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THE EVOLUTION OF SINGAPORE BUSINESS: A CASE STUDY APPROACH (CASE STUDIES)

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(Volume 2: Case Studies)

Anisha Sabhlok

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THE EVOLUTION OF SINGAPORE BUSINESS:
A CASE STUDY APPROACH

ABSTRACT

This volume contains summaries of 12 case studies for three categories of business organisations defined by ownership, i.e. foreign, state and (local) private. The case studies explore the history and pattern of development of 12 business groups/companies in Singapore, highlighting specified aspects including: turning points in terms of business growth, diversification and expansion in domestic, regional and global markets, the strategies that led to their achievements, the role of the government and the measures taken at micro-levels to negotiate the transition to a knowledge-based economy (KBE), and world-class excellence. Issues such as the development of technology, human resources, organisational structure, culture and management style that might influence the ability of the organisation to harness knowledge for enhanced growth are further examined under the KBE theme. Adoption of best practices, corporate citizenship and the nature of businesses' involvement with the community are examined under the theme of World-class Excellence.

1 Government-Linked Companies: Case Studies #1 - #3

1.1 Keppel Corporation *(Case Study #1)*

(Based on inputs provided by company representatives and sources cited in the References)

Corporate Profile

The Keppel Group is a Singapore-headquartered conglomerate with assets in excess of S$33 billion and business operations spanning 20 countries. Keppel employs more than 15,000 skilled and highly trained professionals in its five core businesses of banking & financial services; property; telecommunications & logistics; offshore, energy & infrastructure; and marine (http://www.keppelcorporation.com).

A. *Company History*

Some of the Keppel Group's companies are among the handful of surviving companies in Singapore whose history goes back over a hundred years. Its roots lie in the Singapore Port Authority or Singapore Harbour Board constituted in 1913. Keppel Shipyard came into being in 1968.

***Optional Reading**: From the early 13th century, the waterway between Tanjong Pagar and Tanjong Berlayer and Sentosa Island was used as a passage for ships sailing from the Straits of Malacca to the South China Sea. In 1848, Captain Henry Keppel realised the potential of the sheltered deep-water harbour as a depot for coals in the era of steamships. The harbour, known as New Harbour, was eventually developed for shipping and eventually renamed after him. The development of the harbour was one of the most significant events of 19th century Singapore and contributed substantially to its prosperity*

Shipping companies began building wharves at New Harbour. Docking facilities became necessary. Dock No 1 owned by 2 English businessmen was built in 1859. The company became Patent Slip and Dock Company (and was incorporated in 1875 as a public company called New Harbour Dock Company). Eight years later, Dock 2 was built. In October 1868, the Victoria Dock was opened, and with growing demand, Albert Dock in 1879. By then, the company employed 2,500 workers. In 1899, when it merged with rival Tanjong Pagar Dock Company, the new entity owned almost the entire wharf frontage. Since the prosperity of the island was linked to the port, it became accountable not only to its shareholders, but also to the people and government of Singapore.

The port became the 7th largest world-wide in tonnage of shipping by 1903. However, its facilities were inadequate to meet the growing demand. In 1905, the government stepped in, expropriated the Tanjong Pagar Dock Company, converted it to a public-owned Board and launched the modernisation programme. In 1913, the Board was reconstituted into a corporate statutory body, the Singapore Harbour Board (SHB). The modernisation of the port helped it to cope with the rapid opening up of Malaya and the world demand for tin and rubber. The (SHB) was one of the largest employers in Singapore. From 3,500 workers in 1914, the workforce doubled to 7000 in 1939. The workforce consisted of Malay, Chinese and Indian workers (Lim, 1993)

The 1960s (Foreign Management)

After the war, an extensive programme to rebuild and restore the wharves and docks was mounted. Singapore's attainment of independence in 1963 saw the Port Authority of Singapore (PSA) set to take over the port. It was recommended that cargo handling and ship-repair be separated. In August 1968, the company taking over the Dockyard Department of PSA was named Keppel Shipyard (Private) Ltd.

Wholly government-owned, the company's first Chairman, Mr Hon Sui Sen, and his colleagues set ambitious targets for it. They envisioned Singapore as Asia's largest ship-repair centre after Japan. With the announcement of the withdrawal of the British naval bases, Singapore had to move faster into its industrialisation plan to fill the gap accounting for almost a quarter of its economic activity and 20,000 jobs.

The British Swan Hunter group was hired to manage Keppel for four years and assigned the task of internationalising the business, upgrading the dockyards, wharves and workshops and creating a strong cadre of Singapore managers to take over the management.

The 1960's were favourable years for the ship-repair business. The yards were busy because of the port activity and were able to provide cost-effective repairs. Location and cost were the key factors. There was some activity involving building of tugs and supply vessels for the offshore oil sector, which was active off Indonesia. Keppel too benefited from these activities during the period.

The 1970s (Local Management, Boom and Diversification)

A group of Singaporean officers planned a take-over of the yard by putting together a blueprint for the localisation of the yard. Mr G.E. Bogaars, replacing Mr Hon as Chairman, oversaw the changeover in 1972. The Swan Hunter team had provided a basic system and established a global marketing network. However, it did not break down the traditional demarcation lines between different lines of workers.

Under the local management, the workforce became more cohesive and productivity increased.

The new Singapore government saw a potential market of $500 million in the ship-repair business by the end of the 1970s. It not only set up Keppel, Sembawang and Jurong Shipyard (with Japanese partners), but also encouraged private yards to be formed. By 1974, the ship-repair industry's turnover was already $720 million. Singapore became effectively the most important ship repair centre between Europe and Japan, since the oil tankers found it a convenient first stop for dry-docking and hot-work repairs after degassing on the return trip to the Middle East. While the many private shipyards numbered over 50, Hitachi Zosen Robin Dockyard, Mitsubishi Singapore Heavy Industries together with Keppel, Sembawang and Jurong made up the Big Five. The industry's workforce of 18,000 constituted one-eighth of the total number in manufacturing.

The reasons for the ship repair industry's phenomenal growth in Singapore were:

- Singapore's geographical location along the great trade and tanker routes.
- Its deepwater sheltered port.
- Setting up of refineries in Singapore by oil majors like Shell in the 1960s.

Keppel, under the leadership of Mr Bogaars, Mr Chua Chor Teck and Mr Loh Wing Siew, led the industry.

A programme of expansion and diversification was launched in the 1970s. In 1973, it decided to build the $90 million dry dock in Tuas, Jurong. Commencing operations in 1977, the new yard settled down in 12 months and its early years were busy. Keppel foresaw that, as a single-dock yard, the workshops and other facilities at Tuas would be under-utilised and not be able to cover its high overheads fast enough. Phase Two of the plans therefore envisaged a second dock. The Raffles Dock, with the capability to handle ultra large crude carriers opened in 1982.

In 1971, Keppel bought 40% of **Far East Levingston Shipyard (FELS)** which dealt mainly with offshore work. In 1974, Mr Bogaars led a delegation to the

Philippines to promote investment in the ASEAN region. A yard in Batangas was proposed. By the time the dock was opened in 1978, Keppel Philippines Shipyard had already built several barges.

After FELS incurred heavy losses in 1978 and 1979, Keppel sent over Mr Loh Wing Siew to turn it around by restructuring the system and manpower. A costing system was started (since all projects had over-runs) and new managers trained. The company effected a transition, moving from being a "high-class sub-contractor" to looking at long-term prospects, by taking on turn-key projects instead of piecemeal work to create funds for investment in new facilities. By 1983, FELS was the main contributor to the company's turnover and profits. In 1986, it was the only rig-builder world-wide to secure a new rig-building contract, its offshore technology fast becoming among the best in the world.

In 1976, **Kepmount Shipping (Pte) Ltd** was established to run the growing number of vessels the group owned or managed. Keppel also acquired several companies in the marine-related industry. The company tapped the international market to finance its expansion and diversification. Bonds were issued in1975, 1976 and 1977 for a total of US$87 million. The Singapore government guaranteed the first two issues.

In 1978, financial services operating company **Shing Loong Credit Pte Ltd** was set up, virtually as a one-man show providing bridging finance to shipyard contractors. It helped many contractors to get out of the clutches of moneylenders. This laid the seeds of the banking and financial services arm of Keppel Corporation.

The 1970s thus epitomised a 'golden period' in Keppel Group's history. Its total revenue broke the half-billion dollar mark and pre-tax profits touched a record high. This success however, had not been easily won. The oil crisis caused by the Middle East war in 1973 led to a world-wide recession resulting in the cancellation of a number of orders. Cutting costs became critical. By end-1975, the Singapore shipyards were engaged in a price war and the smaller ones had to cut down on workdays and overtime. The larger yards were able to consolidate by tightening production, cutting waste and using workers efficiently. They also diversified by going for smaller vessels and conversion jobs. The shipyards were thus leaner and fitter when the cycle upturn came at the end of the decade. The first two years of the eighties recorded spectacular turnovers touching $2.4 billion in 1982.

Nevertheless, a taskforce was set up by the EDB to draw up a master plan for the consolidation of the marine industry to insulate it from the vagaries of the business cycle. It recommended fewer but larger shipyards, upgraded mechanisation and computerisation, higher productivity methods, development of marine engineering software skills and attracting more Singaporean workers to the yards (in the seventies, almost 20% of the workers in the ship repair industry were foreigners).

The 1980s (Recession, Restructuring, Diversification of Markets and Products)

A world-wide recession and shake-up in shipping began in 1981 and hit Singapore in 1982. Ship-repair jobs began to fall and the yards started slashing their prices. A disruption and price drop in the oil market further impacted lucrative contracts to install or repair crude oil washing and inert gas systems on large tankers. The five major yards started competing for smaller tankers and cargo vessels, pushing the smaller yards out of business and forcing withdrawal by some foreign companies from ship-repair work. Amidst fears of its turning into a sunset industry, Prime Minister Lee Kuan Yew rallied the industry, cautioning that it must upgrade technology, increase worker productivity and cut back capacity. Singapore had an aggregate dockyard capacity of 2.4 million dwt. The capacity cut amounted to 30%.

The 1985 contraction in the Singapore economy also had an impact, and the need to exercise wage restraint and CPF cuts was recognised. Wage costs had risen twice as fast as productivity in the previous five years.

The need to diversify the company became urgent. Mr Bogaars, the chairman in 1982, wanted non-marine activities to contribute 40% of the group's total earnings by 1990. He felt there were prospects in finance, manufacturing and property development. In 1983, Keppel bought 82% shareholding of **Straits Steamship Limited (SSL)**, paying $408 million in cash. The 93-year old company had strengths in property, traditional shipping services and oilfield engineering services that synergised with Keppel's activities. It also had interests in food, travel, computer services, industrial trading and branches in Australia. However, with the slump in ship-repair and property industries, the timing was unfortunate. Keppel was saddled with a huge debt and interest burden.

Change of Leadership

At this point, the leadership changed. Mr Sim Kee Boon replaced Mr Bogaars and was handed the task of turning the company around. He started reducing the debt burden by eliminating loss-making and non-strategic businesses. Some of the ships were sold off. To reduce the interest burden, a rights issue was launched in the US with an underwriting facility in Singapore. The efforts to seek business abroad while rationalising at home were intensified. Keppel and its subsidiaries started going into markets in China, India and the Middle-East. The workforce at the shipyard was cut down, operations streamlined and productivity increased. By 1986, the company had switched from losses to profits again.

Integrating the cultures of Keppel and SSL took a while. Keppel had an informal culture where the chain of command did not restrict fast and direct communication among managers. SSL had British traditions and was used to working in a hierarchical fashion replete with memos, written proposals, plans, forecasts and information systems. Mr Sim perpetuated an informal style accompanied by delegation of responsibilities and the empowerment of managers.

In the late 1980s, Keppel started developing its financial services, specialised offshore building and engineering businesses further.

The financial services division, which started out as Shing Loong Credit (Pte) Ltd in 1978, accounted for 21% of the group's pre-tax profits in 1992. Shing Loong's customers expanded from yard contractors to contractors from subsidiaries. It was only in 1983 that it received a licence from the Monetary Authority of Singapore (MAS). In 1983, Keppel bought over Malayan Motors and General Underwriters (MMGU), and a share in Asia Commercial Bank. By the late eighties, insurance, finance and stockbroking arms were built up. In 1990, Asia Commercial Bank was taken over, renamed **Keppel Bank** and listed in June 1993.

Meanwhile, the redevelopment programme at FELS started in 1984 continued under Mr Choo Chiau Beng as Managing Director. It also became one of the most advanced builders of harsh environment jack-up rigs (in 1986, it was one of only two companies world-wide which had built such rigs). The long-term, low-rental lease of the dock vacated by Mitsubishi enabled it to take on prestigious projects like the Conoco Platform and Petrobas 18.

Keppel's engineering division, developed in1976, built the Tuas yard, designed, built and installed the mechanical, electrical and steel works of the Temasek Dock in Phase One and Raffles Dock in Phase Two. During the slump, the group tried to retain rather than retrench the better engineers and foremen. It won several MRT contracts to build underground tunnels, installation of ticketing and signalling systems, the Changi Skytrain, etc. The Department of Engineering also started providing maintenance services to office buildings, cargo handling complexes, factories, industrial plants and airports. By the late eighties, it became an independent arm, Keppel Engineering. In 1992, all engineering subsidiaries came under Keppel Integrated Engineering (KIE) which was listed on the SES with a market cap of $400 million.

The 1990s (Expanding Abroad)

Following the restructuring exercise in 1991, Keppel shipyard won the National Productivity award for companies. After the merger of its two shipyard subsidiaries, the holding company, Singmarine Industries Limited was listed on SES and 10% of the shares were reserved for the group's 4000 employees (Keppel was the first major company to give priority share allocation to all levels of staff when Keppel Shipyard was floated in 1980).

SSL too turned around and by the early nineties had projects exceeding $2 billion at home and overseas. Its property portfolio included 3 new generation buildings: Keppel Towers, Ocean Towers and The Quadrant. Overseeing its restructuring had been Mr Lim Chee Onn, who became Managing Director in April 1984. There were contractual, legal, financial and business implications surrounding the restructuring of businesses that had a large geographical spread. The company was split in 1989 into the property and total transportation services, since both were capital-intensive. In 1992, the travel-related companies were merged. Engineering companies were put under KIE.

SSL's main mission was now to find a niche as a significant real estate player and to regionalise. It aimed to have a balanced portfolio between domestic and overseas projects and office, residential, retail and hotels/resorts.

The other arm, Steamers Marine Holdings Limited, sought opportunities in shipping, logistics, telecommunications and related businesses, including warehousing, distribution and telecommunications opportunities in the region.

The push to develop an external wing came from the Singapore government in 1992.

In 1992, overseas operations contributed one-sixth of the group's profits but the target was to increase this to 50%. The strategy was to look for good, like-minded, financially strong partners overseas but avoid greenfield or start-from-scratch projects and hostile take-overs. The focus however, remained on Asia on account of better understanding of business practices and cultures in the region.

Keppel had set up **Keppel Philippines** in the mid-1970s. It was listed in both the Manila and Makati exchanges in 1987. The funds raised were used to acquire Cebu Shipyard and Engineering Works, one of the largest and best-equipped shipyards in the Philippines. In 1992, it also bought over Philippines National Oil

Company Dockyard. This was merged with Keppel Philippines to form the largest shipyard in Philippines. A merchant bank was also acquired in Philippines.

Keppel also went to India and the Middle East in the late 1980s. It entered into a joint venture with Chokhani International Ltd in Madras to set up a ship-repair complex. A full-scale operation began in April 1990 and serviced mainly the Indian national line and coast guard. In the Middle East, Keppel acquired a 20% stake in a ship-repair yard in Ajman, UAE and was appointed its managing agent.

