-owned companies were less concerned about cost of imports and more about corporation tax. Firms were also concerned about potential loss of revenue and export markets as a result of loss of trade privileges (e.g. the GSP preference into USA).

Policies to improve competitiveness and to improve the effectiveness of the IRP include:

(i) development of feeder industries

(ii) provision of business services, including industrial engineering services

(iii) cheaper government loans and better access to financing.

The real problems of industry, however, are low productivity of labour and high wastage of materials and energy because of poor quality control, with consequent low margins. The objectives of policy should be:

- to improve performance at the enterprise level:

(i) Increase the proportion of skilled labour (from 20%) including technical training and English proficiency (create and/or support technical training institutes; fund industry training);

(ii) Increase number of scientists and engineers (e.g. encouraging technical universities);

(iii) Support R&D for productivity improvement, product design and patentable works (e.g. research funding; creation of research centres, testing centres);

(iv) Support upstream (feeder) industries which are potential source of raw materials or essential industrial inputs (e.g. leather, textiles, toolmaking);

(v) Support schemes for technology transfer or upgrading of equipment;

(vi) Promote the creation of industrial clusters when beneficial;

(vii) Structure electricity and telecom tariffs to reflect more competitive pricing for industry.

- at the level of industry policy:

(i) Develop Merger and Acquisition Laws, Anti-monopoly laws, etc. to allow rationalisation and economies of scale;

(ii) Draft industrial policies that foster competition and tackle the entire supply chain within one sector;

(iii) Support intellectual property rights, to promote research and product development;

(iv) Create industry research, testing and information centres;

(v) Guarantee that small financing requirements can be met by the stock exchange (e.g. by developing a junior stock exchange);

(vi) Set realistic cost allowances for capital to truly reflect depreciation rates (e.g. higher depreciation rates in electronics industry);

(vii) Simplify support schemes and reduce bureaucracy.

- at the macro-economy level:

(i) Up-grade the public sector's capabilities to assist industry;

(ii) Develop basic infrastructure for IT and water services;

(iii) Fiscal reform: companies' capital base and financing – devise a system that compensates firms for high registered capital and high retained earnings;

(iv) Taxation: simplify and speed up VAT returns; reduce/harmonise import tariffs; implement audit trails at customs to minimise the effects of transfer pricing.

1. INTRODUCTION

BACKGROUND TO THE STUDY

1.1 In August 1999, the National Economic and Social Development Board (NESDB) appointed WS Atkins to identify key factors influencing the cost structure of seven major Thai industries and to advise on government measures and initiatives to improve the performance of Thai industry.

1.2 Based on the 1st meeting with the Steering Committee, a series of industrial sectors were agreed to be the focus of this study. Sector working reports covering the selected industrial sectors were produced. The purpose of these reports was to present the initial findings of a short diagnostic review of two case studies of companies per sector. The case study interviews investigated the real causes of cost differences, including management, cultural and organisational factors, and investigated to what extent these factors are outside the control of management. This aimed to shed light on the real drivers behind the cost factors, and on their impact on the operations of companies.

1.3 The interim report on cost survey results summarised the findings of a cost structure questionnaire survey of enterprises in the industries using postal and face-to-face interviews. The purpose of this report was to provide quantitative evidence on cost structures to supplement the analysis presented in the sector working reports. As far as there was comparative information available, the cost structure data compiled in the interim report was benchmarked against main competitors.

1.4 This final report summarises the findings of the whole project. It contributes to the study aim, by presenting specific policy options to improve the cost structure of Thai industries, assessing their relative importance and likely impact on industrial competitiveness. A consultative seminar was held on the results of the study at the Hilton Hotel in Bangkok on the 23rd of August 2000. It was primarily aimed at representatives of Thai industry and reported on the overall findings of the study. The policy options considered by the Consultants were presented, and the participants were invited to give their views on the policy options, their viability and their perceived benefits and the impact on particular interest groups. The results of the consultative seminar are included in Appendix 5 to this report.

1.5 The full scope and objectives of the project are set out in the Terms of Reference attached to the contract documents. The Offer of Consultancy Services was submitted in March 1999. Signature of the contract between WS Atkins, The World Bank and NESDB was completed in August 1999.

METHODOLOGY

1.6 A staged and structured approach was adopted in this project to examine the real impact of cost and non-cost factors on industrial performance and competitiveness. Three complementary sets of empirical analyses were performed:

- first at sector/ industry level (quantitative data);
- secondly, at enterprise/sector level (both qualitative and quantitative data based on case studies and interviews);
- thirdly at enterprise/plant level (quantitative data using a questionnaire survey).

1.7 This multi-level approach enabled us to compare the insights gained from these analyses.

1.8 At the sector level, the study procedure incorporated extensive consultation with both government and non-government agencies concerned with industrial policy and the issue of competitiveness, as well as review of the extensive previous studies and reports, and the expert knowledge of the Thai Team Leader.

1.9 At the enterprise level, two complementary approaches were also adopted:

- an expert and wide-ranging review of selected case-study companies by WS Atkins' standard company review procedure, using a team of consultants including an experienced foreign industry expert with knowledge of similar industries in other countries, and a local Thai industry economist, and
- a wider questionnaire survey of enterprises in the industry using postal and face-to-face interviews focusing on narrower cost structure issues.

OBJECTIVES AND SCOPE

1.10 The study aims to contribute to the industrial restructuring programme by establishing a reference point on the cost structure of major industries to which policy makers can refer during the development of industrial policies.

1.11 The focus of this project is therefore on identifying key factors influencing the cost structure of Thai industry. This leads to the formulation of specific measures and initiatives to improve the cost structure of Thai industry, and therefore overall competitiveness.

THE ISSUE: COMPETITIVENESS AND ITS RELATIONSHIP WITH COST STRUCTURE

1.12 According to NESDB's terms of reference for this project, "Thailand has entered a new phase of development, where continuing competitiveness requires increased productivity of all factors of production. This includes increased skill intensity at all levels, improved efficiency of investment, more efficient resource utilisation, and transition to more efficient and effective production processes and structures in both traditional and emerging industries. In this context, it appears essential, over the medium term, to improve the operating efficiency of Thai industry, as a key input to competitive performance.

1.13 A key dimension of operating efficiency relates to the cost structure of industry. In this context, both cost and non-cost factors influence a firm's operations and competitive performance. Although the boundary between the cost and non-cost factors is increasingly imprecise as these factors become increasingly inter-related, non-cost factors generally refer to factors such as quality of the firm's products, related services, response time, etc. In practice, these factors are directly related to cost structure, and should be assessed from that perspective.

1.14 Cost-related factors involve macro-economic factors, industry factors and firm-level factors. At the macro level, costs are influenced by the general institutional, regulatory and legal framework, for example, the tax system, role of rules and regulations and their enforcement, as well as by economy-wide factors such as the general state of infrastructure. At the industry level factors relating to the industry-specific institutional and regulatory environment play a role (e.g. industry-specific

programmes and constraints, competition policies, as well as the level of industry specific inputs and services such as the level of industry-specific infrastructure services).

1.15 Ultimately, the cost structure of industry means the cost structure of firms and its impact on their competitive performance. This relates to all phases of moving a product from its raw material source through every intermediate processing stage to a consumer: the concept of "operations management". Addressing inefficiencies in the set up of materials, acquisition, production and distribution to the end markets can have a significant impact on the competitive performance of firms, industries and the economy as a whole."

THE CONTEXT: BACKGROUND TO THE SELECTED INDUSTRIES

1.16 Seven out of the 13 priority sectors of the National Industry Restructuring Plan were selected for inclusion in this study. It was required that the industries selected reflected firstly, those industries which contribute to economic growth (output/ contribution to GDP growth/exports); secondly, those industries which aim at the production of higher value-added products; thirdly, those industries that reflect the real side of the economy (income distribution/employment/resource usage/private consumption), and fourthly, those industries which have a high percentage of SMEs to foster entrepreneurship. Table 1.1 lists the selected industries and some quantitative selection criteria. The sectors selected are presented in Table 1.2. The main reasons why these industries and sectors were the focus of the study are summarised below.

Table 1-1. Some Quantitative Selection Criteria (in million Baht - 1996)

Industry	Output[1]	Share of industry VA (%)	Value added[1]	Approx. Share of Exports (%)
Food Processing	482,335	10.49	113,563	46
Electronic appliances	338,305	7.36	76,001	7
Textiles and Garments	262,175	5.70	70,134	13
Automotive parts	466,264	10.14	139,653	N/A
Plastic products	93,189	2.03	27,039	0.7
Rubber products	139,758	3.04	36,043	10
Leather products	48,309	1.05	15,752	2

Industry	No. of firms	Share of SMEs[2] (%)	Share of Small Firms[3] (%)	Employment	Labour cost as % of total cost
Food Processing	3,140	99.33	75.99	352,201	1.87
Electronic appliances	316	68.67	26.90	592,019	8.55
Textiles and Garments	3,381	95.24	64.74	401,168	16.25
Automotive parts	1,095	95.34	73.33	107,965	3.97
Plastic products	1,272	97.41	61.95	113,596	14.85
Rubber products	540	93.33	51.11	79,374	5.84
Leather products	832	94.95	68.99	89,531	8.06

Source : Report of the 1997 Industrial Census Whole Kingdom, National Statistical Office
[1]Figures were compared to GDP originating from industries obtained by NESDB
[2]SMEs are firms with employees less than 500 persons
[3]Small firms are firms with employees less than 50 persons

Table 1-2. Selected Industries and Sectors

Industry	sector 1	Sector 2
Food Processing	Ready-to-Eat meals	Dairy Products[1]
Electronic appliances	Computer Hard Drives and Micromotors	Automated Office Equipment
Textiles and Garments	Apparel (Knitwear)	Garments (n.e.)
Automotive parts	Pressed Metal Parts (filters)	Pressed Metal Parts (n.e.)
Plastic products	Household Goods	Specialty and Engineering plastics
Rubber products	Rubber Gloves	Non-passenger Tyres
Leather products	Footwear	Leather Furniture

Notes:
(1) Dairy products was incorporated and one in-depth study visit of a milk manufacturer was undertaken. No survey was undertaken of firms in this sector.

Food Processing

1.17 The food processing industry creates value added due to the abundance of raw materials and the ability of manufacturers to improve food processing technology. It is one of the country's top export earners and employment creators. There are over 3,000 firms in this sector and it has the highest percentage of small companies.

1.18 The industry has inherent comparative advantage, but manufacturers need to improve their yields and continuously up-date their strategy to maintain their leading position in the world market. Their competitiveness is constantly being eroded by the increasing cost of wages, by new competitors and by policies of importers - e.g. proliferation of free trade areas with external tariff barriers, changing administrative practices amongst importing countries, a plethora of technical trade barriers, etc.

Ready-to-Eat Meals

1.19 The main food processing sub-sectors (including processed chicken, canned tuna, frozen vegetable, frozen shrimps), which are major Thai industries, have been widely studied. It was agreed to study studying ready-to-eat-meals, which is dependent upon these primary food sectors. In addition, many former producers of these processed/frozen foods have now moved into ready-to-eat meals, in line with general worldwide consumer preferences. There is the possibility of producing higher-value added products and profit from the high growth rate in the demand of these products.

Dairy Products

1.20 The dairy products sector was included as a case study only, despite the fact that it still requires further development. There are only a total of 58 medium and large firms operating in this sector which makes the survey sample too small to be suitable for statistical inference - not a good basis for analysis using the survey and case study methodologies proposed in this study.

1.21 Presently there is excess supply of fresh milk in the domestic market but the absence of good co-operatives in several areas prevents the full use of surplus milk. At the same time, there are imports of spray-dried milk into the country. The production of dairy products ranging from spray dried milk powder, yogurt, butter, and cheese could improve the utilization of surplus milk, if production was cost effective and exportable. Whether or not this is the case could be studied in the future.

Electronic Appliances

1.22 The electronic appliances industry has switched from import-substituting to export-oriented products. It employs the highest number of people and produces net export value (i.e. the export value of products is in excess of the import value of intermediate parts).

1.23 Thai companies tend to focus on assembly and production of basic metal and plastic parts, using medium technologies in their production. State of the art parts are produced by parent companies and hence, the assembly of most intermediate parts begins with semi knock down kit (SKD) parts.

Computer Hard Disk Drives and parts

1.24 Previously, integrated circuits (IC) were the major exports but have been overtaken by hard disk drive (HDD) exports. Currently, parts of hard disk are the main exports originating from direct foreign investment and Thailand ranks second to Singapore in producing hard disk drives. There are approximately 500 suppliers of hard disk drives and components, and about 100 of related products. American and Japanese companies operate in this segment of the industry.

1.25 About 70 percent of a hard disk drive's total cost can be attributed to imported parts with the motor and the printed circuit board (PCB) assembly being the major imported parts. Even for local produced PCBs, major parts are imported: Copper Clad Laminate (CCL) and Impregnated fibreglass represent some 40-50 percent of the total cost of production of the PCB. Germany and Japan supply epoxy and fibre glass. Chemical suppliers (the US, Singapore and Japan) supply phenolic resin, epoxy resin, polyamide and polyphenylene. Micromotors are an interesting product for future production in Thailand as they are the most important imported components.

Office Automation Equipment (faxes, photocopiers, etc)

1.26 Production of office appliances is intended for both domestic and overseas markets. Equipment such as fax machines and copying machines will soon be important exports. Photocopiers are made in Thailand by companies such Hitachi and Cannon and destined for the markets in Japan and the US. Sharp Appliances (Thailand), Cal-Com Electronics (Thailand), and Hitachi produce facsimile machines. These machines are also exported to the US and Japan.

1.27 Thai firms have expertise in both computer peripherals and office automation equipment, which puts them in a unique position to take advantage of new business technology, which is incorporating the principles of e-commerce.

Textile and Garments

1.28 The textile and garment industry comprises upstream production (e.g. synthetic fibre production, which requires high capital and technology-intensive processes), midstream production (spinning, weaving, dying and finishing processes, which also require capital-intensive techniques, but lower technology) and downstream production (garment production, which is labour-intensive).

1.29 The textile and garment industry has strong links with many other related industries, such as those manufacturing zippers, buttons and elastic. It creates employment and

produces substantial foreign exchange earnings. Thailand exported textiles and garments worth US$4.6 billion from January to November 1999. Following the recession after 1997, there have been significant factory closures, which make it difficult to estimate current employment in the sector, although it is estimate that around 40-50,000 jobs were lost during the recession. Before the slump, the garment industry had 1.2 million workers and the textile industry had 500,000.

Garment

1.30 The garment industry is labour intensive and has the highest number of firms. About 880,000 persons are employed in 3,000 factories manufacturing garment and garments. Garment export has been declining since 1995 due to higher wages (low-end garments cannot compete with products from China, Vietnam and Indonesia) and to the recent economic recession. The Thai garment industry has forecast exports of US$4.8 billion in 2000. The United States and the European Union are the largest markets for Thai garments. Around 50% of Thai exports go to the US, while exports to the EU account for around 23% of Thai exports.

1.31 There are export opportunities in the garment sub-sector, including knitwear and garments made of woven fabrics, as cost advantage is not eroding as quickly as in other sectors. Synthetic fibres and blended yarns are the predominant fabrics with silk, wool, other fibres used in some cases. These are mostly imported and tend not to be regularly available from stockholders in the country, only through purchasers' orders. Other materials such as zippers, buttons and fabrics are either imported or locally sourced.

Automotive Components

1.32 The automotive components and assembly sub-sectors, within the automobile industry, are combined in the national statistics. It is one of the top value-adding industries. The parts industry is catering for two segments: Original Equipment Manufacturer (OEM) and Replacement Equipment Manufacturer (REM). The sector has a sufficient capacity to supply the large market, and a good range of products. The Thai production of auto components supplies roughly 44 percent of the ASEAN market for these parts.

1.33 The sector has potential for growth and is supported by existing capacity in feeder industries such as casting, metal pressing, and mould injection. Technological progress in the auto components sector feeds through to these feeder sectors. Thus the

overall value added of Thai industry can be increased in future if technological progress in the auto components sector is nurtured.

Pressed Metal Parts

1.34 The study focused on pressed metal products. This is an important sector, with fairly similar cost factors. Within this sector, the manufacture of filters is fast growing industry in Thailand. Thai manufacturers of automotive filters today produce some 500 types of oil, fuel, hydraulic oil and air filters, for automobiles, trucks, buses, tractors, marine engines, and air compressors. There is market potential for these products, which has a large replacement market where cost is more important than brand name. Environmental regulation on automotive emissions is driving filter companies to innovate and produce higher-value added products, so Thai manufacturers need to invest well in R&D and product development.

Plastic products

1.35 The plastic products industry generally strengthens as per capita income grows. It is labour intensive whilst needing considerable capital investment, and it has further export possibilities as the large companies within the sector are competitive.

Household plastic goods

1.36 Whilst small and medium sized firms in the household goods sector produce a large variety of products for domestic use, many large companies produce for exports bringing in valuable exchange into the economy. A substantial percentage of these companies are now involved in precision moulding and sophisticated extrusion processes.

1.37 Household goods from plastics have good prospects in the medium term. There is further room for exports as demand grows in other newly industrialising countries.

Specialty and engineering plastic products

1.38 An important growth segment of the plastic products industry is specialty plastics and engineering plastics. Future appliances will use more of these plastics. Sectors that demand more specialty plastic products include the electrical appliances and electronics industry, the food processing industry, the automotive parts industry, and cable and wire producers.

Rubber products

1.39 Thailand is the world's largest producer of rubber. The rubber products industry is amongst the top ten Thai foreign exchange earners and has a good potential in the future in terms of higher value added, number of firms and employment. Important rubber products include rubber tyres, latex gloves, condoms, and rubber bands. In percentage of total production, Thailand exports 33 percent of tyres, 35 percent of rubber gloves, 7 percent of rubber bands and 25 percent of other rubber products.

Latex Gloves

1.40 Latex glove is now the number one rubber product exported from Thailand and its future potential remains high. Latex gloves, which include examination, surgical and household gloves, are manufactured from concentrated natural rubber latex (CNRL). Since the initial development of the latex industry in Thailand just over ten years ago, the industry has made considerable progress. The quality of concentrated latex produced in Thailand is acceptable, and as a result Thailand has started exporting concentrated latex.

1.41 CNRL contains approximately 40% water, so it becomes increasingly less cost effective for manufacturers outside Thailand to import CNRL from Thailand to manufacture products in their own countries. Therefore, there is an advantage of manufacturing latex gloves in rubber producing countries like Thailand, Malaysia and Indonesia. In addition, Malaysian manufacturers are at a cost disadvantage, as they face a shortage of labour and have to import latex from Thailand.

1.42 The glove manufacturing sector, which has overcome the initial manufacturing problems 10 years ago, now possesses the necessary technology to manufacture good quality products. However, the industry still needs R&D to further develop its products. The world requirements at present are focused on low protein, powder-free gloves and puncture resistant gloves for medical use. The technology for manufacturing of such products is still lacking amongst the latex glove manufacturers in Thailand but this can technically be overcome without much problem.

Non-passenger tyres

1.43 A large proportion of rubber products is destined for exports (80 percent). The rubber tyre-manufacturing sector, which supplies up to 80 percent of total production for the domestic market, is the exception. In general, Thai rubber processors have to import

synthetic rubber. In contrast non-passenger tire manufacturers mainly use locally grown natural rubber and so have a competitive advantage in world markets.

1.44 The non-passenger car tyre sector includes truck tyres, industrial vehicle tyres and tyres used in the agricultural sector. There is a large market potential for these tyres both at home and overseas, as brand name is not as important as it is for passenger car tyres. Furthermore, since this group of tyres consumes a high percentage of natural rubber, expansion of this industry will also ensure increasing usage of natural rubber in the future. At present the export of heavy-duty tyres is second to latex gloves, but if given suitable support for expansion, it can become the most important exported rubber product.

1.45 Presently the volume of export of heavy-duty tyres is second to latex gloves but if this industry is given suitable support for expansion, it can become the most important exported rubber product.

Leather goods

1.46 The leather goods industry comprises tanned leather, leather footwear, leather bags, leather furniture and leather toys for pets. In 1995 the Thai share of the world market for leather footwear stood at 5.2 percent; leather bags at 3.1 percent; and tanned leather at 1.8 percent.

1.47 The Asian Free Trade Agreement (AFTA) scheme classifies leather goods as qualifiers for fast-track tariff reduction. Those goods with tariff below 20 percent were reduced to 5 percent in 1998 and those with tariff exceeding 20 percent are being reduced to below 5 percent by 2000. The domestic market for leather goods is not affected by this reduction of tariff rates, as consumers in Thailand prefer better quality products, but the reduction of tariff rates within ASEAN should boost exports of Thai products.

1.48 The leather goods industry turned into one of the top ten foreign exchange earners when foreign companies began to invest in treatment plants in Thailand which turn raw hide into quality leather. Most Thai leather goods exports are holding their market shares in medium and high-end goods. It has a good potential in the future for the production and export of higher value added products and for the development of own brands.

Leather Footwear

1.49 Leather footwear for the low-end & medium-end market is performing well in some export markets. Whilst overall export value decreased last year, footwear export value continues increasing. The government has promoted leather footwear exports via tax rebates and funding of exhibitions, and the export value has increased in recent years. Thus, these efforts seem to have paid off. Important markets are the US, Denmark, and UAE.

Leather furniture and upholstery

1.50 Leather furniture in general has a mixed future as some firms export to stores such as Ikea but will increasingly face stiff competition from central European countries. Indeed, traditional designs, which are bulky, heavy and expensive to transport, are at a disadvantage. But, new modern, light innovative designs are sought after in European and American markets. As the competitiveness of Thai wooden furniture decreases, this is a timely opportunity for Thai firms, to combine their expertise and skill in wooden furniture design with the leather upholstery skill, and manufacture with good quality leather furniture for export.

THE AGENTS: COMPANIES AS ENGINES OF COMPETITIVENESS

1.51 The competitiveness of a sector depends on the competitiveness of its individual firms. For policy analysis, the economic analysis of competitiveness has been widened to include studies of the competitiveness of the firm. The management of a dynamic and prosperous company contributes to the competitiveness of that firm's country of origin. Firms, therefore, become the crucial *engine* of national competitiveness, through the relationships amongst them.

Companies used as Case Studies

1.52 Two representative companies per industry were selected to be used as case studies. Of special interest to this study were examples of increased competitiveness through optimum cost management. The requirements of increased competitiveness are: first, recruitment of better quality people; second, innovation and quality improvement generated from cumulative experience; third, increased financial stability; fourth, implementation of improved management and organisational techniques; and finally, more effective allocation of resources.

1.53 The companies visited are:

(i) Food Processing:

- An average-sized Thai manufacturer of canned fruit juice, canned tuna and ready-to-eat meals. Despite its extensive diversification, the firm is considered to be a small manufacturer in comparison with the other three major players in this industry. This company is representative of the firms in the sector for various reasons. First, the company has the production capacity of an average large processor in the industry. Second, the company, like the majority of firms in the industry, is 100% owned and managed by Thai nationals.

- A large joint venture manufacturer of pasteurised milk, yogurt, and UHT milk to be distributed nation wide. This company is representative of the firms in the industry because most firms in this sector are joint ventures with foreign counterparts. In this case, the local partner is active in managing the production functions, but local management practices are instilled into this company.

(ii) Electronic and electric appliances

- A large foreign manufacturer of components used for computer hard disk production and other products. The company has been set up in Thailand as a manufacturing operation by the parent group based in Japan. Because the company's main product has a proprietary license by an international group, the company holds 50% share of the world market. The firms in the sector are mostly foreign-owned, and located in specialised R&D centres. The major difference between the company in the case study and small and medium sized hard disk part manufacturing companies is that this company has adequate technical and financial strengths. SMEs would lack such capability.

- A large foreign manufacturer (assembler) of fax machines, printers and integrated circuits. The company is fairly representative of companies operating in this sector, as most firms in the office appliances sector are foreign assemblers. The company has been set up in Thailand by the Japanese parent group as an assembly operation. It appears that there are a few firms which manufacture products for office automation, but most of them are also Japanese.

(iii) Garment

- A large Thai manufacturer of shirts, trousers and suits (smaller manufacturer of the ten large shirt producers in Thailand), and
- A small Thai manufacturer of sports and leisurewear.

~ The two companies visited have a relatively high level of investment, which is not typical of other low cost producing nations, as these countries rely on the people rather than on the technology as their main resource. However, it appears that these firms are representative in so far as Thailand is not a very low cost producing nation. Its labour cost is 4 to 5 times higher than in Bangladesh and China, as shown by Sanjaya Lall in his work for the Ministry of Industry (1998). The level of investment also seems representative as a result of 10 years of high steady economic growth and very high levels of foreign investment. Both companies are contractors and have no original design or product development capability. This is typical of manufacturers in developing economies. However, value is being added due to own fabric purchases allowing potential increase in margins.

(iv) Automotive Components

- A large Thai manufacturer of automotive components, and
- A large Thai manufacturer of automotive filters.

~ Both are family run. Their management and production styles depict the distinct character of Thai firms, but it is unusual for such family firms to have large market shares. It is normal for Thai firms to have some family influence in management and to focus on labour rather capital-intensive process.

(v) Plastics

- A small Thai manufacturer of pallets, crates, furniture, industrial and automotive parts, and
- A small Thai manufacturer of automotive and motorcycle parts.

~ Although both firms visited are public companies, the management and ownership structures of the companies visited clearly demonstrate the strong family influence which is characteristic of Thai firms. The family group owns the majority of shares in each case.

~ Unavailability of data makes it difficult to establish the size of a typical injection moulder and also to obtain the industry breakdown by company size. Nevertheless, it is known that there are several hundred small moulders, some with only 2 employees. Thus, it appears that the companies visited are representative of this industry, which is populated mainly by small companies.

(vi) Rubber products

- A small foreign-owned manufacturer of latex gloves. The company is a small firm with both domestic and international business, which is characteristic of Thai firms in the gloves industry. The major difference between this company and most other small and medium size Thai glove manufacturing companies is that this company has the capability to design or adapt production or test equipment, whereas their Thai counterparts would lack such capability. Most other manufacturers would have to buy turnkey equipment packages, which increases their technology cost, or make do with inefficiently designed equipment which means more defects or lower production output.

- A large Thai manufacturer of non-passenger car tyres. Although most companies in rubber tyre manufacturing are joint venture with foreign partners, and the company visited is fully owned by Thais, the company is fairly representative of Thai companies operating in this sector, although some may not own their own transport vehicles. The major difference between this company and most other tyre manufacturing companies is that, this company has developed its know how by itself, whilst other firms rely on their foreign counterparts in this area.

(vii) Leather products

- One large Thai sports shoe manufacturer that makes premium products for high profile international brand names was visited. Related companies manufacturing soles and tanned leather were included in the case study.

~ Compared to other players in this industry, this company is very competitive and well above average. One main reason for selecting this firm is that it possesses sophisticated production and management systems, whilst SMEs mainly have basic systems which are not competitive world-wide. Another reason was the possibility to investigate the supply chain of the company. As one of its subsidiary companies is one if its main suppliers, this has enabled us to get the

full picture of leather footwear industry in Thailand.

- A small furniture manufacturer that operates as a contractor. The company is representative of small manufacturers in the leather furniture sector in Thailand. Not only is it a small scale operation, but also it is registered as a limited company, although its operation is identical to a single proprietorship. The management is strictly under the control of a single owner or one of his family members.

SURVEY SAMPLING FOR COMPANY SURVEY AND BREAKDOWN OF SURVEYED SAMPLE

1.54 An extensive survey was carried out using a combination of postal, telephone and face-to-face interviews. The selection of a representative sample of Thai companies, and the origin of the 449 possible respondents, was based on the breakdown of the *population* of companies by registered capital and by size given in the "The report of Industrial Census Whole Kingdom, 1997". It was ensured that the sample was representative of the entire population of companies, including locally controlled, foreign-controlled, large, medium and small.

1.55 Out of the 449 firms contacted 121 firms were interviewed, mainly during face-to-face and some during telephone interviews. It was impossible to interview some companies, mainly very small or with some foreign ownership. Seven responses were received by mail, which were later followed up by telephone interviews. Five were acceptable.

1.56 The empirical findings are derived from a detailed questionnaire-based survey of 126 companies in Thailand, 65% owned by Thais and 21% locally controlled. 73% of firms were SMEs (under 500 employees), so it was considered that the respondents' composition was satisfactory enough to represent these companies. Tables 1-3 and 1-4 show the detail breakdown of the survey sample.

1.57 The majority of companies focus on one main revenue-earning activity.

Table 1-3: Number of Survey Firms classified by Size

Sector	Small Firms (< 50 employees)	Medium Firms (50-500)	Large Firms (>500)
Ready Meals	3	7	8
Electronic appliances			
Hard Disk parts	0	0	4
Office Equipment	1	2	2
Garments			
Knitwear	0	7	3
Woven garments	1	12	4
Automotive parts			
Filters	2	0	1
Pressed parts	1	18	1
Plastic products			
Engineering	0	2	1
Household	6	7	1
Rubber products			
Latex Gloves	1	5	1
Rubber Tyres	0	1	1
Leather products			
Shoes	4	5	5
Furniture	3	4	2
Total	22	70	34

Table 1-4: Number of Survey Firms classified by Ownership

Sector	Foreign-controlled	Locally-controlled	Thai Owned
Ready Meals	1	4	13
Electronic appliances			
Hard Disk parts	4	0	0
Office Equipment	3	1	1
Garments			
Knitwear	0	4	6
Woven garments	0	6	11
Automotive parts			
Filters	0	0	3
Pressed parts	5	4	11
Plastic products			
Engineering	0	1	2
Household	1	0	13
Rubber products			
Latex Gloves	0	3	4
Rubber Tyres	0	1	1
Leather products			
Shoes	3	1	10
Furniture	0	2	7
Total	17	27	82

2. THAI INITIATIVES RELATING TO COMPETITIVENESS

2.1 This chapter describes how Thai industrial policies affect the competitiveness of the firm, of the sector and of the nation. The first section reports on current industrial policies, measures and implementing agencies, mainly included in the Industrial Restructuring Plan approved by Royal Thai Government Cabinet in April 2000. The following short section reviews the impact of these policies at the national and sectoral level. The remainder of the chapter summarises key issues reported by enterprises on the impact of the industrial policies, particularly the BOI incentives.

INDUSTRIAL POLICIES

General Background

2.2 Industrial policies have gravitated around the import-substitution period, semi-import substitution period, and gradual opening to export promotion. The period from mid-1990 is regarded as the gradual opening to export promotion.

2.3 Thailand has not progressed from the import-substitution regime into the export promotion regime in full - opening of the markets came after 1995. The objective was to encouraged exporters by removing the internal tax burden embedded in the production of exportable products, by for example:

- providing tax-rebates, and tax refunds under the Article 19 (2) of the Customs Act;
- encouraging the use of export credit from financial institutions including the EXIM Bank of Thailand at concessional rates;
- providing some domestic protection to start-up companies to improve the chance of survival (through BOI).
- providing another form of protection by local content requirements on foreign-owned manufacturers (through the Ministry of Industry).

2.4 The overall effect of a trade regime that is neither truly export-promoting nor import-substituting is clear: domestic consumers face high prices for most products consumed. There is still protection on the domestic market which leads to high prices, and at the same time producers selling to the local market are bearing a higher tax burden in order to give tax concessions to exporters. The policy has been

successful in encouraging exports but detrimental for companies producing for the domestic market. Negative effects ultimately include reducing the rate at which domestic business will grow.

2.5 It is clear that the national competitiveness of Thailand was deteriorating throughout the 1990s, and that the overall cost of business activities could not measure up to competing countries. First, there was a huge deficit in the trade account stemming from heavy import of consumption goods, raw-materials and intermediate products, and equipment. Second, the mirror image of this trade deficit was showing up in the budget deficit due to non-productive investment. Third, Thailand was inviting many foreign companies to participate in the economic growth without looking at the real net benefit. For example, many semi-conductor companies gave little or no value-added to the economy due to huge import of parts, and limited employment. Fourth, wages in Thailand were rising faster than its partners in many labour-intensive activities. Fifth, the cost of doing business in Thailand rose proportionately faster than many countries in the region.

2.6 In other words, the net effect of giving tax concessions and incentives to exporters while at the same time protecting domestic producers from competition was to generate foreign investments which were not related to Thailand's resource advantages. They are mainly assembly industries, capital intensive, and importing raw and intermediate products and equipment.

2.7 The 1997 economic and financial crisis clearly indicated that not only should policy directions of the Thai government change, but also that Thai industries should brace themselves to restructure their production, quality control, marketing, financial management and general administration of their organisations. Firms must be leaner, with higher productivity, in order to trade competitively around the world. Without these radical changes in firms, it would be difficult for them to compete in the future.