In Indo-China, SSL was the first to go to Vietnam to develop property projects in Ho Chi Minh City. This was soon followed by marine and engineering projects, which then tapped the group's synergy and contacts to grow the market.

Rewards and Difficulties of Diversification

The diversification and expansion had its rewards. When Singapore shipyards saw declining profits, Keppel Philippines Holdings continued to have higher revenues and profits. However, it was not smooth sailing for several reasons.

- Building yards in less developed countries like India and Philippines, with less skilled workers, no proper machinery, poor hygienic conditions and typhoons, was a tough proposition.
- The Singapore style of management could not be imposed in the same way outside Singapore. The workforce was not as disciplined.
- It was difficult finding Singaporean managers who were willing to relocate to other countries for several years at a stretch.

Moreover, the strategy of using one or the other of multiple businesses to gain entry into foreign markets and follow with other businesses led to mini-groupings within other countries which became unwieldy and difficult to manage. This led to a need to institute a matrix structure and dismantle the cobweb of cross-holdings.

Recent Developments (1999-2000)

Keppel Hitachi Zosen was formed in January 1999 following Keppel Shipyard's merger with Hitachi Zosen Singapore, one of the biggest yards in the region with a combined dock capacity of 1.3 million dwt (Keppel Corporation, 1999).

Keppel FELS and Keppel Integrated Engineering merged to form **Keppel FELS Energy & Infrastructure** in May 1999. Its 77% stake in Singapore Petroleum Company (SPC) enables it to use this as a platform to execute its integrated plan for the energy business.

Keppel and Tat Lee banking and financial services groups were merged in January 1999.

Keppel Tatlee Bank provides a wide range of products and services tailored to meet the needs of corporate, commercial and consumer banking customers. It has a network of 39 branches and 110 ATMS in Singapore. Its overseas network covers seven major cities in the region. It also entered into a strategic alliance with Ireland's largest bank Allied Irish Banks to enhance its financial resources, expertise and market presence in Singapore and the region. In April 1999, Keppel Insurance also completed the merger of its operations with Tat Lee Insurance.

Keppel Group shareholdings in **MobileOne** were consolidated under **Keppel T&T**.

DataOne, a subsidiary of Keppel T&T, received the licence to become an Internet Service Provider from the Infocomm Development Authority of Singapore (IDA).

Financial Performance

As the 1960s were favourable years for the ship-repair business, Keppel's turnover went from S$33 million in 1969 to S$44 million in 1970, jumping further to S$60 million in 1971. In its first year after the local management took over in 1972, Keppel achieved a turnover of S$75 million. In the 1970s boom, the company's total revenue broke the half-billion dollar mark and pre-tax profits touched a record high of

$104.3 million in 1980. At FELS, in 1981, turnover increased by 114% and pre-tax profits jumped from S$1.3 million to $42.7 million. By 1983, FELS was the main contributor to the company's turnover and profits. In the first two years of the 1980s, the company recorded spectacular turnovers touching $2.4 billion in 1982. A re-valuation exercise left Keppel with a $173.9 million loss in 1984. By 1986, the company had switched from losses to a profit of $7.3 million. In 1987, pre-tax profits jumped further 6 times to $45.8 million. By 1989, it had already developed its financial and property arms and crossed the $1 billion revenue mark. In 1991, its Value Added was $58,648 in 1990, 64% higher than the industry average and its labour cost-competitiveness was 15% higher than the sector's average. By 1992, overseas operations contributed one-sixth of the group's profits.

Keppel's fortunes have clearly witnessed some dramatic ups and downs. The comfort zone created by the boom in the seventies was shattered by the crisis in the eighties. It was able to tide over this on account of the strong backing of Temasek Holdings and the government behind it. The wave of listings that followed marked a significant turning point for Keppel. The listings brought in much-needed capital and debt was re-financed through equity-linked instruments, including convertible bonds. The rapid rise of share capital started eroding the return on equity (ROE) despite the continuous rise in pre-tax profits in the decade following 1986. Moreover, conservative attitudes of debt averseness and high gearing ratios on the part of top management resulted in a trend to finance acquisitions through share issues rather than cash payments.

This trend of declining ROE was further enforced by the change in the source of profits. The dominant contribution swung from marine to banking and property that were not 100% owned by the group as in the case of ship repair (the decline of ship-repair, in turn, was triggered by a combination of market factors. The ageing of vessels, fears of oil spills and appropriate rulings by maritime organisations, competition from Korea in the production of cheap tankers, rising labour costs in Singapore, trend towards scrapping rather than repair, etc, eroded the sustainability of profits in the ship repair business. Banking and property on the other hand took off well towards the 1990s). The result was that profits attributable to Keppel declined and ROE and EPS also became laggards. With the downturn and slowing down of growth in Asia, investors too became less forgiving in terms of financial criteria, and were moving to the US and European markets that were performing relatively better. Investors started questioning whether Keppel's investment portfolio contained any high-growth areas for the future.

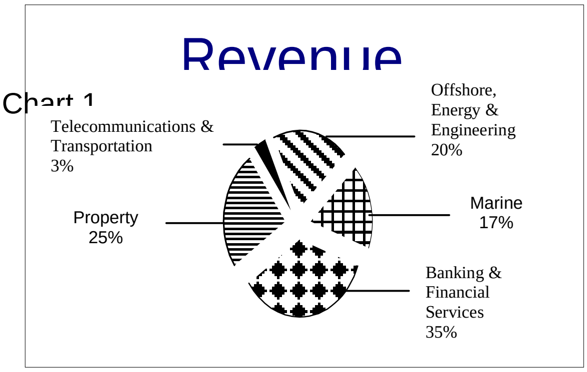
The 1997 crisis also affected the group's banking and property businesses. It incurred a loss of $145 million in 1998. In 1999 however, revenue and profit before extraordinary income reached an all-time high of $4093 and $220 million respectively. This reversal was the result of cost-cutting and other measures taken as part of the group-restructuring plan. The streamlining of the Group's units into 5 distinct core businesses was completed by end-1999, ahead of schedule (see Corporate Profile).

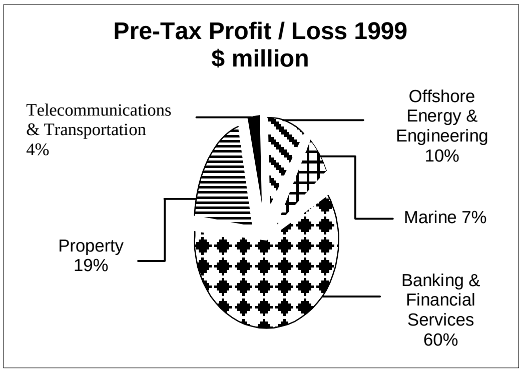
Table 1

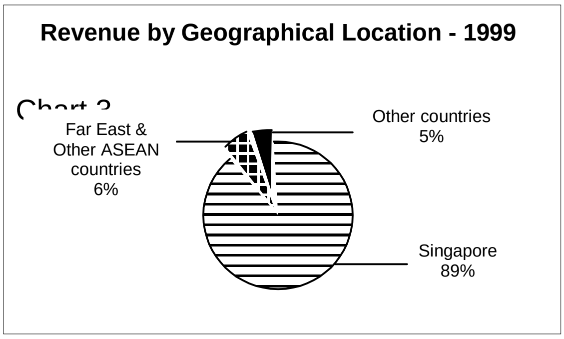
Keppel Group - Financial Data

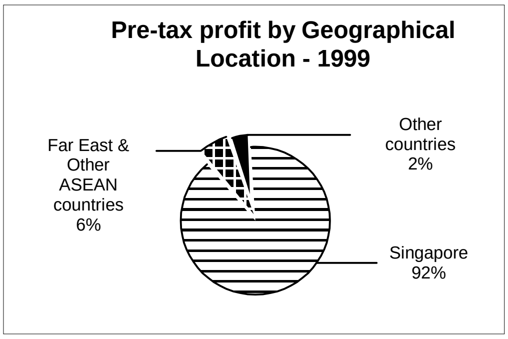
	1995	**1996**	**1997**	**1998**	**1999**
Revenue	2,404	2,886	3,448	3,528	4,093
Profit/(Loss) before taxation	445	506	414	-199	658
Total Assets	15,851	18,870	22,593	28,615	33,214
Return on shareholders fund (%) Total					
Before tax	9.1	7.8	5.9	-2.7	8.4
before extraordinary items	7.6	6.5	4.6	-3.8	6.4
Excluding Keppel Land Group					
before tax	13.5	10.6	6.2	3	9.7
before extraordinary items	11.4	9.4	5.3	2.1	7.6
Net gearing	0.19	0.6	0.5	0.57	0.62

The banking and services division was the largest contributor to the group's profits (60%) in 1999 and was the result of the successful merger of Keppel and Tat Lee banks in the midst of the Asian recovery. Its strategy is focussed on its niches in SME financing and upper-end consumer lending.









Record net profits of S$220 million were announced in 1999 and the interim results in 2000 indicated good prospects for the year. However, Keppel's share price continues to languish because the strategic view of Keppel in the market is that it is a holding company, rather than an operating company with a focussed core business.

Manpower Development/Culture and Management Style

Keppel's core has been made up of a close-knit management team that had worked together for many years starting out at the shipyard. As it grew, the problem of imbuing new teams with the Keppel spirit began to grow. Even for on-the-ground jobs, Singaporeans increasingly wanted to be technicians rather than tradesmen.

Therefore, Keppel has adopted an open door policy towards hiring foreigners both in the worker and managerial ranks.

The company's 1982 Annual Report emphasised the importance of recruiting, developing and retaining the best people. On average, it spent $1 million a year (4% of its payroll) on training. Since 1989, it has had a scholarship scheme for tertiary education as well. However, the emphasis was on combining academic achievements with hands-on experience.

With the starting up of new businesses, worker training has assumed a greater urgency and new initiatives are being explored to help its workforce negotiate the transition to a knowledge-based economy (KBE) including worker motivation and incentivisation. Currently, while bonus ratios are uniform across all employees, the executive stock option scheme tends to be linked to position rather than performance. A revised performance management system is being implemented to tie rewards more to performance.

Each company within the group developed its own culture. 'Top-down' methods of management tend to prevail in the marine business. The culture and style is changing gradually. The younger management is inclined to adopt a more collaborative attitude. In the new businesses envisaged, more flexibility in management style and remuneration packages is likely.

Table 2

Productivity Analysis

	1995	**1996**	**1997**	**1998**	**1999**
Value added per employee ($'000)	67	69	63	27	78
Value added per dollar					
Employment cost ($)	2.31	2.4	2.12	0.87	2.47
Value added per dollar sales ($)	0.37	0.34	0.26	0.11	0.3

B. Strategies to negotiate the transition to KBE

Mr Lim Chee Onn took over as Chairman of the group with effect from 1 January 2000. A brainstorming session involving the senior executives and heads of the strategic business units (SBUs) was held in the early part of 2000 to discuss new ways of doing business in the new economy. The group already has the pre-requisites like branding, a customer base (of over a million corporate customers and consumers), infrastructure and fulfilment capability. It was envisaged that adoption of new, cutting-edge technologies and e-business would help the company leverage these competencies and cross-sell. "To this end, we aim to transform the Keppel Group as a gateway to the New Economy and in the process become a leading eBusiness conglomerate" (Keppel Corporation, 1999, p.38).

Thus, the new strategies aim to:

- E-enable the existing businesses
- Launch new businesses within each core business
- Bundle-up the services across businesses on the internet

In general, each business of the group is striving to sharpen its competitive edge by adopting global best practices, achieving adequate size and leadership positions via strategic alliances, mergers and acquisitions where appropriate, and creating e-commerce capabilities to enhance operational effectiveness or as business propositions in their own right. All these initiatives are intended to benefit customers and shareholders.

- The SBUs of the Group have commenced eBusiness units to extend the core competencies in the traditional brick-and-mortar business, leveraging the existing infrastructure to build a portfolio of customer-focused eBusinesses.
- The Keppel Group Information Technology Steering Committee (KITS) helps SBUs integrate their Business Process Re-engineering (BPR) activities with e-commerce initiatives.
- A sub-committee was set up in 1999 to identify areas where Group companies could cross-sell and bundle their products and services via new delivery

channels such as the Internet and mobile telecommunications, capitalising on the in-house expertise of Keppel Communications, DataOne and external experts.

- Keppel Land, Keppel Tatlee Bank, Keppel Tatlee Finance, Keppel Securities and Keppel Insurance are developing a seamless Project Financing and Cash Management system for Keppel Harbour redevelopment.
- Keppel Securities and Keppel Tatlee Bank will provide an integrated system and on-line features to offer better value to their customers.
- Development of a seamless supply chain and an e-procurement and inventory management system is being explored.
- Keppel Land will bring “smart” facilities into its property developments. These include broadband access, e-community within individual developments, on-line purchasing services etc.
- KITS was set up initially (in 1996) to encourage the use of IT to enhance competitiveness. More Keppel companies are implementing different IT-related BPR initiatives and reaping the benefits from speedier delivery of products and savings at lower cost.
- KITS promoted EVA as a performance measurement for value creation in 1999 to facilitate SBUs’ focus on shareholders’ interests. Seminars and workshops were conducted to create awareness and understanding of the EVA concept among managers and executives and identify and manage the value drivers.
- A BPR competition was organised by Keppel Land in 1999 to achieve cost savings, reduced cycle time and improved revenue. Keppel Tatlee Bank conducted a company-wide BPR exercise to review processes in credit administration and other functions.
- Knowledge and experience-sharing exercises were conducted:
    1. Keppel Tatlee Bank and Keppel Hitachi Zosen gave presentations on how their respective mergers were carried out.

2. Keppel TatLee Bank shared the experience of developing its Internet Banking.
3. MobilOne presented its new Customer Relationship Management System.

- The group is training its people to be technology savvy to enable them to adapt and respond fast to changing market conditions with precision and sensibility.
- It engaged Hay Management Consultants to examine the re-structuring of its human resource practices aimed at building a pool of outstanding and self-motivated HQ staff by creating a culture based on innovation and strong corporate governance. This will include a review of the reward and performance evaluation system, recruitment, training and development programme and career planning.

The Keppel Group unveiled its move into e-business with the formation of several ventures, on 21 June 2000 (**The Business Times**, 2000, June 22):

- K1 e-Biz Holdings Pte Ltd with a paid-up capital of $25 million.
- Its subsidiary, Trade1Asia.com, an SME community e-Commerce portal.
- Its associate, the $500-million k1 Ventures Ltd, a venture capital investment company focussing on Internet and other technology investments.
- An alliance with US-based on-line provider ICG Commerce.

With these initiatives and the revamping of its management style, the group hopes to be able to attract fresh talent and effect a change in mindset and culture. While previously, only options in the listed companies of the group were available, now shares in the new companies will be given to employees.

What effect these will have on the group's share price remains to be seen. Meanwhile, the search for a new core business to turn Keppel from a cyclical to a growth company continues. The top management is looking for a core business that (**The Business Times**, 2000, August 8):

1. Offers scalability requiring the combined assets of Keppel Corporation for support.

2. Offers earnings growth that is higher than Keppel's current businesses.
3. Is executable with minimum disruption to existing businesses.
4. Has potential for maximum competitive advantage.