2.8 Since 1998, the government toyed with two options to jump-start the real side of the economy. These are through a) internal demand and/or b) exports. Rejuvenating internal demand during recession faced a daunting prospect with shortage of funds in the public sector and limited ability of government borrowings from multilateral agencies and private sources. The Miyazawa Fund available from Japan is an exception to this statement. In the end, the financial cost of borrowings appears to overwhelm the social rate of return by a wide margin. The investment impetus from the private sector has been hampered by widespread non-performing loans in the commercial banks. Commercial banks thus have been reluctant to extend credits to

the real sector. The clear alternative was to help the exporting sector to become the locomotive pulling other sectors out of the recession.

2.9 In doing so, the Industrial Restructuring Plan (see Appendix 1), an ambitious set of strategies and measures for industrial restructuring, has been approved by Royal Thai Government Cabinet in April 2000. Import taxes and duties have been modified since the crisis in 1997. Promotional privileges extended by the Board of Investments (BOI) have been reshaped so as to help attract investment of the desired type and to the target industries and geographical areas.

2.10 Besides facilitation of industrial strengthening by the government, an additional point of consideration is the changing AFTA scheme (Asian Free Trade Agreement) in 2000 which has opened up more competition within ASEAN, and prior WTO trade agreements which will ultimately result in deeper tariff cuts. Indeed, although the WTO ministerial agenda could not be concluded in Seattle in 1999, it is likely that developed countries will continue with the tariff reduction trend. Meanwhile, despite some difficulties with delays in reducing tariffs, ASEAN members have agreed in principle to implement the AFTA targets by 2003, with tariffs for intra-ASEAN trade cut to 0-5%.

Import Duties and Taxes

2.11 In an effort to further increase industrial competitiveness and reduce costs for local industry, imported taxes and duties were changed for most of imported items in May 1998. Since then, raw material is taxed at 0-1 percent and intermediate products at 1-5 percent. Import taxes and duties were again lowered for some items at the beginning of July 2000. However, the following table shows that Thailand's import duties are still rather uncompetitive in the ASEAN region in some cases. These taxes are for ASEAN countries excluding Cambodia for which data was available and for the period 1998-2003. The products and countries for which there was data beyond 2003 show the year in brackets. The table does not show Most Favoured Nation status or adjustments to import duties such as when raw materials have sensitive, normal track, fast track and exception status.

Table 2-1: Rough Comparative Table of Import Duties ranges in ASEAN countries for selected Industries' raw materials (%)

Year	1998									2003								
Sector	**Thailand**	**Indonesia**	**Malaysia**	**Philippines**	**Vietnam**	**Laos**	**Myanmar**	**Singapore**	**Brunei Dar.**	**Thailand**	**Indonesia**	**Malaysia**	**Philippines**	**Vietnam**	**Laos**	**Myanmar**	**Singapo**	**Brunei Dar.**
Ready Meals	5 -20	5	0 -11	0-20	-	-	-	0	0	5	5	0 -5	0 -	-	-	-	0	0
Electronic appliances																		
Hard Disk parts	0 - 5	0	-	3	-	-	-	0	-	0 - 5	0	-	3	-	-	-	0	-
Office Equipment	2.5 – 5	0	0	3	-	-	1.5	0	-	2.5	0	0	3	-	-	1.5	0	-
Garments	1-15	0-15	0-11	0-20	5-45	5	0-10	0	0	1-5	0-5	0-5	0-5	0-5	0-5	0-5	0	0
Automotive parts																		
Filters	5 – 10	0 - 5	5 – 20	-	-	-	-	-	-	5	0 - 5	0 - 5	-	-	-	-	-	-
Pressed parts	5 – 20	0 - 5	5 -20	-	0	-	1.0 - 3	0	0 –20	5	0 -5	-	-	0	-	1.0-3	0	0 -20
Plastic products	5-20	2.5-5	0-11	3-10	0-5	5	0-1.5	0	0-5	5	2.5-5	0-5	3-5	0-5	5	0-1.5	0	0-5
Rubber products																		
Latex Gloves	5-10	0-5	0-5	10	2-15	-	-	0	0	5	0-5	0-5	5	2-5	-	-	0	0
Rubber Tyres	0-15	0-20	0-20	0-15	5	-	-	0	0	0-5	0-5	0-5	0-5	5	-	-	0	0

Source: Compiled by WSA using data from Ministry of Finance (Thailand), Fiscal Policy Office, International Economic Policy Division, AFTA Section.
Note: – means N/A.

2.12 The VAT rate was increased from 7 to 10 percent but in an effort to increase consumer spending the increase will only be effective from October 2000.

Promotional Privileges by the BOI

2.13 The usual BOI incentives include tax and tariff exemptions for machinery and raw materials, and exemptions on corporate income tax for 3-8 years. The privileges are geared towards those industries that are economically and technologically appropriate, and have adequate preventive measures against damage to the environment. Flexible measures have been recently introduced not only to help industry comply with WTO regulations but also to attract more Thai and foreign investment. For the first time, investment incentives are only granted to firms if they make commitments to research and development, staff training and compliance with international quality standards within a certain period after commencing operations.

2.14 The main privileges are:

- Tax-based incentives (tax holidays and tax exemptions) depend on project location, industry and investment conditions. Projects in priority areas (basic transportation systems, public utilities, environmental protection/restoration, direct investment in technological development, basic industries) receive corporate income tax exemption for eight years, and import duty exemption/reduction on machinery depending on location. Projects located in locations denominated zones 1, 2 or 3 may receive additional incentives including further tax and duty reductions, as well as allowances for infrastructure investments.

- Non-tax privileges (guarantees, protections, permissions and services).

2.15 The BOI has introduced zoning privileges to push industries into disadvantaged remote areas. For the purpose of granting tax incentives the BOI continue to divide Thailand into three zones. Zone 1 which is Bangkok and five neighbouring provinces usually receive the least promotion privileges. Zone 2 which comprises 12 provinces receive more privileges than Zone 1 but less than Zone 3. Geographical areas classified as Zone 3 are those least attractive to investors, with low per capita income and inadequate investment facilities. Firms which locate in Zone 3 areas are eligible for privileges such as tax exemption for machinery imports, corporate income tax exemption for up to eight years, and tax free raw material imports for five years.

2.16 During 1998 - 1999, less investment was recorded in terms of capitalisation despite increased numbers of applications to BOI for promotional privileges.

Other Incentives

2.17 The Department of Customs operates under the Customs Law (B.E. 2464) which is 80 years old law. The Article 19 (2) of that law permits the exporters to refund their tariff previously paid for raw-materials imported and now included in finished exported items. It is stipulated that waiving taxes is at the discretion of the Customs Director General.

2.18 The Customs Department also operates the bonded warehouse system. At each bonded warehouse, customs officials inspect incoming goods and outgoing goods. Usually these incoming and outgoing goods are sealed in containers. Bonded warehouses are ideal for 100% export business.

2.19 The Ministry of Industry through its Industrial Estate Authority also operates schemes like the bonded warehouse system.

2.20 The above shows that the applicability of tax exemptions and bonded warehouses systems is somewhat limited. In order to obtain a more general coverage, the proposed structure for waiving taxes under the Customs Law can be broaden to cover imported raw materials and intermediate goods for the manufacture of exported products.

Industrial Restructuring Plan – April 2000

2.21 The Industrial Restructuring Plan approved by the Royal Thai Government Cabinet in April, 2000 comprises strategies, measures and implementing agencies to direct the overall industrial restructuring plan of 13 industries (see appendix 1). Three different phases are considered: a) 1999 - September 2000, b) 2000 - 2001 and c) completion by 2004.

2.22 The first phase focuses on improving production processes and labour skills, developing small and medium-size enterprises (SMEs) and relocating factories to regional industrial estates along with upgrading machinery to less environmentally damaging technology. Target industries include, food and animal feed, textile and garments, footwear and leather, electrical appliances and electronics, and vehicles and

autoparts (excluding those made of rubber and plastic).

2.23 The second phase focuses on promotion of business consulting services and research & development. Target industries include all 13 industries in the industrial restructuring plan. No specific plans have been laid out for phase three.

Industrial Policies Particular to SMEs

2.24 Various laws and plans have been approved to assists SMEs in particular in the area of manufacturing relocation, machinery and equipment overhaul, business consulting, and research and development promotion. The SME Development Master Plan – with particular reference to the manufacturing sector – comprises seven strategies, details of which are included in Appendix 1. These are:

- upgrade technological and management capabilities of SMEs;
- develop entrepreneurs and human resource of SMEs;
- enhance SME's access to markets;
- strengthen financial support systems for SMEs;
- provide a conducive business environment;
- develop micro-enterprises and community enterprises;
- develop networking of SMEs and clusters;

2.25 The SMEs Act 2000 has been in existence since February 2000 to enhance and support the development of SMEs. A newly established SMEs Office will be formed to coordinate and implement the plan. Financial support has also been approved since August 1999 including:

- 1 billion baht venture capital fund;
- special SMEs loan program being extended by commercial banks;
- Thailand Recovery Fund being managed by the ADB,
- extension of SMEs credit guarantee and loans being extended by Small Industrial Financial Corporation.

2.26 One key strategy of the 1st phase of the SMEs plan aims at improving production processes. It is the first time that this type of strategy is linked to BOI's investment incentives. Though the response by industry has been slow, it is believed that much

improvement in production efficiency will take place in the later phases.

EFFECT OF INDUSTRIAL POLICIES ON SECTORAL AND NATIONAL COMPETITIVENES

Benefits derived from the Industrial Restructuring Plan

2.27 Production and export of the country's major industries such as electronics, automobile, latex gloves, construction and toys has improved significantly. Those industries with sluggish growth are steel, petrochemicals, textiles, ceramics, and pulp and paper.

2.28 In general, the first-phase initiatives have been quite successful in attracting large firms which are relocating and upgrading their machinery. Many firms, however, have not joined the programme for relocating and upgrading due to concerns on how to undertake further loan repayments whilst they are severely short of liquidity and burdened by high debts. SMEs, in particular, need strong support from the government if industrial restructuring is to be successfully completed. For this, the government approved 3.77 billion baht worth of loans, but only 1.59 billion baht was available during the first phase through the Industrial Finance Corporation of Thailand (IFCT) and Small Industry Finance Corporation (SIFC). In addition, the government allocated 667 million baht for the skill development program but only 364 million baht were drawn and four training projects were given with limited participation from industry. Some firms, particularly in the garment industries where much progress has been recorded in upgrading machinery, have used private capital and loans extended by commercial banks at more competitive rates, rather than government loans.

2.29 Despite the slow response by industry to the stimulus driven by government during the first phase, it appears that if implementation problems can be overcome during the first phase, much improvement in production efficiency will take shape.

COMPANY VIEWS ON THE EFFECT OF INDUSTRIAL POLICIES ON THE COMPETITIVENESS OF THE FIRM

2.30 The effect of industrial policies on the competitiveness of the firm is somewhat different to the effects at the sector and national level. As BOI incentives have been received by companies for some time now, firms were asked how a reduction or termination of BOI incentives would affect their company and its cost structure. This shed light on how prepared companies were for facing more competition and less

protective business environments in the future. In general, the companies stated that the effect, in order of importance, would take the form:

- increases in raw material costs;
- increases in the cost of imported machinery;
- increases in corporate income tax;
- lower production efficiency due to inability to import modern equipment;

2.31 The number of companies interviewed that had products being granted promotional privileges, is shown in Table 2.1.

Table 2-2: Breakdown of products being granted BOI promotional privileges on different sectors.

Sector		No. of firms interviewed in the survey
Food processing	Ready to eat meals	8
Electronic appliances	Hard disk drive parts	3
	Office Equipment	4
Garments	Knit wear	2
	Garments	3
Automotive	Filter	1
	Pressed metal Part	6
Plastic products	Engineering	2
	Household	1
Rubber products	Glove	3
	Tire	1
Leather products	Shoes	6
	Furniture	

Impact by sector

2.32 The following table 2-3 shows the effect of reduction or termination of BOI incentives for the industries studied, based on the opinions of the managers interviewed.

2.33 Most managers thought the main impact of BOI incentives was on their cost of raw materials or imported machinery, via import tariff reductions and refunds. The rubber products and garment industries did not see the impact on materials as important (they

have mainly domestic sources of supply) and the autoparts, food and leather industries did not see the impact on equipment costs as important. Four sectors thought the impact on corporate income tax was the most important suggesting that tax breaks could be gradually removed to avoid abrupt ends to promotional periods.

2.34 The conclusion from this would seem to be that the main impact of BOI incentives is to support the import of raw materials and equipment – i.e. promoting inappropriate forms of investment. The corollary is that when after 5 years these concessions are withdrawn these firms will suffer a shock to their competitiveness unless they have helped to develop supplier industries in the meantime.

2.35 The same incentives, however, are hindering the development of firms supplying to domestic customers, so they are preventing the development of essential feeder industries. For example, according to managers in the leather sector, some government incentives designed to promote export activity in the private sector, are reducing the rate at which domestic businesses will collaborate and grow. This affects their suppliers of hides.

Table 2-3: Perceived Effect of Reduction or Termination of BOI incentives on Costs

Industry	Increase in raw material costs	Increase in cost of imported machinery	Increase in corporate income tax
All sectors studied	✓✓✓	✓✓	✓
Garments		✓✓✓	
Automotive	✓✓	✓	✓✓✓
Electronics	✓✓✓	✓✓✓	
Food	✓✓	✓	✓✓✓
Leather	✓✓✓		✓✓✓
Plastics	✓✓✓	✓✓✓	
Rubber		✓✓	✓✓✓

Source: interviews and survey of enterprises

Effects by Company Size

2.36 The effect of industrial policies on companies' cost structure appears to vary by size. The tables below depict the effects of reduction or termination of BOI privileges according to companies interviewed. The general trend is followed, but medium sized

firms regard the main impact as increase in the cost of machinery rather than the increase in raw material costs. This may reflect the need of medium sized firms to upgrade their equipment as a prerequisite to increases in production capacity.

Table 2-4: Effect of Reduction or Termination of BOI incentives on Costs by company size

Industry	Increase in raw material costs	Increase in cost of imported machinery	Increase in corporate income tax
All firms surveyed	✓✓✓	✓✓	✓
Small	✓✓✓	✓✓	✓✓
Medium	✓✓	✓✓✓	✓
Large	✓✓✓	✓✓	✓

Source: WS Atkins survey. Only the top three impacts mentioned are included in the table. No of ✓ indicates importance given by the industry to reduction or termination of the BOI privileges.

Effects by Company Ownership

2.37 Fully Thai owned firms regard the main impact as increase in corporate income tax rather than the increase in raw material costs and are less concerned about materials costs. The opposite is true for foreign owned firms. This may be because foreign owned investments tend to rely most on imported equipment, materials or kits from their parent, and are also able to minimise tax payments by transfer pricing – i.e. setting the prices at which components and materials are sold from the parent company, or prices at which finished goods are sold to parent company or traders, to minimise profits and tax.

Table 2-5: Effect of Reduction or Termination of BOI incentives on Costs by company ownership

Industry	Increase in raw material costs	Increase in cost of imported machinery	Increase in corporate income tax
All firms surveyed	✓✓✓	✓✓	✓
Foreign controlled	✓✓✓	✓✓	✓
Thai controlled	✓✓✓	✓✓	✓
Fully Thai Owned	✓✓	✓	✓✓✓

2.38 Different corporate attitudes among owners and employees may also account for these different perceptions between Thai and foreign companies. Most managers for

foreign firms are employees whilst managers of Thai firms are also owners. Mgrs of foreign owned firms are therefore more connected with operating margins, and not with corporate profits and tax.

IMPACT OF TRADE LIBERALISATION ON THAI INDUSTRY

2.39 One of the main threats presented to industry at the moment is the reduction or termination or privileges for exports, such as the American General System of Preference (GSP) and similar schemes. To shed light on this issue, companies were asked about the effects on its cost structure if these privileges were terminated. In general, they think main effect would be loss of revenues followed by increased in cost per unit. Small companies considered the main effect to be increase in costs per unit followed by decrease in revenues.

2.40 The perceived effect of trade liberalisation on companies' cost structure appears to vary by ownership. The tables below shows that although decrease in revenues is in general the main effect, foreign controlled companies see the loss of overseas markets as important.

Table 2-6: Effect of Reduction or Termination of trade privileges by company ownership

Industry	Increase in cost per unit	Decrease in revenue	Loss of overseas markets
All firms surveyed	✓✓	✓✓✓	
Foreign controlled	✓	✓✓	✓✓✓
Thai controlled	✓✓✓	✓✓	✓
Thai fully owned	✓	✓✓✓	✓✓

Source: WS Atkins survey

Notes: The number of ✓ denotes the importance given by industry to the effect of reduction or termination of trade privileges. Only the top three effects mentioned are included in the table.

SUMMARY AND CONCLUSIONS

2.41 Production and export of the country's major industries such as electronics, automotive parts, and latex gloves has improved significantly. In general, the first-phase initiatives have been quite successful in attracting large foreign-owned firms, which are relocating and upgrading their machinery.

2.42 Several constraints still exists which impede the full benefits of the restructuring programme from being accrued. These include:

- Companies are severely short of liquidity and burdened by high debts. Concern over further loan payments stops firms taking advantage of the programmes.
- More competitive interest rates than those offered by the government for the restructuring programme appear to be offered by the private sector.
- The implementation of the programme can be improved by reducing the number of agencies involved and creating a forum to facilitate the exposition of private sector views.

2.43 The export promotion policy has been successful in encouraging exports and increasing employment but detrimental for companies producing for the domestic market, including for companies manufacturing raw materials which are declined in favour of imports for which there are import duty exemptions. Import taxes and duties have been modified since the crisis in 1997 and promotional privileges extended by the Board of Investments (BOI) have been reshaped so as to help attract investment of the desired type and to the target industries and geographical areas.

2.44 Much still needs to be done to prepare companies in the incentive programmes for the time when privileges are terminated (or companies stop qualifying for them). In general, the companies stated that the three main effects, in order of importance, would take the form:

- increases in raw material costs;
- increases in the cost of imported machinery;
- increases in corporate income tax.

2.45 If industrial policies are to target these issues, and help to make the existing export

industries more competitive and able to survive the withdrawal of incentives, the policies will need to:

(i) Promote the development of the feeder industries: the production of semi-finished products and equipment used by the leader industries. These should be based on indigenous materials and technology, so remission of import duties and privileged imports are not appropriate;

(ii) Provide business services, including the engineering design of production facilities and production engineering services, to reduce dependence on imported machinery and make existing facilities more productive.

3. THE POSITION OF THAI INDUSTRIES IN THE WORLD MARKET

INTRODUCTION

3.1 This section describes the competitive position of Thailand vis a vis that of its main competitors. The first section indicates the competitiveness of Thai industry by comparing the value of exports with those of competitor nations. For each of the industry sectors, the main competitor nations are then identified. The following sections gives a brief description of the world industry and its trends, and Thailand's position in the world industry, for each of the product sectors. Data from the case studies are then used to show how Thailand's productivity and performance compares to world class performance. Thailand's strengths, weaknesses, opportunities and threats are then summarised and future challenges are summarised.

RELATIVE EXPORTS AS MEASURES OF COMPETITIVENESS

3.2 This section illustrates Thai industry competitiveness by comparing its export level with that of other nations.

3.3 The tables below present country exports into the three main markets (EU, NAFTA[1] and Japan) mainly by countries at a similar level of development as Thailand. Although there is a degree of inaccuracy in these calculations (due to the level of aggregation of data at industry level), it is sufficient to indicate general magnitudes and trends. The statistics made it difficult to calculate equivalent tables for ASEAN countries, as complete data was only available for Malaysia. The lack of consistency of trade statistics for ASEAN markets made it impossible to compute imports by the sub-sector level for all markets bar the EU. Thus, the tables shown here represent the chapters to which the sub-sectors belong. It is assumed that most products within the chapter heading will follow the general trend in trade. This was checked for imports into the EU. Whilst the top main exporters were the same, the ranking was slightly different to that achieved using statistics by chapter.

3.4 It was estimated that the reported data probably includes some double counting of re-exported products. In particular we suspect that exports from countries without manufacturing, such as in the case of the automotive industry in Singapore, may

[1] North American Free Trade Area – USA, Canada, Mexico

include products shipped from other countries in the region through Singapore or Hong Kong. This must be taken into account when studying the tables of imports into NAFTA, EU and JAPAN.

Exports of the Main Thai Industries Studied

3.5 Table 3-1 shows the main exports into the EU, NAFTA and Japan.

Table 3-1: 1998 Imports into NAFTA, EU and JAPAN (Million US Dollars)

Industry	Food	Plastics	Rubber	Garments Knitwear	Garments Not Knitwear	Leather footwear	Auto-motive	Elec-tronics	Plastic and leather furniture	Total
United States	6,112	18,019	5,229	1,929	1,825	255	196,285	22,572	3,782	256,008
Japan	44	2,649	2,912	17	41	4	147,421	12,275	50	165,413
Canada	4,319	5,911	2,273	38	42	7	89,999	2,449	4,904	109,943
China	2,968	4,720	186	8,376	12,817	11,568	47,171	4,699	7,805	100,310
Mexico	711	1,129	558	3,334	4,508	38	74,376	4,013	3,687	92,354
Taiwan	980	1,909	612	1,525	826	241	41,374	1,360	2,086	50,913
Korean Republic	1,430	1,515	939	2,058	1,589	458	38,149	1,247	74	47,458
Malaysia	186	278	1,353	658	550	91	30,189	719	836	34,860
Singapore	247	198	155	328	90	5	30,627	1,136	16	32,802
Thailand	**3,585**	**516**	**1,265**	**1,335**	**1,071**	**646**	**12,855**	**770**	**748**	**22,792**
Philippines	444	102	30	893	1,254	79	14,866	442	438	18,548
Hong Kong	70	248	10	3,256	3,648	164	6,141	857	71	14,465
Indonesia	1,303	333	940	988	2,096	1,367	4,446	337	1,169	12,978
Brazil	819	69	362	12	7	1,174	4,434	195	231	7,305
India	817	198	112	1,100	2,116	441	1,257	68	242	6,351
Bangladesh	229	1	0	1,860	2,713	42	26	6	1	4,878
Vietnam	614	25	32	192	716	1,063	244	27	176	3,090
Sri Lanka	50	19	166	570	1,285	40	77	25	7	2,239
Macau	8	0	0	898	601	65	65	3	17	1,657
Argentina	1,043	31	58	1	1	4	249	17	108	1,513
Pakistan	60	5	2	731	484	20	26	65	22	1,416
Chile	1,179	8	28	3	7	2	90	4	49	1,371
Cambodia	13	0	5	425	635	29	0	0	0	1,107
Colombia	198	73	0	151	258	6	43	4	1	734
Venezuela	155	44	45	0	0	0	237	4	0	484
North Korea	184	11	1	3	77	0	117	1	1	396
Burma	52	0	0	128	69	5	3	0	0	256
Mongolia	0	0	0	33	36	0	1	73	0	143
Bhutan	0	0	0	17	119	0	1	0	0	137
Brunei	0	0	0	120	2	0	10	4	0	136
Myanmar	17	0	0	40	49	1	2	0	4	113
Iran, Islamic Republic	46	0	4	3	1	1	33	7	1	96
Maldives Islands	23	0	0	37	24	0	0	0	0	84
Laos	0	0	0	37	40	1	2	0	0	80
Nepal	0	0	0	7	12	0	1	0	0	20
Afganistan	0	0	0	0	0	0	2	0	0	2
Iraq	1	0	0	0	0	0	0	0	0	1

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

3.6 In general, Thai exports are competing with those from China, Mexico, Taiwan, Korea, Malaysia and Singapore. Exports from developed countries, such as the USA, Japan and Canada are thought not to be competing directly with those form Thailand: there are significant differences in the levels of quality and in the types of products offered by these markets and by Thai industry. Within the ASEAN-4 (Indonesia, Malaysia, the Philippines and Thailand), Thailand is more competitive (in terms of exports), than the Philippines and Indonesia.

MAIN COMPETITOR NATIONS

3.7 To focus the benchmarking analyses, Thailand's direct competitors were identified by studying their export structures (shown above) and by gathering qualitative information form sector experts and Thai industrial associations. In principle, the countries which export to the same markets as Thailand are considered as direct competitor unless qualitative reasons suggest that they are not exporting similar products. The exceptions were detected by qualitative information provided by industry associations through interviews, and by our Thai industrial experts. For example, in the case of food processing (particularly ready meals) Singapore can not be regarded as a direct competitor since it does not have any manufacturing activities. Normally, it has production bases in other countries such as Malaysia or Hong Kong and it just acts as an export agent – Singapore has the funding to buy brand name products.

3.8 As a result of this process, it appears that the main *direct* competitors of the Thai industries studied are those shown in Table 3.2. Those in bold are the most important.

3.9 The following sections analyse, for each of the selected sectors in turn:

- their export performance,
- industry trends and opportunities,
- the competitiveness of the sector in terms of company performance, profitability and cost constraints,
- their strengths and weaknesses, opportunities and threats, and finally
- the issues the sector must fact to improve competitiveness.

Table 3-2: Thailand's Main Direct Competitors

Industry	Sub-sector	Competitors
Food Processed	Ready-to-eat Meals	China, Vietnam and the Philippines
Electronics	Hard Disk Components	**Malaysia, Singapore**, Philippines and **China**
	Office Automation	**China**, Taiwan, **Malaysia**, and Indonesia
Garments	Knitwear and Woven	In USA markets: Chi**n**a, Korea, Taiwan and **Mexico**.
		In Middle-Eastern markets: **Indonesia**, **India** and Vietnam
Automotive	Pressed Metal Parts and Filters	India and China
Plastics	Engineering	Korea and Taiwan
	Household	China and Malaysia
Rubber and Latex	Rubber Tyres	Malaysia and Indonesia
	Latex Gloves	Malaysia
Leather	Furniture	**Indonesia** and **China**
	Footwear	**China**, **Brazil**, India and Italy

PROCESSED FOODS

Exports of Food Products into Main Markets

3.10 Table 3-3 shows the main food exports by country into the main markets. Thai food industry is the 3rd exporter of processed food into main markets and the most competitive amongst countries with the same level of development. Thailand is competing mainly with China and Korea in the EU and Japan. Other competitors from Asia include Taiwan, India, Vietnam and the Philippines. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, Nafta and Japan) is showed in the table below.

Table 3-3: 1998 Food Imports into Main Markets (Million US Dollars)

Exporter	All	EU	NAFTA	Japan	Exporter	All	EU	NAFTA	Japan
United States	6,112	705	1,065	4,342	**Colombia**	198	147	41	10
Canada	4,319	293	2,981	1,045	**Malaysia**	186	97	0	89
Thailand	**3,585**	**694**	**1,738**	**1,153**	**North Korea**	184	0	0	184
China	2,968	308	48	2,612	**Venezuela**	155	35	120	0
Korean Republic	1,430	120	2	1,308	**Hong Kong**	70	30	13	27
Indonesia	1,303	163	322	818	**Pakistan**	60	33	11	16
Chile	1,179	182	390	607	**Burma**	52	0	10	42
Argentina	1,043	683	249	111	**Sri Lanka**	50	15	10	25
Taiwan	980	74	223	683	**Iran, Islamic Republic**	46	32	0	14
Brazil	819	484	140	195	**Japan**	44	44	0	0
India	817	109	206	502	**Maldives Islands**	23	16	0	7
Mexico	711	54	468	189	**Myanmar**	17	17	0	0
Vietnam	614	82	155	377	**Cambodia**	13	5	1	7
Phillipines	444	79	183	182	**Macau**	8	0	2	6
Singapore	247	63	59	125	**Iraq**	1	1	0	0
Bangladesh	229	67	120	42					

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World Industry Trends Food Processing – Ready Meals

3.11 The world market for frozen ready meals was approximately 1.95 million tonnes in 1996 and was forecast to grow by 20% to reach 15.4 million tonnes in 2001. The frozen ready meals market is most developed in the US, where volume sales reached 734,000 tonnes in 1996 (see Table 3-4). The market is relatively mature, however, having risen by only 9% since 1992. Although the UK already constitutes a large frozen ready meals market, sales are still growing strongly, having increased by 43% between 1992 and 1996 to reach 332,000 tonnes. Indeed, ready meals in general have been one of the success stories of the UK food industry in recent years. Frozen varieties have been the focus of much product innovation including new international recipes, plated meals and light meals.

3.12 In many countries, ready meals still represent a young and fast growing market. Three-digit growth occurred over the 1992-1996 period in Italy, Sweden, Portugal and Greece. Germany represents the third largest market for frozen ready meals at 232,000 tonnes in 1996. However, the German market has remained virtually static in 1996, buoyed only by steady new product launches. Growth rates in Europe for 1997 remain very high, confirming strong opportunities.

Table 3-4: Major markets – volume sales of frozen ready meals 1992-1996

	1992	1993	1994	1995	1996	% change 1992/1996
US	672	702	724	730	734	9.2
UK	233	268	286	310	332	42.5
Germany	202	224	236	231	232	14.9
France	113	132	145	175	195	72.6
Japan	71	81	83	92	105	47.9
Denmark	33	43	47	53	58	75.8
Italy	20	24	32	43	56	180.0
Canada	41	45	49	52	56	36.6
Spain	26	28	33	40	42	61.5
Sweden	16	20	24	29	36	125.0
Netherlands	29	30	30	31	31	6.9
Australia	20	20	21	20	20	0
Belgium	16	17	18	19	19	18.8
Norway	11	10	14	16	18	63.6
Ireland	8	8	8	9	9	12.5
Portugal	3	3	4	4	5	66.7
Greece	1	1	1	1	2	100
TOTAL	**1,515**	**1,656**	**1,755**	**1,855**	**1,950**	**28.7**

Source: Euromonitor

3.13 The sector is dominated by the following multinational and large national companies: Apetito AG, ConAgra, Frosta AG, HJ Heinz, Mccain, the Pillsbury company (Diageo), Sara Lee, Schöller, Sharwood RHM Frozen Food, Unilever. Some major retailers, such as Fleming, Marks & Spencer, Carrefour, and Tesco, are driving the market, with many dedicated suppliers.

Sector Trends – ready meals

3.14 Ready meals are one of the fastest growing sectors of the frozen food market in both major and emerging markets. Their growth has been fuelled by the following factors:

- Busier lifestyles
- The increase in single person households
- The growing number of working women
- The trend towards supermarket shopping
- A high level of new product activity and high investment by international manufacturers.

3.15 Frozen ready meals provide a wealth of opportunities for new product development, and markets where they are most developed are experiencing trends towards ethnic (see insert/box below) and speciality meals, as well as higher segmentation with regard to packaging formats. In the UK, manufacturers have successfully launched

both larger portion meals and small "snack pots". In the more mature markets, private label ready meals have been extremely successful at penetrating markets, which were originally dominated by more low cost, standard products such as frozen vegetables (e.g. in the UK private label accounts for a market share of 97.7% in the leading chilled ready meals category).

European Ethnic ready meals

The European ethnic ready meals market was worth £407m in 1997 (excluding Spain and Italy as these markets are too small to quantify). The UK represents the largest market with sales of £307m, followed by France with £ 56m and Germany with £34m. The UK accounts for 75% of the sector, as a result of its having the most developed and well established ready-meals market in Europe. In other countries, there tends to be a greater range of ambient/dried meals, with frozen and chilled meals only beginning to make an impression on the overall ready meals market.

Multinational companies such as Nestle with its Maggi and Findus brands, and Mars with its Suzi Wan brand (except the UK) have the strongest presence in the ready meals market with their products available in all five European countries. Within each country, national companies are also important, e.g. Soprat in France and Frosta and Dr Oetker in Germany. Smaller specialist ethnic companies are also present in this market with more found in the larger and more developed market such as the UK and France, e.g. Patak and Discovery Foods. Within the chilled ready meals segment, own label penetration is very high, especially in the UK. Own-brands dominate this segment, with very few brands present. Chilled branded ready meals include the Shahi (Indian) and Ken Hom (Chinese) ranges from S&A Foods in the UK, and the Taureau Aile range from Skalli in France.

Source: The European Ethnic Foods Market, 1998, Leatherhead Food RA

3.16 Success in the ready meals industry depends on balancing the convenience aspect with individuals increasing demands for health, quality and taste, and variety. Recent new product developments have included the following:

- Restaurant quality ready meals
- More involved ready meals aimed at customers who want to do more than just re-heat food, e.g. "Create a Meal"
- Vegetarian meals in countries where the concept is underdeveloped, such as France
- Ethnic meals such as Indian, Chinese and Mexican dishes
- New variety of pizza with more original toppings
- Fast food type snacks and ready meals, such as chicken nuggets and take-aways
- Ready meals made with more exotic meat and game, such as venison
- More practical packaging, such as re-sealable bags

3.17 Future industry trends are sure to involve new distribution strategies, bypassing retailers by using the internet and home delivery to sell and deliver ready meals. Also, "the emergence of 'sub-groups' of consumers will make it increasingly complicated for mass market operators to tailor their product to these individual needs. While offering new opportunities to more specialised niche players, NPD and

promotional expenditures will probably prove prohibitive" (Source: Datamonitor).

International Benchmarking: ready meals

3.18 The following are some benchmarks that the Thai food processing industry should be looking to achieve.

Table 3-5: Benchmarking of Average Thai Companies against Best Practice

Benchmark	Thai Companies visited	Best Practice
Quality Control/Quality expenditure	10%	4.9%
Marketing/Sales Exp. (% of gross sales)	1-2%	Direct sale
Gross margin	13-22%	13.5 %
Liquidity ratio	3.29 times	2.0 times
Operating cost/Total Cost	77-86%	60-80%
Import tax for materials	12 –20%	5%(Vietnam)

Cost Structure and Competitiveness for Ready Meal Manufacturing

3.19 The accounts of some Thai ready meal companies show robust operations with good double-digit gross margins from 1997 to 1999 ranging from 13% to 22%. This is above average: competitors in the UK for example have gross margins of around 13.5%. The Thai industry average, however, is only 8-9%, which is poor.

3.20 Comparing to the standard norms, companies spend too much money on appointing agents. These agents take certain amount of income from the bottom line ranging from 1 to 2% of gross sales. Modern companies sell directly to supermarkets without agents.

3.21 Procurement is a troublesome area for companies as they may buy small quantities of many items. Excessive diversification increases costs and hinders the overall operation of companies.

3.22 Cost appears to be a problem for materials sourced from overseas, as import tax has increased from 12% to 20%. The import duty for some items in Vietnam, which is one of Thailand's competitors in this industry, is only 5%. Furthermore, although import tax can be refunded, the refund process is time-consuming. Thus, the increase in import duty and the delay in tax refund lower the company's competitiveness.

SWOT Analysis – ready meals

3.23 Table 3.6 summarises the strengths, weaknesses, opportunities and threats (SWOT analysis) for the ready meals sector.

Table 3-6: SWOT analysis of Ready-to-Eat Meals

Strengths	Weaknesses
• Companies are experienced exporters • Good management, engineers and skilled labour • Good quality products at competitive prices • Some firms with good gross margins • Capability to continuously upgrade itself	• Small domestic market; • Average poor margins • Lack of international brandnames: mainly subcontract supply to international brand names or private labels. • Many small companies with niche markets which are disregarded by international distributors • Lack of appropriate manpower training • Slow to adopt new processing techniques
Opportunities	**Threats**
• Rapidly growing world market • Development of larger companies capable of competing internationally • Sales to food services such as restaurants and deli counters • Use of versatile equipment to produce a wide range of recipes without additional investment and develop economies of scale	• Acquisitions by international brands to gain market share in high-end products • Price wars in branded ranges (rather than own labels) • Increasing number of international standards, certifications and labelling requirements to be met • NAFTA member countries (mainly Mexico) as competitors in the US • Countries with ACP status enjoy 16-24% tariff advantage

Current and Future Competitive Challenges for Thai Ready-to-Eat Meals Industry

3.24 As Thai people prefer to consume their food in fresh form, the processed food industry has to concentrate on the overseas market predominantly. The free-trade regime has honed the skill of the management, engineers, and skilled labour to adapt to international requirements. Thai industry has continually upgraded itself to produce quality product at affordable prices. This is considered to be a distinct advantage of the processed food industry. The downside is that average gross margin attributed to the industry cannot be impressive. It is usual to see single digit gross margins.

3.25 One of the many reasons that keeps the gross margin down to a single digit is the lack of international brand names in the most competitive markets. Almost all companies produce for private labels and international brand names. Although some firms have purchased brands overseas (e.g. in 1989, Unicord Public Company purchased Bumble Bee Seafoods). Other firms in the processed food industry have not embarked on this

route to attain the elusive double digits gross margin. Thus, the high-end products are beyond their reach.

3.26 The Thai Processed food industry consists of firms of medium size. There are few SMEs co-existing in the industry. If any, they tend to be small companies that search for their niche market and not derivatives of big companies. In fact, it is difficult to operate small companies to supply to the world. Large customers prefer to purchase from large companies so that they do not have to split total procurement into several lots. From the suppliers' side, large companies are convenient in terms of large deliveries of their products. In addition, the majority of the processed food industry, except for a few foreign owned companies, has been slow to adopt the new processing techniques.

3.27 Whilst skilled labour is available widely in the industry, manpower training is perhaps lacking in most factories. Workers are measured in terms of yield - X kilograms per worker per day - but they are put through the work without sufficient training in most cases. Because the skill component is crucial, the food industry pays higher than the prevailing minimum wage.

3.28 In summary, the sector has considerable strengths, including good human resources (in contrast to many Thai industries). The main weakness is the lack of brands, the small size of companies, and threat from large branded manufacturers. This leads to real weakness in marketing. One solution to this would be for marketing activities at companies to be centralised for each division (including outside ready to eat meals) to promote each other's products and benefit from synergies. A possible way forward is to promote a small number of leading firms with strong export skills, who would develop brands, and procure from many of the other smaller firms in the sector.

ELECTRONIC APPLIANCES

Exports of Electronics Products into Main Markets

3.29 Table 3-7 shows the main electronics exports by country into the main markets. Thailand is the 10th exporter of electronic goods and the Thai electronic industry competes mainly with China, Mexico, Taiwan, Korea, Singapore and Hong Kong, amongst others. Thailand provides a significant proportion of exports to NAFTA, and in this region, Thai industry has additional competitors including Canada, Malaysia, the Philippines and Indonesia. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, NAFTA and Japan) is showed in the table below.

Table 3-7: 1998 Electronics Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
United States	22,572	9,927	7,560	5,085	**Mongolia**	73	0	73	0
Japan	12,275	3,931	8,344		**India**	68	58	3	7
China	4,699	1,201	2,539	959	**Pakistan**	65	32	29	4
Mexico	4,013	116	3,872	25	**Vietnam**	27	11	1	15
Canada	2,449	368	1,975	106	**Sri Lanka**	25	7	3	15
Taiwan	1,360	329	741	290	**Argentina**	17	11	6	0
Korean Republic	1,247	225	550	472	**Iran, Islamic Republic**	7	7	0	0
Singapore	1,136	279	654	203	**Bangladesh**	6	2	0	4
Hong Kong	857	290	429	138	**Colombia**	4	3	1	0
Thailand	**770**	**200**	**324**	**246**	**Chile**	4	4	0	0
Malaysia	719	226	293	200	**Venezuela**	4	4	0	0
Philippines	442	146	173	123	**Brunei**	4	4	0	0
Indonesia	337	72	178	87	**Macau**	3	2	1	0
Brazil	195	52	140	3	**North Korea**	1	0	1	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World Industry Trends: Electronic appliances - Hard Disks and Office Automation Equipment

3.30 The total output of the electronic equipment and components industry was US$ 1,180 billion in 1998 compared with US$ 1,133 billion in 1997, a growth of 4.1%.

3.31 The world computer (EDP) market, which grew by 8% in 1997, continued to be buoyant in 1998 with a growth of 15.5%. Some of this increase may have been due to the increasing trend to incorporate additional equipment into computers, particularly communications associated products such as modems. Lower growth of 3.9% was forecast in 1999 as the market is affected by the trend to cheap “no frills” computer and modest growth is forecast for the next 3 years.

3.32 Production of electronic equipment and components was US$232 billion in 1998 compared with US$218 billion in 1997 (see Table 3-8 for producing countries). This represents an increase of 6.4% in current dollars or a real growth of 6.0%. The fastest growing sector was again radio communications (incl. Mobiles) with a growth of 13%. Component production increased by 8.2% and computer equipment by 4.8%.

Table 3-8: Main Producing Countries of Electronic Equipment and Components

Country	Production US$ million
USA	338,879
Japan	268,473
Germany	54,698
China	49,268
South Korea	47,594
Singapore	44,946
UK	42,251
Taiwan	38,752
Total Western Europe	*250,734*
Total World	*1,180,000*

Source: Yearbook of World Electronics Data 98/99

3.33 The electronics sector is so diverse in the range of products manufactured, that it would be extremely complex to list the main companies in each sub-sector. In general, large manufacturing companies have a wide range of electronic products including computer hardware and automated office equipment.

3.34 Electronics are at the leading edge of a nation's move toward a fully developed economy – service/knowledge-based- as it reinforces the nation's strength. Computer hardware manufacturers are one of the fastest growing sectors of the electronics market in both major and emerging markets. Their growth has been fuelled by the following factors:

- Convergence of computers and telecommunications generates new technologies which drive markets to expand.
- Increasing household demand for computers to be used as communication tools due to user-friendly computer programmes, lower costs and easy access to the internet.
- Faster and better internet access due to improved data communications systems such as ISDN and cable networks.

3.35 The following are the main challenges faced by this industry:

- Continued improvement in productivity can only be achieved through R&D, capital investment, human resources investment and market development.
- Small players must recognise niche markets and capitalise on them.

- Cooperative agreements between domestic and foreign companies.
- The need to become more efficient in its use of both energy and materials particularly through recycling of precious and toxic metals used and management of toxic wastes produced in the manufacturing process.

International Benchmarking – electronic appliances

3.36 The following are some benchmarks that the Thai Electronics industry should be looking to achieve. Data is from company visits and interviews.

Table 3-9: Benchmarking of Thai Companies against Best Practice

Benchmark	Thai Companies	Best Practice
Claims Received	6 Per Month	2 Per Month
Claims Resolved	100%	100%
Recruits Staying 1 Year	70%	98%
Product Cost / Sales	72%	60%
Invoices Paid within 60 days	85%	98%
Maintenance Headcount	1%	2%
Stock Turns	10	24
% Rejection Rate	4%	0.5%
Indirect Hours	24%	12%
Average Age Equipment	4 Years	2 Years
Customer Contact Time	6%	32%
Inspection/Direct Labour	30%	6%
Labour Turnover	14%	2%

3.37 The main problems of the Thai industry are seen to be:

- High levels of indirect labour and high labour turnover, yet low levels of maintenance manpower.
- High levels of complaints and rejects
- Low stock turnover – i.e. high levels of stocks
- Low levels of customer contact.

Cost Structure and Competitiveness for Hard Disk Part Manufacturing

3.38 Gross margins per unit are around 14%, which is good, but out of this selling and

administrative expenses are around 12% leaving little net margin. These expenses are considered high for companies with no marketing activities. Most companies are foreign-owned and products are sent to the headquarters and most selling is done there.

3.39 Most raw materials used are imported mainly from the US and Japan. Companies report an average increase in raw material costs of around 15%. Although the delivery lead time for the main raw material used is 30-45 days, companies have no alternative but to use the few suppliers in this field, located in the US or Japan. In addition, the stock levels for raw materials are relative high.

3.40 Table 3.10 shows the SWOT analysis for hard disk drive manufacturers. The weaknesses are high levels of indirect labour and high labour turnover, along with poor training, and lack of marketing capabilities leading to dependence on parent companies.

Table 3-10: SWOT analysis of Hard Disk Drive Companies

Strengths	Weaknesses
• Good worldwide market shares • Financial backing by international Parent companies • Located close to customer • Cheap labour costs • Leading product technology from parent company • ISO systems implemented • Good internal technical training • Simple production and purchasing planning • No material shortages	• Lack of professional marketing • High labour turnover • Low margins • Long lead times for purchasing • High inspection costs (30% labour) • Poor management skills/training
Opportunities	**Threats**
• More automation to de-skill/remove labour • Develop new markets and new applications	• Single source for specialised raw material • Computer prices falling further • Competitors setting up in China (cheaper)

Cost Structure and Competitiveness for Office Automation Equipment (faxes, copiers etc)

3.41 Office automation equipment companies' return on investment of about 20% is acceptable, despite above average operating costs. Foreign parent companies market the products, so Thai subsidiaries usually record a break even or loss situation every year thereby having no tax liability.

3.42 There is a very high content of intermediate products purchased (more than 90% of

total cost). Suppliers are both foreign and local but the products purchased are mostly foreign. It is reasonable to believe that this supply chain has been designed precisely to leave most profits at the headquarters at this early stage. The problem of long delivery times and delays in raw material supply mainly results from incomplete orders and delay from overseas suppliers.

3.43 The Thai content of their products can be increased if good quality suppliers were nourished with the help of the government. The one key advantage of using local suppliers is that immediate action can be taken when supply problems arise. One key area for improvement would be the reduction of long lead times.

3.44 The highest cost of investment is mould dies, as these are mostly imported from overseas (usually from companies' headquarters). This may change, as local firms may be able to produce mould dies in the future.

Table 3-11: SWOT analysis of Office Automation Equipment Companies

Strengths	Weaknesses
• Cheap labour costs • Many customers world-wide • ISO certified and use of quality improvement concepts • Possibility of 100% exporting of output • Excellent sales growth prospects	• Some dated products • Some very long lead time purchases • Low value added • Some business functions duplicated due to strong control from overseas partners/ headquarters • Some single source suppliers • Lack of skilled engineers
Opportunities	**Threats**
• Possible to increase Thai components purchase • Diversify into other electronic products	• Production moving to lower costs suppliers (e.g. China)

Current and Future Competitive Challenges for the Thai Electronic appliances Industry

3.45 Companies are mainly foreign-owned (Japanese) and concentrate on manufacture or assembly of products. They have no design or innovation capability within Thailand. Although this is the case in competing electronic industries, value is being added in Thailand due to own material purchases allowing potential increase in margins. In order to benefit form tax incentive systems, companies report small profits and even losses for the Thai subsidiaries.

3.46 The products manufactured are of similar standard to other good international electronics manufacturers. However, some companies may still be producing dated

equipment (particularly fax and printer machines). Companies appeared to be poor on product costing and variance analysis.

3.47 The organisation structure of companies is dominated by foreign managers, and companies are poor at developing and training local managers.

3.48 The computer market they supply has been on a cost-down strategy for the last 20 years. It appears that further reductions may have serious implications on the profitability of Thai companies. They should consider using current skills and equipment to serve other market sectors as well as the computer industry. Companies need to consider ways of adding value to its products.

3.49 As the price of electronics equipment has steadily reduced, it is paramount for firms to improve production efficiency. Thailand can be a prosperous HDD centre, if human resources and R&D are nourished in order to improve productivity and reduce cost.

3.50 There appears to very little activity to develop and improve the supply chain of companies although the material content can be as high as 90%. It is possible to develop local suppliers to be based near these companies. This could reduce transportation costs and reduce lead times considerably. Government assistance would be required to provide the investment and labour skill development.

GARMENTS INDUSTRY

Exports of Garments into Main Markets

3.51 Tables 3-12 and 3-13 show the main garment exports by country into the main markets. Thailand is the 8th main exporter of knitwear and the 11th main exporter of other garments. China is by far the main competitor in all main markets. Thailand provides a high proportion of knitwear to NAFTA, as all other main competitors including China, Mexico, Hong Kong, Korea, Bangladesh and Taiwan.

Table 3-12: 1998 Knitwear Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
China	8,376	1,888	2,192	4,296	**Vietnam**	192	62	14	116
Mexico	3,334	8	3,309	17	**Colombia**	151	4	147	0
Hong Kong	3,256	833	2,381	42	**Burma**	128		128	0
Korean Republic	2,058	302	1,064	692	**Brunei**	120	0	120	0
United States	1,929	190	1,474	265	**Myanmar**	40	40	0	
Bangladesh	1,860	653	1,203	4	**Canada**	38	20	3	15
Taiwan	1,525	256	1,232	37	**Laos**	37	28	9	0
Thailand	**1,335**	**323**	**860**	**152**	**Maldives Islands**	37	5	32	0
India	1,100	540	547	13	**Mongolia**	33	3	23	7
Indonesia	988	460	454	74	**Bhutan**	17	0	17	
Macau	898	230	649	19	**Japan**	17	16	1	
Phillipines	893	124	737	32	**Brazil**	12	11	0	1
Pakistan	731	194	535	2	**Nepal**	7	6	0	1
Malaysia	658	209	399	50	**North Korea**	3	1	0	2
Sri Lanka	570	233	332	5	**Iran, Islamic Republic**	3	3	0	0
Cambodia	425	91	333	1	**Chile**	3	1	2	0
Singapore	328	55	266	7	**Argentina**	1	1	0	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

Table 3-13: 1998 Other Garment Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
China	12,817	2,672	4,165	5,980	**Colombia**	258	18	239	1
Mexico	4,508	14	4,488	6	**Bhutan**	119	0	119	
Hong Kong	3,648	1,399	2,209	40	**Singapore**	90	13	75	2
Bangladesh	2,713	740	1,962	11	**North Korea**	77	22	0	55
India	2,116	801	1,242	73	**Burma**	69		67	2
Indonesia	2,096	647	1,325	124	**Myanmar**	49	49	0	
United States	1,825	216	1,450	159	**Canada**	42	30	12	0
Korean Republic	1,589	192	1,221	176	**Japan**	41	40	1	
Sri Lanka	1,285	264	1,014	7	**Laos**	40	35	5	0
Phillipines	1,254	92	1,089	73	**Mongolia**	36	0	36	0
Thailand	**1,071**	**207**	**756**	**108**	**Maldives Islands**	24	0	24	0
Taiwan	826	87	718	21	**Nepal**	12	9	2	1
Vietnam	716	378	44	294	**Chile**	7	1	6	0
Cambodia	635	37	597	1	**Brazil**	7	5	0	2
Macau	601	216	379	6	**Brunei**	2	0	2	0
Malaysia	550	126	406	18	**Argentina**	1	1	0	0
Pakistan	484	225	255	4	**Iran, Islamic Republic**	1	1	0	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

3.52 It appears that Thailand is more competitive in knitwear than in other garments. In addition to the competitors listed above, Thailand must compete against the Philippines, Sri Lanka and India. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, NAFTA and Japan) is showed in the tables.

World Industry Trends: Knitwear and other Garments

3.53 In terms of value of total garment sales, the USA, India, China and Japan are the most important consuming countries (See Table 3-14). Growth is expected to be highest for China and later on high for Indonesia, Turkey and Brazil. The devaluation of currencies throughout the developing world after 1997 helped to increase the export-competitiveness of many of these countries.

3.54 The garment and textiles industry remains relatively fragmented. Although there are several very well-known and important brands, these companies hardly play the same role in the clothing industry as, for example, the top automotive manufacturers, and procure from very many sources. On the one hand, because of the nature of the industry and technology, there is vast scope for niche producers. Furthermore, in such regions as Southeast Asia and Eastern Europe, the power of brand companies, such as Levis, etc., is undermined by product piracy. Major industry companies include: Levis Straus Associates Inc (US), Marks and Spencer (UK); Benetton Group (Italy), Industrias De Diseno Textil (Inditex) (Spain), Burton Group PLC (UK), Coats/Viyella (UK), Liz Claiborne (US). Most of these are marketing companies which procure from the lowest cost world suppliers for a given quality. They tend to stratify countries according to quality: Thailand for example is considered lower quality than some competitors.

Table 3-14: Clothing Markets - Value of Sales by Selected Countries (US$ Million)

Country	1999	2002f	2005f
USA	122,366	127,268	130,000
Japan	81,645	86,609	89,507
China	51,511	65,447	79,269
India	20,156	21,536	23,086
Vietnam	9,341	10,075	10,881
Brazil	9,161	9,871	10,629
Canada	6,127	6,480	6,811
South Africa	5,648	6,420	6,917
Mexico	3,656	4,060	4,462
Taiwan	3,553	3,996	4,397
Argentina	2,223	2,411	2,579
Israel	2,220	2,386	2,551
Colombia	2,158	2,346	2,545
Indonesia	1,783	1,908	2,134
Hong Kong	611	619	623
Venezuala	607	707	826
Turkey	486	527	569

Source: Euromonitor.

Sector Trends - Garments

3.55 According to EIU forecasts, global consumption of garments will grow at around 2% per annum from 2000-2005. Growth in demand for clothing is driven by growth in consumer spending as a whole but it is also highly cyclical, as spending on clothing tends to grow at a faster rate during boom times and can decline sharply during recessions.

3.56 As a total of consumers' expenditure, clothing tends to decline in the most developed markets. For example, while in China, Russia and Poland clothing purchases represent from 10-12% of consumer spending, in Canada and Taiwan, it represents less than 5% (See Table 3-15)

3.57 Within Europe, the dominant trend in the past decade has been the rise of low cost imports from the Middle East and Asia. However, a contrary trend is also apparent: there has also been solid demand for very high-quality, more individual clothes, especially in such countries as Italy and the UK.

Table 3-15: Clothing and footwear: consumers' expenditures by country, 2000f and 2005f, and shares of total expenditure.

Country	Total Expenditure (US$bn)		Share of household expenditure	
	1992	2005f	1992	2005f
China	34.9	60.5	12.8	11.1
Poland	5.34	8.4	10.9	9.2
Russia	44.6	57.3	9.9	9.8
Italy	75.2	89.8	9.8	9.4
Czech Republic	1.3	1.7	9.4	8.2
Slovakia	0.6	0.8	9.4	8.5
Spain	32.6	41.1	9	8.3
Hungary	2.1	2.8	8.8	8.6
Sweden	10.6	12.5	8.1	7.8
Mexico	13.7	14.4	8	7
Germany	74.3	78.7	7.9	6.4
Netherlands	14.8	19.8	7.3	7.3
Belgium	9.9	11.5	7.2	6.9
South Africa	4.6	6.9	7.1	6.4
Norway	3.8	5.2	6.7	6.2
USA	264.8	378	6.5	6.3
UK	42.6	59	6.3	6.6
France	46.6	52.5	5.9	4.9
Denmark	1.3	5.6	5.9	5.5
Australia	10.1	13.3	5.7	5
Japan	114.3	145.7	5.5	4.5
Argentina	2.3	3	5.3	5.2
Canada	17.3	22	5	4.5
Brazil	12.9	22.5	4.9	4.5
Taiwan	5.4	12.5	4.7	5.7
South Korea	6.8	9	4.3	3.2

Source: Economist Intelligence Unit, 1995.

International Benchmarking – garment industry

3.58 The following are some benchmarks that the Thai Garment industry should be looking to achieve.

Table 3-16: Benchmarking of Average Thai Companies against Best Practice

Benchmark	Thai Companies	Best Practice
Efficiency	35% to 52%	85%
Lead Time (Manufacture to despatch)	15 to 20 days	5 days
Fabric Lead Time	45 to 60 days	15 days
Rejects (% of finished product)	0.0%	0.1%
Ratio of indirect to direct labour (Manfg)	1 : 1	1 : 20
On time delivery	100%	100%
Order fulfilment%	90%	100%
Operation skills per operator	1-2 skills	5 to 6 skills
Direct labour excesses	65% to 45%	65% to 45%
Marker Utilisation	85-90%	88% - 90%
Standard minutes per Unit		
• Trousers	42	29
• Shirts	32	19
• Sportswear	12	6
World-wide competitive cost	Not applicable	$0.05 to $0.10

3.59 Thai companies fall very far behind best practice in almost all indicators of productivity. Indirect labour is extremely high, manufacturing efficiency is very low, and standard times are high. This is partly because labour skills are low.

Cost Structure and Competitiveness for Garment Manufacturing

3.60 The low efficiency and low productivity are the main cost problems for the sector. This is not serious yet, as labour costs are very low, but it will become increasingly difficult for Thailand to compete with low labour cost countries unless efficiency and productivity are improved. At present, companies charge international competitive rates for their products, but they are often manufacturing at a loss. A major problem is the lack of proper costing systems: their costing mechanisms do not properly take account of overheads and can lead to over- or under-pricing.

3.61 Companies tend to supply a 'Full Package' garment, where the contractor is responsible for the purchase and supply of all raw material and technical input, with the exception of design. The ability to purchase/supply raw material for customers orders is a competitive advantage over many companies operating from North Africa, the Middle East, and Eastern Europe. These companies often do not have good access to the supply chain or do not have the capital/ability to fund large raw material purchases, and therefore are at some disadvantage on maximising margins.

SWOT Analysis

3.62 Table 3.17 summarises the SWOT analysis for the garments industry.

Table 3-17: Summary SWOT analysis of the Thai Garment Industry

Strengths	Weaknesses
• Suitable geographical location of Thailand in the Asia Pacific region. • Abundant supply of skilled labour. • Wages are not excessively high whilst skill content is good. • High degree of vertical integration. • Good collaboration amongst companies and between the private and public sectors. • Purchasers trust the quality and timely delivery of Thai products.	• High number of SMEs, which are inefficient and not effectively managed. • Lack of information especially on the rivals' cost and products and of export possibilities for SMEs. • Lack of high skill in production and marketing • No multi-skilling • Lack of information and networking in sourcing materials and products from overseas. • Poor R&D in the designing stage of production. • Use of outdated equipment and technologies. • High tariffs for raw materials and machinery lead to prices marginally higher than those of competitors. • No strong world-wide brandnames.
Opportunities	**Threats**
• Export of high-end products where the cost of production is relatively higher elsewhere. • Many quota categories are under-utilised due to poor quality. • Exploit the short-term benefits of currency devaluation by looking at medium and long-term benefits of creating brandnames in the export markets. • Use of direct marketing channels to enhance the earnings accrued to producers.	• Quota allocation under the MFA which sometimes limits the ability to expand the export volume. • The manufacturers' lack of awareness of code of conduct of major brands buyers. • Additional product certification including EN ISO 9000 and EN ISO 14000. • Fast track tariff reduction (to 0% and 5% by the year 2000) industry within ASEAN. Low-end garments will face stiffer competition from Indonesian and Vietnamese factories.

Current and Future Competitive Challenges for the Thai Garment Industry

3.63 Thai companies are characterised by their manufacturing systems, in that they are set up for high efficiency low standard cost production. Each work place and operating method has at some point in the development of the company been engineered to yield high performances from operators assigned to single operations.

3.64 Thai companies still appear to be structured to manufacture under high volume, low unit cost conditions. On the contrary, some companies in other low cost producing countries such as Morocco, Mauritius, and those within Eastern Europe are realising that cost will not always be their unique selling point and are examining ways of adding value.

3.65 Strategies which are being developed are those based on quicker response, higher

flexibility, design and branding, partnerships and joint ventures (both with customers and suppliers) and the introduction of state of the art information technology. Successful companies must therefore implement new technology as it becomes available, but more importantly, they must optimise human resources.

3.66 The vision for garment manufacturing is that companies must move towards highly flexible, fast, responsive manufacturing configurations. These configurations will be set up towards zero, highly customised and extremely fast production.

3.67 There is now a greater awareness and perception of environmental issues and these will continue to strengthen over the next few years. Many of the major European (and some American) retailers are using the environment as a selling mechanism by promoting environmentally friendly processing. In Europe where legislation will soon be passed banning the use of certain processes in the production of fabric, particularly dyeing and finishing. The standard that will be imposed is Oeko-Tex, and currently is only a voluntary scheme. It has however been adopted by major European retailers, and all their swing tickets and product labels now state that they conform to this standard.

3.68 Other issues which will continue to affect the competitive element will be the increasing demands placed on ethical trading and compliance to Western manufacturing standards on health and safety and employment conditions.

AUTOMOTIVE PRESSED METAL PARTS

Exports of Automotive Pressed Metal Parts into Main Markets

3.69 Tables 3-18 shows the main automotive pressed metal parts exports by country into the main markets. Mexico, China, Taiwan and Korea are in a different league to Thailand, due to the large volumes provided to the main markets. Competitors with closer volumes to those supplied by Thai industry are Thailand, Singapore, Malaysia and the Philippines. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, Nafta and Japan) is showed in the table below.

Table 3-18: 1998 Automotive Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
United States	196,285	53,046	122,184	21,055	**Venezuela**	237	36	201	0
Japan	147,421	40,541	106,880		**North Korea**	117	11	90	16
Canada	89,999	3,051	86,418	530	**Chile**	90	15	75	0
Mexico	74,376	1,270	72,718	388	**Sri Lanka**	77	46	14	17
China	47,171	10,152	28,749	8,270	**Macau**	65	31	33	1
Taiwan	41,374	10,245	24,475	6,654	**Colombia**	43	24	19	0
Korean Republic	38,149	8,307	24,550	5,292	**Iran, Islamic Republic**	33	31	2	0
Singapore	30,627	8,052	15,814	6,761	**Bangladesh**	26	20	0	6
Malaysia	30,189	6,751	18,681	4,757	**Pakistan**	26	26	0	0
Philippines	14,866	2,687	9,202	2,977	**Brunei**	10	10	0	0
Thailand	**12,855**	**3,071**	**6,747**	**3,037**	**Burma**	3		2	1
Hong Kong	6,141	2,818	2,627	696	**Laos**	2	2	0	0
Indonesia	4,446	893	2,419	1,134	**Myanmar**	2	2	0	
Brazil	4,434	1,420	2,974	40	**Afganistan**	2	0	2	
India	1,257	664	554	39	**Mongolia**	1	0	1	0
Argentina	249	133	112	4	**Nepal**	1	1	0	0
Vietnam	244	63	15	166	**Bhutan**	1	0	1	

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World Industry Trends: Automotive Metal Parts – Pressed

3.70 The market for replacement car parts is relatively mature and shows little growth. With the main players – at both the manufacturer and distributor level – trying to increase their share of the market and their profitability, competition is intense. Motor vehicles parts main importers are USA, Canada, Germany, UK, Benelux, France and Mexico and the main exporters USA, Germany, Japan, France, Canada, Italy and UK. (International Trade Statistics Yearbook – United Nations – Vol II Trade by Commodity)

3.71 In the case of filters, the fuel filter market segment is set to grow, but improved quality and longer service intervals are negatively impacting the sales of oil and air filters. (European Car Filters 2000 Datamonitor). The main car filter manufacturers are Filtrauto, Mann & Hummel, Fram/Fiaam, and Mahle/Knecht. Leading players such as Champion and Quinton Hazell have recently been subsumed within larger automotive component groups. Developments in the automotive filters segment are overwhelmingly dominated by environmental considerations. Key developments include the creation of filters with the potential to optimise the air fuel mixture in order to improve fuel consumption and to reduce emissions (e.g. Knecht/Mahle optimising filter). Similarly, filters have been developed where only the insert is changed (e.g. Mahle eco-inserts).

3.72 Overall the key trends affecting the automotive components sector are as follows:

- The globalisation of components operations in line with the globalisation of the automotive industry.
- The restructuring of operations to ensure greater efficiency. This includes the introduction of measures to improve profitability, the reorganisation of management structures to take account of the increasing demand for global supply and increased focus on areas of core competence.
- A rapidly increasing requirement for components suppliers to supply a complete systems capability.
- An increase in the positioning of sub-assembly plants adjacent to vehicle factories due to the above mentioned need to offer a systems capability as well as an increased requirement for just in time deliveries and flexibility in production runs.
- The rapid consolidation of the components sector through take-overs and mergers.
- An increased number of technical alliances and joint ventures.
- The creation of a network of super-suppliers who are expected to dominate the global automotive components market in the next century.

International Benchmarking

3.73 In Thailand, current annual estimate of new motor vehicle production is close to 300,000 units (220,000 units were produced in the first 7 months of 2000). High annual growth levels (35%) are expected in the key automotive sector up to 2003, according to sources such as the Economist Intelligence Unit. Thus, with such strong growth prospects, Thai industry should drive itself to achieve best practice standards. The following are some benchmarks that the Thai Automotive Parts industry should be looking to achieve.

Table 3-19: Benchmarking of Average Thai Companies against Best Practice

Benchmark	Thai Pressed Metal Part Companies	Thai Filter Companies	Best Practice
Stock turns (for OEM customer)	11:1	Not applicable	15:1
Stock turns (for aftermarket)	Not applicable	4:1	12:1
Lead time (manufacture)	3 days	2-3 days	<24 hrs
Tool Change time	7-10 minutes	20-30 minutes	<10 minutes
Customer Rejects	Approx. 1%	<1%	0
On time delivery	Approx. 97%	Approx. 70%	100%
Absenteeism	6%	3%	<1%
Productivity (value added per employee)	$12,181	$16,624	>$60,000

3.74 Best practice is not the best achieved by any one company but the high standards that world class companies are setting themselves. The main problem of Thai companies is low productivity of labour.