C. Excellence/Corporate Citizenship

- In 1999, Keppel Corporation, Keppel TatLee Finance and Keppel Logistics received the "**People Developer Standard**" certification.
- Keppel Logistics attained **SQC** status for its prowess in establishing a mission statement, core values, team building, process quality management and a customer-oriented focus.
- Keppel Insurance received the **Excellence in Education** award for 1998-99 from a prestigious American institution.
- The **Keppel Group Scholarship Scheme** was started a decade ago to recruit and groom academically promising students with leadership potential. A total of 95 scholarships have been awarded since the scheme began. Scholarships under other schemes are also awarded, e.g. the Singapore Corporate and Association of Singapore Marine Industries Scholarship Schemes. The Keppel Group Regional Scholarship Scheme, launched in 1997 to create regional and managerial talents, selects young and promising Filipino students to study at NUS. To date 13 Filipinos have been awarded the scholarship.
- The Group's cordial and harmonious relations with its workers' unions has helped it to implement cost-cutting measures, restructure and merge operations to improve competitiveness without hurdles.
- The Group ensures a safe and healthy environment for its staff and contract workers by maintaining excellent safety records. External consultants audit the yards' Safety Management Systems. Training sessions are conducted to spread safety awareness and commitment among staff. Keppel FELS

received a Certificate of Merit from the Ministry of Manpower for its safety track record.

Broadly, each business unit within the group has tended to judge itself against ROE targets or the respective industry benchmarks in the past. In recent years, an increasing focus on quality benchmarks, time-to-completion etc. (e.g. in ship-repair) and customer-orientation (e.g. in banking and financial services) is becoming evident. EVA measurement and EVA-linked bonuses have not received much attention till recently because of the view that business initiatives must be driven first, measurements come later.

Staff Welfare, Recreation and Community Service Efforts

Being a government-linked company (GLC) and part of the "Temasek community", Keppel Group's companies have been mindful of their social and physical impact on the environment.

- Programmes promoting arts, education, charities and the labour movement are supported. Charities supported include NTU fund, Breast Cancer Foundation, Kidney Dialysis Foundation., Singapore Lyric Opera etc.
- The staff of some companies visit welfare homes and organise sightseeing and shopping trips for the less fortunate.
- Associate company M1 was involved in bringing Cirque du Soleil to Singapore, sponsoring the M1 Classic, a tennis tournament and Camp Sunshine, a program for chronically ill children.
- The group has recently implemented the "second Saturday off" practice, increasing the number of hours worked on other days of the week commensurately. Besides a Family Day, the recreation clubs of the group's companies organise sporting and social events throughout the year for staff and their families. For example, in 1999, Keppel FELS organised a getaway cum charity visit to Batam, distributing provisions to the villagers and orphanage there.

- In 2000, the Group adopted two of the four schools under the Association for Persons with Special Needs (or APSN) under its staff volunteerism initiative.

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1.2 Singapore Airlines *(Case Study #2)*

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CORPORATE PROFILE

Over half a century in operation, Singapore's international carrier, Singapore Airlines (SIA) has become an innovative market leader in the airlines industry and a globally recognised brand name associated with product and service excellence. SIA and its subsidiary SilkAir's route network reaches out to 91 destinations in 40 countries, serving Asia, Europe, North America, the Middle East, the South West Pacific and Africa[2]. SilkAir serves 18 destinations in 8 countries. The entire SIA network, including code-sharing services with partner airlines and SilkAir, extends to 119 destinations in 41 countries[3]. Its operations have been enhanced through strategic bilateral alliances with Ansett Australia, Ansett International, Air New Zealand, Lufthansa, Scandinavian Airlines and United Airlines. After much deliberation, it joined the Star Alliance network as part of its globalisation strategy and commitment to offer customers even better services and benefits and integrated, "seamless" travel world-wide.

A. COMPANY HISTORY

SIA's roots can be traced back to Malayan Airways operating its first flight in May 1947. After Singapore's independence, it was renamed Malaysia-Singapore Airlines (MSA) with the governments of Singapore and Malaysia as joint shareholders. The modern-day version of SIA was born in 1972 with the split in MSA into separate airlines for each nation (http://www.singaporeair.com). Singapore's new national flag carrier had a modest fleet of 14 aircraft, a staff of 6000 and a route spanning 22 cities in 18 countries.

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[2] As at December 2000

[3] Ibid

Strategies

SIA's strategy and evolution were charted out by the dictates of the country's geography and history for both passenger and cargo traffic. Its vision and strategies have been largely guided and shaped by former Chairman, Mr JY Pillay, former Managing Director, Mr Lim Chin Beng and the current CEO, Dr Cheong Choong Kong.

International Routes

From the very outset, the absence of a domestic market for the airline on an island city-state meant that it had to survive on the long haul and international markets. This meant pitting itself against the best in regional and global markets where no protection could be expected. This in turn, meant that:

- Its equipment had to be excellent.
- Its service level had to be distinctive and a differentiating factor.
- It had to evolve a brand image.

New Aircraft Technology

Thus SIA placed a strong emphasis on equipment as part of its commitment to the safety and comfort of passengers by choosing airplanes best suited for its operations rather than a highly varied fleet. It also emphasised the fitting of the plane, quantified indicators of flight frequencies, critical mass frequencies, code-sharing agreements etc. It is the largest operator of Boeing 747-400s. It has one of the youngest fleets of any major airline, with an average age of 5 years 10 months[4]. Its young and modern fleet in turn translates into cost savings, on-time departures, lower maintenance costs, fuel savings, higher market profile and improved staff morale (Singapore Airlines, 1998).

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[4] Ibid

Branding and Marketing

Its marketing strategy has remained consistent over the years. It promoted its branding by spearheading a marketing and advertising campaign based on the icon of the "Singapore Girl" aimed at personifying SIA's tradition of friendly service and hospitality.

The "hub" concept was another pillar driving the marketing strategy. Since Singapore is situated in Southeast Asia en route between Europe and Australia/New Zealand, it made sense for SIA to:

- Make a niche for itself processing Europe and South West Pacific routes for passengers, fast and comfortably.
- Leverage on its business and ethnic ties with China, India and South East Asia by processing these routes.

As Singapore started to grow its external "wing", business ties determined the expansion of routes.

Automated Airport Facilities

While its conscious strategy was dictated by history and geography, the delivery of efficient and friendly services was linked to and supported by the government's pro-active policy in developing Changi Airport for fast and comfortable passenger and cargo traffic. Efficiency was enabled through faster clearance, short waiting time and its airport facilities.

Profit-Driven Free Aviation Trade

SIA has always been driven by the profit motive. It operates as a lean organisation avoiding excess and extravagance. It has consistently advocated freer airways.

These challenges in turn shaped **SIA's management philosophy** which has, over time, been refined to seven principles: competitive approach; core business focus; customer-oriented organisation; corporate culture that encourages flexibility and enterprise; creative product and service; communications excellence; and consistency in all areas.

Subsidiaries

As business grew, several stand-alone functions e.g. airport terminal services, engineering, etc were spun off the parent company as subsidiaries, stimulating them to develop not just as profit centres but investment centres as well, financing their own expansion. Autonomy helped to sharpen the focus on efficiency and productivity. SIA continued to be the principal customer but they could reach out to other airlines as well.

SIA's development was in fact a microcosm of Singapore's development. The Airline made changes to ride on the synergy of increasing regionalisation and investments overseas. In the 1960s and 1970s, the vision of Singapore was that of a trade base. In the 1980s, with the move towards developing Singapore as a services hub, the cargo strategy and modus of operating changed, witnessing a movement from bilateral to multilateral alliances.

Strategic Alliances & Acquisitions

Hitherto, many bilateral alliances existed and were seen as the only way to survive and forge market access to otherwise inaccessible domestic markets, e.g. alliances with United Airlines and Swissair. However, no specific structure guided these alliances. Moreover, there was a limitation on growing a hub. Other airlines and airports in the region were also growing and becoming competing hubs. It was realised that there was a need to expand by linking hubs or building other growth centres to create synergies that would have a spin-off in terms of revenue increase or cost savings through shared resources and other economies of scale. Alliances would enable partners to achieve the initial critical mass necessary for market penetration. Other growth centres could be targeted either by buying an equity stake in an established airline or setting up a new airline with a local partner in countries like China and India where the market potential was large and the local airlines not for sale.

Excellence Alliance

Delta, Swissair and Singapore Airlines joined hands to form a Global Excellence alliance in 1989 acquiring small equity stakes in one another. Thus, the alliance was not only multilateral but brought together a partner from each of the major geographical regions, i.e. Asia, Europe and America. The alliance was expected to help the partners expand beyond their market boundaries: Delta, a local US carrier, would be able to process international markets, and Swissair and SIA could serve more destinations in the US without losing their independence or right to develop their own markets.

Difficulties Experienced*:* The alliance came to an end in 1997. Its uneventful 8-9 year history revealed that the airlines' goals and priorities did not mesh. The frequency and timing of flights was not "in sync". While the alliance had provided some cost saving synergy through common procurement of equipment etc, shifts in marketing strategies and schedules to accommodate partners proved difficult and slow. Moreover, there was a limit to which fleet, configuration and customising of aircraft could be held to a common yardstick. Synergising the fleet profile was also inimical to competitive advantage and differentiation. Delta continued to be focused on its local market and developed routes according to its own geographical and historical links. Opportunities to grow and harness market strength therefore did not work out as expected.

Acquisitions

The acquisitions strategy also had a chequered innings. The Tata-SIA venture in India ran into problems with the Indian authorities and failed to take off. The move to set up with China Airlines in 1998 also ran into regulatory problems. China Airlines was on its own acquisitions trail and did not need the cash or expertise as it had its own alliances. In Indonesia, the tourist traffic was hit by the economic crisis in the late 1990s. More recently, in March and August 2000, SIA has been successful in acquiring a 49% stake in Virgin Atlantic and 25% of Air New Zealand (and thereby Ansett Holdings of Australia).

The deals with Virgin and Air New Zealand were successful because:

1. They rode on the complementary rather than overlapping networks between Europe-Singapore-Australia/New Zealand. SIA's network stopped at the UK. Virgin serviced the UK-US network. Air New Zealand and Ansett serviced the Australasian network.
2. Their images and focus on passenger safety and comfort were in sync with SIA's. Both are well-run airlines with good service and marketing strategies.
3. The UK, Transatlantic and Australian markets are huge and offer a very large potential for networking partnerships.

Star Alliance is driven by the top management (CEOs) of the respective member airlines with a view to go beyond mere co-ordination of passages to create new synergies, products, markets, and levels of service and organisation. The Alliance also offers greater efficiencies for airlines, which will translate into customer benefits eventually. These include interfacing reservations and check-in systems, "through" check-in, frequent flyer programmes, lounge access for premium customers, code-sharing joint product development programmes, promotions and marketing, customer servicing, information technology and cargo operations (Singapore Airlines, October 15, 1999).

Thus the Alliance aims to differentiate its products from those of other alliances and at the same time, to let individual airlines maintain their individual identities and project the alliance as a combination of these individual strengths. The objective is thus to create a common product service across the alliance members through standardised hardware and a common IT platform, but to let levels of service differ, maintaining individual differentiation between the airlines. It operates like a "buffet" allowing individual members to choose and adapt features and practices (e.g.

management of assets through hedging, supply chain management through sub-contracting and outsourcing, decentralisation of operations, marketing strategies, etc) from Alliance partners that can add value to their own operation. This sharing of ideas and expertise "software" will serve to give the knowledge-based cutting edge to all alliance partners, including SIA. Moreover, with the inclusion of code-share services with alliance partners, SIA's network expanded to 119 cities in 41 countries.

Table 3
Financial Performance and Other Indicators

1999-2000 ($ million)	SIA Group	SIA Company
Total revenue	8,899.40	8202.2
Profit before tax	1,463.90	1641.5
Shareholders' funds	10,957.50	
Return on average shareholders' funds (%)	10.1	
Total Assets	16,451.30	
Value Added	4,542.40	3981

Source: SIA Annual Report 1999/2000

SIA's consistent strategies and policies have contributed well to its financial performance. It has been consistently profitable in each year of its operation. Having well-diversified markets has helped. It was able to ride through the Asian crisis that erupted in 1997, on the strength of the European, Australian/New Zealand traffic.

By the year ended 31 March 2000, the company's revenue grew to $8202 million. Group profits before tax were $1464 million. Shareholders funds decreased 10.1% to $10,958 million on account of share buyback at a cost of $510 million and goodwill of $1589 million arising from investment in Virgin Atlantic Limited written off against shareholders' distributable reserves. The Group's total assets stood at

$16,451 million. Total Value Added (VA) of the Group increased to $4542 million. Staff productivity, measured by changes in capacity produced, loads carried, revenue earned and VA per employee, improved 15.8% over the previous year (company figures). The VA per employee was $165,100. The group's revenue was $8899 million. The Airlines' revenue consisted of $5957 million from passenger traffic and $1,909 million from cargo (Singapore Airlines, 2000).

There is some concern that the return on shareholders funds has, in its recent financial history, flattened out to 8-10% from the earlier "highs" of 25-28%. The narrowing profit margins are due to the strong Singapore dollar, which depressed foreign currency earnings and raised the costs of doing business in Singapore. With increasing deregulation came increasing competition from other developing "hubs". Even with steady profits, with rising investments and shareholder funds, the rate of return may continue to decline.

(Note: SIA is developing the use of EVA, in consultation with Stern Stewart & Company (USA) as an internal benchmark for management use. SIA does not use measures of Intellectual Capital but pragmatically works towards it through its emphasis on training its workforce)

Chart 5

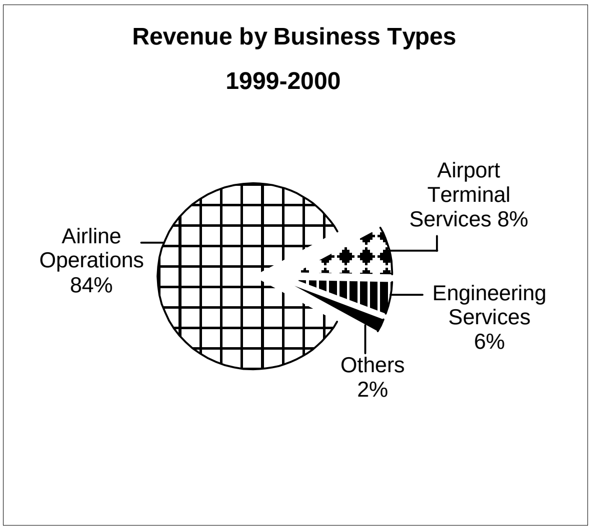
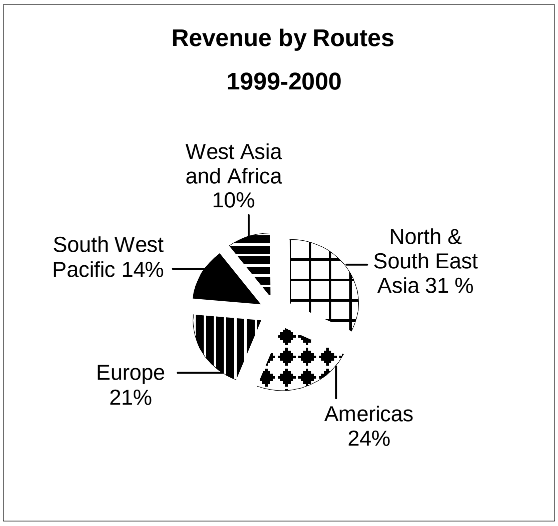


Chart 6



Note: The figures in the Chart 5 on "Revenue by Business Types" does not take into consideration the Inter-Company Transactions.

Privatisation through Listings

After the announcement of the privatisation policy in the mid-80s, the first major divestment was that of SIA (Sikorski, 1989). The two differences between this privatisation and other public issues of shares by state-owned enterprises in Singapore lay in the size and scale of the flotation and the fact that part of the issue was covered by Temasek Holdings, thereby proving actual government divestiture. SIA was listed on the Stock Exchange of Singapore in December 1985. Temasek Holdings had its proportional ownership in SIA reduced to 63%. In March 1987, the Public Sector Divestment Committee recommended that the government's shareholding be further reduced to 30%.