Cost Structure and Competitiveness for Automotive Pressed Metal Parts

3.75 The products manufactured are of a standard similar to other good international manufacturers, but companies have very high standard costs per unit – even those companies manufacturing high-margin products. Margins per unit are low (12%-20%). They are unable to increase margins because they work on a sub-contract basis where the customer controls their costs and pays on a cost-plus basis. Companies use a universally-accepted cost system determined by the customer, that is the same for the customer's suppliers any where in the world. This costing system is subject to the requirements of individual customers. For example, Japanese customers fix the cost for the company, and some others do not allow any margin on raw material costs. In addition, 80% of customers own the tooling, because the ownership of the tool gives the customer the freedom to change sub-contractors.

3.76 Throughout most of the automobile industry there is a cost down culture that requires suppliers to annually decrease their costs. In some instances the price paid for the product is based on costs plus a percentage. This is being applied in Thailand by some OEMs but it has made little difference to working practices when compared to Japanese or Western companies.

3.77 Manning levels are much higher than one would expect elsewhere and asset utilisation is low. There is also tolerance of poor service from local suppliers that leave companies with additional costs. The value adding process of companies can also be severely constrained by the need to buy overseas materials, particularly from Japan and to sell them locally. They can be caught between high cost material and low cost

buyers.

SWOT Analysis

3.78 The SWOT analysis for pressed metal autoparts is summarised in table 3.20.

Table 3-20. Summary SWOT analysis of the Thai Pressed Metal Auto Parts Industry

Strengths	Weaknesses
• Modern equipment. • Good relationship with OEMs. • Good support from Joint Venture partners. • Some high margin products. • Strong presence in the after-market sector. • Local stockists can supply steel. • Brands being developed.	• A high percentage of raw materials have long lead times. • Workforce not well educated or experienced. • Lack of shop-floor involvement. • Over-manning. • Limited production management expertise. • Some critical raw materials supplies from overseas. • High inventory levels. • Poor customer service. • Domestic market saturated.
Opportunities	**Threats**
• Overseas OEMs. • Growing after-market. • Large export market. •	• Dependency on local OEMs. • New Japanese competition about to enter Thailand. • Development of car industries in developing countries. • Pirate products.

Current and Future Competitive Challenges for the Thai Auto Parts Industry

3.79 Local parts manufacturers (around 600 firms) will increasingly compete for orders by local assembly plants. There are some concerns over the cancellation of local content requirements in the year 2000, the slowdown of the automotive industry, the increasing price trend of domestic raw material price and high import tariffs. In the long term, Thai automobile assembly expects to reach 600,000 units during the next five years (2004). If so, it will have a positive impact on automotive parts then.

3.80 Industries appear to manufacture products with lower value added per employee than world standards, which indicates high levels of over manning. In addition, companies have very high standard costs per unit, although some do manufacture high-margin products. It appears that companies can increase their output and capacity utilisation substantially, without investing in new equipment, which would improve unit costs.

3.81 Speed of production is directly related to work in progress, working capital and often service levels. As much time is spent on waiting, the cost of production increases. This is due to inefficient suppliers, and transport problems, and as a result service

levels are not as good as they could be. Thai companies already subcontract some of production activities, and best practice companies would like to sub-contract more work to improve manufacturing efficiency, but are unable to do so as this extends manufacturing time with all of the problems mentioned above.

3.82 The heavy dependency of companies on the domestic market would indicate that their growth would depend directly upon the health of the Thai economy and the markets of the local OEMs. They have to compete with world suppliers, however. Innovative product design in the automotive component industry is a particularly important competitive factor: new designs are often only required when the OEM designs a totally new vehicle, and is driven by the OEMs themselves. Innovation is however applied in production processes, management processes and supply chain management. This is often cost or service driven and Thai companies will need to invest sufficiently in R&D to keep improving their processes and remain competitive.

3.83 Companies could benefit from some investment in marketing, particularly for export where early sales have been made through customers approaching the companies.

PLASTIC PRODUCTS

Exports of plastic products into main markets

3.84 Table 3-21 shows the main plastic exports by country into the main markets. Thailand appears to be the 8th exporter in terms of value of exports after China, Taiwan, Korea and Mexico. Mexico and China are strong in the NAFTA markets. Thailand exports a higher volume of plastics that the other ASEAN-4 economies (Indonesia, Malaysia, and the Philippines). The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, NAFTA and Japan) is showed in the table below.

Table 3-21: 1998 Plastic Products Imports into Main Markets (Million US Dollars)

Exporter	All	EU	NAFTA	Japan	Exporter	All	EU	NAFTA	Japan
United States	18,019	3,407	13,374	1,238	**Singapore**	198	67	46	85
Canada	5,911	130	5,744	37	**Philippines**	102	15	31	56
China	4,720	1,355	2,720	645	**Colombia**	73	7	66	0
Japan	2,649	850	1,799	0	**Brazil**	69	55	13	1
Taiwan	1,909	390	1,024	495	**Venezuela**	44	27	17	0
Korean Republic	1,515	390	630	495	**Argentina**	31	3	28	0
Mexico	1,129	51	1,048	30	**Vietnam**	25	16	1	8
Thailand	**516**	**171**	**150**	**195**	**Sri Lanka**	19	5	8	6
Indonesia	333	119	97	117	**North Korea**	11	1	10	0
Malaysia	278	129	9	140	**Chile**	8	2	4	2
Hong Kong	248	102	130	16	**Pakistan**	5	2	3	0
India	198	93	103	2	**Bangladesh**	1	1	0	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World Industry Trends: Plastics – Engineering and Household plastic products

3.85 This paragraph gives an indication of the size and trends in markets for plastic products, by way of data on the trade in the raw material plastic resins. The market for engineering plastics is worth approximately £7 billion (Chemical and Engineering News, Oct. 5 1998). The US, Japan and Germany are by far the largest producers and consumers of plastic resins – the raw material for plastic products (see Table 3-22.). The fastest growing markets – i.e. producers of plastic products - are in Eastern Europe (i.e. Hungary) and South America (i.e. Brazil). The supply of engineering plastic resins is dominated by six very large companies who together account for over 60% of the market (see table 3-23).

Table 3-22: Main Engineering Plastic Resins Manufacturers

Name of company	Market share
GE Plastics	22
DuPont	12
Ticona	11
Bayer	9
BASF	5
Mitsubishi Gas	4
Other	37

Source: Chemical & Engineering News-Oct 98

Table 3-23: Production and Consumption of Plastic Materials 1997

	1997 Production (Kt)	% change 96/97	1997 Consumption (Kt)	% change 96/97
USA	42119	5.4	38923	2.5
Japan	15209	3.7	12264	3.7
Germany	11858	9.2	9895	7.3
France	5800	9.2	4483	9.7
Belgium	4400	2.3	1597	8.6
Italy	3740	4.3	5810	7.4
Canada	3508	2.9	2888	5.6
UK	3046	3	4407	4.9
Brazil	2988	9.4	2950	10.3
Spain	2949	11.2	3181	9.8
Malaysia	950	35.7	1000	5.3
Hungary	828	14	539	21.2
Israel	465	22	601	7.3
Slovenia	155	20.3	175	-1.2

Source: IPAD

Sector Trends – plastic products

3.86 The markets for plastic products are growing worldwide, as plastic products substitute for many other materials – particularly metals and timber – in many applications, including construction and vehicle manufacture. This is accompanied by an increase in the use of high specification and high performance plastics, particularly engineering plastics. Engineering plastics are particularly used in the automotive industry, and provide greater durability, lower vehicle weight and manufacturing efficiency, often replacing vehicle components formerly made of metal. Considering the advantages that plastics have in the area of cost, manufacturing efficiency, durability, weight and recyclability, it is expected that an all-plastic car ultimately will be produced by an original equipment manufacturer, opening huge markets for engineering plastics manufacturers.

International Benchmarking

3.87 The following are some benchmarks that the Thai Plastic industry should be looking to achieve.

Table 3-24: Benchmarking of Average Thai Plastic Moulding Companies against Best Practice

Benchmark	Thai Companies	Best Practice
Number of employees	288-337 staff	250-300 staff
Capacity utilisation	40-85%	60-85%
Customer order to delivery	15-30 days	Up to 30 days
Delivery time of raw materials	2-90 days	Average 7 days
Stocks of raw materials	Up to 38 days	Max 20% of raw materials needed for 60-90 days
Stocks of finished goods	15-56 days	Up to 30 days
Typical injection run length	Too short (e.g. 2 days)	Depends on tool set up time and urgency in production
Product defect	2.47%-3%	1%
Scrap rate	0.5-5%	Max. 1-2%

3.88 In many firms, performance is comparable to best practice, but there is wide variation. In general reject and scrap rates are too high, and production runs too short to be competitive.

Cost Structure and Competitiveness of Plastics (injection moulding) manufacturing

3.89 Companies enjoy very low labour costs. However, raw material costs are around western levels and power charges are higher than western. The plastics industry world-wide aims at a gross margin of at least 50%. Product costings in the industry reveal very low gross margins, sometimes barely acceptable. It appears that companies should overhaul their pricing estimation methods. We estimated that some companies would have to charge more for their products (up to 50% in some cases) to be worth accepting the order. Ultimately, the market dictates the sale price thus the only alternative for survival is cost reduction. A move upmarket would of course help margins if this were really possible.

SWOT Analysis

3.90 Table 3.25 summarises the SWOT analysis for plastic products.

Table 3-25: Summary SWOT analysis of the Thai Plastic Products Industry

Strengths	Weaknesses
• Spare capacity. • Quality certification for specific markets (e.g. UL listing for exporting to the US).	• Lack of mould making technology in Thailand. • High production costs, resulting from small orders and therefore higher set-up costs. • High raw material costs • High working capital, due to paying cash for materials, but sales on 60 days credit terms. • wide variety of products, and lack of specialisation leading to rather high losses. • Specialty and some other resins have to be imported.
Opportunities	**Threats**
• The number of competitors is decreasing due to harsh economic conditions. This is a favourable trend for the expansion of Thai companies' customer base, both domestically and abroad. • Increased substitution of plastic material for other substances.	• Downstream integration of pellet and resin manufacturers into moulding. • The cancellation of Local Content regulations in the year 2000 • slowdowns in the automotive industry • high prices for domestic raw materials • high import duties for raw materials • price-cutting by competitors to get work. • technology development of materials and conversion processes is based firmly in Northern and Central Europe.

Current and Future Competitive Challenges for the Thai Plastics Industry

3.91 Plastic injection moulding in Thailand has already started to follow the European evolution. In this evolution, Thai best practice injection moulding is probably somewhere around the 1970's "state of the art".

3.92 In the 1970's, European moulding speeds increased. Multi-cavity tooling for small components became common. Considerable attention was paid to finished product handling methods and reduction in manual finishing methods to reduce labour costs. Specialisms by product or industry continued.

3.93 It appears that Thai companies need to catch up with competitors world-wide which have evolved even further since then. Indeed, since the 1980's, the material range used in Europe increased. Labour cost reduction and recycling of in-company waste and ex-consumer waste became important. Robot moulding extraction was introduced. Machines became more dedicated, faster, more efficient and product-consistent. Statistical process control methods became common for product quality. Specialist machines were introduced that could mould a component in more than one material, e.g. a transparent panel but with a strong opaque edge. The concept of the "contractual inter-face" being shifted towards the injection moulder was introduced by

automotive industry customers.

3.94 It is likely that the average company in the industry is somewhat typical of even earlier stages. In the 1960's, for example, plastics companies split into separate processes of which injection moulding is a major element. When mouldings were produced for engineering companies, difficulties were common as sufficient quality could not be obtained from tools owned by the customer. Multi-cavity injection moulding, where several components are moulded simultaneously, became common and was followed by "hot runner" tooling (where the feed lines to each component are left permanently liquid inside the tool). As a result, injection moulding companies split into various specialisms, such as big slow mouldings, small fast mouldings, uni-material, uni-product, uni-industry (such as food or pharmaceuticals or health care) or own products (like toys or houseware). Some remained as "trade-moulders" supplying specialist parts in any material and becoming heavily involved in tool design. Tool making that was integrated into a moulding operation or under the same company ownership ceased to be viable.

3.95 To summarise, the future development of the plastic industry requires mould-making technology, compounding and blending process. As Thailand has no indigenous technology, the industry must rely on imported technologies which are expensive. There have been many joint ventures with foreign technological know-how as a means to sourcing these expensive technologies. As technological transfer is far from complete, this results in an inherent technological void in the industry which must be overcome.

RUBBER GOODS

Exports of Rubber into Main Markets

3.96 Table 3-26 shows the main rubber exports by country into the main markets. Thailand appears to be the 5th exporter. The export value of Thai rubber is quite similar to that of the Malaysian industry, although Thai exports have a larger share of the Japanese market and Malaysian exports of the EU market. Indonesia is also a close competitor but the Philippines export little in terms of rubber products. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, Nafta and Japan) is showed in the table below.

Table 3-26: 1998 Rubber Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
United States	5,229	1,031	3,862	336	**Singapore**	155	70	76	9
Japan	2,912	940	1,972		**India**	112	36	75	1
Canada	2,273	35	2,224	14	**Argentina**	58	12	46	0
Malaysia	1,353	549	686	118	**Venezuela**	45	1	44	0
Thailand	**1,265**	**340**	**506**	**419**	**Vietnam**	32	21	5	6
Indonesia	940	235	569	136	**Philippines**	30	9	0	21
Korean Republic	939	390	489	60	**Chile**	28	0	28	0
Taiwan	612	173	381	58	**Hong Kong**	10	9	0	1
Mexico	558	38	519	1	**Cambodia**	5	4	1	0
Brazil	362	79	278	5	**Iran, Islamic Republic**	4	4	0	0
China	186	117	10	59	**Pakistan**	2	2	0	0
Sri Lanka	166	87	69	10	**North Korea**	1	0	1	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World Industry Trends: Rubber products – Tyres and Latex Gloves

Tyres

3.97 The world **tyre** industry is worth $50 billion a year, representing a production of approximately 700 million units (in year 2000). Main importers of rubber tyres and tubes are USA, Germany, UK, France, Italy and Netherlands; main exporters are Japan, France, Germany USA, Korea, UK and Spain. Big 5 group dominate the industry but they are increasingly being challenged from manufacturers from emerging countries (South Korea, India and China). Main manufacturers of tyres are Goodyear (acquired Sumitomo Rubber Industries in 1999), Michelin, Bridgestone, Continental, and Pirelli.

3.98 Mergers and acquisitions, which have already been increasing in recent years, were particularly important during 1998. Asia's economic turmoil, global over-capacity and poor prospects for growth have forced companies in many industries into merger and acquisition deals. Mergers in the tyre industry give benefits from economies of scale, increased market share, brand recognition and reduced competition. The Goodyear/Sumitomo alliance will give the former better access to the Japanese market and strengthen the latter's financial position. The Economic Intelligence Unit forecasts further rationalisation of the branded world tyre industry.

3.99 Tyre companies have been faced with cost-cutting programmes in an over-supplied industry. They have been squeezed by the car industry to reduce costs, while making better and safer tyres. For the Japanese manufacturers, the trend towards increasing export volumes and production overseas has forced them into alliances to avoid the

costs of building additional factories and sales networks.

3.100 Because of the proliferation of vehicle models and manufacturers, tyre makers have been developing new technology for more automated and more flexible tyre factories. Goodyear's Impact, Michelin's C3M and Pirelli's Flexi are three of the new technologies. Bridgestone and Continental are also developing new production technologies.

Latex gloves

3.101 In the case of latex **gloves**, growing concerns over allergies to natural rubber have led the US government to seek solutions via legislation (following legal cases for product liability involving latex allergies). There is a move towards powder-free medical examination gloves, gloves manufactured using dermashield processing technology as well as growing popularity of polyurethane gloves.

3.102 Despite the economic problems, Asia still attracts manufacturers to establish latex goods production plants in its region. Safeskin plans to close factories in California and Malaysia and to open a new one in Thailand, while London International is to eliminate two US gloves lines and to increase condom manufacturing capacity in Thailand. Thailand has increased latex goods production capacity, but exports to the US and Europe are proving difficult.

International Benchmarking

3.103 The following are some benchmarks (qualitative rankings based on experts' knowledge) that the Thai Rubber industry should be looking to achieve.

Table 3-27: Benchmarking of Average Thai Rubber Goods Companies (qualitative indicators relative to best practice)

Benchmark	Thai Glove Companies	Thai Tyre Companies	Best Practice
Efficiency	0.85-0.90	Not available	1
Equipment	0.85	0.60	1
Human Resource	0.90	0.40	1
Technological capability	0.85	0.60	1
R&D capability	0.80	0.40	1
Rejects	1	0.90	1
Production management	1	0.30	1
Quality system	1	0.65	1

Cost Structure and Competitiveness for Latex Gloves and Tyre Manufacturing

Glove Manufacturing

3.104 The profit margin for companies is around 10-15%, which is about the industry norm. Companies have reasonable efficiency rates, slightly below best practice. However, production overhead expenses are considerably higher than would be expected: the cost of telecommunications is considered high and companies have high depreciation costs.

3.105 Companies manufacturing rubber gloves use both local and imported raw materials. Imported raw materials, such as high quality chemicals and papers, have long lead times. Companies manufacturing tyres have local sources of supply with shorter rubber lead-time.

Tyre Manufacturing

3.106 Tyre companies reported low profits margins (about 5%) which is well below those of best practice. Most raw materials are acquired from local sources, except some chemicals which are consumed in small amounts, including rubber, carbon black, nylon fibre, bead wire. This is because of lower price in comparison with local sources. Although its price is cheaper, it has several hidden costs such as having to hold more stock due to longer lead-time. For example, in the case of nylon (for lining) companies have to hold on average ½ month worth of stock. If companies could buy it locally for the same price, then it could only need to have 2-3 days stock. This shows that right sourcing of raw materials can have important implications on the production cost.

SWOT Analysis

3.107 Table 3-28 summarises the SWOT analysis for rubber products manufacturers.

Table 3-28: Summary SWOT analysis of the Thai Rubber Products Industry

Strengths	Weaknesses
• Thailand has an excess supply of rubber, at lower cost than in Malaysia. • Thai producers have foreign partners in the production of rubber tyres, condoms, and rubber gloves. • Thai producers are experienced and will perform better with support from the government	• Small-scale rubber plantations hinder quality control. • Shortage of good technicians. • Lack of good R&D and slow product development amongst SMEs. • Underdeveloped infrastructure. • Shortage of synthetic rubber technology. • General lack of access to financial markets. • Lack of technical support for SMEs • Narrow range of rubber grades available to producers.
Opportunities	**Threats**
• There are opportunities for those producers willing to embrace environmental issues. • Malaysia's reduction of rubber planting areas. • A softer Baht should provide short-term benefit to exporters. • The importing countries continue to grow • Room for further value-added by processing rubber into rubber products.	• Price intervention in the rubber market causes irregular supply of latex, and increases latex prices. • Tariffs on raw materials and chemicals do not encourage production of rubber products. • Certain types of products require a foreign partner to provide both technologies and brand names. • Interventionist policies and political change make long term planning difficult

Current and Future Competitive Challenges for Thai Rubber Glove Industry

3.108 The rubber glove industry will always be a competitive industry for manufacturers in Thailand as the raw material (i.e. concentrated latex which contain 40% water in addition to 60% rubber) is local. This saves transportation cost of raw material which contain 40% water. Two other countries, Malaysia and Indonesia, are also major producers of natural rubber but production of latex in Malaysia is declining due to labour shortage for tapping the rubber trees. At present Malaysia already has to import latex from Thailand. Indonesia may not have labour shortage problems but the infrastructure for rubber product manufacturing industry in not as good as in Thailand.

3.109 Rubber gloves is already the top exported rubber product for Thailand, ahead of car tyre. There is very good potential for Thailand to develop into the major latex product manufacturer in the world, not only for gloves but also for other latex products such as balloons, condoms, and rubber thread. Future opportunities exist for the Thai rubber glove industry as stated above. However, the following must be done:

- Develop technology for manufacturing low proteins or hypoallergenic rubber gloves and also powder free gloves.

- Improve on productivity in order to lower production cost as the prices of the rubber glove are very competitive.

- The industry should also develop innovative products such as puncture resistant glove and improve research and development on quality of rubber gloves in order to increase competitiveness, by:

- Shift from commodity products (medical examination glove, household glove etc.) to specialty products (clean room glove, medical surgical glove, and industrial glove).

- Improve on comfort and convenience of uses. (e.g. softer glove, better-fit size and shape etc.).

Current and Future Competitive Challenges for Thai Rubber Tyre Industry

3.110 The truck tyres and other heavy-duty industrial and agricultural machine tyres, particularly solid tyres, are manufactured from natural rubber as a major component (typically 80% of the total rubber used). Being a natural rubber producing country, it is obvious that this type of rubber product should be one of the targeted products for manufacturing promotion.

3.111 Also, the markets for truck tyres, industrial tyres and other heavy-duty tyres are less concerned with brand names, as compared with passenger car tyres. Therefore, opportunity exists for expansion of this market sector.

3.112 At present all the medium size manufacturers of truck tyres in Thailand manufacture cross-plied or biased tyres. This is an old technology. Eventhough there is still market for cross-plied tyres and for quite some time to come (5-10 years), the local manufacturers should aim to upgrade themselves to production of radial tyres. The technology of radial tyre is more advanced and capital intensive, the latter being the primary obstacle to the changing over for most companies in this product sector. However, this should seriously be the future target of this industry, in order to increase their competitiveness in the international scene.

3.113 There are markets for cross-plied truck tyres and pneumatic and solid tyres for industrial and agricultural uses in many parts of the world which the Thai manufacturers have not explored. Therefore, opportunity still

exists for these products. What that may need to be done by the Thai manufacturers in order to fulfil the opportunity that exists is to improve on efficiency of production and management.

3.114 Developing marketing strategy is also the other big challenge and government support is essential to be successful.

LEATHER GOODS

Exports of footwear and furniture (including leather) into Main Markets

3.115 Tables 3-29 and 3-30 show the main footwear and furniture exports by country into the main markets. Thailand appears to be the 5th exporter of footwear and the 8th of furniture. Main competitors for Thai footwear industry are China, Indonesia, Brazil, Vietnam, Korea and India. Within ASEAN-4, Malaysia and the Philippines export only about a third of Thai's exports. Main competitors for Thai furniture are Mexico, Taiwan, Indonesia, Malaysia and the Philippines. The competitiveness (i.e. export levels) of Thailand and each competitor for each main market separately (EU, Nafta and Japan) is showed in the table below.

Table 3-29: 1998 Footwear Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
China	11,568	1,083	8,877	1,608	**Sri Lanka**	40	23	17	0
Indonesia	1,367	501	798	68	**Mexico**	38	16	20	2
Brazil	1,174	161	1,001	12	**Cambodia**	29	10	0	19
Vietnam	1,063	823	200	40	**Pakistan**	20	19	1	0
Thailand	646	273	342	31	**Canada**	7	6	0	1
Korean Republic	458	94	166	198	**Colombia**	6	6	0	0
India	441	321	118	2	**Burma**	5		0	5
United States	255	86	72	97	**Singapore**	5	4	0	1
Taiwan	241	179	9	53	**Argentina**	4	4	0	0
Hong Kong	164	97	65	2	**Japan**	4	4	0	
Malaysia	91	24	63	4	**Chile**	2	0	2	0
Phillipines	79	64	1	14	**Iran, Islamic Republic**	1	1	0	0
Macau	65	50	15	0	**Laos**	1	1	0	0
Bangladesh	42	31	0	11	**Myanmar**	1	1	0	

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

Table 3-30: 1998 Furniture Imports into Main Markets (Million US Dollars)

Industry	All	EU	NAFTA	Japan	Industry	All	EU	NAFTA	Japan
China	7,805	1,121	5,958	726	**Korean Republic**	74	7	3	64
Canada	4,904	65	4,745	94	**Hong Kong**	71	55	8	8
United States	3,782	491	2,884	407	**Japan**	50	40	10	
Mexico	3,687	51	3,633	3	**Chile**	49	3	46	0
Taiwan	2,086	284	1,355	447	**Pakistan**	22	7	15	0
Indonesia	1,169	478	463	228	**Macau**	17	0	17	0
Malaysia	836	134	528	174	**Singapore**	16	13	0	3
Thailand	748	113	308	327	**Sri Lanka**	7	4	2	1
Phillipines	438	68	315	55	**Myanmar**	4	4	0	
India	242	95	145	2	**Colombia**	1	1	0	0
Brazil	231	138	93	0	**Bangladesh**	1	0	1	0
Vietnam	176	83	7	86	**Iran, Islamic Republic**	1	1	0	0
Argentina	108	1	107	0	**North Korea**	1	0	1	0

Source: Compiled by WS Atkins using the World Trade Atlas Database for USA, Canada, Mexico and Japan and Eurostat database for countries in the EU. Year end currency exchange rate was used for translation.

World industry trends: Leather Footwear and Furniture

3.116 World trade of **footwear** is around US$40 billion. Developing countries account for 60% of all exports. The main importers of leather goods are Italy with 17% of all imports, China with 12.6%, USA (12.1%), Germany (7.7%), France (4.4%) and Japan (4.1%); the main exporters are China (14.5), Italy (14.1%), USA, Korea, India and Germany. On a global scale, it is estimated that shoes with leather uppers account for approximately 45% of the total world-wide footwear production in 1998. This amounted to around 4990 million pairs of shoes, which used roughly 1170 million square foot of upper leather.

3.117 The main footwear producing regions are:

Region	Share of world production
Asia	47%
Europe	24%
Americas	18%
Other	11%

Source: Satra's Information Centre: World Footwear Markets 2000

Sector Trends

3.118 Producers in developed countries have virtually abandoned the low end of the market. They continually consolidate and restructure their manufacturing facilities to produce

higher-quality products for niche markets.

3.119 The main challenges for the footwear industry are:

- upgrade skills in production workers in order to create new market opportunities;
- develop strategic alliances with footwear producers in other countries;
- provide firms to access to up-to-date market intelligence.

3.120 **Leather upholstery** for both **furniture** and **automobiles** is a growing industry world wide. Many changes are taking place in the furniture industry. The most important, is the alliances and innovative ways of marketing devised by companies in order to avoid having to rent floor space in shops. The furniture industry by-and-large is not a brand driven industry, so schemes such as co-operative advertising and show rooms are quite successful.

3.121 In general, the leather furniture industry should embrace technology in order to automate production lines. The main challenges that the leather furniture industry faces world-wide relate to the application of industrial engineering techniques to manufacturing. These include the use of production cells, deciding when to produce to order or for inventory, tracking labour productivity, and tracking material wastage.

International Benchmarking - footwear

3.122 The following are some benchmarks that the Thai footwear and upholstery industry should be looking to achieve.

Table 3-31: Benchmarking of Average Footwear Companies against Best Practice

Benchmark	Thai Footwear Companies	Best Practice
Supplier lead Times (scores)	NA	3.2
Lead time - Order processing (days)	14-21	4.4
Lead time – manufacturing (days)	NA	8.8
Despatch time (days)	30 (by sea)	3.8
Despatch cost (%)	NA	0.9
On-time deliveries (%)	NA	91.8
Production per hour (sq. ft/ hour/man)	160	110
Plant utilisation (%)	95%	80%
Value added per direct employee	Baht 300	Baht 4 million
Sale returns (%)	0.5-0.6	1.5
Rate of stock turnover	2.4	8
Raw material costs (%)	65%	62
Direct labour costs (%)	7%	6.5
Lead time for new product development (days)	2-3 Weeks	Not measure
Wastage level of leather	45%	10%

Leather - Footwear

Cost Structure and Competitiveness for Footwear Manufacturing

3.123 Leather companies have relatively high standard costs per unit. Margins per unit are around 4-11% against international averages of 10%. It has been reported by a recent survey into the proportion of solid waste generated by shoe factories, that the wastage level of leather can be as high as 45% in some areas of the shoe manufacturing sector. Although in a well run factory, this would be viewed as excessive, if such a figure were applied to large operations, the results would be alarming. Thus, some companies have in place incentive schemes whereby if the operator achieves the required number of panels from the leather he uses, he can earn a bonus of up to 15% of his standard wage.

3.124 Those companies which are producing for main international customers have indirect access to information on future market trends. Quick adjustments to the Companies' strategy and production plan are therefore made. This close relationship results in the privilege to receive six month advanced purchase orders and one-year advanced purchasing plans. This enables companies to lower production cost substantially and to select especially high-end models with high demand.

3.125 The finished sole unit contributes up to 40% - in the case of sport shoes - to the manufacturing cost of the completed shoe. There is a potential

saving of 10-15% if companies applied more advanced technology in the manufacturing of sole units. An example is the matching of pigments for plastics by colour computers equipped rather than manually. The benefits derived from this are direct savings in chemical purchasing because of the effectiveness of the numerical systems against the inefficiency of the human method.

SWOT Analysis

3.126 Table 3-32 summarises the SWOT analysis for leather footwear.

Table 3-32: Summary SWOT analysis of the Thai Leather Footwear Industry

Strengths	Weaknesses
• Modern equipment. • Good relationship with international brands. • Good support from suppliers • Some high margin products. • Brands being developed.	• High inventory levels: A high percentage of raw materials have long lead times. • Some critical raw materials supplied from overseas. • Mostly low margin products • Very poor material usage
Opportunities	**Threats**
• Large export market. • Use of locally treated leather	• Dependency on international orders • Dependency on cheap labour • Development of footwear manufacturing in other developing countries. • Pirate products.

Current and Future Competitive Challenges for Thai Footwear Industry

3.127 The managerial skills of Thai businessmen and the manual and manufacturing skills embodied by the labour force are observed to be the equivalent of those in the West. This is borne-out by the sheer weight of world class companies and international brand names having goods made in the vicinity of Bangkok for global distribution. The level of quality available in the finished article is high.

3.128 Where there has been a high level of co-operation and partnership between manufacturer and customer, knowledge of best practices in processing and the use of current technology has been acquired by the local company through a process of technology transfer. There are high standards of production control and intimate attention to detail. Making a diverse range of complex products for sports shoe companies for example, underwrites the ability of the manufacturer to design-in leading edge performance to their products, rendering them highly desirable in the international marketplace. These products are marketed and sold on by the owner of the brand for premium prices following export from Thailand.

3.129 Globally a high-volume, low-margin product in the manufacture, shoes and leather

goods rarely command more than a 5% gross margin for the factor. Foreign-owned conglomerate labels have the largest slice of the cake, and are fickle in their policies when it comes to placing their interests and orders for manufacture. This is also the case for Thai industry.

3.130 Companies have a large quantity of spare manufacturing capacity. The potential here is un-tapped currently and would, if brought back to life:

- Create employment
- Improve the performance of companies/groups by making a bigger contribution to operating costs/overheads
- Develop into an expansion of existing profit centres
- Potentially reduce imports by providing more of what the local market needs
- Increase company turnovers
- Contribute more to Government through taxation

3.131 What appears to be preventing this is:

- A lack of know-how in many cases
- A lack of quality market intelligence on needs and sales potentials within the home market
- A lack of vision
- A relaxed resignation to carry the overheads burden of unused factory space
- A failure to demand a return on investment
- A lack of understanding of how marginal costed goods and even loss-leaders can add to the company's activities, spreading the load of the operating costs within the business

Cost Structure and Competitiveness for Upholstery Manufacturing

3.132 Although the export market shows high potential, lack of original design and international marketing skills hamper the prospects of Thai upholstery companies. Designers concentrate on copying European styles rather than developing own models. This results in companies not being able to take advantage on this trend in exports, because not all have skills in international business.

3.133 Leather is seen to be the main opportunity to improve perception of quality and price/margins, so will probably increase in use in the future. Some companies employ local hides displaying classical poor quality including putrefaction, parasite attack, bad preservation, poor flay and damage from hand fleshing. Other companies work with imported hides for upholstery, as local humped cattle do not produce suitable cutting area (i.e. they are not big enough). Wet blue is mainly imported from Australia.

SWOT analysis for leather upholstery

3.134 Table 3-33 summarises the SWOT analysis for leather upholstery.

Table 3-33: Summary SWOT analysis of the Thai Leather Upholstery Industry

Strengths	Weaknesses
• Use of established furniture marketing channels	• Poor quality of local raw hides • Old equipment • High cost of imported hides • No original design • Low volumes • Industry dominated by families in the tannery business • Dependency on foreign know how and technology
Opportunities	**Threats**
• Highly skilled labour force in furniture design and production – could be transferred to upholstery design • Large export market. • Use of locally treated leather, if quality is improved • Some high margin products.	• Further cost reductions in leather upholstery manufactured, particularly in Eastern Europe • Increasing establishment of larger competing manufacturers that have links with large retailers in target markets

Current and Future Competitive Challenges for Thai Upholstery Leather Industry

3.135 Thai Tanneries are entering into exclusive agreements with furniture manufacturers, so it is becoming more difficult to enter the industry and be accepted as an independent agent, for fear that the design, technology or business might be stolen. Leather is seen to be the main opportunity to improve perception of quality and price/margins, so will probably increase in use in the future.