The immediate effect of privatisation on SIA was the increase in its market value and share price and the publication of a prospectus containing hitherto undisclosed information. None of SIA's share issues to Temasek suggested any government subsidy. In fact a study of debt/equity ratios revealed "stickiness" in SIA's ability to raise equity capital from the government.

SIA soon went on to become the local exchange's premier blue-chip stock. The partial divesting of subsidiaries like SIA Engineering Company was geared towards providing more focus to these organisations' operations. In 1998/99, Temasek Holdings held a 53.8% stake in the airline.

The Company's subsidiaries, Singapore Airport Terminal Services (SATS) and SIA Engineering Company (SIAEC), each launched an IPO in May 2000 on the Singapore Exchange. This will provide them greater autonomy to grow their businesses.

A. KBE Initiatives

R&D, Innovation and Use of Technology

SIA, being primarily a service-based organisation, its R&D and innovation effort too has a strong customer focus based on passenger comfort, convenience and choice in both hardware and software. It is concerned with shortening check-in time, improvements in catering and cuisine, new selection of experiences on-board etc. In the early years, R&D efforts were decentralised. A centralised department that co-ordinates and drives R&D from the engineering and marketing aspect has now been set up. Innovation is driven by competitors' activities as well as by looking outside the industry for ideas.

SIA has been accredited with several industry-leading innovations. It was the first to:

- offer free headsets, a choice of meals and free drinks in Economy Class in the 1970s.
- fly non-stop from London to Singapore in 1984.
- set up satellite-based inflight telephones in 1991.
- introduce Krisworld, a state-of-the-art inflight entertainment and communications system across all three classes.
- form its International Culinary Panel and World Gourmet Cuisine.

SIA continues to leverage on technology as a strategic tool to improve customer service in several ways:

1. **Corporate website:** SIA's website provides comprehensive information on flight schedules, inflight services, cargo services and corporate information in a customer-friendly format. KrisFlyer members will be able to make redemption bookings online.
2. **Online booking:** SQ-eTravel is SIA's Internet reservations and ticketing facility introduced on July 1999. Customers can not only check flight availability and fares, and book tickets for destinations in Asia, Europe and Australia, but First and Raffles Class customers can even select preferred seats subject to

availability. A range of ticketing options from electronic ticketing, mail ticketing, self-collection or collection from the airport is now available. The features and destinations covered by the online facility are being constantly improved. Several similar facilities are also available through the Star Alliance website.

3. **WAP technology:** SIA was among the industry leaders in the introduction of Wireless Applications Protocol (WAP) introduced in July 2000, giving customers access to SIA information and services at their fingertips.
4. **Software enhancements in traditional channels:** These will enable Priority Passengers to make seat and meal requests quickly, and a "Book the Cook" service for First and Raffles Class customers is being made available. Convenient options for access to the Internet and other corporate services in SIA's Silver Kris Lounges are being explored.
5. **Use of radio frequency:** SIA is exploring the use of radio frequency and related technologies to provide a hassle-free experience and higher level of baggage service at airports.

Human Resource Development Policies

The SIA Group is Singapore's largest private-sector employer. Manpower costs account for about 17% of SIA's Total Expenditure. It is committed to developing the potential of its 27,000 plus workforce and currently spends more than $100 million annually on training. Training costs amounted to 14% of its payroll in 1996-97 compared to the national target of 4% (Singapore Airlines, 1998, p.20). In 1998-99 the group spent almost $4300 per employee on training, well above Singapore's national average of $300 per worker (Singapore Airlines, April 1, 2000).

SIA's commitment to its workforce is based on the premise that service excellence can only be delivered by highly–trained and motivated people. Constant training and re-training has been a strategic aspect of its success long before it became recognised as a pre-requisite for a successful transition to the KBE. It helped staff to adapt quickly to new ideas and changing customer needs. Training at SIA was always viewed as an investment rather than a cost, and is systematic and structured.

SIA recruits both specialists as well as generalists in various departments. Staff with management potential are identified through the Shell Staff Appraisal System. Every SIA employee has a training plan prepared each year by his or her department head. The Core Management Program is compulsory. Complementary programs are benchmarked at each phase of the employee's career based on job responsibilities. Even specialists can request a move to a generalist area after seven years in a department. Creativity is encouraged through the Staff-Ideas-in-Action Scheme and in-house publications. Job rotation and early empowerment foster innovation in management.

The $80 million SIA Training Centre, opened in 1993, is its training hub with various training programmes for management, cabin crew, flight crew, commercial training, computer training, and even a continuing education scheme. The Singapore Flying College trains cadet pilots.

Staff Compensation and Incentives

SIA has been conscious of paying competitive salaries. Packages for non-managerial staff are collectively negotiated through unions. Additional staff benefits include travel privileges, bonus payments, stock options and loyalty awards to long-serving employees, and access to a multi-million dollar sports complex. The formula for bonus payments is standardised for all employees, underscoring the need for team spirit to boost overall company performance, while stock options reward individual performance based on rank and degree of responsibility. Since the inception of stock options in 1975, the SIA staff's stake in the company is about 20% of its issued share capital (Singapore Airlines, 1998, p.13).

The SIA Employee Share Option Plan was approved by shareholders in March 2000 (Singapore Airlines, 2000). It comprises the Senior Executive Option

Scheme for senior executives and the Employee Share Option Scheme for all other employees. It covers all employees of SIA and its wholly owned subsidiaries except SATS and SIAEC, which have their own respective share option plans.

Loyalty awards were awarded to employees who had completed 15 years of service. With the increasing number of such employees, the number of years of service required to win the award was increased to 25 years. The company staff turnover for FY99/00 was 6.59%.

Organisational Structure and Culture

SIA's organisational structure has not changed substantially over time but promotions are moving faster in recent years and project-based work involving cross-departmental teams has increased. New departments for product innovation such as 'IT for commercial use' have been set up.

The Chairman, Deputy Chairman (Chief Executive Officer) and the Executive Vice-Presidents comprise the top management that sets the vision and direction. However there are no binding hard and fast rules governing lines of communication, allocation of duties and authority. Formal committees are kept to a minimum. The management style is democratic rather than authoritarian. The reporting lines are well defined but devolution of responsibility and empowerment to lower levels is encouraged. SIA's management systems and training empower even low-level managers to take independent decisions. Regular corporate-wide meetings and briefings, corporate newsletters and circulars promote information and knowledge sharing.

C. Excellence/Corporate Citizenship

Long before the formal propagation of business excellence in the form of the Singapore Quality Award (SQA) / Singapore Quality Class (SQC) framework, SIA's management approach represented a refreshing manifestation of Total Quality Management (TQM), one of the foundations of the SQA framework.

- The SIA "model" of excellence did not conform to any single model as such but drew features and building blocks from several sources as it developed, e.g. Balanced Scorecard, Six-Sigma, TQM, and benchmarking against best practices in the airlines industry world-wide.
- Regulatory requirements such as ISO 9000 and ISO 14000 for environmental management are adhered to.
- Quality control is decentralised.
- Benchmarking is also award-based, e.g. based on the various criteria for travel/airline industry awards. The passenger experience is broken down into different areas, each area sub-divided into levels of experience and these, benchmarked against customer surveys and industry practice.

Wide accessibility of information and technology coupled with globalisation make it difficult to build competitive advantage based on product know-how or achieve significant product differentiation. SIA gained by embracing the concept of service quality as its corporate creed and success formula over 20 years ago. During 1989-90 when commercial aviation was going through one of the most difficult periods in its history, SIA remained at the top of the airline business ranking in terms of profitability. Its dedication to service quality and excellence has been the major factor in its successful business performance.

SIA's TQM system works at achieving global service quality through total customer satisfaction by constantly trying to address the customer's explicit and implicit needs and even delivering service "beyond expectations". The basic elements of the system are:

1. systems planning, design, implementation and control
2. organisational behaviour and culture

SIA's Key Principles of TQM (Chang, Yeong and Loh, 1996)

1. Commitment to Customers: Customer focus is the driver and passengers the raison d'etre of the business. Examples of SIA's "Customer First" approach are:
   - Passenger Opinion Surveys are conducted regularly to monitor the quality of services offered including those of SIA's inflight service, food and beverages, inflight entertainment, aircraft interior, airport operations, reservations and ticket operations etc.
   - Service and Performance Index: The survey results are analysed and distributed to key personnel on a quarterly basis. Areas showing a drop in ratings are addressed by follow-up action and areas requiring further investment are identified.
   - The ratio of compliments to complaints is tracked overtime to monitor trends.
   - The market research department conducts focus group studies to predict future customer requirements.
   - The concept of prioritising internal customers helps to establish a total customer service system, whereby all service operations are connected to form a service chain.
2. Commitment to Quality: Quality is used as a strategic weapon by providing that little extra in service that helps to establish market niche, and is delivered in an openly competitive environment without protectionist measures and over-regulation. In all key operational areas, SIA has established a set of service indicators. Through service indicators, problems and failures to meet service standards are identified and solutions implemented, e.g. SATS tracks the flight delay rate, baggage mishandling rate, cargo mishandling rate, average passenger check-in time, baggage presentation time, cargo delivery time, ground support equipment maintenance and servicing rate, etc.

3. Total Involvement: The management philosophy dictates that every employee be totally involved with the delivery of service quality. A decentralised organisational structure takes decision-making autonomy to the lowest possible level. A judicious division into subsidiaries and associated companies brings sharper focus on quality and customer services. The practice of job rotation creates well-rounded employees, minimises sectional interests, promotes a flexible outlook and encourages an innovative mindset. Continuing education and training throughout an employee's career provides motivation along with rewards and recognition. SIA conducts regular reviews to ensure that its salaries are market-competitive, and has a profit-sharing scheme.

Awards

SIA's standards of customer service and operating performance have been consistently recognised through major international awards. It regularly receives accolades from more than 30 international organisations or publications involved in travel, tourism and business. Over 100 such individual honours have been added to SIA's collection.

Community Contributions

A significant contributor to the national economy in terms of revenue, expenditure, foreign exchange earnings and capital formation, Singapore's largest private sector employer and an ambassador of Singapore around the world, SIA takes its role as a leading corporate citizen very seriously. It has played an active role in the communities it serves, in Singapore and abroad, through sponsoring of the arts, sports, educational initiatives and programmes for the needy ranging from handicapped children to senior citizens.

A speech by Mr JY Pillay provides some insight into SIA management's attitude towards corporate donations.

Excerpts of Speech by Mr JY Pillay on 25 March 1978:

"There appears to be some misunderstanding in Singapore on the role of corporate philanthropy. A general belief prevails that any corporation, particularly if it is large and does not lose too much money, is a cornucopia of funds for any and every good cause, and some not-so-good ones as well….corporations by and large do not share the same views..."

"The great philanthropic organisations in the West, particularly America, carry household names like Ford, Mellon, Carnegie, Nuffield. But these great charities were set up not with corporate funds but with individual fortunes, albeit those fortunes were generated by commercial enterprise…"

"The crucial point is that if there is to be a disinterested contribution to charity, it must come from the owners of capital, not those who manage capital….we are only in fiduciary position for our shareholders' funds and we can make charitable donations only if there is a strong commercial or corporate purpose…"

"If the standard of business ethics is to be raised in this country, we should not get private benefit mixed up with corporate or institutional benefit."

The Needy

Since the early 1980s, SIA has been an annual contributor to the Community Chest of Singapore. Singapore's National Kidney Foundation, The Singapore Cancer Society, The National Council of Social Service and the Movement for the Intellectually Disabled of Singapore, have all been beneficiaries of SIA.

Education

In 1998, SIA made an annual contribution to the National University of Singapore Overseas Intensive Language Programme and has sponsored the SIA-JC (Junior College) debate series on Premiere 12 television. It has also made substantial donations to various established fellowships and professorships. It also supports the Young Enterprise Scheme (secondary school students from New Zealand win trips to Singapore) and visits by underprivileged children from Indonesia.

Arts

SIA contributed $15 million to the LaSalle-SIA College of the Arts to create a major regional centre for fine art, music, drama and design in Singapore, the largest sum invested in a non-profit motivated venture by SIA. It is also a regular sponsor of local arts groups and events such as the Singapore Symphony Orchestra, Singapore Festival of the Arts, Singapore Dance Theatre and the Singapore Lyric Opera. It has helped to bring many top performers to the Singapore stage, including world-class performances by the Washington Ballet, the Paris Opera Ballet, and the San Francisco Ballet. Under the SIA-NAC [National Arts Council] Travel Grant Scheme, SIA provides free and rebated tickets for young local performers to travel for overseas education or performances.

Sports

SIA offers rebated tickets annually for national sports contingents travelling abroad and promotes Singapore's image as a world-class cultural and sporting event city by sponsoring special events, e.g. SIA International Cup in March 2000.

National Events

SIA is a regular sponsor of National Day Parade activities. It also backed Singapore's first attempt to scale Mount Everest in 1999 and the Antarctica 2000 expedition.

Awards

SIA was named "Outstanding Corporate Citizen" for its contribution to social development by the Singapore Council of Social Services. It has won the

'Distinguished Patron of the Arts' award several times. It has also received the SHARE Programme Platinum award from the Community Chest of Singapore.

Environment

SIA's concern for the environment is reflected in various SIA operations (**Singapore Airlines Limited**, 1997)

- Its ultra-modern fleet policy is geared not only towards passenger comfort and reliability but also towards lowering fuel consumption and reducing carbon dioxide emissions and noise levels.
- It has committed itself to sound environmental practices through the adoption of ISO 14001 standards for Environmental Management Systems.
- The use of chlorofluorocarbons is being phased out and recycling operations are in place.
- The new SATs Inflight Catering Centre is equipped with special water-free waste disposal facilities.
- Substances such as waste oil, scrap materials and paper are recycled.
- SIA engineers use the latest techniques to reduce air-pollutants and waste during maintenance work.
- All new SIA buildings are designed for energy efficiency and resource conservation.
- Almost all of SIA's flights today are no-smoking flights. This earned SIA a prestigious World Health Organisation (WHO) medal in 1995.

Table 4

Comparative Ranking among Top 25 International Airlines

	SIA	Total World Traffic	SIA's Ranking
In Revenue Passenger Kilometres (RPKs) (000,000)	64,529.00	2,834,703	11th
In Operating Revenue (US$ '000)	4,773,680.00		17th
In Operating Profit (US$ '000)	475,727.00		9th
In Net Profit (US$ '000)	737,452.00		4th
In Freight Tonne Kilometres (FTKs) ('000)	5,481,708	124,065,236	5th
Passengers ('000)	-	1,581,814	Not in top 25
No. of Employees	-	2,156,620	Not in top 25
Fleet Size	-	15,901	Not in top 25

Source: ***ATW's World Airline Report,*** **July 2000**
based on latest available annual reports of each airline.

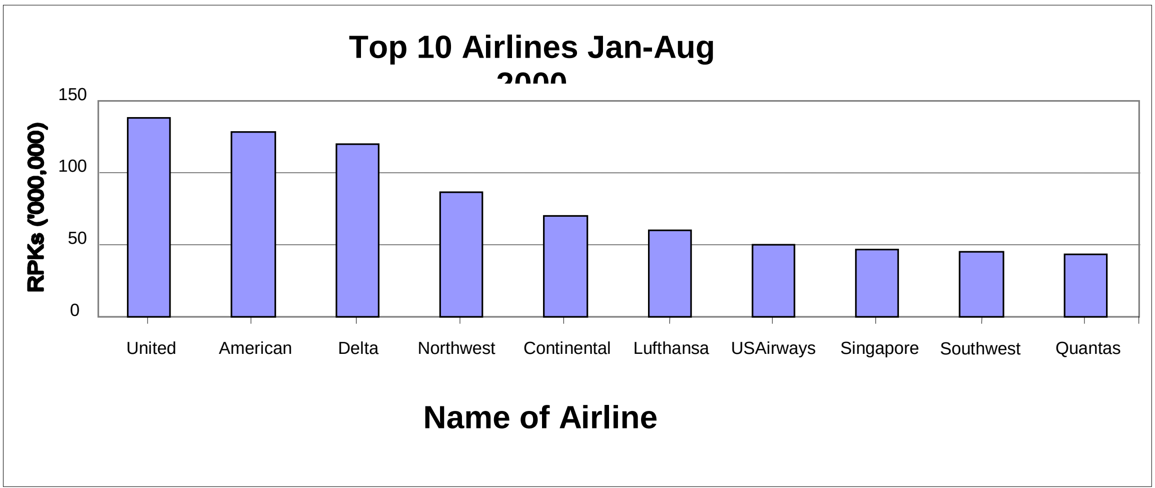
Table 5

Share of World Traffic

	SIA	Total World Traffic	SIA's share (%)
In RPKs (000,000)	64,529	2,834,703	2.28%
In FTKs ('000)	5,481,708	124,065,236	4.42%

Source: ***ATW's World Airline Report,*** **July 2000.**

Despite being one of the most admired airlines, according to the **World Airline Report** (July 2000) published by Air Transport World (ATW), SIA was the fifth largest airline in term of cargo carried, and the eleventh largest passenger carrying airline (the estimates from January to August 2000 show an improvement in its ranking to eighth position). Globally, just 17 airlines, mostly American carriers, account for about three quarters of all passenger capacity (Granitsas, 2000, p.60). America's large domestic aviation market alone accounts for 40% of the world's available seat miles, Europe and Asia accounting for 20% each. Airlines catering to large domestic markets are in an advantageous position because domestic aviation is driven by market demand while cross-border aviation is subject to international aviation law, and most countries cap foreign ownership of local carriers.



.**Source:** ***Air Transport World*****, December 2000 issue**

Outlook and Challenges for the Future

- SIA will continue to grow, not at the heady rates of 30% per annum experienced in the early years but more moderate rates of 5-10% (Singapore Airlines, 1998).
- Protectionism practised by other countries, in the form of denied access to a destination, restricted capacity or special fares that can only be sold by a national airline, may continue to pose a problem.
- SIA will have to work smarter, raise productivity through automation, reducing the need to employ large numbers of staff.

- Increasingly, work may be outsourced to cheap labour countries as has been done with revenue accounting in Beijing, software development in Madras and aircraft maintenance in Xiamen.
- Airline-related joint ventures overseas where the costs are lower and growth rates higher (starting from a lower base) may translate into higher returns.
- SIA's bilateral alliances and Star Alliance offer a large potential for the expansion of its route network and flight frequencies. SATS has been active in setting up joint ventures to operate kitchens and airport handling companies in China, Japan, Taiwan, Hong Kong, Macau, Vietnam, the Maldives, India and Pakistan. SIAEC too has joint-venture businesses in Hong Kong, China and Taiwan. These will continue to grow.
- The cargo division, which contributes 23% of total revenue, will be corporatised in April 2001. No listing plans have been announced as yet. SIA, Lufthansa and SAS have entered into partnership to form the world's first global airline cargo alliance.
- The Tata-SIA bid for a 40% stake in Air-India in 2000 has rekindled hopes that the alliance may yet bear fruit.
- SIA is reviewing the possibility of bidding for a 10% stake of Thai Airways in conjunction with Lufthansa in 2001 (**The Straits Times**, December 16, 2000).

Thus, while the Singapore hub remains an important element of SIA's operations, it is the contribution from alliances and businesses based overseas that is expected to increase. Most significantly, SIA's pro-active investment in continuously training its manpower, its single-minded customer focus and the emphasis on a culture of encouraging quality and innovation will continue to serve it well.

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1.3 Singapore Technologies *(Case Study #3)*

(Based on an interview with Mrs. Kuan Kwee Jee, Director, Strategic Relations, Singapore Technologies, Mr Lau Kee Siong, Director, ST College, and sources cited in the References)

Corporate Profile

Singapore Technologies (ST) is a leading technology-based multinational conglomerate headquartered in Singapore. It employs over 35,000 people world-wide in over 200 wholly or partially owned subsidiaries and is associated with another 100 companies. It is involved in several strategic business areas spanning R&D, design and engineering and precision high value-added manufacturing and services spread across five core competencies: engineering, technology, infrastructure and logistics, property and financial services (http://www.st.com.sg).

A. Company History (Singapore Technologies, 1997)

Early Development in Defence-Related Businesses

ST had its beginnings in the pioneering **Chartered Industries of Singapore** (CIS), started in 1967 as a munitions maker to serve newly independent Singapore's defence equipment needs. Its first factory, in the swamplands of Jurong was a modest ammunition plant for 5.56 calibre rounds.

In 1968, **Singapore Shipbuilding and Engineering** (SSE, now called ST Shipbuilding) was formed to provide indigenous capability to build and repair naval vessels. The Singapore Mint production plant was established as a division of CIS.

In 1969, **Singapore Electronic and Engineering** (SEEL, now ST E&E) was formed to take over the buildings and equipment and commercialise the operations of the former weapons and electronic workshops of the British Naval Base. In 1971, **Singapore Automative Engineering** (SAE, later known as ST Auto) was started to maintain Singapore Armed Forces vehicles and tanks.

The year 1973 saw the formation of the following:

- **Ordnance Development & Engineering** (precision engineering and production of medium calibre weapons)
- **Allied Ordnance of Singapore** (marketing and manufacture of Bofors 40mm and 57mm guns)
- **Singapore Food Industries** (to supply food to SAF)
- **SAF Enterprises** or SAFE

Unicorn International was established in 1978 with the mission of selling Singapore's defence industry's name abroad. It took on after-sales support and sourcing of materials besides playing the role of agent for foreign suppliers dealing with Mindef (Ministry of Defence).

A Character and Culture Rooted in Technology

ST began as a defence-related entity in its first decade but grew to become a broad-based industrial group by its third decade. By 1996, defence constituted only 20% of ST's total turnover and its share has declined further since then. This defence connection however, shaped its basic character in several ways:

- The capital-intensive and knowledge-based nature of defence industries provided the basis for ST's technology focus.
- Having had to start from scratch, ST became accustomed to a culture of creation of new industries rather than extending existing capacities.
- Being linked to a larger purpose (i.e. the safety of people) coloured its initial thinking and evolution as well.

Profit-Driven Commercial Operation

Two crucial decisions by the government further established its character:

- The defence industries were established as commercial operations and not as ordnance departments within Mindef.

- They were expected to make profits, i.e. they were given the same treatment as other state-owned enterprises in Singapore.

This helped to keep defence costs within bounds. It made the learning curve short and steep. It also ensured that the defence companies sought other uses for their technology and production capacity, leveraged their skills to enter new industries and businesses in complex high-tech areas and nurtured the acquisition of knowledge and technological skills.

Technology Transfer and Quality Control

Twelve core defence industries were formed between 1967 and 1980. The CIS adopted the principle that every licensed contract must include technology transfer and appropriate training packages with a strong emphasis on quality control. All operations were to be technology driven and all products were to be of uncompromising quality.

From Sub-Contracting of Parts to Assembly to Indigenous Design and Production Capability

CIS spent the early years licence-manufacturing and sub-contracting for foreign ordnance manufacturers. It moved from 5.56 mm cartridges to120mm mortar bombs, production and assembly of fuses, M-16 rifles and grenade launchers. Gradually, the proportion of sub-assemblies increased with the objective of moving towards indigenous design and production capability. CIS was liberal with R&D funds. The development of the Ultimax 100 Section Assault Weapon brought CIS into the world-class league in the arms industry and customers began to take notice. By the mid-80s, CIS was a star performer and its earnings provided the seed capital for the diversification and expansion of the group (all defence industries were consolidated under the Sheng Li Group in 1974).

A Visionary Leadership

Dr Goh Keng Swee provided the early vision. An important turning point in the evolution of the CIS was the leadership of Philip Yeo who became its Executive Chairman in 1979 (he became Chairman of the Executive Committee of Sheng-Li Holdings in 1987 and remained ExCo Chairman till 1992). He is credited with putting the drive to commercialise and re-engineer the group into high gear.

Stages in Diversification

There were 3 (overlapping) stages in ST's diversification as it moved beyond its "comfort zones".

1. From the late 1970s onward, ST went into areas which were commercial and industrial activities that extended the core of the defence-related competencies. The service components of defence industries were spun off into stand-alone companies.
2. From the early 1980s, ST expanded into new technology areas like IT and semiconductors, broadening its base to nurture and develop businesses in emerging technologies.
3. Its regionalisation and globalisation phase started in 1986.

1. Expanding Share of Non-Defence Business

From the start, the shipyard's future was tied equally to civilian clients. It built naval and paramilitary craft for Singapore and foreign clients and various commercial vessels including liquefied petroleum tankers, container vessels, passenger ferries and yachts. In 1996, only 45% of ST Shipbuilding's revenue came from military contracts. The rest was from commercial jobs, ranging from the conversion of seismic vessels and refurbishing luxury yachts, to designing and installing fire-fighting systems on supply ships and repairing chemical tankers and dredges.

Following restructuring and rationalisation, the **Singapore Technologies Industrial Corporation** (STIC) was formed in April 1989 to group together the non-defence-related businesses of Sheng-Li. The latter was officially renamed **Singapore Technologies Holdings** in 1990.

The group's non-defence work then ranged from making roast meat, building industrial parks, retailing consumer goods and providing financial services.

Commercialisation and diversification were the only ways to lower costs and retain skills vital to maintain the competitiveness and efficiency of the defence industries and buffer the uncertainties of defence sales.

ST Aero, the group's aerospace arm (started in 1975) set up **SASCO**. A local commercial aircraft maintenance subsidiary (in collaboration with SIA and Japan Air Lines) ventured overseas to set up **ST Mobile Aerospace Engineering** in Alabama, USA, which carried out heavy maintenance work and converted passenger planes into freighters.

In the 1990's, most of ST Aero's profit and sales growth stemmed from its work on commercial aircraft. In 1996, while turnover in its commercial sector increased by 24%, its military sector only managed a marginal growth of 2%.

ST E&E also became a highly diverse electronic systems integration business. It won the contract to install Singapore's Mass Rapid Transit System's supervisory control and communications system. It also built automation projects for Raffles City, Changi International Airport Terminal One, and Singapore General Hospital among others. In the mid-80's, it began to develop and manufacture key components of the systems adding value and deepening the company's engineering focus and capabilities, and providing a huge export potential. ST E&E's wide range of products and services now include intelligent monitoring and control systems (QMACS), integrated digital electronic switches (INDEX), configurable operator consoles (CONOCO) for military and paramilitary command and control applications, automatic carpark management systems (AUTUPARC) and computerised toll management systems (AUTOLL). Its overseas markets include China, Taiwan, Hong Kong, Malaysia and Thailand.

Instances of Some Difficulties Experienced: Shipbuilding ran into a bad patch in 1977. A plum contract from a consortium of German owners to build container vessels ran into cost overruns, technical difficulties and demanding clients. Sheng-Li Holdings had to pool resources from its more liquid subsidiaries to save SSE. To cut losses, the shipyard had to cancel the contract on the last four vessels. A weak US dollar and a world-wide glut in aircraft maintenance facilities hit the aerospace arm. In the first six months of 1995, SASCO reported a loss of more than $17 million. The company was restructured and started marketing its services more aggressively world-wide.

A Change in Strategy Towards Refocusing on Financial Returns and Marketing:

There were several reasons for the difficulties experienced in the 1980s:

- The defence industries had neglected business development. They were vertically integrated to deliver a range of products and services to a single local buyer, i.e. Mindef.
- On the commercial side, they had to deal with the multiple forces of the market place, cultural differences, currency exchange fluctuation, etc.
- They had difficulties finding people with the right commercial mindset.
- The group had misunderstood the process of acquiring high-end technology. It soon realised that technology acquisition and transfer required an appropriate receptacle within ST to receive the technology. It could only take place if its own companies were ready in terms of technological, managerial or marketing capability. In 1988, the strategy changed. It was decided that venture investment decisions would be based on anticipated financial returns. Technology transfer would be regarded as a bonus.

Dr Goh Keng Swee stated, in a paper presented in 1992, that the cause of the problems in the 1980s was not production but marketing in foreign markets. The government had ordered a change of leadership to salvage, sell or close the loss-making enterprises. The losses sustained in the new ventures had to be absorbed by other ventures, which were profitable. Moreover, the pressures in the 1980s had come from other sources as well. Government-linked companies, in general, were accused of crowding out small and medium-sized local enterprises.

By 1990, the group acquired a clearer understanding of the risks and rewards of diversification. Strategically, two points became clear:

- Additional skills were clearly required in management and marketing.
- Future growth lay in the non-defence area.

This set the stage for the next phase of its evolution.

2. Venturing into Semiconductors

ST's boldest diversification, into semiconductors, was rooted in **Chartered Electronics Industries** (CEI) formed in 1981. It was Dr Jean Hoerni, a Swiss engineer, who suggested to Mr Yeo that Singapore should go into semiconductor manufacturing. Wafer fabrication is the highest productivity segment of the semiconductor business. VA/worker can hit US $500-600K a year. However, it is also a high investment, high risk, long term, cyclical and fiercely competitive business.

Suitable technology partners were sought. In November 1987, CIS, Sierra Semiconductor and National Semiconductor combined to form **Chartered Semiconductor** (CS). The venture took off in 1988 with a factory in Singapore's Science Park. In 1989 however, National Semiconductors pulled out, rendering idle part of the capacity at CS earmarked for it. CS decided to reinvent itself, moving from being a captive producer to being an independent foundry capable of serving multiple customers. In 1990, an R&D thrust was launched. The production team was separated from the design team, which was transferred out to form **TriTech Microelectronics International** in 1991. After the production/design split, CS became **Chartered Semiconductor Manufacturing** (CSM).

Finding new customers in 1990 was an uphill task with the semiconductor recession gathering force. Losses accumulated to S$100 million by the end of 1991. Some of the group's other start-ups were also facing problems, but CSM's problems were the most serious. By 1995, helped by a boom phase in the industry and additional capacity created in partnership with Toshiba to improve commercial viability, CSM was able to raise revenues by more than 70%.

In August 1995, the ST group launched a new company **ST Assembly Test Services** (STATS), with which the group was able to position itself as a provider of a complete array of semiconductor-related services, i.e. design, wafer fabrication, assembly and testing.

Despite subsequent ups and downs in the market, CSM continued to diversify its products and widen its customer base into markets like PCs, telecommunications, consumer goods and toys. It set up offices in Europe and Japan and started looking at building plants overseas in order to move closer to major markets and tap larger pools of technical talent.

3. Regionalisation - Business Parks as an Entry Strategy

The third phase of its diversification, i.e. regionalisation and globalisation, began in the mid-80s when the group went into major infrastructure projects in the region (Indonesia, China and India). There were several deterrents to regional expansion: lack of physical infrastructure, uncertain political and economic systems and the temptation to stay within Singapore's comfortable environment. Following the recession of 1985/86, international markets and overseas investments were identified as a strategic thrust. Construction, logistics and project management services were identified as the competencies that could be transplanted into the region - hence the foray into business parks.