3.136 It is apparent from the availability of spare capacity in the upholstery leather sector of Thailand's manufacturing base that current resources are under utilised. The skill-base is highly developed among the labour force. The managerial and commercial acumen is evident in staff. The prevailing climate however dictates that companies focus on export markets using largely foreign raw materials rather than looking to opportunities of using domestic hides or foreign hides treated in Thailand.

3.137 The companies gathered in the Km 30 tanning district area display a wide range of ancient and modern practices, and differing levels of technology in use. Some of the companies need to update their technology, particularly the wet processing as it is

about 50 years out of date. This gives ample opportunity for an improvement in methods through technology transfer. There can be a number of technology transfer initiatives identified as wanting for the full exploitation of the possibilities.

3.138 While it was stated that in some cases, a home market did not exist for certain products, drawing economic comparisons with near neighbours, the Thai economy is developing and growing partly due to the interest and confidence placed in Thailand by International Conglomerates.

3.139 A number of factors impact on development of exports. These involves assisting tanners to make the products most in demand in the most effective and profitable way. The breeds that are reared, and what the potential is for the conversion into the most lucrative products must be assessed. Indeed, many Western countries have failed to capitalise on hide treatment (basis of all leather manufacture) as a high value bi-product of the meat production industry.

3.140 The result of this is that there are currently many hide improvement schemes world wide (including in India) seeking to drive up the quality. Starting with husbandry methods, schemes in Europe, America and Australia, organised groups with technical and governmental backing are taking the inactive to assign a higher value to this material. This is a slow evolutionary process, thus it may be possible for the Thai Government to plan a more effective way to build an invigorated industry from the ground up.

3.141 Tanneries are mostly family run and in some cases the decisions are still taken by the head of the family. Current management practices will be therefore difficult to implement unless younger generations are given the power and responsibility to take these businesses forward into the next century.

4. COMPETITIVENESS GAP

INTRODUCTION

4.1 This section assesses the competitiveness gap between Thailand and its main competitors world-wide and in East Asia in terms of labour productivity, which previous sections have shown is the critical factor in Thailand's declining competitiveness. For this, the most recent published data on output per employee and value added per employee is used. Then, the section presents our views on how and at what speed the gap can be closed.

4.2 Due to the limitation of the available published international benchmarking data, we have to rely on two main sources: the 1998 *Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries*, and the expert report on the sub-sector visit. Unfortunately recent data for Thailand are available only for 1991 and 1994. Thai industry in 1994 will be compared to the competitors given in Table 2.1, and East Asia (Japan, Republic of Korea, and Taiwan) in the same year and in 1995 as to look at the improvement in the competing countries. More recent consistent data for *all* countries is not yet available.

COMPETITIVENESS TRENDS

4.3 It has been shown that Thailand's competitiveness was eroding in the mid-1990s. Table 4.1 shows the World Competitiveness Index in 1995-1999 and indicates this clearly. By 1997 Thailand's competitiveness index was better than those of Korea, the Philippines, and Indonesia. At the same time, its index was worse than that of Hong Kong, Singapore and Malaysia. As economic crisis deepened in 1998, the competitiveness index plunged to all-time low at 39. Thailand was only better than Indonesia in that year. In 1999 after the lowest point in economic activities, the index had improved but it was still a long way from the early 1990's period.

Table 4-1: Economic Competitiveness Ranking 1995-99

Country	1995	1996	1997	1998	1999
Singapore	2	2	2	2	2
Hong Kong	3	3	3	3	3
Japan	4	4	9	18	16
Malaysia	23	23	17	20	27
China PRC	31	26	27	24	29
Philippines	36	31	31	32	32
South Korea	26	27	30	35	39
Thailand	27	30	29	39	34
Indonesia	34	41	39	40	46

Source: World Competitiveness Index 1999

The index is a ranking based on a weighted average of many quantitative and qualitative factors such as literacy, communications, law and order, education, social and political factors, as well as cost and economic indicators. Most competitive country = 1.

4.4 Thailand's economy is now seen as firmly in recovery mode, with GDP growth estimated by the IMF in 1999 to have been at 4%; the Thai Council of Economic Ministers estimated in February that GDP growth would amount to 4.4% in 2000, and the Economic Policy Committee that it would amount to 5%. Manufacturing growth is seen to be growing at an even faster rate. Manufacturing growth in December was at 15% in the last quarter of 1999. At the same time, exports have soared by 30% in the same period.

4.5 There are some concerns from such bodies as the IMF that structural problems with the Thai economy and financial system remain, such as the prevalence of bad debts and non-performing loans in the financial sector and continuing budget deficits. Nonetheless, it appears that the key industries will post continued growth as the country stages a recovery and returns to pre-crisis manufacturing levels.

4.6 Export values rose by 7.3% to US$58.5 billion during 1999 and to US$32.9 in the first half of 2000. This can be attributed to two major factors: world economic growth and increased demand in intra-Asian trade. In response to these factors, Thai exports picked up substantially in the second quarter of 1999.

4.7 Table 4-2 shows the recent trend in exports of the selected sectors. The future looks good for high-technology goods but there is increasing concern that electronics rely heavily on imported parts. Exports of automobiles and parts are on the rise despite high tariff barriers and regulation in Asian countries. Industries that suffer are those

relying on intensive labour such as garment and leather manufacturing.

4.8 Table 4-3 shows export trends in more detail for processed foods. Most prepared foods managed to increase exports during 1996 – 1998, with particularly large increases for canned fish. These exports may suffer non-trade barriers such as international sanitary standards in major markets like the US and EU, unless Thai industry quickly manages to comply with these standards.

Table 4-2: Export Value, Percentage Change and Market Destinations during Nine Months, 1999

Item	Million (US$)	Change (%)	Market
- Rising Exports			
Vehicles and Parts	1,358	63.8	Australia, USA, Japan and Germany
Furniture and parts	599	24.5	Japan, USA, and UK
Electric circuits	2,958	21.9	USA, Netherlands, Malaysia and Taiwan
Computer and parts	5,955	5.2	Singapore, Taiwan, Netherlands, the Philippines and UK
Plastic products	532	0.4	Japan, Malaysia, Vietnam and Taiwan
- Declining Exports			
Rubber products	769	-23	Japan, USA, China and Malaysia
Frozen shrimp	904	-8.3	Japan, China, Singapore and Australia
Garments	2,130	-6.0	USA, Japan, Saudi Arabia, UAE, Hong Kong and Poland
Footwear and parts	646	-3.4	USA, Germany, Italy and Hong Kong
Canned seafood	1,190	-0.2	UK, Germany and Saudi Arabia

Source: Business Economics Department, Thailand

Table 4-3: Export of prepared food, during 1996-1998 and percentage change

Category	1996	1997	% change	1998	% change
Canned fish	34.2	49.3	44	67.9	37.8
Sauces and other preparations	1.6	2.4	43.1	3.1	29.4
Wheat products and other preparations	5.2	5.7	9.4	6.5	13.5
Rice products	3.3	3.7	12.6	4.1	11.1
Canned fruit	15.1	13.9	-7.1	15.4	10.5
Canned vegetable	5.1	5.8	13.2	6.3	9.5
Processed seafood	6.2	8	30.3	8.5	5.2
Preparation cuttlefish	0.3	0.9	154.9	98.9	3.9
Soup and other preparations	1.2	0.9	-27	0.4	-50.3
Total	*78.5*	*98.1*	*24.9*	*120.2*	*22.5*
Total Food Exports	**273.4**	**318.3**	**16.4**	**395.8**	**24.3**

Source : Business Economics Department, Thailand

COMPARISON OF COMPETITIVENESS INDICES WITH MAIN COMPETITOR NATIONS

4.9 The following sections discuss productivity indices for each sector.

Food Processed Sector

4.10 Table 4-4 shows competitiveness comparisons for the food processing industry. In 1994 compensation per employee in Thailand was higher than the Philippines. In the following two years compensation per employee in the Philippines became higher reflecting the advantage of cheap labour in Thailand in early 1990s. Compensation per employee in Thailand was as low as 1/5 – 1/10 of those in the East Asia in 1994. Nevertheless the compensation per employee in China and Vietnam are estimated to be lower than in Thailand, so it appears that Thailand's food processing industry has lost the comparative advantage on cheap labour to China and Vietnam.

4.11 Differences in labour cost, however, are reflected in productivity. Output value per employee of this industry was higher than that of its low-labour-cost competitor (China) and similar to Philippines in 1994, but lower than the high wage East Asian countries. In consequence labour costs were 8.6% of output in Thailand, only 6.7% in Philippines, around 8.5% in Korea and Taiwan (the same as Thailand), and as much as 14% in Japan. Thailand therefore has no labour cost advantage, even over Korea and Taiwan. Moreover, the Philippines was rapidly improving the output value per employee, by 38.9% during two years, so increasing its advantage over Thailand.

4.12 Value added per employee in the Thai food processing sector was about 27.2% of the output value in 1994. It was even higher in Philippines, and in Japan and Korea it was as much as 40%. This indicates that either Thailand's products are much lower value/quality, or its material and services costs are higher – probably a combination of both. The competitors have been increasing their value added rapidly. In 1995 value added per employee in China increased by 97.8% and in the Philippines it was increased by 94.9% in 1993, a rapid improvement.

4.13 In general, Thailand will not be able to compete in terms of cheap labour any longer. Development in R&D and market development are the key factors for Thai food processing industry to increase her output value per employee and value added per employee. Plant capacity utilisation and procurement of raw materials have to be improved in order to maintain Thailand's competitiveness.

Table 4-4: Competitiveness Comparison for the Food Processing Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	2,600 (94)	30,377 (94)	12,400 (94)
World Competitors	**China**	NA	15,024	2,632
	Vietnam	NA	NA	NA
	Philippines	2,458 (93)	36,261 (93)	12,662 (93)
East Asian Comparison	**Japan**	31,977	233,289	94,512
	Republic of Korea	13581	160,171	63,005
	Taiwan	14277	162,532	32,610

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995

Electronics Sector

4.14 Table 4-5 shows competitiveness comparisons for the electronics industry. In 1994 compensation per employee in the electronics industry in Thailand was lower than for almost all its world competitors (Singapore, Malaysia and Indonesia). Compensation per employee in Singapore was almost ten times that of Thailand, implying better quality of employment. Such high wages may not be high enough to attract skill

workers into this industry resulting in a lag in technological improvement relative to neighbouring countries such as Singapore and perhaps, Malaysia. It is noticed that compensation per employee rapidly increased in this industry. Cheap labour is not the main advantage in the case of high technology industries. The skill of labour is more important for its competitiveness

4.15 Output value per employee of Thai electronics industry was relatively low when compared to its world competitors. In 1994 it was as low as almost one-third of output per employee in Malaysia, and lower than that in Indonesia. This was not always the case and Malaysia's values used to be lower than Thailand's at the beginning of 1990s. Indeed, Malaysia output per employee increased by 74.4% within three years between 1991-1994, an increase of more than twenty percent annually.

4.16 Among its world competitors, only Singapore has a high rate of increase in value added per employee. There has not been much improvement in value added per employee in Indonesia or Malaysia.

Table 4-5: Competitiveness Comparisons for the Electronics Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	1,447 (94)	25,000 (94)	7,237 (94)
World Competitors	**China**	NA	NA	NA
	Singapore	13,880 (94)	369,915 (94)	92,833 (94)
	Malaysia	3,715(94)	78,796 (94)	11,241 (94)
	Indonesia	1,650	42,661	5,824
East Asian Comparison	**Japan**	39,627 (93)	371,358 (93)	122,050 (93)
	R of Korea	15,941	209,512	64,031
	Taiwan	NA	NA	NA

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI. Notes: Number is bracket is year when before 1995.

Garment Sector

4.17 Table 4-6 shows competitiveness comparisons for the garment industry. In 1994 compensation per employee of garment industry in Thailand was less than half of that in Taiwan, and much lower than those in Japan and Korea indicating competitiveness in cheaper labour. Data for China is not available but it is expected to be lower than Thailand. In 1995 the compensation per employee of garment industry in the three East Asian countries increased by more than half in Japan (53.3%), and Korea (66.9%), and by about one-third in Taiwan (31.7%). 1995 data for Thailand was not available, but was expected to be lower than those three East Asian countries. Nevertheless cost of labour in China remains lower than in Thailand.

4.18 Value of output per employee in Thailand was lower than for the three East Asian countries in 1995 due to the cheaper cost and the low-end products. In 1994 value added in Thai garments was more than half of the output value (66.0%). The ratio was higher to Japan's (32%) and Korea (39.0%), and Taiwan (32%) indicating the competitiveness of Thai garments by that time. Despite rising costs, the three East Asian countries had been able to maintain value added by increasing their production value per employee.

Table 4-6: Competitiveness Comparisons for the Garment Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	3,600 (94)	12,557 (94)	14,504 (91)
World Competitors	**China**	NA	NA	NA
East Asian Comparison	**Japan**	22,574	73,195	39,875
	Republic of Korea	12,523	72,580	35,651
	Taiwan	9,933	56,907	20,018

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

Automotive Parts Sector

4.19 Table 4-7 shows competitiveness comparisons for the automotive parts industry. In 1991 compensation per employee of the automotive parts industry in Thailand was

much lower than those in Japan, Korea and Taiwan but still higher than its competitor, India. Compensation per employee in India was less than half of that in Thailand in 1991 and there was a small increase in 1995 (only 9.9% during 5 years or 2% annually). Thailand does not have competitiveness in cheaper labour in this industry, but the skill level of labour is much higher. Thus, value of output per employee in Thailand was more than six times of that in India in 1994 and was even higher when compared to China in 1991.

4.20 Value added in Thailand was a very high 66.9% of output value in 1994 reflecting high kills and efficiency in this industry. Thai value added per employee was much higher than that of competitors, China and Taiwan. The increase in output value and value added per employee in China, India and Taiwan in 1995 did not surpassed Thailand's position even back in 1994. Thus, this Thai industry has maintained its productivity which has resulted in sustained competitiveness.

Table 4-7: Competitiveness Comparisons for the Automotive Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	3,817 (91)	75,322 (91)	50,424 (91)
World Competitors	**China**	NA	10,690	2,606
	India	1,797	14,578	3,285
East Asia Comparison	**Japan**	37,828 (91)	520,488	163,624
	Republic of Korea	23,175	192,211	75,714
	Taiwan	17,183	117,690	38,478

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

Plastics Sector

4.21 Table 4-8 shows competitiveness comparisons for the plastics industry. In 1994 compensation per employee of plastics industry in Thailand was much lower than that in Japan, Korea and Taiwan. It was still lower than its competitor; Malaysia. In 1995 compensation per employee in Malaysian plastics industry increased by 71.6%. Compensation per employee in Japan, Korea, and Taiwan increased at a slower rate

than in Malaysia.

4.22 Output per employee in Thailand in 1994 was lower than in Malaysia but higher than in China. Value added per employee in Thailand was higher than in China and slightly lower than in Malaysia. As a ratio to total output value, Thailand had a higher share of value added (48% compared to 20% and 38%). This share was close to Japan's and higher than those of Korea and Taiwan. Thus, it appears that Thailand started increasing its competitiveness in plastics since 1991.

4.23 Once again, investment per establishment is very much lower than its competitors.

Table 4-8: Competitiveness Comparisons for the Plastics Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	2,600 (94)	17,650 (94)	8,500 (94)
World Competitors	**China**	NA	12,388	2,472
	Malaysia	4,154	33,750	12,769
East Asia Comparison	**Japan**	38,756 (94)	248,467	110,305
	Republic of Korea	16,812	187,491	79,536
	Taiwan	13,565	63,555	20,029

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

Rubber Sector

4.24 Table 4-9 shows competitiveness comparisons for the rubber industry. In 1994 compensation per employee of rubber industry in Thailand was lower than in Malaysia but much higher than in Indonesia, the two main competitors. In 1995 compensation per employee in Malaysia increased by 50% and was more than double than that in Indonesia. Thus Thailand does have competitiveness in terms of cheap labour in this industry.

4.25 Output per employee in Thailand in 1994 was much higher than Indonesia but lower than in Malaysia. For Malaysia the value of output per employee increased by 37.7%.

For Indonesia the increase was as high as 86.5%.

4.26 Value added per employee of Thailand was 32% of the output value. The ratio was higher than Malaysia and Indonesia (18-28%), and it worsen in 1995. Thus Thailand was more competitive than Malaysia and Indonesia in rubber manufacturing.

Table 4-9: Competitiveness Comparisons for the Rubber Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	2,600 (94)	37,806 (94)	12,100 (94)
World Competitors	**Malaysia**	4,218	46,101	13,267
	Indonesia	1,199	22,752	4,435
East Asia Comparison	**Japan**	38,929 (93)	249,342	127,080
	Republic of Korea	17,367	130,329	62,132
	Taiwan	12,911	56,094	18,165

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

Leather Sector

4.27 Competitiveness comparisons are shown separately for leather-footwear and leather products as given in Tables 4-10 and 4-11.

Leather-Footwear

4.28 In 1994 Thailand's footwear industry had a higher compensation per employee than India. Output values per employee in Thailand were about 60% of that in India. Despite higher compensation per employee and lower output value per employee, Thailand had a higher value added per employee. It was almost double of the value added in India. This could reflect a higher efficiency.

Table 4-10: Competitiveness Comparisons for the Footwear Industry

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	2,300 (94)	7,918 (94)	5,300 (94)
World Competitors	**China**	NA	NA	NA
	Brazil	NA	NA	NA
	India	739	13,112	3,323
	Italy	20,571 (94)	117,952 (94)	31,455 (94)
East Asia Comparison	**Japan**	31,690	144,957	64,811
	Republic of Korea	12,066	62,171	29,036
	Taiwan	10,131	54,790	11,276

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

Leather Products (including Furniture)

4.29 In 1994 Thailand had a higher compensation per employee than Indonesia bur much lower than those of other competitors such as Japan, Korea and Taiwan. Value added of Thai manufacturing was more than half of output value but it was only 32% in Indonesia. This indicates the competitiveness of Thailand over Indonesia.

Table 4-11: Competitiveness Comparisons for the Furniture sector

		Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
	Thailand	2,000 (94)	8,267 (94)	5,600 (94)
World Competitors	**China**	NA	11,785	2,437
	Indonesia	1,114	13,409	4,354
East Asia Comparison	**Japan**	34,325	186,507	75,332
	Republic Korea	15,067	149,646	49,974
	Taiwan	13,250	44,023	15,044

Source: Arsen J Daney (ed), 1998, Manufacturing Worldwide: Industry Analyses, Statistics, Products & Leading Companies & Countries, 3rd edition, The Gale Group, MI.. Notes: Number is bracket is year when before 1995.

CLOSING THE GAP: HOW AND TIME FRAME

4.30 Compared to world best practice, most Thai firms have low margins because of:

- Low levels of skilled labour. This keeps them in labour intensive and old technology, and leads to high reject rates and poor quality
- Products in low quality ranges, with low value of output
- High materials cost because of high reject rates and poor material yields
- Some good technology but generally technology of the 1970s and 1980s.

4.31 These translate into increased production costs for industries in relation to those of their main competitors, shown in Table 4.12. The table above shows the comparison of Thailand with specific countries. In particular, it shows that:

- the share of materials and utilities costs are higher than for competing industries in all industries shown except for leather products (excluding footwear)
- the share of labour costs is quite similar to competing industries, except for leather products.

4.32 As Thailand has the lowest operating surplus as percentage of total output, for the industries studied excluding leather products (without footwear), the industries are facing strong challenges even before taking into account differences in marketing and administration charges and practices– and in taxation and financial charges.

Table 4-12: Rough Benchmarking of Cost Structures - % of Output for latest year available

Industry/Country	Materials and Utilities (%)	Labour (%)	Operating Surplus (%)
Food Processing			
Thailand	73.0	5.8	21.3
Korea	60.7	8.5	30.9
The Philippines	64.3	5.7	30.0
Garments			
Thailand	71.4	19.2	9.3
Korea	50.9	17.3	31.9
Mexico	46.0	25.5	28.4
Indonesia	60.8	12.3	26.8
India	71.2	5.7	23.1
Plastic Products			
Thailand	68.0	9.8	22.2
Korea	57.6	9.0	33.5
Malaysia	64.1	11.9	23.9
Rubber Products			
Thailand	78.9	4.6	16.5
Korea	52.3	13.3	34.3
Malaysia	71.4	8.3	20.3
Indonesia	79.5	4.5	16.0
Leather Footwear			
Thailand	55.6	19.2	25.2
Korea	53.3	19.4	27.3
Leather products			
Thailand	55.3	15.7	29.0
Indonesia	64.0	7.8	28.1
Korea	66.6	10.1	23.3
India	88.1	4.4	7.5

Source: Several Industrial Statistical Sources
Note: Lack of recent data for many competing countries resulted in the use of mostly 1996 for consistency reasons. Data for Auto Components and Electric appliances was too incomplete.

4.33 In each of the sectors it is clear that has one group of competitors with much lower wage rates (China, sometimes India, Vietnam); other ASEAN countries with similar wage rates (Malaysia with slightly higher rates, and also Indonesia and Philippines with lower rates), then a group of East Asian nations (Japan, Korea, Taiwan) with big markets, efficient firms and high wage rates. Not surprisingly, the low wage countries have lower productivity, because they tend to use more labour intensive processes. The unit labour cost is the product of these two factors, and at least in the early 1990s Thailand had an overall lower labour cost per unit of output than either its low-wage competitors or its high wage competitors, so it had a competitive labour advantage (in some cases as much as a half that of some competitors and a third of that of Japan). Our conclusions from the study, however, is that this has been eroded since the early

1990s because wages rose faster than productivity.

4.34 The value added as percent of output value in Thailand is frequently as good or better than competitors. This is an indication of a combination of efficient use of materials and services, and high yields and value of product. A high level of value added is needed in order to pay labour costs and the cost of capital and to leave a surplus for profits and taxes.

4.35 The data show that Thailand tends to have much lower levels of investment per establishment than its close competitors. This may be a difference in the way data is reported, but if true, shows that Thailand has relatively small manufacturing units and poor levels of investment, indicating that Thailand is likely to be losing relative competitiveness through under-investment.

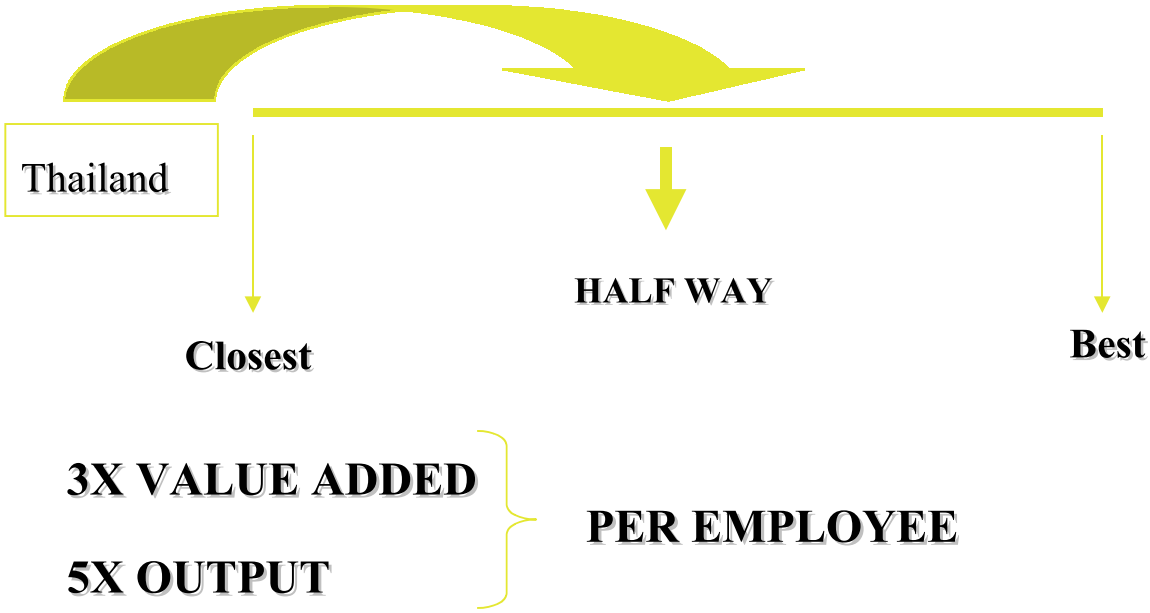
4.36 Table 4-13 shows a rough estimation of the competitiveness gap between Thailand and its main competitors for the industries studied. This estimation was derived from the comparisons shown above plus our own expert assessment of the industries' situation. The comparisons are with those competitors performing better than Thailand – in most cases this includes Japan, Taiwan and Korea, and also Malaysia (for electronics, plastic products and rubber products) Indonesia (for electronics), Philippines (for processed food), India and Italy (for leather footwear), and China (for furniture)

Table 4-13: Rough estimation of competitiveness gap with main competitors

Industry	Compensation per Employee ($)	Output per Employee ($)	Value added per Employee ($)
Food Processed	8-19%	19-28%	13-97%
Electronics	3-87%	6-58%	6-64%
Garments	16-36%	39-50%	36-72%
Automotive	10-22%	14-64%	30-66%
Plastics	7-62%	7-52%	8-66%
Rubber	7-61%	15-82%	9-96%
Leather – Footwear	7-22%	7-75%	8-47%
Leather Products (inc. furniture)	6-15%	4-70%	7-37%

4.37 From this, it is clear that as a rough average, Thailand needs to improve its value added per employee by at least 3 times (relative to its competitors, who are also increasing output and efficiency) and its output per employee by 5 times in the industries studied.

Figure 4-1: Competitiveness Gap



4.38 The levels of value added and output are the result of a combination of factors including levels of technology and skill of the labour force, levels of capacity utilisation, levels of employment and use of energy and other utilities. These factors, and the way they affect costs are analysed in Section 5 of this report. The relevant ways in which value added and output can be increased through proper management of these costs are also depicted in Section 5.

4.39 It is difficult to estimate how long it would take the industry to catch up with its main competitors in terms of these indicators of competitiveness. The challenge is enormous, and will require raising the value of products by moving to higher product technology and more up-market goods, as well as investment in new process technology to reduce costs.

4.40 From Table 4.1, it is clear that Thailand must take some years to catch up with its competitors. Assuming that the state of technology is increasing at a nominal rate, the catch up period may vary between 3 to 5 years. Large firms will take less time than smaller firms. Nevertheless, the competitors are also moving ahead rapidly at the same time so the gap to be closed in widening. It must be recalled, however, that

Thailand does still have a huge wage rate advantage over the East Asian competitors, so that its unit labour costs are still below these competitors. The stumbling block is lack of financial support as financial institutions are waiting for economic growth to restart before extending credits. Indeed, most financial institutions are not extending long term or short term loans to manufacturers at the moment – domestic firms have less chance of securing loans than exporters. As the cost of upgrading machinery and equipment will be enormous (e.g. textile machinery is now 10 times more expensive than before – not counting the change in value of the US dollar), the support from financial institutions is fundamental. Until this is in place, industry ell lack the necessary technology to reduce costs and the gap to be closed will continue to widen.

5. FACTORS AFFECTING COST COMPETITIVENESS

INTRODUCTION

5.1 This section summarises the main factors affecting cost competitiveness in Thai industry.

CRITICAL COST FACTORS

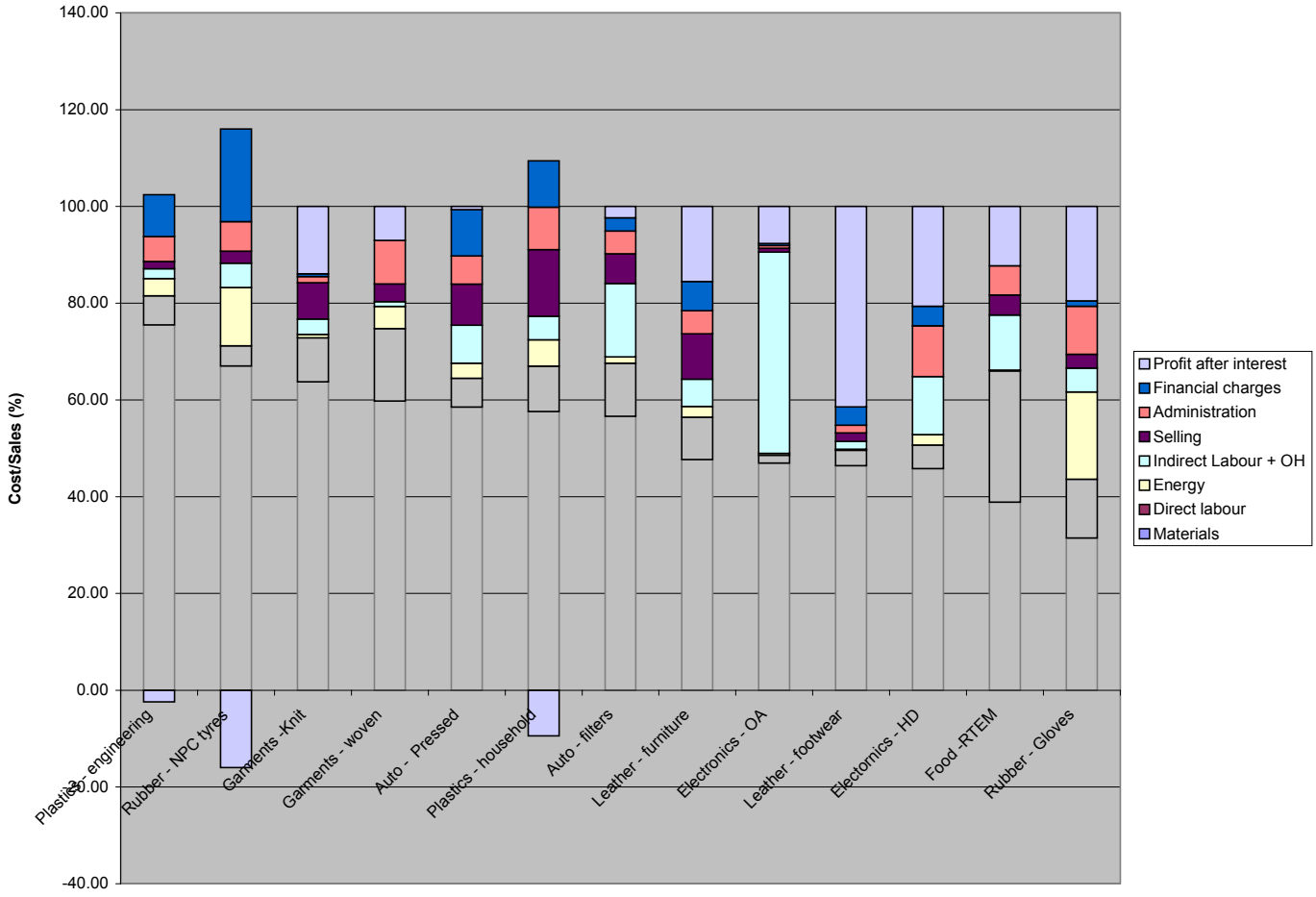
5.2 Table 5.1 summarises, in general terms, those factors that are adversely affecting the cost competitiveness of Thai industry. It can be seen that there is room for improvement in many areas.

Table 5-1: Factors adversely affecting cost competitiveness

Factors	Processed Food	Electr. Appl.	Garments	Auto-parts	Plastic products	Rubber products	Leather products
Materials			✓	✓	✓	✓	✓
Utilities	✓	✓	✓	✓	✓	✓	✓
Labour skill	✓		✓			✓	
Investment and Financing	✓		✓	✓	✓	✓	✓
Technology	✓			✓	✓	✓	✓
R&D	✓						
Scale Efficiency	✓		✓				✓
Capacity Utilisation	✓	✓	✓	✓	✓	✓	✓
Production Control	✓		✓		✓	✓	
Product Quality	✓	✓				✓	✓
Sales/ Marketing	✓		✓	✓	✓		✓
Management	✓	✓		✓			

OVERALL COST STRUCTURES

Figure 5-1: Comparisons of Cost Structures of Industries studied



5.3 Figure 5.1 illustrates the cost structures of the sectors studied, as a percentage of reported revenue. The data are drawn from case study companies visited and from survey data, but after rejected any survey data which was not considered reliable.

Profitability

5.4 Few firms reported profitability accurately, but based on the reported data most firms reported net profit after depreciation and interest of 10-13% of turnover. It is expected that most firms would tend to under- rather than over-state profits. Only plastics and rubber tyres, however, reported net losses.

Materials

5.5 All sectors have relatively high raw material costs: 50-75% of revenue for all except food and rubber gloves. This is because all are final product manufacturers, with little vertical integration – i.e. they buy in most of their materials and components.