Unsuccessful Early Efforts: The early efforts in Thailand and China were fraught with difficulties. STIC had to pull out of work begun on Ayudhya Industrial

Park in Thailand. The Tiananmen Square episode put paid to a project started in Shanghai.

Indonesia: The move to develop Batam began in 1989 together with Jurong Town Corporation (JTC) and an Indonesian partner, Salim group. The Indonesians would buy the land, source human resources, handle local logistics and liaison with government bodies, and the Singaporeans would develop, market and run the industrial park. Total investment required was US$530 million. With the support of Overseas Union Bank (OUB) and a few foreign banks, STIC was able to start off with S$370 million. Putting world-class utilities in place proved a major challenge. Nevertheless, by end-1996, 84 international companies were operating in the Batam Industrial Park (BIP). It started to bring in profits within 3 years of operation and became poised to grow further.

Encouraged by its success, STIC teamed up with the same partners in 1991 to set up Bintan Industrial Estate. By 1996, 11 companies were operating in the park. Another part of the island was developed into a world-class holiday resort.

China: In 1993, again as part of a consortium, STIC ventured into the Wuxi-Singapore Industrial Park (WSIP) project in China's Jiangsu province. However, unlike Batam and Bintan, the area was not a jungle but farmland. Existing tenants had to be resettled by the local government. Given China's high import duties, STIC had to rely on locally available material. WSIP also faced stiff competition from other industrial parks in the area. The marketing challenge was tougher. Since the facilities offered were more expensive, the park targeted investors in high-tech industries. Seagate, Hitachi Maxell, Siemens Components, Matsushita Refrigeration among others, set up plants in WSIP. By 1996, 36 companies had investments worth US$430 million. The park became profitable by its second year.

The success of the three industrial parks was partly due to the 'one-stop shop' concept, i.e. provision of a low cost production site with infrastructure, logistical and administrative problems taken care of. Moreover, industrial parks became entry points into the respective countries. It was perceived that ST's main focus was on industrial parks, infrastructure, lifestyle, leisure and IT, fitted in over the long haul.

Regrouping and Rationalisation

A striking feature of ST is the frequency with which it renamed, reorganised and reinvented itself, not only in terms of products and processes, ventures and experiments, but also in terms of its identity. Initially, with its defence involvement, issues of ownership, control and corporate structure were as critical as products and markets. The crucial decision to set up CIS as an independent corporate entity run on commercial principles, unaided by government subsidies, established a model for all other defence companies that followed.

The first round of rationalisation occurred in 1974 when 8 of the 16 defence companies in existence came under **Sheng-Li Holding Pte Ltd**. Its purpose was to monitor companies in which Mindef had interests. In 1981, the group was reorganised under Ordnance, Aerospace, Marine and General Services arms. In 1983, **Singapore Technology Corporation** was formed as the umbrella for Sheng-Li's ordnance companies. In 1987, Sheng-Li formally adopted a Charter that mandated that defence industries would undertake related industrial and commercial activities as well.

A unified corporate identity in the form of Singapore Technologies emerged after the analysis in the Monitor Study led by Professor Michael Porter in 1988. The strategic weaknesses noted in the group were:

- An absence of a strategic management process.
- A lack of synergy among the entities in the group.
- A lack of information dissemination within the group.
- The diversification of the defence companies led to fragmentation, lack of focus and dilution of leadership.
- Business development units at the group level had been ineffective.

Monitor recommended that the group should divest or exit from some of the commercial and military export businesses and realign and consolidate remaining ones. A new organisational structure was needed.

A single strong corporate identity was defined in terms of “Singapore Technologies” and its distinctive sunburst logo. It differentiated itself from its competitors in terms of strategic characteristics (resourcefulness, reliability, responsiveness and relationship) rather than by customer and market. Although **STIC** was formed in 1989 to consolidate the non-defence businesses, the group was not convinced of the need to completely separate military and civilian markets. Its approach focussed on growth through leveraging competencies and capabilities irrespective of whether it was defence related or not. In May 1990, Sheng-Li Holding was officially renamed **Singapore Technologies Holdings** (STH).

In 1990, STH decided to regroup start-ups in emerging technologies under **Singapore Technologies Ventures** (STV). These were transferred at book value but many had developed negative net worth. In 1992, STV therefore rationalised its assets, writing off non-realisable assets. The losses amounted to $270 million of which $240 million were written off. By 1994 however, STV had a turnover of $552 million and profits of $69 million. More significantly, the establishment of STV institutionalised the entrepreneurial spirit of investing in cutting edge technologies within ST, triggering a further wave of diversification effected alternatively through subsidiaries, partnerships or acquisitions. **Agilis Communication Technologies**, **Chartered Systems and Networks**, **ST Assembly Test Services**, **ST Telemedia**, **Dornier Asia Medical Systems**, etc, were all part of this wave. ST Telemedia’s array of activities now include cable television, mobile data, internet, satellite, paging, cellular networks, satellite earth station and trunked mobile communication services.

In 1994, STH, which was hitherto held directly by the Ministry of Finance Incorporated, was reorganised under Temasek Holdings with Mr Lim Siong Guan as Chairman of STH.

In 1995, the parent company rationalised its property assets by injecting these into **Pidemco**, a subsidiary. In 1996, Pidemco, with assets of $4.3 billion, was injected into the ST group. The ST group itself owned or managed about $4 billion worth of property assets in Singapore and overseas. Pidemco's mission was to become a leading property developer and investor in Singapore and the Asia-Pacific region and export its property management services. It was also expected to offset the risks associated with ST's high-tech ventures.

Privatisation through Listings

In the post-mortem following the economic recession in 1985, questions were raised regarding the role of state-owned enterprises. A sub-committee of the Economics Committee set up to examine the structure of the Singapore economy concluded that while state enterprises had been necessary to jump-start the economy, they had evolved beyond their initial charters. The concerns of the private sector critics and the attractiveness of the private enterprise model of doing business triggered a string of listings as a move towards privatisation. The GLCs saw this as a natural progression providing opportunities to raise finance and effect share-swap arrangements in joint ventures or takeovers in strategic partnership or alliance with other publicly listed foreign technology-oriented corporations. Going public was also to be the test of efficiency of the ST companies. ST Aero and ST Shipbuilding were listed in August 1990 and ST Capital, ST E&E, ST Auto, ST Computer Systems & Services in 1991.

ST retained management control of its core defence companies by retaining at least 51% of the shares, setting individual and foreign ownership limits and retention of certain veto rights by MOF. **ST Capital** did not have a foreign ownership limit imposed on it. Start-up companies were taken out of STIC's portfolio and put under STV, and STIC was listed in 1993 after three years of profit, as required by the Stock Exchange of Singapore.

According to an internal ST report in 1993, public listing did reduce the flexibility of ST in such matters as the mobilisation of financial and human resources, and restructuring and re-alignment group-wide in ST. On the other hand, listings had been a welcome source of additional funds.

The technology sector saw the first dual listing on the NASDAQ and SGX by Chartered in November 1999 followed by STATS in January 2000. SFI and CEI listed on the SGX in 2000.

A. Transition to KBE

Choosing a Model of Growth/Organisational Structure for the Future

Mr JY Pillay, Board Chairman of ST from 1991-1994, felt that ST had gone beyond its original purpose and diluted its raison d'etre by branching into non-defence areas. On the other hand, ST's Exco Chairman, Philip Yeo felt that without the diversification into commercial areas, the defence-related components would fail.

The question was, should ST remain a solely defence-related conglomerate or become a broad-based technological corporation moving into new areas? Since ST chose to define itself in terms of character and competencies rather than customers, markets or ownership, it chose to be both.

The need for a proper organisational framework and system to fully realise the energies and talents of people was recognised. The diversity had resulted in subsidiaries, often competing with each other rather than leveraging on the expertise and name of a single large group. This competition also puts them in an advantageous position, as they are not sheltered by the cosiness of inter-company businesses. The quality of thinking and vision of the senior management, cultivating an appropriate culture and value system dealing with issues of organisation, organisational development, motivation, compensation schemes, people selection and internal power politics, became vital.

The group was restructured in 1995 to implement these goals, with companies being regrouped under 14 Strategic Business Areas. STV was restructured and renamed **Singapore Technologies Pte Ltd** (STPL) and became the Operational HQ of the group.

A Change of Leadership and Another Restructuring

Ms Ho Ching, who in 1997 became President and CEO of STPL, assumed the key leadership role at OHQ. In yet another restructuring it was decided that ST would now focus on 5 areas: technology, engineering, infrastructure, property and finance. The criteria for entering a new business would be whether given the market potential, ST could add value and grow into a significant international or regional player in the business. At the group level, ST had the breadth and diversity but needed to develop depth in each area of skill differentiation. The challenge of putting in place strategic management systems was to combine autonomy with co-ordination and discipline.

Human Resource Development and Policy

It was felt that a critical factor in achieving the right balance between autonomy and co-ordination is people. Given its goals, ST became a cosmopolitan group employing the best talent from all over the world. In 1997, CSM alone had people of 22 nationalities working for it (ST itself represented a kaleidoscope of companies ranging from start-ups to mature businesses). To put in place a pro-active HR system, ST adopted a number of programmes:

- It adopted the EVA management concept and practice to measure the asset productivity of its various units. Employee bonuses were linked to EVA.
- It launched QUEST (Quality and Excellence in ST) to inculcate productivity consciousness among its workers and encourage their participation in making decisions and suggestions. Over 1300 QUEST teams or quality circles have been formed and 80% of ST's staff have made at least one suggestion. For example, two suggestions saved the company more than $5 million. Other

best practises, like 6-Sigma, SQA ISO 9000, ISO 14000 and ISO 18000 were being put in place.

- It established the ST College in 1995 which offers management courses for the staff, organises orientation courses for new recruits and propagates ST's core values and knowledge-management (ST College is a virtual organisation with a staff of six persons only).
- It invested heavily in education and has awarded over 400 overseas under-graduate and post-graduate scholarships in engineering and non-engineering areas.
- It established an Executive Resource Unit in the HR division that identifies talented individuals in the group, nutures them and manages their careers.
- ST's Recreation Club organises recreational activities for staff including games and foreign travel.
- Three 'tortoise' clubs were formed in 1999 to serve as intrapreneurship vehicles. Clubs of 10 members each are entrusted with a S$10m investment fund to invest in new ideas and business opportunities with other staff.
- ST's people focus also led it in many cases to go beyond the bottom line.

The main thrust of these measures is to create a mindset for knowledge-based learning from the top all the way down to the operators' level. Cultivating e-savviness was a vehicle. Ultimately, the objective was to use the information and data embedded in the group's own products, orientate it towards customer needs and leverage on its vast customer bases to create value. The CEO of each company was to be held fully accountable to shareholders and employees for meeting short-term and long-term bottom line targets.

The workforce at ST is multicultural with a high percentage of non-citizens particularly in the semi-conductor business and its overseas subsidiaries.

Consolidation, Rationalisation and Repositioning of the various businesses continued into 1998. STIC and Sembawang Corporation were merged in 1998 to form **Sembcorp Industries** focussing on infrastructure development, marine engineering, IT and logistics. Sembcorp completed its rationalisation in 1999 with the mergers of the construction and logistics businesses and divestment of various non-core businesses. The financial services group was restructured with ST Capital acquiring sister group Vertex and then merging with Vickers Ballas in December 1998, expanding the range of financial services provided by the group to securities, growth financing and asset management. At ST Telemedia, the **Starhub Consortium** was awarded the licences in May 1998 to operate fixed and mobile phone services from April 2000.

On 17 April 2000, STPI, a shareholder of Pidemco Land and a subsidiary of the Singapore Technologies group, acquired 24.6% of DBS Land. In November 2000, Pidemco Land merged with DBS Land to form **CapitaLand**, the largest listed company in Southeast Asia with combined assets worth S$18 billion in 33 cities and 17 countries. Shareholders would receive numerous benefits including:

- enlarged company size and significant scale in core sectors.
- a larger market capitalisation.
- broader geographic presence.
- significant operational synergies and economies of scale.

CapitaLand Limited's strategy for enhancing shareholders' value includes:

- Focusing on its core competencies in the residential, commercial and serviced residence sectors.
- Balancing trading returns with steady investment income.
- Building fee-based businesses as a second growth engine.
- Selectively taking advantage of overseas opportunities in key gateway cities.
- Improving its capital structure.
- Exploiting the Internet and developing e-initiatives.

Organisational Structure and Culture

Because the organisation has been undergoing a constant metamorphosis and change, according to Mrs Kuan and Mr Lau, organisational charts and fixed structures have become meaningless for the technology-based organisation. Jobs are being defined by functional purpose and increasingly employees set their own goals, come forward with proposals on how to achieve these goals and are allowed to pursue these independently.

The culture evolved at ST as a result of its strategies had certain characteristics:

- ST cultivated agility rather than plans, energy rather than safety, visioning and foresight rather than visions.
- Entrepreneurship is a formal part of its culture and transferring ownership to managers is being considered.
- It leveraged the skills of its staff and transferred them across industries. Core competencies were defined by staff skills. It never typecast itself as a specialist.
- Because of this, accumulation of knowledge was considered as important as accumulation of capital. Knowledge itself was treated as the locus of production.
- It also leveraged the skills and resources of others and learnt to make corporate partnerships a success.
- It made mistakes and learnt from them rather than not venture into anything.
- Integrity, Value Creation, Courage, Commitment and Compassion were adopted as its core values.

Financial Performance

ST's transformation over three decades was both in terms of size and activities. Between 1967 and 2000, its turnover increased from S$200 million to S$10 billion in 2000. Its assets increased to S$23.5 billion (the number of employees world-wide have grown from about 100 employees when it started to 39,800 in 1999). The contribution of Overseas Operations to Total Revenue expanded from zero to 46% in 1996 (Singapore Technologies, 1997 and 1998).

Absolute sales turnover from defence kept rising well into the 1990s, but was shrinking as a proportion of the group's total sales, from 57% in 1984 to 45% in 1989 to 27% in 1995.

The regional economic crisis that erupted in 1997 had a major effect on Pidemco Land and ST Capital and a negative impact on retail, travel, tourism and industrial park operations at STIC. World-wide semiconductor sales fell 8.4% in 1998, the biggest decline since 1985 negatively impacting CSM's revenue and profitability.