5.6 If the government is to support garments, autoparts, leather, and plastic, the cost of raw material can be lowered through:

- schemes of improving local raw material quality and productivity (e.g. leather, textiles)
- reducing import duties, especially on sophisticated material (e.g. some used in automotive and plastics).

Energy and utilities

5.7 It appears that the expenditure in utilities is average for these industries. Comparisons were made with typical water, electricity and gas consumption for comparable UK industries and Thai industries' consumption are within the expected range.

5.8 The most important elements of energy cost are electricity and then fuel oil. In terms of cost, Thailand has relatively high prices for heavy fuel oil, compared for example to countries in central and eastern Europe, but less than Hong Kong and South Korea. Electricity prices are similar to or slightly lower than other SE Asian and developed countries at around US$0.05/kWh. Most countries have average industrial power prices in the range US$0.04 to 0.06/kWh.

SKILLED LABOUR AND TECHNOLOGY

5.9 The survey has shown that the low proportion of skilled workers, low employment of QSEs, and low expenditure on R&D ultimately affect the operation efficiency of Thai industry.

5.10 Reject rates of products (by production manager and by customers) are given here is a measure of skill and technology. On average, 3.8% of products are rejected because they do not meet production standards and customers reject 1.5% of products. This is much higher than industry averages and these reject rates translate into higher costs. The following table shows the reject rates of the industries studied based on surveyed

companies.

Table 5-2: Average Reject Rates (%)

Industry	At plant	By Customer	Industry	At plant	By Customer
Knitwear	3.8	0.6	Ready Meals	4.5	2.0
Other garments	5.9	1.4	Leather Furniture	2.8	2.0
Automotive filters	3.0	1.7	Leather footwear	2.7	0.4
Automotive pressed parts	3.2	0.8	Engineering plastics	4.0	0.7
Office Equipment	0.5	0.4	Household plastics	3.3	1.7
Hard disks	3.4	3.4	Latex gloves	3.7	1.4
			Rubber tyres	10.5	10.5

CHANGES IN PRODUCTION CAPACITY UTILISATION

5.11 In general, capacity utilisation has improved since 1998. Eight of the sub-sectors studied showed improvement. The following table shows the average capacity utilisation reported by the firms interviewed. Indeed, great improvement in the rate of production capacity utilisation has occurred since the economic crisis. By the end of 1999, the average production capacity utilised was reported to have increased to 63%. (Bangkok Post, January 4 2000, page 16, Economic Review). This, however, is still well below economic levels and represents a high cost for industry.

Table 5-3: Average Capacity Utilisation 1998-1999 (%)

Industry	1998	1999	Industry	1998	1999
Knitwear	86	86	Ready Meals	61	60
Other garments	82	77	Leather Furniture	54	47
Automotive filters	52	58	Leather footwear	79	80
Automotive pressed parts	53	67	Engineering plastics	47	53
Office Equipment	73	76	Household plastics	61	65
Hard disks	62	71	Latex gloves	65	63
			Rubber tyres	64	71

FINANCING

5.12 Financing charges are generally not a large element of costs in the sectors studied, but it is significant that in the four subsectors where financing charges are highest (household and engineering plastics, rubber tyres and auto parts), accounting for around 10% of revenues, the sectors are loss-making or near breakeven.

5.13 In general the problem is excessive financial leverage, but the electronic industry has difficulty in obtaining debt financing for firms. This exemplifies the importance of having a well functioning public equities market in Thailand. Because these industries (e.g. electronics - mainly computer hardware industry) are relatively new, most SMEs rely on outside financing for their capital requirements. The increasingly more intangible nature of these firms' assets (e.g. brandnames) makes financing computer firms difficult relative to more traditional industries. Debt financing is difficult for these industries, since companies often lack substantial tangible assets and do not have a long corporate tradition.

5.14 Although the public equity market has been traditionally the preserve of large high tech firms, smaller firms in high tech industry in the West are increasingly going public to finance their growth – including product development and international marketing. Proceeds from an initial public offering add equity to the firm. In addition, companies as important means of attracting, retaining and motivating staff use stock options and purchase plans. For example, over 40% of companies in this industry in Canada offer these schemes to most employees.

6. POLICY RECOMMENDATIONS

INTRODUCTION

6.1 The economic and financial crisis of 1997 and subsequent events indicate clearly that not only must policy directions change, but also Thai industries must brace themselves to restructure their organisation, production, quality control, marketing, financial management and general administration. Without these radical changes in firms, it is difficult to compete in the new environment. Firms must be leaner and more productive to compete with world imports and exports.

6.2 In general, the first phase initiative of the Industrial Restructuring Plan has been quite successful (mainly with larger firms). Export values rose by 7.3% to US$58.5 billion during 1999 and to US$32.9 in the first half of 2000. Export growth has been experienced in automotive components, furniture, plastic products and computer parts, but exports have declined in footwear, rubber products, garments and some food processed products.

6.3 This section summarises the main recommendations. These are aimed at correcting inherent weaknesses in the Thai economic system, and comprise factors at the national level and at the level of industry and the firm. Although it is quite risky to suggest priorities for policies (best results can be expected when improvements are sought in tandem) the relatively more needed policies are shown first in the list below.

SUMMARY OF POLICY OPTIONS

6.4 Our recommendations at the firm level are:

- Increase the proportion of skilled labour (from 20%) including technical training and English proficiency;
- Increase number of scientists and engineers (e.g. encouraging universities);
- Support R&D for productivity improvement, product design and patentable works (e.g. creation of research centres, testing centres);

- Support upstream (feeder) industries which are potential source of raw materials or essential industrial inputs (e.g. leather, textiles, toolmaking);
- Support schemes for technology transfer or upgrading of equipment;
- Promote the creation of industrial clusters when beneficial;
- Structure electricity and telecom tariffs to reflect more competitive pricing for industry.

6.5 Our recommendations at the industry level are:

- Draft industrial policies that foster competition and tackle the entire supply chain within one sector;
- Guarantee that small financing requirements can be met by the stock exchange (e.g. junior stock exchange);
- Set realistic cost allowances for capital to truly reflect depreciation rates (e.g. high in electronics industry);
- Develop Merger and Acquisition Laws, Anti-monopoly laws, etc.;
- Support intellectual property rights;
- Minimise low-value adding official procedures.

6.6 Our recommendations at the macro-economy level are:

- Develop basic infrastructure for IT and water services;
- Taxation: simplify and speed up VAT returns; reduce/harmonise import tariffs; implement audit trails at customs to minimise the effects of transfer pricing;
- Fiscal reform: companies' capital base and financing;
- Devise system that compensates firms for high registered capital and high retained earnings.
- Up-grade the public sector's capabilities;

6.7 A detailed elaboration of these policies is shown below.

FIRM/INDUSTRY LEVEL

6.8 Improving production, upgrading product quality, improving loss-control systems and upgrading machinery are the only long-term solutions for keeping the Thai industry competitive. It may pave way to the success as they can move into the high end of the market instead of directly compete with the lower labour cost countries of China, India and Vietnam.

6.9 The benchmarking exercises have shown that the main problems preventing increased competitiveness at the firm/ industry level are:

- Low skills leading to low labour productivity and low utilisation of equipment and capacity, and low technology;
- Technology which is not at the forefront of latest practice, partly resulting from the shortage of skills and low R&D input;
- High rates of rejects, low material yields, high levels of complaints resulting from both the above factors, and also from a lack of quality assurance and quality control;
- Some high cost inputs, e.g. power, although this is not the main problem, and dependence on many imported components and materials.

6.10 These four main groups of factors need to be tackled at the firm and industry level.

Skill factor among labour force

6.11 In 1980s Thailand was touted as a cheap-labour haven for foreign investors. Since 1990s money wage has risen and Thai labour wage is no longer cheap regionally. The money wage in the Philippines, Indonesia, India, China PRC, Myanmar, Vietnam and Laos is lower than the Thai wage. While there is no labour survey to determine the skill factor embodied in the labour force, experts estimate that only around 20 percent of all workers are skilled labour leaving the bulk of labour force to be unskilled. Lack of skilled labour has been the usual complaint among foreign companies. Foreign companies expect Thai workers to be technically equipped to be trained to operate sophisticated equipment, and for that they must also be literate in English.

6.12 The Ministry of Labour and Social Welfare should implement programmes to remedy the shortage of skills immediately. More vocational training and short-courses to train new skills must be established. In view of the long process, the government

must set aside a budget to train people on a long term basis. This must mainly be oriented at the development of vocational training schools and colleges. In addition, the quality of current technical training could be improved following successful experiences in other countries such as in Malaysia. Indeed, the Malaysian Technology Development Corporation (MTDC) offers, amongst other services, training of high quality tailored to specific industry needs. Additionally, the MTDC and host universities have set up technology centres (innovation centres and incubation centres). The Incubation centres, in particular, aim at profiting from latent opportunities in the spin off companies originated from MTDC/University knowledge and cooperation.

6.13 Mechanisms used in western countries to promote skills and training include:

- Industry training boards, which raise a training levy from all firms in a particular industry, design training courses and materials, work with local colleges to set up courses, and reimburse companies who send workers on approved courses (internally or externally);
- Job creation schemes by which government pays part of the cost of firms who employ and provide training for previously unemployed persons;
- Grants to new investment projects which reimburse part the cost of training workers;
- Subsidised consultancy schemes for training need analysis and developing training programmes in firms.

Technology, R&D and Education

6.14 It was found that around less than 1 percent of GDP of Thailand is dedicated to research and development. This is far too small to make any impact on the spin-offs to commerce in general. Firms that were interviewed in the studies have indicated a certain amount of R&D. A closer look at firms' R&D activities indicate that they do not focus on productivity improvement, product design, and patentable product or process development. Most Thai firms do not take a long-term view of the importance of technology development, and tend to use well-known technologies in their production.

6.15 When we survey the number of scientists and engineers involved in production of manufactured goods, the number of scientists and engineers are low. In Kao Shung alone, there are 50,000 engineers involved in technology-related researches that

spawn electronics industry of Taiwan. Government needs to redirect public expenditure to increase the output and employment of qualified scientists and engineers (QSEs). Public and private universities have concentrated on non-science subjects. Private universities are not likely to concentrate on science and engineering subjects because the investment cost is high. Public universities must redirect their efforts (and budget) towards science and technology. This also points to the reduction of non-science in general.

6.16 The move towards a more technology-oriented industrial structure will need government support. To attract more QSEs, their salary levels need to be raised. Individual firms will not themselves drive the increased employment of QSEs. Most Thai industry sectors consist of many SMEs, so research, testing and product development work will need to be performed by industry research centres, which as well as publicly funded product and process research and market intelligence, can provide commercial testing, quality assurance, certification, consultancy, design and general information services to their sector. The establishment of testing centres is a good idea particularly given the capital cost of equipment required to carry out the tests. In some industries the cost of equipment is not that high but there are no skilled scientists to run the centres and perform the tests. This should not be carried out by the Government but by independent private companies. This will minimise bureaucracy.

6.17 One-stop-shop schemes involving simplified flotation procedures (IPOs - Initial Public Offerings), logistics advice, R&D support in Singapore and Hong Kong were mentioned by industry as good examples to follow that support industrial production. These schemes have encouraged automation of suppliers by promoting IT-based logistics and business-process enhancement through automation. Advice is given to companies on the best financing for the specific technology needed. These schemes may provide medium to long term benefits mostly by encouraging the use of the right technology to the right market. In addition, these schemes have arose awareness of key elements of risk management including foreign exchange risks in companies (particularly SMEs) through their exposure to new methods of assessing risk.

Quality related issues

6.18 International competitiveness in modern world markets is largely related to quality issues. This is why very high labour cost countries like Germany and USA are still major exporters of manufactured goods. Thai industry needs to move gradually towards higher value high quality products, and it needs to move rapidly to reduce

rejects and increase yields for the products it already exports.

6.19 There are three main routes to this:

- Widespread move to implementation of quality assurance (QA) systems by firms – that is, management systems for good practices throughout the business processes (marketing and sales, production, dispatch and distribution, maintenance, human resources, finance etc). This must be enforced through the promotion of 3rd party certification of companies to the ISO9000 series of quality standards;

- Improved quality control (QC) systems in firms – that is the systems of inspection of materials, work in progress and finished goods, with proper testing procedures and procedures for taking corrective action before defective material reaches the finished product, or worse still the customer;

- Quality labelling of the products themselves. There may be opportunities to develop specific Thai quality labels which could gain worldwide acceptance for some products (e.g. rubber goods) but in most cases international labels will be required. More and more this will include the European CE marking, essential for selling into the EU and it will become important in other markets too. Other important marks include HACCP, UL, GAP, GMP, OU and FCC approved mark. Nutrition labels are becoming increasingly important (e.g. all food exported to the USA must have nutrition labels), which takes 3-6 months to develop.

6.20 Government assistance will be needed, with the strong support of the industry associations, to promote these various quality schemes. Most countries have had a programme of subsidised consultancy to help firms – e.g. by paying half of the cost of a consultancy programme to assist firms to gain ISO9000 or a quality mark, which also help develop the domestic capability of quality consultancy firms. Major firms can also be assisted to implement quality schemes in their suppliers, and government should impose quality assurance requirements on its own suppliers through public procurement rules.

Feeder industries and industrial infrastructure

6.21 The government has mainly relied on the promotion system (e.g. BOI) which is the earlier Japanese model. In the meantime, the Japanese have shied away from this

system and adopted other systems to make their industries competitive, including developing clusters to combat industry inefficiency[2].

6.22 One of the weaknesses this study has detected is that incentives given by government (BOI, Customs Law, Bonded Warehouses, etc) have been used by firms mainly to reduce the cost of imported materials and equipment, so that the export oriented industry remain dependent on imported inputs. Manufacturers use imported parts, which are reliable and arrive on time, when they are of good quality. Competing parts locally made are of inferior quality and sometimes are in short supply. Thus export industries are dependent upon the foreign investor, and do not increase their long-term viability or generate new linkages or induce development in their feeder industries. These incentives are not necessarily to blame for the import dependency. The system was set up to perform the task that was relevant in the 1970s. The present requirements may not fit with the provisions.

6.23 To become independent of imports, incentives generally should be moved away from import duty reduction to more general support for investment (for example through accelerated depreciation, investment allowances, training grants, provision of subsidised land and buildings, subsidised consultancy support, etc). Additionally, the government must provide incentives on the value chain by providing incentives for feeder industries as well as for the main industries. The automotive industry, for example, has taken this route without government intervention as Ford and other large auto companies set up their parts suppliers to complement their assembly activities. Important auto companies have found out earlier that they cannot rely on locally make parts. Support could also be given specifically for investments which provide feeder inputs to the targeted export industries. Examples of important feeder industries are:

- Semi-finished materials: tanned leather, rubber, plastic parts, precision metal castings and pressings, paints and dyes, industrial chemicals and plastics, packaging;
- Tooling and equipment: die making, machinery industries;
- Parts: fasteners, spare parts, subcontract component assembly;
- Services: industrial design consultancy, testing laboratories, market research, training consultants and specialist training.

[2] Porter, Michael E., Can Japan Compete?.

6.24 The development of industrial clusters has been shown in many countries to create productivity gains, innovation and generate new business start ups by creating competition between firms, transfer of know-how, and reducing the cost of provision of common industrial infrastructure services such as training, design, consultancy, testing etc. It promotes inward investment by providing n assured supply of trained and experienced labour, and generates new small businesses by the spin off of activities and new ideas from the existing firms. Clusters can be promoted by setting up government owned and promoted technology parks or industrial estates targeted at specific sectors (Malaysia's Technopolis for IT related businesses is one of the best known examples). They can also be created around a government research centre or sector training centre, or by the use of planning regulations to give preferential.

6.25 Each of the sectors in this study would be suitable for encouraging clusters. The SME Development Master Plan includes a strategy for the development of networking of SMEs and clusters. The Ministry of Industry aims to conduct studies of various cluster models to provide lessons on which models are suited to Thai conditions. In addition , the MoI aims at supporting pilot projects to develop clusters in each region. Similarly, the Department of Industrial Promotion and the Institute of SME Development aim at promoting business relationships as stepping stones toward cluster relationships.

Infrastructure and Cost of utilities

6.26 Modern and reliable infrastructure, lacking at the moment in Thailand, is of great importance for the development of cost competitive industries. Whilst the provision of basic services such as water is paramount for all industries today, the provision of advanced infrastructure such as IT is fundamental for the formation of conducive environments that facilitate innovation across all activities.

6.27 Thai industry faces higher electricity, energy and telecoms tariffs than some of its competitors, but it is not significantly disadvantaged against most of its SE and E Asian competitors. While these utility suppliers must be able to make a proper return on investment, and there should be no encouragement to waste energy, tariffs to major industries should be set with a view to (a) the prices of utilities in competing countries and (b) the long-term marginal cost of supply. It has not been within the scope of this study to investigate detailed energy and utilities pricing structures, but there may be ways to adapt the tariff to industries needs, e.g. through variable tariffs according to time of day and week, or through long term supply agreements, or through variation in the maximum demand/total demand structure. Industry should, however, be

encouraged to save energy, and some incentives (such as grants or low cost loans) for energy conservation investments would both help industry and fit with international environmental policy.

MACRO-ECONOMIC LEVEL

6.28 At the macroeconomic level there are three objectives in order to increase the competitiveness of Thai industries:

- To open up the economy so that the competitive Thai industries have free access to world markets for their products and to the most appropriate technology and raw materials, and so that the most efficient industries flourish and inefficient ones either improve their performance or give way to efficient ones;

- To provide a financial system which enables firms to finance investments efficiently and which exerts a proper control over the governance of firms so that funds are not directed into non-viable projects;

- To create a tax system which does not inhibit companies' development.

Openness of the economy to trade and investment

6.29 Thailand's competitors are major trading nations which are gaining from the global liberalisation, first under GATT and now under WTO, and from the development of major free market areas such as the EU and NAFTA. Thailand also stands to gain from liberalisation in the long-run, and must not miss out on the development of world trade.

6.30 Liberalisation at the global level is being accompanied by liberalisation within ASEAN under the AFTA scheme. In fact, by 2000 many commodities on the normal track have to be liberalised. Thailand could not unilaterally liberalise many items on the list, and needs to support ASEAN objectives. Recently members trying to remove commodities from the inclusion list to the temporary exclusion list have bogged down the ASEAN liberalisation - although somewhat limited in scope and range of products.

6.31 Thailand stands to gain many valuable opportunities in the world market, and will also become more flexible and responsive to any future fluctuations in the world

economy. The openness to the external economic influence should not be held responsible for the slow response to the 1997 economic collapse. The true culprit was the state of readiness to respond to volatile changes at the global level. It was clear that policy changes were sluggish. For example, an open economy needs a flexible exchange rate, yet it took the government almost 7 months to unpeg the currency after numerous speculative attacks against the Thai baht between December 1996 and June 1997, even though the shadow exchange rate in 1995 already exceeded the official exchange rate by a considerable margin. A timely response would have saved the economy billions of US dollars in international reserves. Thailand lacks an early warning system that indicates to policy makers that policy changes must be executed. It also lacks good monitoring system by the Bank of Thailand as manifested in the widespread irregularities in banking practices. Thus, Thailand must upgrade the public sector's capabilities in managing and monitoring global changes. Likewise, policy makers must be encouraged to decide swiftly in response to global and regional changes.

6.32 The severity of the economic collapse in 1997 was to a large extent due to many years of bad investment decisions in the private sector. Companies were actually operating on 'false' gross margins throughout the entire period, because of the protection given to domestic industries. Without protection the 'true' gross margins of most companies would be halved, and many products were being produced at very low or even negative value-added.

6.33 Companies tend to blame government agencies for committing to the trade liberalisation without their prior consultations. This was the usual accusation to Thai trade negotiators in Geneva. The private sector knew all along, however, that liberalisation would come sooner and hoped that their political connections would have delayed the liberalisation for few years. Meanwhile the companies did not upgrade their productivity, or move out of uncompetitive products. To increase the problem, companies rolled over their debts by creating new projects through the banking system. It was a miracle that this roll-over could go on for an extended period without intervention. Entrepreneurs and bankers alike were to be blamed for extending credits to projects which were not economically viable.

Financial markets

6.34 To operate a successful economic system and a healthier industrial sector, a deeper reform must be implemented. The accounting practice in Thailand has been considered as sub-standard in relation to international practice. Firms do not disclose

every detail on their balance sheets even amongst the listed companies. A lack of systematic cost accounting was found to be widespread amongst the companies studied. Where present, accounting records appear to have been developed to accommodate different government regulations (e.g. SEC for public companies) and not to suit the business needs. This hinders companies' evaluation and analysis of their own performance. This encourages lack of transparency and accountability facilitating high financial leverage. In reviewing the capital base of Thai companies, it is found that most Thai local companies have low registered capital, and tend to borrow heavily from banks and financial institutions, often on short term (common throughout SE Asia). Because financial leverage is very high, firms are very vulnerable to a down-turn in activity. This excessive use of debt financing results from:

- the predominance of private and family ownership of firms who are unwilling to risk their own funds;
- a weak capital market for stocks and shares, and an underdeveloped stock market;
- banks need to find a home for their funds without the resources to properly evaluate projects and business plans, monitor their investments or to exercise control over the companies they finance.

6.35 It is very difficult for small and start up companies to obtain financing through the stock market. As a result, most SMEs source their funds from informal and unregulated markets. An example of this is the traditional "playing share"[3] allocation of cash within a corporate group – an issue that could be addressed by Government. There are signs that even premium companies such as technology companies will not seek listing in the Thai stock market. This could partly stem from the under-valuation of the Thai stocks by foreigners such as Morgan Stanley Capital Market Index. In fact in the first quarter of 2000, the Thai stocks have outperformed the benchmark by 17 percent. Until Morgan Stanley revises its MSCI index and its weighting, the stock market will not assist Thai companies in the capital funding.

[3] Chinese style "fund raising" with a view to pooling money from closed business entities. It is called "playing share" because everyone owns one share in the pool. The money is allocated to the highest return bidder and then rotated until all entities have benefited from the resources. Members of the group can bid for the lump sum every month, but those who have won bidding the last month or previously are not allowed to make a bid. This scheme is very popular among Chinese business specially when bank financing is scarce.

6.36 While it is typical of Asian companies to borrow heavily from the financial institutions, debt financing is often not a sound financial proposition. Many companies earns around 17 percent gross margins, with net profit after amortisation around a single digit and consequently if sales volumes fall returns are insufficient to cover financing charges. Most companies in the Western Hemisphere have high registered share capital and solid retained earnings. After reviewing corporation tax practice of Thailand (flat rate of 30%), we have found that because of the tax system, companies prefer to record low profits to avoid high corporate tax payment – there is an incentive to avoid declaring high profits. In addition, companies prefer to register low capital, as it is difficult to reduce capital without court ruling. The Revenue Department considers the size of capital to be an important yardstick in assessing tax. It will be a great benefit to the economy if fiscal reform in this direction. In addition, the Revenue Department could allow firms to increase their capital without taxing the company in question unless they distribute their dividends in full. Currently, the Revenue Department collects corporate tax before distribution of profits and subsequently they collect dividend tax from shareholders. For the listed firms on the stock market, the current law does not permit firms to buy back their stocks from other investors. Should this be allowed, there would be great benefit to companies. In short, private companies should have sufficient capital base and should finance more of their investment through retained earnings. Thailand should aim to reduce the overall debt/equity ratio to below 3 in 5 years and progress to around 2 in ten years. The Thai government can contribute to more efficient financing of SMEs industry by:

- Guaranteeing that the stock exchange accommodates financing requirements in small ranges (say $100,000-$500,000) for SMEs. If this is not possible, explore the possibility of creating a junior stock exchange, commonly used in developed economies. These junior exchanges are very important in the early developments of SMEs in technology-related industries.
- Guarantee that the stock exchange develops some unique public offerings and private placement initiatives for smaller companies, which safeguard the interest of investors.
- Offering extra financing to SMEs (in the form of affordable loans) for product development and international marketing. These loans may have different terms and conditions to those offered to large firms (e.g. smaller collateral may be requested if projects have high export potential) which may result in the need for closer monitoring of performance of loans. Additionally, loan appraisal methods for large firms may not be appropriately applied to SMEs.
- Setting up a single and simple standard for cost accounting and facilitating the

elaboration of affordable software packages that comply with the standard. Ultimately, this will impact on loan approval procedures by financial institutions and on financing of SMEs.

- Allowing for Thai capital cost allowances to have the capacity to truly reflect the real depreciation within the industry – for example, given the accelerating rates of obsolescence of electronics manufacturing equipment.

Fiscal Reform

6.37 Many reforms that took place since 1997 have focused on necessary financial reforms, foreclosure law, and bankruptcy laws. It is natural to initiate financial reforms as the poor response to the crisis stemmed from inadequacies in the financial domain. There have also been fiscal reforms. The Ministry of Finance has revised tariffs in accordance to the GATT commitments, and it has also revised excise tax on gasoline upward. Likewise, it has changed value-added tax on two occasions and it will also continue to adjust value-added tax to replenish the revenue shortfall. Fiscal reforms of this nature are necessary, but should have a marginal impact on industry competitiveness.

6.38 Overall, there remain major bottlenecks to the improvement and strengthening of competitiveness of firms, resulting from a complicated and cumbersome tax system. A tax structure that compensates for high registered capital and high retained earnings could include a reduction of the corporate tax rate across the board or the incorporation of a lower tax bracket for high registered capital-high profit firms (along the lines of the American system structured retrogressively). Tax Reforms may comprise many dimensions:

- First, the corporate tax reform could provide level laying fields for all firms in the same sector regardless of size and age of firms. Currently firms of the same business do not pay the same rate of corporate tax.
- Second, the Department of Revenue could make it easier for firms to reduce their capital base if firms have suffered from proven financial losses. Currently it requires a court ruling to be able to achieve this and certainly it is time consuming.
- Third, the current practice of permitting certain minimum number of years to write off assets is quite impractical. The government could update the depreciation allowances to reflect the true nature of business. This is manifested in the frequent tooling in the electronics industry. The allowances are old fashioned and should be improved.
- Fourth, VAT reform may be achieved ideally to avoid the current pay-and-

claim system or at least to refund quickly to exporters. Currently exporters pay VAT to the government and claim it back. Exporters must wait to receive their refunds for many months from the Revenue Department while they continue to pay the VAT tax even when they are not supposed to pay the tax in the beginning. This increases the production cost of exporters. In recent years, dishonest people tried to claim the VAT return from false documents. Total exemption will do away with this abuse and avoid this inefficient pay-and-claim system. Alternatively, the Revenue Department could allow the amount to be refurbished to the exporters to cancel out the fresh amount of the VAT tax. At the same time, speeding up refunds of value-added tax to exporters could help them improve their cash flow.

- Fifth, import tax on raw materials and machinery can be waived instead of enforcing the tax credit scheme which is inefficient and counterproductive. It should not be waived or reduced arbitrarily due to political reasons such as in the case of lower import tax on cold rolled plate of 1% in order to support local tin plate and canning manufacturing. Similarly, tariff harmonisation of the import duty on machinery spare parts and machinery appears to be important. Currently the spares attract a duty of 5-30% compared with 5% on machinery that cannot be produced in Thailand (there is a new measure that reduces this tax further to 3%). As a consequence, sometimes it is more economic to replace a machine rather than repairing it.

Effectiveness of Legal and Political Institutions

6.39 The 1998 World Economic Forum reported that corruption in the customs administration was a particularly severe problem for exporters and other business that need imported machinery and inputs in order to participate in the international division of labour. The logic behind this political development is pointing to transparency and less corruption among the officialdom. Good governance must begin with the public sector to avoid unnecessary extra costs to industry. Thailand has been slow in reforming its legal institutions and political institutions. The pace of reforms after 1998 has been rapid and several new commercial codes have been passed by the parliament. It is certain that new laws will be added to the long list such as the Merger and Acquisition (M&A) laws and Anti-Monopoly Laws. These laws will assist Thai companies to consolidate their businesses.

6.40 Thai companies have been afraid of a foreign invasion. This is natural, as most businesses have been preserved for Thai companies for a long time. In order to strengthen their competitiveness vis-a-vis foreign firms, industrial sectors need to consolidate, and M&A should be deployed as an option. Additionally the government should improve response by the Foreign Trade Department (Ministry of Commerce)

when a Thai manufacturer files a complaint against dumping price practices by foreign importers – Anti-Dumping (AD) and Countervailing duty (CVD law). Indeed, the current Thai law is following the procedure agreed upon by the GATT and the WTO. A critical difference between proving dumping prices in Thailand and in major western countries is who has to provide the evidence to the Authority. Under Thai laws, the plaintiff in a civil suit must provide the authority with sufficient evidence to prove beyond reasonable doubt that there has been a dumping practice. In other countries, the responsibility to clear the case lies in the defendant's corner. That is, foreign importers must provide evidence that there has not been a dumping practice by them. Thus, legal procedures to prove the case set forth under Thai law hampers the investigation into dumping practices. However, as few foreign imports sell in Thailand at dumping prices (the exception being commodity petrochemicals such as polyethylene or polypropylene), the cost of changing the legal procedure will far outweigh the benefits.

6.41 The government has established several new courts to cover intellectual property rights and bankruptcy cases. It is premature to say whether they are effective in handling cases. Court judges must be trained to be versed in accounting and other managerial science to understand the complications of the commercial world. Landmark cases should be forthcoming and establish the standards that provide clear guidelines for future references.

APPENDIX 1: SUMMARY OF INDUSTRIAL DEVELOPMENT PLAN STRATEGIES AND SME DEVELOPMENT MASTER PLAN

Summary of Industrial Development Plan Strategies (1998-2002)

Industrial Sector	Programme to which the industrial sector gives an importance							
	Productivity	Technology	Labour skill	SMEs	Product Development	Job Distr./ income earning	FDI	Pollution reduction
Food and animal feed	✓✓	✓	✓		✓✓			✓✓
Textile and garment	✓✓	✓✓	✓		✓✓			✓
Footwear and leather	✓✓	✓		✓✓	✓✓		✓	
Wooden products and furniture	✓✓	✓		✓✓	✓✓			✓
Pharmaceutical and chemical	✓✓	✓✓			✓✓	X	✓	✓
Rubber and Rubber products	✓✓	✓✓		✓	✓✓		X	✓
Plastic products	✓✓	✓✓		✓	✓			✓✓
Ceramic and glassware	✓✓	✓✓	✓		✓✓			✓
Electrical appliances and electronic	✓✓	✓	✓	✓✓	✓✓	X		
Vehicles and parts	✓✓	✓	✓✓	✓	✓✓	X		
Gems and jewelry	✓✓	✓✓	✓	✓	✓✓			✓
Iron and steel	✓✓	✓✓	✓	✓	✓✓			✓
Petrochemical	✓✓		✓✓		✓	X	✓	✓✓

Source: Executive Summary Industrial Development Plan, National Industrial Development Committee, June 15, 1998.

Notes: ✓✓: More importance given, ✓: Less importance given, X: No importance

Definitions of Programmes

- **Productivity**: **improving productivity and streamlining production processes to enhance c\ompetitiveness in cost and delivery of the products**

- **Technology:** upgrading the technological capabilities and modernizing the technologies and amchinery in the target industries
- **Labour skill:** upgrading the labour skills in the target industries
- **SMEs:** incubating and strengthening the small and medium supporting industries
- Product Development: promoting product development, product design and marketing channels
- **Job distribution/income earning:** distribution and relocation of labour-intensive and less prollution production units to rural areas in order to support job distribution and income earning
- **FDI:** persuading foreign direct investment in the strategic industries with technology for the future.
- **Pollution reduction:** relocating the high production industry to specific zones and promoting the application of clean technologies in order to reduce pollution.