Table 6

	1997 S$'000	**1998 S$'000**	**1999 S$'000**
ST Group Turnover	5,374,350	5,787,102	5,550,692
ST Group Profit/(loss) before taxation	(247,461)	(481,863)	260,422

Chart 8

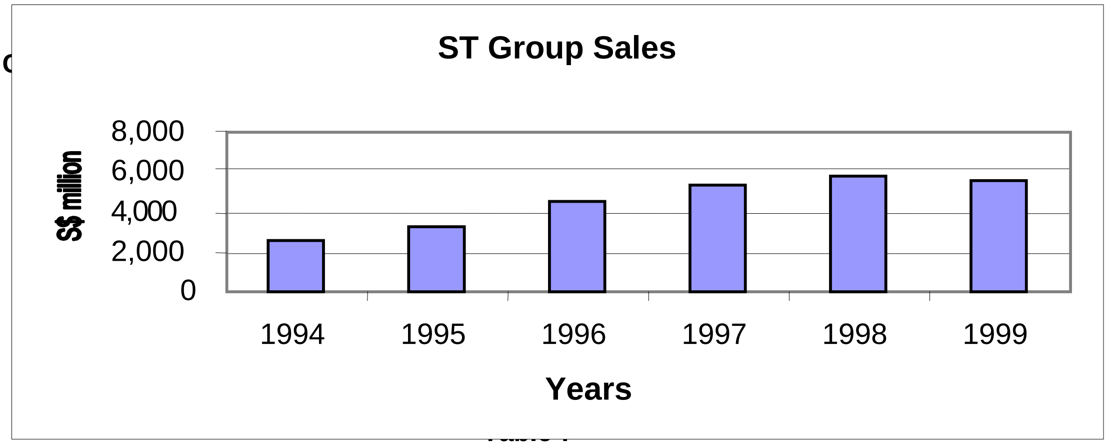


Table 7

Sales by Region (S$ million)

	1994	1995	1996	1997	1998	1999
Singapore & Asean	1,739	2,218	2,754	3,385	3,677	3030
East Asia	99	179	240	371	350	340
United States of America	407	539	962	962	1,102	1500
Rest of the World	295	324	584	652	661	680
ST Group Sales	2,540	3,260	4,540	5,370	5,790	5550

Chart 9

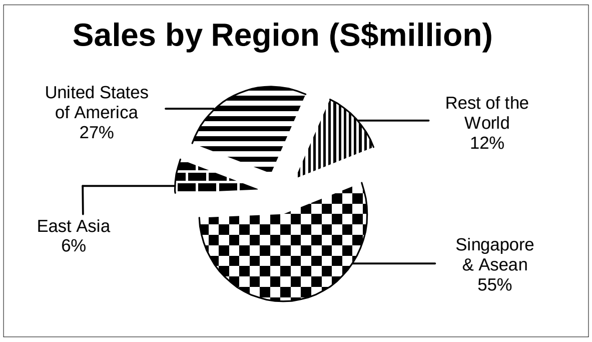
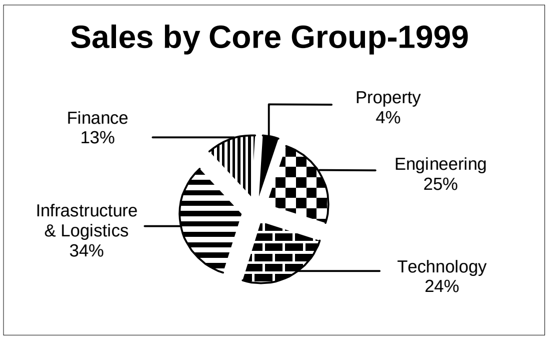
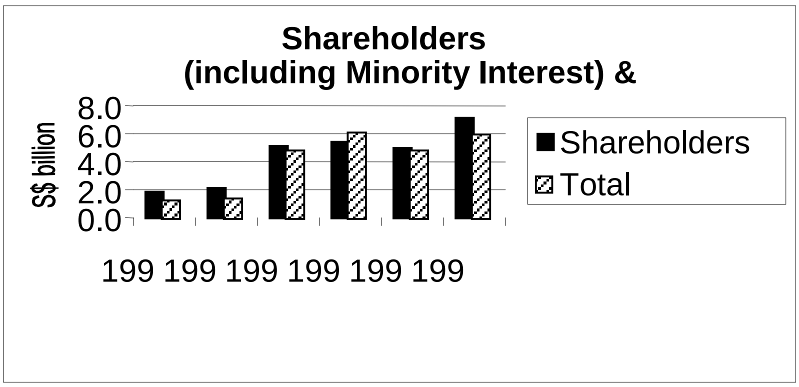


Chart 10



The group reported a pre-tax loss of $482 million in 1998. Attributable group loss was $998.8 million due to provisions and write-downs at Pidemco Land and Sembcorp Industries and loss suffered by CSM. Temasek Holdings injected $456 million for Pidemco's acquisition of POSBank Tower and $800 million for investments in CSM and Pidemco Land, reducing the Group's debt position from the previous year (its debt-equity ratio rose from 1994 to 1997, but has since declined).

Chart 11



The extensive provisions, write-downs and increased capital investment brought the group's EVA to -$1.9 billion a further decline from 1996 till 1998 (see charts). Except for engineering, all other business groups showed a declining EVA. The group's Net Profit after tax (NPAT) was declining since 1994 and negative in 1997 and 1998.

Table 8

EVA & EVA Spread (S$ million)

	1996	1997	1998	1999
Engineering	-63	-29	28	124
Technology	-239	-617	-700	-449
Infrastructure & Logistics	6	-4	-183	-59
Properties	-197	-505	-921	-583
Finance	35	-40	-44	37
ST Group EVA	-582	-1269	-1726	-856

The cautious recovery in the region and a rebound in the electronics industry saw improved performance in many of ST's business groups in 1999, including property and financial services. Group net profit jumped to a record S$621 million. ST Engg companies performed well. Chartered turned profitable again with the upturn in the semiconductor industry world-wide. The Infrastructure & Logistics division witnessed a robust improvement in results. Pidemco also showed positive profits. Gross group turnover including sales at associates Sembcorp and Vickers Ballas was just under S$10 billion. Some of Telemedia's units like ST SunPage, ST Mobile Data and Beijing Uni-sin turned profitable in 1999 but start up losses at capital expenditure intensive StarHub and SCV pulled the telemedia group into the red. Group EVA improved to S$856 million loss in 1999 compared to the S$1.7 billion loss in 1998 (Singapore Technologies, 1999).

Value added per employment cost reached a five–year low in 1997. In 1998, value-added per employee (in S$'000) was S$93.51 and increased further in 1999. Value added per dollar of employment costs was S$2.35. Significantly, value-added per dollar of investment in fixed assets was S$0.44.

Table 9

ST Group – Productivity Analysis

	1997 S$'000	1998 S$'000	1999 S$'000
Value-added per employee	81.66	93.51	149.35
Value-added per dollar of employment cost	1.47	1.58	2.35
Value-added per dollar of investment in fixed assets	0.37	0.40	0.44

More strategic business areas are trying to complete the implementation of EVA-driven business frameworks to mobilise employees to improve service and product quality, and reduce costs.

C. Excellence/Corporate Citizenship

Despite losses, the ST group has continued efforts to uphold world-class quality standards. The development of robust scalable systems and best practices is a key thrust for ST companies.

- To date, 51 companies of the group have attained ISO 9000 certification, 7 have ISO 14000 environmental standards and 25 have been inducted into the SQC league. These standards are maintained not only in Singapore but in ST's operations in other countries as well even if it makes such operations costlier in order to set good precedents.
- The QUEST programme continues to encourage employee suggestions for productivity and cost saving.
- Two employees received awards from PSB for outstanding contributions in 1998. During 1999, two companies and three employees received the National Outstanding QC Organisation and Outstanding QC Manager Awards respectively. About 20 companies had been awarded the People Developer Standard by 1999.
- ST College trained 8070 executives in 1998 and total training man-days increased by 40% from the previous year to 17,671. In 1999, it trained 7591

executives and training man-days were 15111. E-learning programs and development of case studies as a learning tool is being promoted.

- Workshops and seminars are held in EVA implementation, project financial analysis, risk management, strategic management and other areas. Integration of QUEST, TQP and Kaizen into the EVA framework provides impetus for these productivity improvement activities to be value driven.
- Chartered and some other companies pioneered the use of 6-Sigma programmes to sharpen their customer focus and competitiveness.
- Pidemco pioneered the application of RAROC (Risk Adjusted Return on Capital) in 1999 to develop greater knowledge and awareness of risk management concepts and systems.

Community Involvement

- Various companies in the group have adopted homes and participated in charity drives as part of community service activity. In 1999, the group raised S$145,300 for 11 charitable organisations.
- A percentage of the group's annual profits are donated to the Singapore Technologies Endowment Programme (STEP), launched in 1997. The investment income of the fund is used for various community development projects, especially in the education area. This is to ensure that the community we operate in can also benefit from the profits that ST makes.
- Regular ST Family Day events bring thousands of employees and family members together for day-outings at the Singapore Zoological Gardens, Sentosa, etc.
- A group-wide fund-raising effort to provide aid for Indonesia raised $15,000.

The Sunburst Youth Camp started by ST College in 1998 and funded by STEP has become an annual feature. It aims to foster closer relationships between youth from Singapore and other ASEAN countries and introduce ST and Singapore to the visiting delegates.

Outlook and Priorities for the Future

ST's business parks, retail and tourism activities may remain vulnerable to regional economic fall-outs. Recovery in the property and financial services sectors will continue to improve the outlook for these sectors. Construction, logistics, food and engineering activities are expected to show good results. The performance of the venture capital arm will depend on that of its portfolio of technology stocks held in the US market.

ST Engineering is exploring opportunities in the US and Europe. A key initiative is to sell advanced systems such as the Bionix Infantry Fighting Vehicle to the developed markets. Sembcorp is exploring international alliance and acquisition opportunities. CapitaLand also aims to venture into investments in key gateway cities overseas.

At the group level, setting up of e-commerce and life science investment funds is a key initiative. E-structuring and e-transforming of existing businesses will continue.

ST has put top priority on operational units to strengthen its balance sheet by developing EVA drivers for better effectiveness and tighter financial discipline. It is providing greater focus and support to build up key systems through a variety of best practices. Efforts to reposition, consolidate, acquire or divest where feasible, are likely to continue.

Role of Government

ST's government links did give it influence, access to resources, and a captive market for its ordnance. STIC also gained from the assistance from EDB and MAS during the setting up of the industrial parks. The intangible benefits were not of the kind that guarantee success. It was required to bid for government contracts on a competitive basis with other local and foreign companies. In the case of BIP, funding may have been more easily available had it not been a GLC. As ST's operations get more globalised, it is perceived that the intangible benefits of being government-linked will probably decline.

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2 Foreign Multinationals in Singapore: Case Studies #4 - #6

2.1 Philips Electronics Singapore Pte Ltd *(Case Study #4)*

(Based on interviews with Mrs Elizabeth Martin, Director, Corporate HR, and Mr David Lim, Chief Controlling Officer, and sources cited in the References)

Philips Group - Global Company Profile

Royal Philips Electronics is one of the world's biggest electronics companies and Europe's largest. Its sales touched EUR 31.5 billion in 1999. It is a global leader in colour television sets, lighting, electric shavers, colour picture tubes for televisions and monitors, and one-chip TV products. Its 232,433 employees[5] in more than 60 countries are active in the areas of lighting, consumer electronics, domestic appliances, components, semiconductors, medical systems, and IT services (http://www.philips.com.sg). It is quoted on the New York Stock Exchange, London, Frankfurt, Amsterdam and other stock exchanges.

A. Singapore Operations: History and Strategy

Philips is one of the largest MNCs in Singapore. Its partnership with Singapore dates back to 1951, when it set up a trading office in Singapore. Since then, it has grown in tandem with the Singapore economy.

Following the industrialisation policy in the late 1960s, Philips expanded its presence in the Republic through steady and consistent investments in manufacturing. In the early 1970s, it started its industrial operation in Singapore with the factories for the assembly of audio equipment such as radios and cassette recorders. The Domestic Appliances Factory and the Machine factory in Jurong and the Television and Tuner factories in Toa Payoh followed. By 1974, Philips Electronics Singapore Pte Ltd (PESPL) had five manufacturing plants producing hi-fi audio equipment, television sets, TV tuners, domestic appliances and moulds and dies with more than 60% of its production geared for export.

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[5] As in June 2000.

By 2000, Philips' extensive operations in Singapore included six manufacturing plants, a sales organisation, and global and regional competence centres, and employed a staff of 6152 people. It has also grown beyond Singapore and set up numerous satellite plants in the region.

Strategy

The building of the Changi Airport in 1976 marked an important turning point for the commercial operations of PESPL. The building required many systems including lighting, public address system, television monitors etc. The company dealt with a range of products and was contracted for the task. It was at this juncture that it realised that many of its clients needed not only products, but also “solutions” because they preferred to deal with one supplier. Providing these by “bundling” products and having many product divisions serve each client became a cornerstone of its strategy.

The strategy brought many benefits.

- Several government and private contracts followed over the years: the Central Expressway (CTE) tunnel, the Raffles City and most major hotels, the Electronic Road Pricing (ERP) system, the Safari Park (multi-system), to name a few, where Philips was able to provide lighting, televisions, sound systems, etc, as a package.
- It developed the capability to deal with clients and service their needs and queries.
- Big projects improved Philips’ brand image as a diversified company, providing products that touched the life of Singaporeans in many ways. It also boosted employee morale and their sense of pride in the company.
- It resulted in a large number of repeat orders from big clients including Changi Airport.

The company witnessed a steady expansion in sales throughout the 1970s and 1980s except for declines in 1982 and 1983. The growth in the seventies centred essentially on assembly of products. The eighties saw greater emphasis on improving efficiency, quality management, product development and process improvement to keep the organisation “lean and mean”. In the nineties, the factories in Singapore became international competence and production centres, designing, developing and manufacturing products that were marketed globally.

The next major turning point came with increasing competition from cheaper products made in China and other manufacturing centres. The Asian economic crisis aggravated this. This led to a change in the strategy of relocating and outsourcing some of the manufacturing operations to cheap-labour countries like Malaysia, Indonesia (Batam), China, Eastern Europe and Mexico.

Regionalising from Singapore

Philips Electronics Singapore began its operations in Vietnam with a representative office in Ho Chi Minh City in 1993 and soon became involved in projects ranging from telecommunications and transportation to civil aviation, medical supplies, commerce and industry. In the north, the Hanoi Representative Branch office opened in January 1995 spearheaded marketing activities.

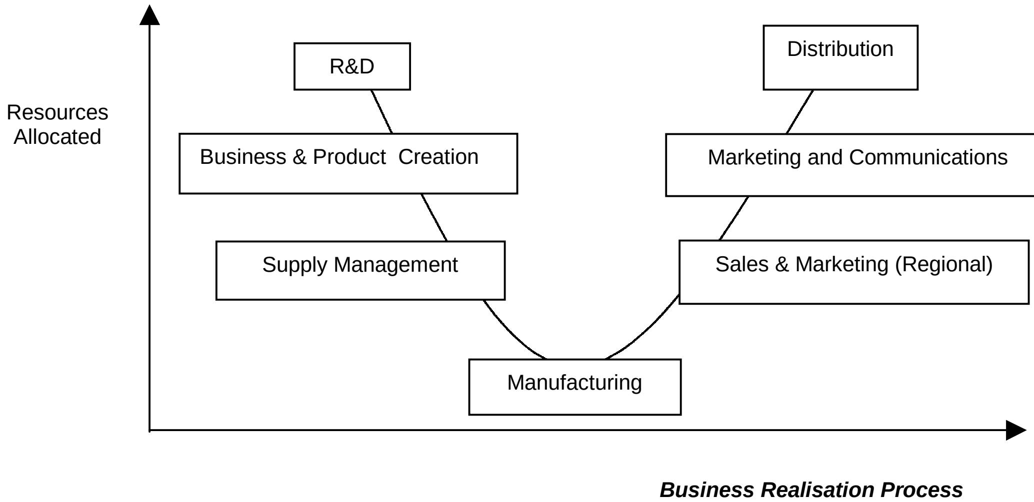
With a limited market coupled with rising business and labour costs in Singapore, products such as audio and television, which were earlier relocated from Europe to Singapore, were further relocated to China and other manufacturing centres.

The rationale behind these moves was that manufacturing with low margins became increasingly cost-driven while R&D, business and product creation, supply management on the one side and regional sales and marketing, market communication and distribution on the other, became greater value creating functions. Given the excellent infrastructure and highly competent workforce together with the relatively higher costs of operation in Singapore, the strategy for the company’s future evolution in Singapore will be defined by an increasing allocation of resources to higher value creating functions (the market leader for this trend was Dell

Computers; the same trend is visible in companies like Hewlett-Packard, Motorola, etc. (see Chart 12 below).