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(with Particular Reference to the Manufacturing Sector)

STRATEGY 1 : Upgrade Technological & Management Capabilities of SMEs

Measures	***Relevant Agencies***
1.1 Establish an enterprise diagnosis system as a tool for promoting and supporting potential SMEs *Aim to :* Create awareness by entrepreneurs and government of Thai business competence. Allocate appropriate resources to assisting potential and needy groups. *By :* Intensive training of professional business evaluators; Targeting services to needy enterprises according to diagnostic reports. Developing indicators and database for benchmarking.	• Department of industrial Promotion. • Institute of SME Development
1.2 Develop consultancy system for business improvement & problem-solving *Aim to :* Improve effectiveness of business consultancy; Reduce cost to the individual entrepreneurs. *By :* Developing database & network of local and foreign consultants; Arranging "group" consultancy for greater cost-effectiveness; Cost-sharing from government.	• Institute of SME Development • Department of Industrial Promotion • National Science and Technology Development Agency • Federation of Thai Industries • Board of Trade
1.3 Support modernization of facilities & international-standard management systems (e.g. ISO & TQM) *Aim to :* Achieve production efficiency Thai is globally competitive; Gain acceptance in the global marketplace. *By :* Propagating management practices in line with international systems, but adapted to suit Thai social & business environment; Increasing supply of assessors and consultants; Providing sources of financing & cost-sharing by government.	• Ministry of Finance • Department of Industrial Promotion • Specialized Institutes • Board of Investment

1.4 Support improvement of product quality towards international standard. *Aim to :* Gain acceptance in the global marketplace. *By :* Enhancing capabilities of technical institutes to provide laboratory testing & inspection services to SMEs at nominal costs; Expediting Mutual Recognition Agreement (MRA) for the testing service-providers; Targeting quality-upgrading consultancy services in addordance with testing results.	• Specialized Institutes
1..5 Develop networking and improve efficiency of R&D institutes. *Aim to :* Overcome limited capacity of SMEs to invest in R&D; Facilitate innovations by Thai SMEs, with appropriate management of intellectual property rights. *By :* Co-ordinating R&D programs responsive to the needs of SMEs; Supporting procurement of equipment suitable for R&D for SMEs; Providing opportunities for SMEs to experiment using public equipment; Developing appropriate measures to protect intellectual property rights.	• National Science and Technology Development Agency • Ministry of University Affairs • Government research centers/institutes

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(with Particular Reference to the Manufacturing Sector)

STRATEGY 2: Develop Entrepreneurs and Human Resource of SMEs

Measures	***Relevant Agencies***
2.1 Create & incubate new entrepreneurs and develop existing entrepreneurs; *Aim to :* Develop the "global-oriented" Thai entrepreneurs; Instill entrepreneurial spirits & business experience in the younger, technology-oriented generation. *By :* Introducing entrepreneurship development curriculum in formal education; Promoting activities for sharing of experience; Providing information & advisory support, facilities & financing especially for investments in new products, new market entries, etc.	• Institute of SME Development • Department of Industrial Promotion
2.2 Enhance efficiency and flexibility of training services. *Aim to :* Improve learning effectiveness; Provide convenience to prospective trainees; Reduce cost and disruption to businesses. *By :* Developing specific curricula for each business / job position / region; Utilizing innovative teaching methods & media ; Providing flexible hours of attendance; Reducing costs through tax credit, etc.	• Institute of SME Development • Department of Industrial Promotion • Department of Skill Development

2.3 Improve efficiency & coverage of industrial skill standards certification system. *Aim to :* Improve labor productivity; Gain the global buyers' confidence; Improve earnings of skilled workers, *By :* Increasing coverage of skills with defined standards in accordance with industry's requirements; Expanding skill testing & certification services; Providing fiscal incentives; Developing database of certified skilled workers.	• Department of Skill Development • Specialized Institutes
2.4 Improve curriculum & methods in educational establishments to meet industry's needs. *Aim to :* Alleviate problems of new workers lacking necessary skills & knowledge; Utilize existing facilities for re-training industrial workers for new technologies or re-deployment *By :* Promoting co-operation between industry and educational institutions to develop curricula relevant to industry's needs; Expanding dual-training & re-training schemes by providing incentives to participating enterprises.	• Ministry of Education • Ministry of University Affairs

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(with Particular Reference to the Manufacturing Sector)

STRATEGY 3: Enhance SMEs' Access To Market

Measures	***Relevant Agencies***
3.1 Improve SMEs' access to government procurement. *Aim to :* Enhance opportunities for SMEs to sell to the public sector which is the major domestic buyers; Enhance opportunities for local / provincial enterprises with emphasis still on good product quality and good business ethics. *By :* Review & revise public-sector procurement regulations and procedures to reduce bias against small enterprises; Assess and set expenditure target for procurement from small enterprises; Improve dissemination of procurement notices and information.	• Office of the Prime Minister • Ministry of Finance
3.2 Promote sub-contracting & linkage with large enterprises, both domestically & internationally. *Aim to :* Achieve mutual benefits for large and small enterprises, with the LEs being market and technology sources for SMEs and SMEs contributing to cost-reduction for LEs. *By :* Developing buyers-suppliers database and information network; Developing model contracts and legal advisory services; Developing insurance mechanism for contractees.	• Department of Industrial Promotion • Board of Investment

3.3 Expand & strengthen export promotion activities for SMEs. *Aim to :* Improve access to export market for SMEs at reasonable costs; Overcome limitations of SME personnel in handling custom procedure, communication in foreign-languages, etc. *By :* Developing buyers-suppliers database; Organizing study missions & trade fair missions; Providing financial & technical support for product & packaging development; Establishing centres to provide assistance in exporting procedure, communications, e-commerce, etc.	• Department of Export Promotion
3.4 Promote cross-border trade and linkage with trading companies. *Aim to :* Enable SMEs to benefit from sub-regional economic co-operation; Overcome limitations of SMEs in undertaking marketing activities. *By :* Supporting linkage between the trading sector and manufacturing SMEs; Utilizing existing trading firms to spearhead entry into new markets; Disseminating information on market preferences to SME producers.	• Ministry of Commerce • Board of Investment

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(With Particular Reference to the manufacturing Sector)

STRATEGY 4: Strengthen Financial Support System for SMEs

Measures	***Relevant Agencies***
4.1 Expand & develop credit guarantee system for SMEs 4.2 Develop existing specialized financial Institution into an SME bank *Aim to:* Enable commercially-viable SMEs to obtain adequate funding and other financial services more easily Reduce reliance on collateral *By:* Recapitalizing SIFC and SICGC; Setting up branches in the provinces; Enhancing credit risk assessment capabilities; Linking up with enterprise diagnosis & business consultancy systems.	• Ministry of Finance • Small Industry Credit Guarantee Corporation • Small Industry Finance Corporation
4.3 Establish Venture Capital Fund for SMEs *Aim to:* Encourage investments in strategic SMEs; Enable strengthened SMEs to get listed in the capital market	• Ministry of Finance • Ministry of Industry
4.4 Establish SME Promotion Fund. *Aim to:* Facilitate expansion of effective SME projects under government & non-government organizations; Encourage & support groups/associations of SMEs to invest in common facilities & joint activities.	• Ministry of Industry • SME Promotion Office

4.5 Strengthen financial advisory services for SMEs *Aim to:* Enable SMEs to obtain pertinent advice from local service centres regarding suitable sources of funds; Enable SMEs to obtain pertinent advice from financial institutions regarding business plan development.	• Specialized financial institutions • Federation of Thai Industries • Chambers of Commerce

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(With Particular Reference to the manufacturing Sector)

STRATEGY 5: Provide Conductive Business Environment

Measures	***Relevant Agencies***
5.1 Establish and strengthen local information centres for SMEs *Aim to:* Enable SMEs to gain faster & less costly access to information which are important and necessary for conduct of business *By:* Producing information contents, media, reference materials; Supporting acquisition of information media and equipment for local service centres.	• Institute of SME Development • Ministry of Industry • Ministry of Commerce • Board of Trade • Federation of Thai Industries
5.2 Develop mechanism for review & revision of laws, regulations & administrative procedures to redress disadvantages of SMEs. *Aim to:* Improve competitiveness of SMEs through reduction of disproportionate fiscal burdens and regulatory obligations.	• Ministry of commerce • Ministry of Industry • Office of the Jurisdical Council
5.3 Support SMEs' preparedness for the IT age. *Aim to:* Enable SMEs to take full advantage of information technology in accessing information and presenting their products & services to wider target customers. *By:* Training; Developing application software suitable for Thai SMEs; Providing source of funds/loans for investing in IT equipment.	• Institute of SME Development
5.4 Improve efficiency of distribution channels. *Aim to:* Reduce product distribution costs to SMEs; Enable SMEs to reach wider markets.	• Ministry of Commerce

5.5 Strengthen services & planning capabilities of regional/local authorities & organizations. *Aim to:* Increase the role of local organizations in defining their own visions and directions, based on local potentials and external opportunities; Enable regional and rural SMEs to gain faster and less-costly access to quality services *By:* Developing service manuals & providing orientation to staff of local service centres; Encourage joint study & planning between public and private-sector organizations, and between central and regional organizations.	• Ministry of Industry • Ministry of Commerce • Board of Trade • Federation of Thai Industries
5.6 Promote establishment of SME parks. *Aim to:* Induce investments of SMEs in supporting industries and those with linkage to large enterprise. *By:* Adopting appropriate terms & conditions and incentive schemes; Adopting design of facilities appropriate to the needs of SMEs	• Industrial Estate Authority of Thailand

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(With Particular Reference to the manufacturing Sector)

STRATEGY 6: Develop Micro-Enterprises and Community Enterprises

Measures	***Relevant Agencies***
6.1 Incubate "strategic" micro-enterprises & community enterprises *Aim to:* Improve survival rate and growth of "strategic" enterprises which help strengthen the industrial structure. *By:* Close co-operation between government agencies, private firms, NGOs & the communities; Providing advisory, production sites, training of manager & workers, loans & equity participation.	• Department of Industrial Promotion • Institute of SME Development
6.2 Promote commercialization of indigenous know-how. *Aim to:* Create new businesses, new products & Thai innovations. *By:* Applying modern technologies & methods to improve quality standard, production efficiency, utility and value-added.	• Institute of SME Development • Department of Industrial Promotion • Department of Agricultural Extension
6.3 Upgrade management and encourage MCEs to enter the formal sector. *Aim to:* Help MCEs gain access to business information, services and funding. *By:* Creating awareness of opportunities and benefits; Providing training & advisory; Reducing disincentives such as taxation, etc.	• Institute of SME Development • Ministry of Commerce • Ministry of Industry
6.4 Promote business associations and co-operation among MCEs. *Aim to:* Provide opportunities for exchange of experience & business relations. *By:* Supporting group activities; Strengthening systems & management of associations for sustainable activities & services.	• Institute of SME Development • Department of Industrial Promotion • Cooperative Promotion Department

Summary of Strategies, Measures & Relevant Agencies Under the SME Development Master Plan

(With Particular Reference to the manufacturing Sector)

STRATEGY 7: Develop Networking of SMEs and Clusters

Measures	***Relevant Agencies***
7.1 Conduct studies of various cluster models which enhance overall efficiency. *Aim to:* Provide lessons from which model(s) suited to Thai conditions may be selected/developed. *By:* Analytical studies and observations of existing clusters in Thailand and other countries.	• Ministry of Industry
7.2 Support pilot projects to develop clusters in each region. *Aim to:* Assess potential for improving efficiency of local economies; Gain experience regarding barriers and limitations to the development of clusters in Thailand. *By:* Inducing suggestions and co- operation from private-sector organizations, local authorities, and financial institutions, to support the necessary investments.	• Ministry of Industry
7.3 Promote association and business relations as stepping-stone towards cluster relationship. *Aim to:* Foster foundation of trusting business relationship. *By:* Providing facilitation and financial support for underlying activities.	• Department of Industrial Promotion • Institute of SME Development
7.4 Provide infrastructure support, incentives, and financing. *Aim to:* Induce cluster growth in potential localities and business sectors.	• Industrial Estate Authority of Thailand • Board of Investment

APPENDIX 2: METHODOLOGY APPLIED TO THE QUALITATIVE QUESTIONS

METHOD OF ANALYSIS OF QUALITATIVE SURVEY QUESTIONS

Data processing and validation was carried out by computer using the commercial package SPSS\PC+ Statistical Package, version 9. The statistical unit used is the company but the tabulation of the information was performed by percentage of cases and not by percentage of respondents, using different filters. This methodology provides a consistent and reliable procedure to detect systematic behaviour.

Descriptive Statistics

For the questions with only two alternative answers the procedure was straightforward, mainly relying on the analysis of frequencies, cross-tabulations and correlations based on cases.

For the questions based on companies' rankings, an index number was used. The number called 'Index of Importance" is a simple measure that assesses the overall importance of each of the alternatives in a question, for the whole group of respondents.

Index of Importance

The 'Index of Importance' is a measure that takes into account both the order of importance of a characteristic and the number of firms, in relation to the whole sample of respondents, that have assessed a particular characteristic as having that importance. The higher the index number, the more important the characteristic will be considered by the entire sample.

Consider the general 3x3 (ixj) cross-tabulation of the number of respondents (N) who assess a given characteristic (e.g. criteria taken into account in decision process), by applying a *scale point* according to their declining importance (i.e., importance ranking first, importance ranking second, etc.).

L		IMPORTANCE RANKING				
A		First	Second	Third	Not important	Rows Total
B	**Characteristic 1**	x_{11}	x_{12}	x_{13}	x_{14}	R_1
E	**Characteristic 2**	x_{21}	x_{22}	x_{23}	x_{24}	R_2
L	**Characteristic 3**	x_{31}	x_{32}	x_{33}	x_{34}	R_3
						N

Weights were given to the numbers in each cell of the cross-tabulation, in order to take into account both the number of respondents and their rankings. The pattern of weights given is presented in the table below.

L	IMPORTANCE RANKING			
A		First	Second	Third
B	**Characteristic 1**		w_{11}	w_{12}	w_{13}
E	**Characteristic 2**		w_{21}	w_{22}	w_{23}
L	**Characteristic 3**	w_{31}	w_{32}	w_{33}	

A set of weights must resemble the quality of importance of each characteristic, therefore:

$$w_{11} > w_{12} > w_{13}$$

$$w_{21} > w_{22} > w_{23}$$

$$w_{31} > w_{32} > w_{33}$$

There is no cross-comparisons between weights in each row (e.g., between w_{11}, w_{21} and w_{31}), since each row is a separate case. The weights assigned vary from:

- Not at all relevant: -2
- Not considered: 0
- Second option: 2
- Main option: 4

The higher the value of the index, the more importance was given to a particular characteristic by the entire population of survey respondents. The general calculation of the

index of importance takes the form of:

Characteristic 1	$M = (w_{1j} x_{1j}/(Nx_{1j}))$ for j=1,2,3
Characteristic 2	$M = (w_{2j} x_{2j}/(Nx_{2j}))$ for j=1,2,3
Characteristic 3	$M = (w_{3j} x_{3j}/(Nx_{3j}))$ for j=1,2,3

Note that if every respondent puts the first choice for a specific characteristic, the value of the index can not be computed, since we will have to divide by zero. However, if all the sampled firms did value a specific factor as the most important, calculation of the index is not needed, since its assessment in relation to the other factors with various distribution of answers is straight forward.

APPENDIX 3: COMPANY-LEVEL COMPETITIVE PERFORMANCE

APPENDIX 3: COMPANY-LEVEL COMPETITIVE PERFORMANCE

Food Processed Sector

Table A3-1: Cost and technical competitiveness of Thai Food Processing Company

	Ready to Eat Meal company	Dairy Product Company
Technology and R&D	• Lack of trained food technologist • Should narrow range of tasks • Do not possess any patent for food technology	• Provided by foreign partner, no R&D for new product • No industrial R&D, R&D people may lack the R&D scientific knowledge
Equipment	• Machine idleness • Need modern machine with less labor(skilled)	• GOOD condition
Plant size and scale efficiency	• Complicated resulting high operation cost	NA
Capacity utilization	• 20% of sales under utilized due to seasonal • Should apply more automation for cost improvement	• Excess capacity
Information technology	• No evidence of application	• Sufficient • Little integration
Production control	• No process control system • Inventory = 100 days • Inventory turnover = 3.6 times/yr • Inventory to turnover = 22.8%	• Computerized • Inventory = 25 days • Inventory turnover = 14.8 times/yr • Inventory to turnover = 10.7% • GOOD stock management
Productivity measurement and growth	• No productivity measurement mechanism	• NA but expect to achieve foreign standard
QC/QA	• GMP. HACCP, ISO9002 • **10%QC against norm of 4.9%**	• GMP, HACCP • Fully aware, expected best practice

Sale, marketing and promotion	• Predominated by oriental supermarkets, difficult to move to high-end • Too much money on appointing agents **(1-2% of gross sales**) against modern companies **direct sale** to supermarket	• Limited shelf-life of the products • May be trouble as joint venture ends technical relationships
Human resource	• Lack of strategic training	• Available in-house and outside training
Management	• Inexperienced company board	• GOOD, provided joint-venture collaboration

Table A3-2 Financial and cost structure competitiveness of Thai Food Processing Company

	Ready to Eat Meal Company	Dairy Product Company
Financial summary, turnover and profitability	• FAIR Gross margins 1997-99 = 13-22% , **UK 13.5% and average 8-9 %** • POOR Net profits in some years (1997 = 7%) • FAIR Return on investment 19.4% • GOOD Liquidity ratio = 3.29 times, **norm = 2.0 times** • GOOD Debt/equity ratio 12.3%, **Thai 40% and UK 60%** • POOR velocity of capital = 1.61 times	• FAIR Return on investment = 15.4% • POOR Liquidity ratio = 0.17 times • POOR Debt/equity ratio = 88% **,Thai 40% and UK 60%** • POOR velocity of capital = 2.32 times • Should trim down the products focusing on those contributes to highest gross margin
Investment and financing	• Recommend fixed capital investment rather than deposit with financial institution • Loss from tuna is the hindrance	• Fully made use of domestic credit lines and also has access to international credit
Cost structure	• POOR Operating cost = 77.56% (1998), 86.01%(1999), **norms 60% and 80%** • Too much variety, swinging gross margin and net profit • POOR Cost of utilities	• POOR Operating cost, almost 80%sales, **norms of 60% and 80%** • Weak products should be left out • Gross margin 21% • Profit before tax < 4% • POOR General and administrative cost = 15%sales, **int'l <7%**
Materials	• No report of waste from procurement • Do not know competitors' material costs • Troublesome procurement • POOR import tax = 12 –20, **Vietnam 5%** • Time consuming tax refund process	• High price local supply of raw milk

Electronics Sector

Table A3-3 Cost and technical competitiveness of Thai Electronics Company

	Hard Disk Company	Office Automation Equipment Company
Technology and R&D	• R&D is handled by foreign headquarter, does not have its own design capability	• Part of Japanese group • HIGH rank of world production • Relatively labor intensive
Equipment	• POOR average age = 4 yrs **, norm = 2 yrs** • GOOD quality, well automated • BOI privileges lead to importing equipment, better to buy new machines	• WORSE average age = 4 yrs **, norm = 2 yrs** • BOI privileges, should consider buying new machines
Plant size and scale efficiency	• Functional manner	• GOOD design with good layout, ample space for expansion
Capacity utilization	• 8 million and 4 million pieces per month , for 90% office automation and 10% auto parts	• 80% capacity utilization
Information technology	• Fully automated but no application in related functions	• IT for stock control • No integration between production and related activities

Production control	• POOR Claims received = 6/mth, **best = 2/mth** • FAIR Claims resolved 100%, **best = 100%** • POOR Stock turns = 10, **best = 24** • POOR Customer contact time 6% **, best 32%** • POOR Inspection/direct labor = 30%, **best = 6%** • POOR Customer order to delivery = 60 days, **average delivery time of raw material from US = 45 days, production = 1 days** • Inventory = 35 days • Inventory turnover = 14 times/yr • Inventory to turnover = 6.6% • Scrap rate =3%	• POOR Claims received = 6/mth, **best = 2/mth** • FAIR Claims resolved 100% **best = 100%** • POOR Stock turns = 10, **best = 24** • POOR Customer contact time 6% **, best 32%** • POOR Inspection/direct labor = 30%, **best = 6%** • Not achieving just-in-time strategy • Production line time = 2 days • Inventory = 54 days • Inventory turnover =6.8 times/yr • Inventory to turnover = 14.7% • Cash tied in production process
Productivity measurement and growth	• GOOD Order cycle time • FAIR Stock availability • GOOD Order size constraints • FAIR Ordering convenience • GOOD Frequency of delivery • FAIR Quality of document • GOOD Product Quality • FAIR Delivery reliability • FAIR Claims procedure • POOR Order completeness • POOR Technical support • POOR Order status information • GOOD Price • POOR After sales customer care • Lack of best practice productivity indicators	• GOOD Order cycle time • GOOD Stock availability • GOOD Order size constraints • GOOD Ordering convenience • GOOD Frequency of delivery • GOOD Quality of document • GOOD Product Quality • FAIR Delivery reliability • FAIR Claims procedure • POOR Order completeness • GOOD Technical support • FAIR Order status information • GOOD Price • FAIR After sales customer care • Lack of best practice productivity indicators • Lewer performance for best practice benchmarking

QC/QA	• ISO9002	• ISO9002, ISO14001 • Advanced quality systems • Product safety APPROVALS • Defect rate = 0.3% • Customer rejection rate = 0.1-0.2% as recorded by foreign head office • POOR Rejection rate = 4%, **best = 0.5%**
Sale, marketing and promotion	• Handled by foreign headquarter	• Supplying volume products of dated technology at a lower price
Human resource	• POOR Recruit staying/yr = 70%, **best = 98%** • POOR Maintenance headcount = 1%, **best = 2%** • POOR Indirect hours 24% , **best =12%** • POOR Labor turnover 14%, **best = 2%** • Fair quality	• POOR Recruit staying/yr = 70% **best = 98%** • POOR Maintenance headcount = 1%, **best = 2%** • POOR Indirect hours = 24%, **best 12%** • POOR Labor turnover =14%, **best = 2%** • Only in-house training
Management	• Centralized	• No marketing function • Centralized

.

Table A3-4 Financial and cost structure competitiveness of Thai Electronics Company

	Hard Disk Company	Office Automation Equipment Company
Financial summary, turnover and profitability	• GOOD Return on investment >500% • POOR Liquidity ratio = 1.07 times, **norm = 2.0 times** • GOOD velocity of capital = 20.11 times	• FAIR Return on investment = 20.6% • POOR Liquidity ratio = 0.5 times , **norm 2.0 times** • WORSE debt/equity ratio = 800% **against Thai 40%** • GOOD velocity of capital = 18.39 times • May face difficulty if external finance is requested
Investment and financing	• High outside party financing	• Finance support from parent company
Cost structure	• POOR Invoices paid w/i 60 days = 85%, **best 98%** • POOR Product cost/sales = 72%, **best 60%** • POOR Operating cost = 72.81%(1998), 64.82%(1999), **norms = 60% and 80%** • POOR Selling and administrative expenses	• POOR Invoices paid w/i 60 days = 85%, **best 98%** • POOR Product cost/sales =72%, **best = 60%** • POOR Content of intermediate products = 93%total costs
Materials	• Imported from US and Japan • POOR Delivery lead time = 30-45 days, **average = 15 days** • 60 days credit to clients, impact on cash flow • Bargaining power over other raw materials	• Long delivery times • Delay in raw material supply • Can increase Thai content • High cost of imported mould die

Depreciation	• POOR Depreciation, investment in machinery and equipment = 67.6% total fixed assets	• POOR Depreciation, investment in building, machinery and equipment = 92.2% total fixed assets

Apparel Sector

TableA3-5 Cost and technical competitiveness of Thai Apparel Company

	Shirt, Trouser and Suit Company	Sport and Leisurewear Company
Technology and R&D	• Using sophisticated equipment with greater demand on maintenance • Mis-managing the technology • No product design or development capability • Need development in skills and technology	• Using sophisticated equipment with greater demand on maintenance • Mis-managing the technology • No product design or development capability • Need development in skills and technology
Equipment	• GOOD sewing and finishing equipment • GOOD working order and maintenance	• Well invested in all areas of production
Plant size and scale efficiency	• Confused workflow and inefficient method of matching parts prior to final assembly • Workflow can be improved by reducing number of machines	• Better organized • Equipped with a computer-aided management information system
Capacity utilization	• 1,500 – 2,000 trousers/day • Underutilized machines, thus excess capacity	• Plan to extend capacity
Information technology	• No computer generated management information systems in integrating all elements of manufacturing • Lack of a very good IT system	• No computer generated management information systems in integrating all elements of manufacturing • Lack of a very good IT system • Investing in a new account package (TEGA)

Production control	• Customer order to delivery = 150 days • Delivery time of raw materials = 105 days • Production line = 30 days • Inventory = 82 days • Inventory turnover = 4.4 times/yr • Inventory to turnover = 19.0% • Under-performing stock management • Require $1.25 – 1.5 mill. Investment in capital for shirt manufacturing to meet world best standard • Require $0.6-0.75 mill. Investment in capital for trouser manufacturing to meet world best standard • Should have a stronger control to monitor production and output	• Customer order to delivery = 95-110 days • Delivery time of raw materials = 45-60 days • Production line = 5 days • Inventory = 10 days • Inventory turnover = 35.3 times/yr • Inventory to turnover = 8.7% • Acceptable stock management • A little cash tied up • Investment plan to re-equip and use updated technology • Should have a stronger control to monitor production and output
Productivity measurement and growth	• Unable to measure productivity • POOR Efficiency: trouser 35%, shirt 52%, garment 41%; **best 85%**	• Unable to measure productivity
QC/QA	• POOR EN ISO9001 **best practice "Quality at Origin"** • 100% inspection on finishing process • Emphasis on inspection and rectification than prevention	• POOR EN ISO9001 **best practice "Quality at Origin"** • Typical quality management system
Sale, marketing and promotion	• Licensed USA-based brand • Subcontractor, without own brand name	• Licensed USA-based brand • Subcontractor, without own brand name

Human resource	• GOOD Absenteeism = 3%, **world standard 8-12%** • Management lack of basic understanding of production process • No evidence on formal operator skill training • Lack of normal production management skill	• FAIR Absenteeism = 8% **world standard 8-12%** • No evidence on formal operator skill training • Lack of normal production management skill
Management	• More decentralized	• Centralized

Table A3-6 Financial and cost structure competitiveness of Thai Apparel Company

	Shirt, Trouser and Suit Company	Sport and Leisurewear Company
Financial summary, turnover and profitability	• Profitability = 22.13% • POOR Liquidity ratio = 0.48 times, **norm = 2.0 times** • POOR Debt/equity ratio = 50.2% **,Thai 40%** • POOR Velocity of capital = 1.39 times	• Profitability = 22.02% • POOR Liquidity ratio = 0.51 times, **norm 2.0 times** • POOR Debt/equity ratio = 234% **,Thai 40%** • GOOD velocity of capital = 10.48 times • FAIR Mark up = 12%, **contractor 15%,** **Western Europe 8-12%, branded >30%**
Investment and financing	• Should direct investment decision with confidence	• Clear policies in investment
Cost structure	• FAIR Charge out rate/sm for shirt = $0.145, for trousers = $0.064, **world $0.05-0.10** • POOR efficiency • POOR selling and administrative expenses = 9.3 – 15.1%, **average 10% at most** • POOR Standard cost/unit • FAIR Operating cost 78%, **norms of 60-80%** • POOR Direct labor to turnover = 9-16%, **norm 3.85-5.75%**	• FAIR Charge out rate/sm = $0.096, **world $0.05-0.10** • POOR Standard cost/unit • POOR Operating cost 89%, **norms of 60-80%** • POOR Direct labor to turnover = 9-16%, **norm 3.85-5.75%**
Materials	• Local with some cost disadvantage , highly import proportion • Complicated and time-consuming refund	• Local with some cost disadvantage , highly import proportion • Complicated and time-consuming refund
Utility	• Average mostly, except high cost of local telecommunications = 3 ฿/mn **UK 1.59-2.02 ฿/mn**	• Average mostly, except high cost of local telecommunications = 3 /mn, **UK 1.59-2.02 ฿/mn**

Automotive Parts Sector

Table A3-7 Cost and technical competitiveness of Thai Automotive Parts Company

	Pressed Metal Part Company	Filter Company
Technology and R&D	• Long time design, production and test • Bottleneck in production knowledge • Lack of innovate design • Unsophisticated cost system, unable to measure cost activity • Existed product endurance test	• Long time design, production and test • Bottleneck in production knowledge • Lack of innovate design • Unsophisticated cost system, unable to measure cost activity • Existed product endurance test
Equipment	• GOOD technology by Western std. • GOOD maintenance	• GOOD technology by Western std. • GOOD maintenance
Plant size and scale efficiency	• Cost of distance and non-value added activity • Over-manned • Subcontracting coating and cutting	• Insufficient space • Subcontracting coating
Capacity utilization	• 40% spare capacity • Saturated market • Over-manned, work one shift • High investment in equipment	• Excess capacity • Saturated domestic market • Poor delivery performance due to insufficient capacity • Existing export demand
Information technology	• No MRP • Less evidence of computer on shop • No evidence of operator's access to computer	• Partly implementing MRP • Less evidence of computer on shop • No evidence of operator's access to computer

Production control	• POOR Stock turns = 11:1 **Best = 15:1** • POOR Lead time (mft.) = 3 d **Best < 24 hrs** • FAIR Tool change time = 7-10 mn **best < 10 mn** • POOR On time delivery = 97% **best = 100%** • Customer order to delivery = 1d • Delivery time of raw materials = 30 days • Time on production line = 7-10 d • 6 months forecasts on demand • Relatively lower working capital • Inventory = 19 days	• POOR Stock turns = 4:1 **best = 15:1** • POOR Lead time (mft.) = 2-3 d **best < 24 hrs** • POOR Tool change time = 20-30 mn **best < 10 mn** • POOR On time delivery = 70% **best = 100%** • Customer order to delivery = 2-30d • Delivery time of raw materials = 7-45 days • Time on production line = 3-14 d • Estimate demand for aftermarket • Relatively higher working capital • Inventory = 7 days
Productivity measurement and growth	• POOR Value added/E = $12,181 **best = $60,000** **UK = $47,974** • No measures of efficiency	• POOR Value added/E = $16,624 **best = $60,000** **UK = $47,974** • No measures of efficiency
QC/QA	• FAIR Customer rejects = 1% **best = 0** • NA Span of control, **best = 25:1** • Manager to employee = 24:1 • ISO 9002 • Data existing but have not been much used • Once/week scrap report • Every 6 months random check on raw materials	• FAIR Customer rejects < 1% **best = 0** • NA Span of control, **best = 25:1** • Manager to employee = 6.5:1 • ISO 9002 • Standard process inspection • Incoming, in process, and outgoing inspection • Standard laboratory testing
Sale, marketing and promotion	• Front end marketing and sales tasks	• Foreign competitors with 3-4 major competitors • Insufficiency to meet current demand hinders the investment in marketing.

Human resource	• POOR Absenteeism = 6% **best < 1%** • Overstaffed on shop floor and in office • Problem of employee turnover, an investment of ฿10,000/new employee • Cultural barrier to improvement	• POOR Absenteeism = 3% **best < 1%** • POOR Employee turnover = 10% • Need more practical training • Cultural barrier to improvement
Management	• Family-run firm, with decentralization, and willingness to accept new management skills	• Family-own business

Table 8 Financial and cost structure competitiveness of Thai Automotive company

	Pressed Metal Part Company	Filter Company
Financial summary, turnover and profitability	• GOOD Return on investment = 41.2% • POOR Liquidity ratio = 0.39 , **norm = 2.0 times** • POOR Debt/equity ratio = 309%, **Thai 40%** • POOR velocity of capital = 2.62 times	• POOR Return on investment = 14.5% • POOR Liquidity ratio = 1.43, **norm 2.0 times** • POOR Debt/equity ratio = 213% **, Thai 40%** • FAIR velocity of capital = 4.13 times
Investment and financing	• Mainly on fixed assets • Domestic borrowing	• Mainly on fixed assets • Domestic borrowing
Cost structure	• Profit = 12% • POOR Standard cost/unit • GOOD Selling and administrative expenses = 4-5%, **average 10% at most** • POOR Operating cost 89%, **norms 60-80%**	• Profit = 10-31% • POOR Standard cost/unit • GOOD Selling and administrative expenses = 4-5%, **average 10% at most** • POOR Operating cost 90%, **norms 60-80%**
Cost control	• POOR Energy cost 686 ฿/sqm/yr, DoE 122.6 ฿/sqm/yr	
Materials	• Imported • Long time on waiting	• Local and overseas
Depreciation	• POOR Depreciation cost due to high investment in machinery and equipment	• Declining balance at 20% a year • 80% already fully depreciated as all machines are more than 30 years old

Plastics Sector

Table A3-9 Cost and technical competitiveness of Thai Plastics Company

	Pallet, Crate, Furniture, Industrial and Automotive Part Company	Automotive and Motorcycle Part Company
Technology and R&D	• One of the best moulding injection companies in Thailand • Mostly suitable technology in current market • Future thread of high wage rate • No clear separation of R&D staff • Suspected low and unbudgeted R&D expenditure • No investment in R&D for downstream vertical integration	• Mainly rely on Japan • No evidence of product/process related R&D
Equipment	• 2nd Grade quality and technology moulding machine	• POOR tooling technology
Plant size and scale efficiency	• Generous working areas leading to high operating cost	• Generous working areas leading to high operating cost
Capacity utilization	• FAIR Production capacity = 40-85%, **best = 60-85%** • Underutilized, constrained total moulding capacity since each machine can only run certain of the tools	• FAIR Production capacity = 40-85%, **best = 60-85%** • Underutilized, constrained total moulding capacity since each machine can only run certain of the tools
Information technology	• Limited the investment on production area	• FAIR Use of IT • Implementing MRP for production control • Use computer systems for shop floor and management communication

Production control	• FAIR Customer order to delivery = 15-30 days, **best up to 30 days** • POOR Delivery time of raw materials = 2-90 days, **best =7 d** • POOR Stock of raw materials = up to 38 days, **best = 20% of needed 60-90 days** • POOR Stock of finished goods = 15-56 days, **best up to 30 days** • POOR Typical injection run length, too short = 2 days, **best depends on tool set time and urgency in production** • POOR Scrap rate = 0.5-5%, **best = 1-2% at maximum** • Underperforming stock management	• FAIR Customer order to delivery = 15-30 days, **best up to 30 days** • POOR Delivery time of raw materials = 2-90 days, **best =7 d** • POOR Stock of raw materials = up to 38 days, **best = 20% of needed 60-90 days** • POOR Stock of finished goods = 15-56 days, **best up to 30 days** • POOR Typical injection run length, too short = 2 days, **best depends on tool set time and urgency in production** • POOR Scrap rate = 0.5-5%, **best = 1-2% at maximum** • Acceptable stock management • Difficult control on many different jobs running at once
Productivity measurement and growth	• POOR Product defect = 3%, **best = 1%** • No advanced productivity measurement	• POOR Product defect = 2.47%, **best = 1%** • No advanced productivity measurement
QC/QA	• EN ISO 9002 • No evidence of SPC • Adequate control, few customer complaints	• EN ISO 9002 • UL listing and certification from American Laboratory • Adequate for small products • Insufficient for the majority products
Sale, marketing and promotion	• Target on export while defending Thai market • 5 staff in marketing	• Buyers lost confidence in product quality • 97% sales to domestic market • Few “own products” but plans to have more. • 5 staff in marketing

Human resource	• FAIR Number of employee = 337, **best = 250-300 staff** • Over manning level due to bad experience from machines and tools • Slender training facility	• FAIR Number of employee = 288, **best = 250-300 staff** • Slender training facility
Management	• Very hierarchical	• Slovenly and under-utilized appearance

Table A3-10 Financial and cost structure competitiveness of Thai Plastics Company

	Pallet, Crate, Furniture, Industrial and Automotive Part Company	Automotive and Motorcycle Part Company
Financial summary, turnover and profitability	• GOOD Return on investment = 76% • POOR Liquidity ratio = 0.24 , **norm = 2.0 times** • POOR Debt/equity ratio >300%, **Thai 40%** • POOR velocity of capital = 1-1.4 times • Need SPC, scrap reduction study, short term training and review methods, and training	• POOR Return on investment , not profitable • POOR Liquidity ratio = 0.37, **norm 2.0 times** • POOR Debt/equity ratio >300% **, Thai 40%** • POOR velocity of capital = 1-1.4 times • Need SPC, scrap reduction study, short term training and review methods, and training
Investment and financing	• High depreciation due to high investment in building, machinery and equipment = 71.5% of total fixed assets	• High depreciation due to high investment in building, machinery and equipment = 69.4% of total fixed assets
Cost structure	• POOR Gross margin = 22.60%, **norm > 50%** • POOR Operating cost = 77.40%, **norms 60-80%**	• POOR Gross margin = 11.95%, **norm > 50%** • POOR Operating cost = 88.05%, **norms 60-80%**
Cost control	• Separated purchasing department, need efficient communication	• Separated purchasing department, need efficient communication
Materials	• High price	• High price
Utility	• Competitive price by European standard, but higher cost of telecommunication (3 compared to 1.59-2.02 ฿/mn) • Higher level of energy consumption	• Competitive price by European standard, but higher cost of telecommunication (3 compared to 1.59-2.02 ฿/mn) • Higher level of energy consumption

Rubber Sector

Table A3-11 Cost and technical competitiveness of Thai Rubber Company

	Latex Glove Company	Non-passenger Car Tyre Company
Technology and R&D	• POOR Technological capability = 0.85, **best =1** • POOR R&D capability = 0.80, **best =1** • No agency for biological test • Ability to design/adjust production or test equipment • Has R&D laboratory and well-qualified personnel • Able to develop own new product or process • Should be more towards improving/enlarging product quality, to be competitive	• POOR Technological capability = 0.60, **best =1** • POOR R&D capability = 0.40, **best =1** • Old technology • Rely on self-learning, Taiwanese technologist, ex-worker of large tyre manufacturers • Good enough technology for low-end products • Need R&D on compounding to reduce cost • Lack of financing hinders improvement in technology
Equipment	• POOR Equipment = 0.85, **best =1** • No microprocessor controlled dipping lines	• POOR Equipment = 0.60, **best =1** • Taiwanese and Chinese made • No modern technology system to control stock/production planning • Mostly old machines (6-10 yrs) • Need ฿320 mill. investment to reduce cost by 10%
Plant size and scale efficiency	• Well designed, well-protected environment • Shorter particularly designed dipping machine	• Old plan • Should redesign plant layout
Capacity utilization	• Smaller output using batch dipping	• Lack of personnel to deal with constant changes • Under-utilized plant, only 33% capacity utilization due to shrinking market
Information technology	• No indication on computer system application in related functions	• Not found

Production control	• FAIR Quality system = 1, **best=1** • Stringent advanced computerized system • POOR Customer order to delivery = 30-115 days • POOR Average delivery time for raw materials = 30-60 days • Average time in production line = 1 hour • Inventory = 89 days • FAIR Inventory turnover = 4.1 times/yr • FAIR Inventory to turnover = 17.4%	• POOR Quality system = 0.65, **best=1** • Stock hold of raw materials = 1 mth • Poor raw material warehouse • Lack of production management technology and planning • Average customer order to delivery = 14 days • Average raw material delivery = 1 day • POOR Average production line = 12days – 3 months • Waste time in working process • POOR Inventory = 231 days • POOR Inventory turnover = 5.7 times/yr • POOR inventory to turnover = 46.5% • Under-performing stock management, cash tied up
Productivity measurement and growth	• FAIR Efficiency = 0.85-0.90, **best = 1** • FAIR Rejects = 1, **best = 1** • Not aware of productivity measurement by computerized system • Overall productivity is 15-20% lower than the best	• NA Efficiency • POOR Rejects = 0.90, **best = 1** • NA Assessment on efficiency and productivity, only product quality • 0.5% sales rejected, 0.5% production cannot be dispatched • No attention to measure human resource issues
QC/QA	• Certificate on biological compatibility • ISO 9001, EN 460001, ISO 9002 Canada • Stringent but better than local SME norm • Rejection rates = 6%	• ISO 9002, TSI certificate, US DOT 1Z(tyre standard) • Laboratory testing for quality of rubber compounds • Artificial road test, Taiwanese machine, above local norm

Sale, marketing and promotion	• Export 90%j own exclusive right to the patent originated from overseas • One competitor in local high-end product range	• Concentrate on international markets • 6 people direct sale force team, holds 5% of local market • Export declined to 50% • Production to stock, not to supply customers
Human resource	• POOR Human resource = 0.90, **best = 1** • 700 operatives with 7-8 MSc., above local norms of 1-2 BSc. • Increasingly shift to high technology and high quality products • More emphasis on HRD, above local norms • Low employment turnover	• POOR Human resource = 0.40, **best = 1** • Operate 6 days/wk, 3 shifts but many machine stopped due to bad production planning
Management	• FAIR Production management = 1, **best = 1** • Moderate centralization	• POOR Production management = 0.30, **best = 1** • Decentralized, accept new management style

Table A3-12 Financial and cost structure competitiveness of Thai Rubber Company

	Latex Glove Company	Non-passenger Car Tyre Company
Financial summary, turnover and profitability	• GOOD Profitability = 22.27% • FAIR Liquidity ratio = 1.73 , **norm = 2.0 times** • GOOD Debt/equity ratio > 22.69%, **Thai 40%** • Normal velocity of capital	• POOR Return on investment = 4.63%. nearly no margin • POOR Liquidity ratio = 0.67, **norm 2.0 times** • POOR Debt/equity ratio = 279% **, Thai 40%** • POOR velocity of capital = 0.46 times • High risk situation
Investment and financing	• NA	• Investment in factory expansion
Cost structure	• FAIR Profit margin/item = 10-15%, same as int'l std • FAIR Operating cost = 78.54%, **norms 60-80%**	• POOR Profit margin = 5%, • POOR Operating cost = 94.38%, **norms 60-80%**
Cost control	• Found on production side only	• Quite strict, several a/c sections
Materials	• Local and overseas • Not vertically integrated • 30-60 days raw material lead time, considerable investment • Import chemicals and papers due to higher quality	• Major cost item = 65% • Only 6 day rubber lead time • Mostly local except some chemicals • Right sourcing will be benifits
Utility	• Reasonalbe utility consumption = 10.3%	• Compettive by European standard but high price of telecommunication = 3 ฿/mn UK = 1.59-2.02 ฿/mn
Depreciation	• High, 84% investment in machinery and equipment	• High, 68% investment in machinery and equipment • High cost of petrol and car related expenses • High overhead expenses due to purchase of spare parts and factory supply

Leather Sector

Table A3-13 Cost and technical competitiveness of Thai Leather Company

	Footwear Company	Furniture Company
Technology and R&D	• Small R&D center on site • CAD and CAM designs • Average lead time for development of new products = 2-3 weeks	• Contractor furniture and Raw to Wet Blue: old machinery, do not have any R&D system • Contractor Furniture: expertise but lacks control system • Wet Blue to Finished Upholstery: technology to provide upgraded products
Equipment	• Korean and Taiwanese machinery • Labor intensive, an advantage • Reasonable expected target $32 million extra capital expenditure	• Contractor: under capitalized on plant/machinery, mainly manual • Raw to Wet Blue: no evidence of clean technology, poor environmental practice in tanning • Wet Blue to Finished Upholstery: some more modern machinery in dyeing and finishing
Materials	• NA	• Raw to Wet Blue: local hides – classical poor quality • Wet Blue to Finished Upholstery: imported hides
Plant size and scale efficiency	• NA	• Messy factory layout
Capacity utilization	• Indirect access to information and future market trend • Reserve at least 80% for main customers, choice to select high-end models with high demand	• Short of work

Information technology	• No distinct indication of IT application • Labor intensive operation • Tendency to gradually apply more • Started to use CAD/CAM in R&D functions	• Little evidence of IT
Production control	• NA Supplier lead time score. **best = 3.2** • POOR Order processing lead time = 14-21 d, **best =4.4 days** • NA Manufacturing lead time, **best = 8.8 days** • POOR Dispatch time (by sea) = 30 days, **best = 3.8 days** • NA On time delivery, **best = 91.8%** • Variety of different combinations of products at once • Highly systemized control practices	• Raw to Wet Blue: low level of observable control system • Wet Blue to Finished Upholstery: built in process control system, visible attention to details
Productivity measurement and growth	• GOOD Production/hr = 163.72 sq. ft/hr/man, **best = 112.2** sq. ft/hr/man • POOR Value added per direct employee = 306.74 Baht, **best = 4.23 mil.Baht**	• Working very slowly, low level of activity
QC/QA	• Internationally approved • ISO 9002 • 100% raw material batch test • Notable quality • Little scrap	• Raw to Wet Blue: no complete QC system • Wet Blue to Finished Upholstery: more concern, focus on QC

Sale, marketing and promotion	• Three shoe types: Low tech FOB price $8-10, Medium tech $12-14, High tech $14-22 • 95% exported to main customers, 5% retail domestic market • Joint venture with foreign marketing company	• High export potential contrained by lack of original design and international marketing skill
Human resource	• Labor intensive • Established a training system to maintain the competitiveness • In-house training system • No training program on marketing function	• Labor intensive • No formal training
Management	• Decentralized management system • Expand upstream and downstream industries	• Family business

Table A3-14 Financial and cost structure competitiveness of Thai Leather Company

	Footwear Company	Furniture Company
Financial summary, turnover and profitability	• GOOD Return on capital invested = 83% • POOR Liquidity ratio = 0.26, **norm = 2.0 times** • POOR Debt/equity ratio >600%, **Thai 40%** • High risk of indebtedness	• NA
Investment and financing	• Share capital in related parties • Foreign debts and domestic borrowings	• NA
Cost structure	• Sport shoe: POOR Margin/unit = 4%. Selling and admin. 7%, net loss • Sole Unit: Margin/unit – 18%, GOOD Net margin = 11%. **average 10% at most** • Sport shoe: FAIR Operating cost = 74.35%, **norms 60-80%** • Sole Unit: POOR Operating cost = 83.41%, **norms 60-80%** • Electricity = 90% utility cost • Machinery related = 96% maintenance cost	• NA
Cost control	• Sport Shoe: Recommend cellular manufacturing system • Sole Unit: Spectrophotometer color computer measuring device	• NA

Materials	• Sport Shoe: difficulty in returning good outside specification	• NA

APPENDIX 4 – ASSESSMENT OF UTILITIES COSTS

In order to assess the level of utilities costs vis a vis expected costs elsewhere, the consumption of water, electricity and telecommunications was estimated on an annual basis according to the manufacturing area (in sq. meters) or the number of employees for the companies visited. The maximum demand levels were not considered since these relate chiefly to the pattern of demand and the adequacy of infrastructure and not, a priori, to a simplified model of the running costs of the industrial units.

Energy: Electricity and Gas

The Department of the Environment in the UK has issued a document *Introduction to Energy Efficiency in Factories and Warehouses* as part of its Best Practice Programme, which sets benchmarks for energy use for a number of different categories of industrial activity. Unless consumption figures for an existing plant are considered (which would quickly become inappropriate for products with differing characteristics) it is necessary to make a number of assumptions which clearly permit consumption figures to be modified in the future to reflect changes in circumstances, such as additional shift working. On the basis of this information, energy consumption yardsticks are developed which provide median figures that are used to estimate consumption of electricity and gas.

Water

According to WS Atkins' experts the amount of water consumed varies between 25 and 40 litres per person per day. It was therefore assumed that general manufacturing would consume the least water, at 25 litres per person per day of 7.5 hours. This equates to 3.33 litres per employee per hour. These figures were then applied to the number of employees engaged in each operation to determine the annual water consumption given the working practices assumed in the DoE report (used for the estimation of electricity) - assuming 52 weeks worked per year

Telecommunications

The WS Atkins Telecommunications experts base their assumptions about consumption of this service on the number of office staff that are employed. They estimate that as a general rule 10% of office staff time is spent on the telephone, and that in manufacturing industries the average breakdown is 50% for incoming calls and 50% for outgoing calls. The telecommunications consumption figures on an annual basis amount to 5% of total staff office time. It is assumed that these figures include fax and Internet operations. As the cost

per call within Bangkok is 3 Baht irrespective of the duration, all calls are assumed to be on a regional basis. The cost per call within Thailand varies between 6 Baht and 30 Baht per minute for daytime calls.

In summary, the aggregate expected cost of utilities is much lower than that provided by the companies. Since the consumption rate is average for the industries (or slightly above average in some cases), the rate charged by the Thai service providers is much higher than what is expected elsewhere. Indeed, a good indicator of utility costs is the actual rate charged in Thailand vis a vis what other firms around the world face. The following table shows the prices charged in North Wales (UK). This region has been selected as a benchmark because WS Atkins staff concluded after a study completed in July 1999, that North Wales appeared to face above average charges for public utilities than most of the other regions within the European countries examined (Spain, France, Belgium, Germany, Eire, and UK).

Table A4-1: Benchmarking Prices of Utilities against North Wales

Benchmarking Region	Electricity (Baht/kWh)	Water (Baht/cubic Mt)	Local Telecommunications (Baht/minute)
Thailand	2.17[3]	11.5[1]	3[5]
North Wales (UK)	3.32[4]	50.2[2]	1.59-2.02[6]

Notes: (1): Type 2 rate being applied to state enterprises and any industrial activities. It represents bulk sale excluding VAT. (2): The amounts of water involved are relatively small and hence are charged at standard domestic water rates. Larger consumption would lead to lower prices per unit but with a fixed front-end charge. (3): Average unit price sold to industrial endusers. (4): Amounts over 500,00 kWh p.a. are subject to individual negotiation; the indications are that the unit cost would go down to circa 3 Baht per kWh for day use. (5): Price per call irrespective of duration. (6): There are substantial reductions for large volume demand. (7): Annual consumption of 1 million kWh or more is at a negotiated price. It is estimated that prices could be negotiated down as low as 0.8p per kWh.

It appears that the companies visited purchase electricity at a slightly lower price than that provided by the Department of Energy. According to the companies, electric power is slightly cheaper at an average of 1.825 Baht/kW-hr than 2.17 Baht/kW-hr.

The above table shows that prices charged in Thailand are similar to those in European and therefore high for the region. It is clear, however, that slightly high consumption rate than

expected arises from over-staffing. For example, it can be assumed by European standards that office staff account for approximately 10% of a single shift. The number of office staff (all non-manufacturing) for the companies visited is therefore higher than the number expected in manufacturing environments elsewhere.

APPENDIX 5. RESULTS OF THE CONSULTATIVE SEMINAR

RESULTS OF THE CONSULTATIVE SEMINAR

INTRODUCTION

The consultative seminar held on the results of the study was primarily aimed at representatives of Thai industry and reported on the overall findings of the study, including the findings on cost structure, qualitative factors in competitiveness, and the strengths weaknesses opportunities and threats of each sector. The policy options considered by the Consultants were presented, and additional suggestions invited. The participants were invited to give their views on the policy options, their viability and their perceived benefits and the impact on particular interest groups.

Overall, the main priorities given by industry to needs/issues which at the present make their cost structure uncompetitive are:

- Training of skilled labour (mainly processed food, auto parts, rubber products and leather goods);
- Tariff reduction (mainly processed food, rubber products and leather goods);
- Development of local raw material sources and feeder industries (mainly plastic products and leather goods);
- Reduction of electricity rates (mainly processed food and plastic products);
- Human resource development including engineering and management training (mainly electronic appliances, garments, plastic products and rubber products);
- Development of brands and marketing support (mainly garments and leather goods);
- Technology and R&D support in various forms (e.g. financing of technology and know how transfer, setting up of testing centres, labs, etc).

In addition, industry sees a high number of normal business activities currently developed by the private sector, as responsibility of government. This assumption may stop the private sector being more innovative and taking charge of its own development. Increasing competition may act as a motivating force for companies to change the management culture currently in place, leading to an increase in competitiveness.

The rationale behind the recommendations suggested was sometimes quite unclear resulting from vague and generalised comments. Nevertheless, the key points raised and recommendations suggested are reported in full.

SUMMARY OF KEY POINTS RAISED ON FACTORS AFFECTING COST STRUCTURE OF INDUSTRIES

Processed Food Industry

The industry stated that it lacked raw materials of the right quality and trained personnel. In addition, some products face difficult product development stages. Overall, Thai companies do not appear to be experimenting with machinery or production processes but rather they tend to use substitutes for patented ingredients[4] to attain better products. This is a common practice if scientific knowledge on food technology is limited. Firms would be better off by purchasing strategic ingredients to jump-start their product development. The main factors mentioned by industry as affecting competitiveness through costs are related to taxation, government policies, raw materials, and R&D. These are as follows:

- *Operations Management*: high levels of stocks of materials are a financial burden for companies.
- *R&D*: The industry lacks capability in food research, and the little information available is not properly made use of.
- *Taxation*: Long delay in refund of Vat results in higher cost.
- *Basic Infrastructure*: lack of tap water supply to zones other than BOI's increases the costs of water supply. Electricity rates are high for manufacturing facilities.
- *Official procedures*: Farmers and the FDA in other provinces take a longer time to register brand names and obtain FDA approval. This extra burden is a cost burden to them and could be reduced if the government made the necessary arrangements to facilitate registration and approval procedures in provinces other than Bangkok.

Electronic Appliances

Industry stated that sometimes local intermediate materials might not meet the quality levels demanded by the market causing imports to take place. The purchase of these imported materials is expensive for industry because import tariffs are high and at the same time reduces cost competitiveness of the finished product because import tariffs for products are very low and sometimes nil.

[4] Specific ingredients (e.g. hydrolyzed protein which is a second derivative from milk) are patentable. Equipment can be patented under laws but product process is rarely patentable under laws in most countries.

The main factors mentioned by industry as affecting competitiveness through costs are related to technology. The lack of an adequate IT infrastructure for e-commerce hinders the implementation of modern logistic processes. In contrast, better IT infrastructure in other countries results in lower logistic costs. The efficiency of these logistic systems is further enhanced by active contribution made by custom departments which act as service industries with genuine expertise in each individual sub-sector.

Garments

Due to rather short product life cycles, new product development lead-times are also very short. This forces manufacturers to choose carefully not only those products which are competitive, but also those which can be developed in a shorter time than competitors. As a result, there is a trend towards use of higher value textiles, reduced may costs, increased productivity and production of higher value added garments. Indeed, the benefits of producing high value added garments (i.e. sportswear) are widely recognized and as a result some product lines have been developed. However, the types of products manufactured are relatively limited. The industry has not developed enough to be able to establish international brands or develop own designs, except for Thai Silk.

Currently, the industry associations led by the textile association coordinate skill development. The main factors mentioned by industry as affecting competitiveness through costs are related to technology. Technology is constantly changing which makes very difficult and extremely costly the continuous training of employees. Similarly, the lack of up-to-date technology results in a reduced number of new styles being produced by industry and in 40% less production efficiency of those standard products.

Auto Components

Best practice in Thai is still lower than international. The industry relies on intensive may due to the lack of knowledge on the applicability of technology, and lacks good management particularly at SME level. This results in poor practices in these firms, and little training of staff because the local entrepreneurs are afraid that their workers will leave the company once they acquire the necessary skills. In addition, local industry feels a general lack of support by the government at the same time as over encouragement and promotion of foreign investment.

The main factors mentioned by industry as affecting competitiveness through costs are related to technology mainly the lack of spare parts which have to be imported increasing

costs.

Plastic Products

Industry did not think that the material costs from the Thai petrochemical industry were significantly higher than international levels. Import duties, in any case, will be reduced to 5% in 2003.

The main factors mentioned by industry as affecting competitiveness through costs are related to the lack of product focus, the manufacturing of moulds, taxation, and high costs of utilities (electricity and water). Industry recognises that increased product focus (by emphasizing on specific products) will boost productivity and increase production capacity.

Rubber Products

The rubber products industry sees itself as comprising two sectors; a large one, which produces for major international brands, and a smaller one, which caters for the domestic market under Thai brand names. The private sector feels that if the local rubber products industry is competitive, Thailand can evolve into a major rubber products' producing country. The main factors mentioned by industry as affecting competitiveness through costs are related to shortage of skill labour, high cost of raw materials and lack of market information.

Leather Goods

The leather products industry is currently emphasizing the need for manufacture of high fashion items and hopes to catch up with international competitors in the long term. For this, specialty leathers must be imported. The upholstery industry as well as the leather goods industry would benefit from the development of a high quality local tanning industry. Presently the raw materials of the local market are of low quality and lack of cooperation between the two industries, resulting in import of raw materials which causes the cost to be high.

The main factors mentioned by industry as affecting competitiveness through costs are related to raw materials, technology, skilled may, cost of utilities, and own designs. Efficiency of the machinery is still low, which also causes production costs to be high.

SUMMARY OF RECOMMENDATIONS GIVEN BY INDUSTRY

The following table summarises the priorities given by participants to the needs faced by industry. Those for which industry had specific suggestions will be expanded below.

Table A5-1: Priority given by Industry to recommendations suggested at the Consultative Workshop

Industry	Food	Electronics	Garments	Automotive	Plastics	Rubber Tyres	Gloves	Leather Footwear	Leather Furniture and Tanneries	Small leather goods
Raw material – all including development of Local sources and feeder industries	1st			3rd	3rd			1st	1st	
Abolition of Local contents – Extend adjustment period				5th						
HR Development		2nd	3rd		6th					
Training skilled labour				2nd	7th		3rd	2nd		
Training – Engineering						4th	4th			
Training – Management					5th	3rd				
Training – Improve quality. Technical colleges can follow Malaysian model					1st					
Technology – Financing for specialty tech								3rd		
Technology – transfer of tech and know how				4th	4th				2nd	
Technology upgrading and productivity of suppliers		3rd								
Tariff reduction				1st			2nd	4th		
Tariff harmonisation		1st								
Environmental and ethical – non tariff barriers – need education mainly in SMEs								5th	5th	
Marketing – Development of brands			2nd						3rd	1st
Marketing – Training							6th			
Laboratory									4th	
Testing Center						2nd				
Distinction between patents and trademarks according to degree of innovation										
Market Liberalisation – competition policy – for whole sector						1st				
Simplify industry structure – emphasise supply chain management	7th		1st							
Reclassification of industry							1st			
Industry	**Food**	**Electronics**	**Garments**	**Automotive**	**Plastics**	**Rubber**	**Gloves**	**Leather**	**Leather**	**Small**

						Tyres		**Footwear**	**Furniture and Tanneries**	**leather goods**
Creation of specific government department	3rd						5th			
Establishment of centre for industry information										
Decentralisation of government agencies to support provinces	4th									
IPO – Like schemes		4th								
Communication government – private sector	2nd	5th								
Draft Norms in line with international standards and provide information										
Financial support – mainly SMEs	8th	6th								
National IT infrastructure		7th								
Losses due to transfer pricing – use of audit trails at customs, or force companies to globalise re parent companies		8th								
Lower electricity rates	6th				2nd					
Guarantee of water supply to areas other than BOI promotional zone	5th									

Source: Compiled by the Federation of Thai Industries based on the discussions held at the Consultative Seminar.

Food Processing

- *Tariff reduction*
- *Government support*: draft policies taking into account the entire industry and not only the processed side of it or the raw material side of it; decentralise government agencies to support provinces better; provide one stop information center particularly to make information available to farmers so that they will become more knowledgeable and understanding of what the processed food industry needs.
- *Utilities*: guarantee water supply and reduce electricity rates for manufacturing facilities.
- *Raw Materials*: help in the outsourcing of quality materials and reasonable price; give incentives to promote food processed products that Thailand doesn't have (selective policy planning).
- *R&D*: upgrade the National Food Research Institute and select individual product lines with increased budgets; support a science institution or department including research work; promote and encourage the gathering of information and know how of food industry.

Electronic Appliances

- *Tariff:* harmonise tariff for raw materials and finished products – current tariff differential gives a cost competitive advantage to imported finished products but also creates confusion in industry as the HS code used is difficult to apply for the classification of items (raw materials, parts and finished products have different tax rates).
- *Suppliers' technical capabilities:* provide One-Stop service such as IPO schemes from Singapore which are useful in supporting production by upgrading technical capabilities of suppliers regarding stock control systems (BOI is already providing similar services).
- *Feeder Industries:* encourage growth of components' manufacturing and of its link with industry by promoting the location of suppliers near manufacturers of end products.
- *Human resource development:* provide tax incentives or subsidies for in-plant or in-house training.
- *Earnings and capital investment:* address transfer pricing used by foreign companies as means to reduce reported profits in Thailand by implementing adequate audit trailing mechanisms at Customs.

Garments

- *Styles of products*; support supply chain management so that better quality fabrics are manufactured.
- *Market*: help the private sector in developing international markets; find new markets for entrepreneurs; give importance and funding to international trade shows so that industry can learn about international standards and be updated on market information.

- *R&D*: provide support from related government agencies; attract expertise from Taiwan and Hong Kong which are seen to have the know how and the technology.
- *The government*: draft policies that address the whole industry; provide incentives for product lines which are competitive with a few to reduce manufacturing of product lines which are competitive.

Auto Components

- *Government*: give incentives to promote sectors that have low production costs.
- *Technology*: support the development of production processes that use less may in production; support the local production of spare parts to reduce costs.
- *May*: support development of may to meet international skill levels and encourage stronger social responsibility, establish a specialised centre on human resource development for the industry

Plastic Products

- *Tariffs:* equate the import duty on machinery spare parts and machinery. Currently the spares attract higher duty than machinery. As a consequence, sometimes it is more economic to replace a machine rather than repairing it.
- *Technical Education*: reform of technical colleges using Malaysia as a role model for technical education. The Thai colleges suffer from having obsolete machinery and shortages of good trainers. In Malaysia, there is a technical college covering plastic products manufacture which provides operative training on "state of the art" equipment. Industry does not know how this centre is funded but the possibility of outsourcing technical colleges to the private sector with a detailed specification of the type and volume of training requirements was discussed. Cheap student loans are available for young people wanting to be trained technically.
- *Management Training*: make management training available especially in costing systems for SMEs
- *Utilities*: reduce energy costs as these are an important cost especially in PVC manufacture (15-20% of total costs). Currently, electricity prices are relatively high (twice that of neighbouring countries) but industry is hopeful that the implementation of the "Power Pool" planned to start in 2 years time which lead to lower prices. Similarly, price of water has been increasing in the last years.
- *Raw materials*: support local feeder industries which at the moment are not being able to supply special materials
- *Finance*: encourage financial restructuring as industry has high debts/ financing charges.
- *Government*: provide information on opportunities in export markets (e.g. standards, commercial); help in marketing particularly for SMEs which accumulate large stocks of finished products; provide incentives on sales to Thai customers who purchase and then export Thai products.

Rubber Products

- *R&D:* encourage universities to train larger numbers of rubber technicians. At the moment, there are few universities and technical schools providing suitable training for skilled engineers (Songkhla University does not turn out enough graduates specialised in the rubber industry). This results in low levels of R&D performed in the industry.
- *Labour Training*: emphasise training on use of technology and quality standards, continuous upgrading of engineering knowledge, and spread knowledge of international standards for management.
- *Government*: set up a Rubber Council comprising both private and public sector representatives to look into the demand and supply side at the same time. In the past the efforts have focused on the supply side; set up a single organisation looking after the special interests of the rubber industry. Presently the duties are being dissipated through out several government bodies without any linkage in their respective policies; sponsor visits from foreign specialists in rubber industry.

Leather Products

- *Technology:* promote use of foreign technology to achieve faster manufacturing times of leather goods; sponsor foreign expertise visiting the country with a view to increase the quality of the local leather via better use of technology.
- *Raw materials*: promote the use of local materials instead of imported materials; encourage quality upgrade of local raw material and reduce dependency on imports.
- *Management:* promote power delegation to younger generations more in tune with market requirements.
- *Supply chain:* encourage a regular forum between tannery and leather industry to have better coordination.
- *Brand names:* promote and encourage developing own brand name so the product development can meet needs of both local and international market.
- *Government*: promote the development of domestic market as well as the export market; draft policies that relate the leather products industry to the leather tanning industry.

KEY CONCLUSIONS OF THE CONSULTATIVE SEMINAR

Liberalisation is seen as an important issue and industry would like to see government departments (which draft policies) taking into account all products involved in the supply chain and indeed in each sector. Although tax exemptions exist (for those importing raw materials for the export market and those investing in new technology), manufacturers feel that it is not enough. It was also mentioned that government agencies could be decentralised

enough to provide adequate support to industry located in the provinces. Malaysia was mentioned as an example of such system and Malaysian policy in rubber encourages the development of the whole sector, not just rubber plantation. In Thailand, protection policies for planters are leading to higher cost of imported synthetic rubber which is required to produce the variety of rubber products required by the industry.

Distinction between patents and trademarks according to degree of innovation was suggested. In our opinion, it appears by the comments made that the process of registration confuses industry leaders. Current laws make a distinction between trademarks and patents and the choice between the two is up to the interested company. Both patents and trademarks come under the jurisdiction of the Department of Intellectual Property (ministry of Commerce). The system appears to be fair and not biased against a bona fide Thai innovation. The cost involved in registration is nominal (circa Baht 8-10,000 per application) but the time frame involved is expensive in terms of delays caused to production. It takes 10-14 months from the time the application is submitted to the Department – time mainly spent in verifying that the work has not already been registered in other major countries.

The issue of how to encourage automation with prevailing surplus is difficult for all policy makers. It appears that the requirement for importation of brand new machines instead of second hand is expensive for industry. In addition, there is no appraisal service for second-hand machines and these machines cannot be used as collateral with financial institutions. In our opinion, the BOI's machine upgrading scheme points to the right direction but further help is needed such as the provision of appraisal services for second-hand machinery and the consideration of these assets by financial institutions as collateral.

From the survey we conducted, the gross margins achieved by industry appear to be low. Industry confirmed that productivity improvement may not be enough to offset financial charges faced by industry. In our opinion, companies should try to attain a debt/equity ratio of 1:2 at the maximum.