Chart 12

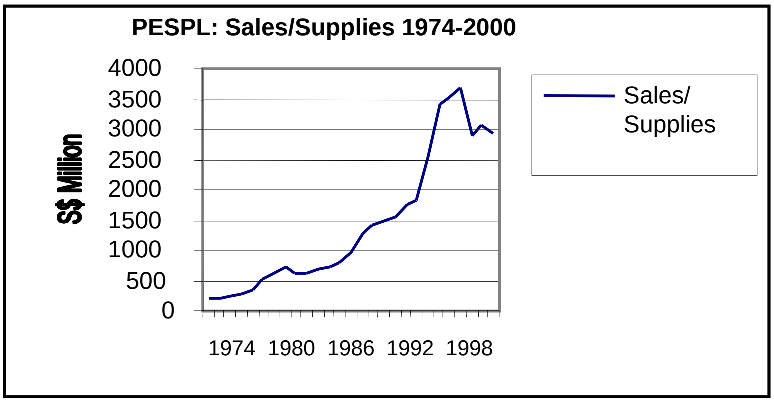
PESPL'S Resource Allocation Strategy For Singapore

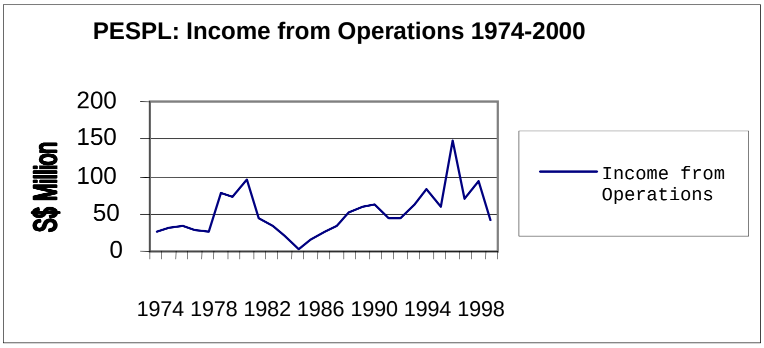


Financial Performance

PESPL's consolidated results show steady increases in sales from 1974 to 2000. Revenue increased from S$192 million in 1974 to S$2929 million in the budget for 2000. The dip in sales between 1981 and 1984 was due to reduction in industrial supplies from the audio factory to the US. The lower volume produced in Singapore was the result of lower demand from the US market. During the Asian economic crisis, PESPL's local sales have maintained good results. There was an increase in income from Optical Storage in meeting the surge in VCD demand in China. The relocation of Audio to China, the discontinuation of Philips Consumer Communications locally as a result of a joint venture with Lucent Technologies and lower CTV sales contributed to the dip in sales witnessed in 1998.

Chart 13





Income from operations rose from S$26 million in 1974 to S$97 million by 1981. Thereafter, it has been lower in all years except 1997, when it rose to S$149 million.

Table 10
Philips Electronics Singapore Pte Ltd

	Units	1999	1998	1997	1996	1995
Number of Employees	employees	6,152	5,973	7,067	7,723	8,242
Assets	million	854	687	948	1,063	924
Turnover	million	3,071	2,912	3,676	3,463	3,011
Profitability						
• Return on Equity	%	89	31	40	11	18
• Return on Net Assets	%	38	28	42	13	19
• Income from Operations	million	97	70	149	60	83
Economic Profit	million	67	28	N.A	N.A	N.A
R & D Expenditure	million	100	78	74	46	48
R & D Expenditure over Turnover	%	3%	3%	2%	1%	2%

B. KBE Initiatives

R&D and Technology

Philips' global expenditure on R&D has been 6% to 7% of sales between 1995 and 1998. It rose to 7.3% in 1999. It has a large portfolio of intellectual property protecting its innovations. In 1999, it filed more than 1500 new patent applications.

In Singapore, Philips R&D Expenditures as a percentage of its Turnover have been around 2-3% in the past five years (it dipped to 1% in 1996 on account of the "Centurion" program that involved world-wide belt tightening action in the company).

In tandem with Singapore's drive to become a knowledge-based and more technologically advanced economy, PESPL opened its regional R&D centre named the "Philips Innovation Campus Singapore" at Toa Payoh in May 2000. It is intended to become the "Silicon Valley" for Philips' operations in Asia-Pacific. The campus is the first of its kind for Philips in the Asia-Pacific region, and its largest outside The Netherlands. It is also the largest development centre to date in Singapore's electronics industry and it houses over 800 development engineers for product and business creation. Over $110 million has been committed to development activities for the year 2000.

The campus will yield several benefits:

- Greater synergy, speed and efficiency in development and design activities.
- Ability to put new, innovative and better products on the market faster.
- A platform for cross-fertilisation of ideas and rapid exchange of knowledge.
- Sharing and leveraging of technology, capabilities, infrastructure and equipment.
- A challenging environment for talent in Singapore and the region.
- Economies of scale through the pooling of resources and co-location of labs and technology groups from different business units of PESPL.
- Optimum infrastructure and environment for designing hybrid products.
- Collaboration with local and international research institutes and universities.

Singapore's active support of R&D activities under the Industry 21 initiative will help provide a conducive environment for campus activities to grow. The campus in turn will boost the skills and knowledge of Singapore's workforce through technology transfer, international exposure and collaborations.

Information Technology

In 1999, three projects resulting from initiatives started in 1997 were completed:

- A fully standardised state-of-the-art communication network interconnecting country-based domestic networks.
- A single company-wide e-mail, groupware and knowledge management infrastructure serving 100,000 users globally.
- Standardised desktop hardware and software, leading to increased productivity, improved communication and lower costs.

IT technology is intended to be an enabler for Philips' sales and purchasing organisations to execute an e-commerce strategy for their business and support their customer/vendor relations.

Human Resource Development Plans and Policy

Philips is deploying a clear, uniform and integrated approach to management recruitment and development. At the global level, key managerial functions have been defined and the current and potential top talent within the company identified. Those identified will participate in a Leadership Competencies Program. In its third Employee Motivation Survey in 1999, 203,000 employees were consulted. The response rate was 76% and revealed an improvement of 2%[6].

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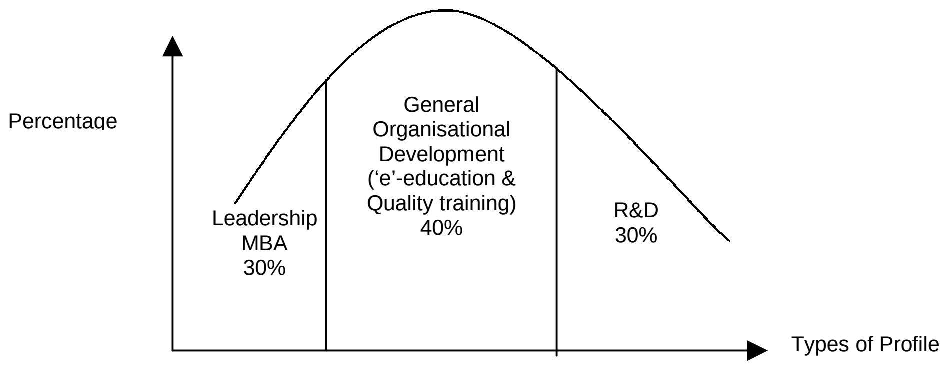
[6] The Employee Motivation Survey (EMS) is carried out once every 2 years. The survey covers 12 categories: Customer Orientation, Co-operative Working Relationships, Management Support, Immediate Boss Support, Performance Orientation, Reward and Recognition, Personal Growth and Development, Satisfaction and Commitment, Quality, Environment, Financial Awareness, Entrepreneurial Behaviour. In 1999, the EMS score of top 3 items were: Customer Orientation, Environment, Co-operative Working Relationships. The bottom 3 items were listed as follows: Reward and Recognition, Performance Orientation, Personal Growth and Development.

In Singapore, of the current employee count of 6152 at PESPL, 800 are R&D engineers. The Philips 2000 vision envisages an increase of R&D engineers to 1200 in 2003. To underpin the learning and development environment, the Philips University (a virtual organisation) has also been set up. The university incorporates leadership programmes, quality improvement programmes, general IT programmes and Masters and PhD programmes. It is envisaged that 30% of the employees will benefit from technical training, another 30% of employees will undergo leadership training and “adventure learning”. Masters programmes are developed in collaboration with Singapore Management University and other universities. The other 40% of the workforce will undergo training under general organisational development through ‘e’- education and quality training. A pilot programme, Masters in Technical Design (MTD), is being developed by Philips in collaboration with NUS and the Technology University of Eindhoven (the Netherlands) with a view to marketing to other corporations when it is fully developed.

Chart 15
PESPL: Development of Asia-Pacific Talent Pool



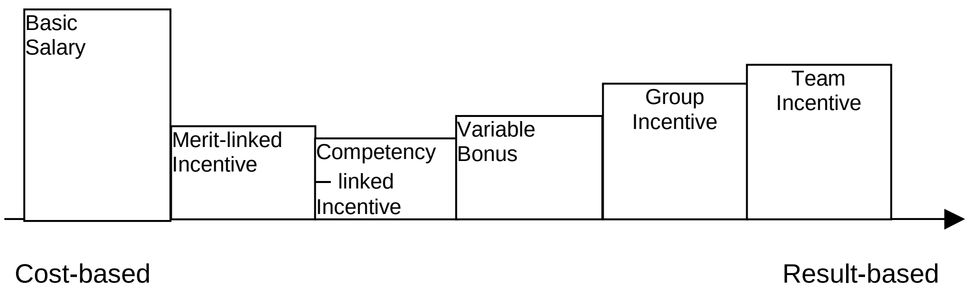
Philips started a system of training engineering recruits in the 1980s. So far, 10 programmes of recruiting graduates from NUS and NTU (approximately 30 graduates per intake) have been undertaken. After a period of 9 months spent on education and training, graduates are bonded for 2 years.

PESPL spends approximately 4% of its payroll on training. Each business unit conducts training needs analysis and prepares appropriate development plans for its employees. The management views number of days of training per employee targets as a passive approach. Their view is that training should translate into competence and the latter measured and benchmarked. For example, in the case of e-education, those who have basic knowledge in the use of a computer are categorised as Level 1, those who can use software are categorised as Level 2 etc (this approach has been commended by the Singapore Productivity Standards Board).

Reward and Compensation

The current annual salary structure consists of the 12+1 month wage and an annual variable bonus of 0 to 3.5 months. Currently, the variable bonus is linked to both company performance and individual performance. At higher levels of management, it is also linked to the company's cash flow position and its economic profits. At lower levels, it is linked to the performance of the respective business units. In the future, it is envisaged that the variable component of the wage will increase. Long term incentives for the Innovation Campus staff will be introduced soon along with team and project based awards. The new approach will tend toward increasing ad hoc and conditional rewards based on results rather than structured and guaranteed packages.

Chart 16
Wage & Compensation Structure: Moving from Cost-based to Result-based



The current labour turnover among engineers at 1.5% per month (18% per year) is considered high. This is attributed to the strong trend towards high value activities in the electronics industry MNCs operating in Singapore. The turnover and absenteeism among production operators on the other hand is low. According to the management, Philips in fact, in this category, has an “ageing” employee profile on account of long-standing employees, almost 60% of whom are women workers.

Culture and Management Style

All measures are aimed at developing a learning and knowledge culture among Philips’ staff and employees, and moving from a manufacturing operation based culture to one that will foster innovation and creativity. The new management style is to engage rather than manage employees. This is supported through an infrastructure of cyber cafes, the institution of Patent Nites, Patent Awards, etc. From July 2000, a casual dress code and flexible working hours have been introduced for R&D staff based on trust that overall guidelines on total working hours will be adhered to.

There is also a strong focus on fostering good relations among staff and between foreign and local talent. This mutual appreciation has worked to the company’s advantage in the past. Foreign managers, impressed by the quality of the workforce and operation in Singapore carry this goodwill with them to subsequent postings and help to generate further investment and opportunities for PESPL (Philips Singapore was awarded the NTUC May Day Commendation (Gold) in 1995 in recognition of its active promotion of harmonious labour- management relations).

C. Excellence/Corporate Citizenship

Philips’ efforts towards world-class excellence are benchmarked in terms of financial performance, innovation and quality initiatives. In Singapore, two of Philips’ units have been recipients of the Singapore Quality Award. The Tuner Factory received the award in 1998 and the Domestic Appliances and Personal Care (DAP) unit won it in 2000.

Tuner Factory

Philips Singapore Pte Ltd (Tuner Factory) has its key competencies in the areas of Development, Mass Manufacturing, Process Innovation, Marketing and Distribution of Radio Frequency (RF) tuners. The Factory is amongst the top three RF tuner manufacturers in the world for the TV and VCR markets. It is also the market leader for multimedia tuners for the personal computer market with 68% market share. From 12 million units in 1993, production volume of the Factory increased by 50% to 18 million units in 1997.

The world-class performance of the factory has been the result of its pursuit of business excellence since 1985, when it launched its Total Quality Management drive. Known as Company-Wide Quality Improvement (CWQI), the initiative has seven core activities ranging from customer orientation to employee training. In order to ensure that senior executives serve as role models in driving the company towards business excellence, their performance is assessed every six months based on employee feedback.

The factory recognises human resource management as a key factor for it to remain in the forefront of the tuner industry. In 1997, it invested 4.13% of its payroll on training, compared to the national average of 3.6%. The number of Quality Flexibility Teams (similar to Quality Circles) totalled 80, translating into an employee participation rate of 78% - one of the highest in the private sector (Productivity and Standards Board, 1999). It had a low employee turnover rate of 4 to 8% annually for five years from 1993 to 1998.

Continuous business process improvements have resulted in the following key achievements over the last five years:

- Consistently excellent performance on delivery reliability that is close to 100%.

- Reduction of delivery lead-time from 11 weeks to 7 weeks for multimedia tuners, 9 weeks to 5 weeks for the TV/VCR tuners, with plans to half the lead time in 1998.
- A 55% reduction in the time-to-market for new products from 91 weeks in 1994 to 41 weeks in 1997.

The factory has a proactive system of gathering feedback on customer and market requirements, which is effectively translated into operational plans to improve customer satisfaction. As a result, the overall customer satisfaction ratings have increased from 90% to 98% and satisfaction with response time has improved from 90% to 97% from 1993 to 1998. During the same period, the factory's customer retention and growth indices for Europe, US and Asia-Pacific have increased by 75%, 200% and 140% respectively.

In July 1999, Philips launched (globally) its **Business Excellence through Speed and Teamwork (BEST)** program. BEST is intended to give a renewed focus and impetus to the drive towards world-class performance in all processes along the business chain (Royal Philips Electronics, 1999). Under BEST, quality becomes a leadership issue driven by a committed management. It is integrated in every business performance review cycle, providing measurement tools and focus through Business Balanced Scorecards. Speed is recognised as a fundamental driver of business excellence. Quality improvement competitions based on teamwork in various businesses have produced substantial benefits not only for the Group's businesses and consumers but also in terms of recognition and opportunities for personal growth and self-fulfilment for employees. Headquarters and management audits support and reinforce the improvement process by providing cross-business exposure to leadership practice.

Philips DAP

Having a high level of employee involvement in its quality improvement programme is the key factor that helped Philips DAP win the SQA award (**The**

Business Times, 2000, July 26). It has achieved over 95 per cent employee participation, through management-led business improvement teams, ongoing improvement teams, production floor management, an enhanced employee suggestion scheme, as well as through comprehensive learning, assessment and reward systems. Its internal communication strategy reaches all employees including those on the production floor. People on the production floor were involved by setting up "mini-companies" comprising between 10 and 20 people thereby creating a sense of ownership in a big organisation. Each of these groups has goals and missions. These mini-companies execute improvements in their particular areas of responsibility.

According to the management, the key challenge in the quality improvement process is setting priorities, communicating a consistent message to employees and getting them to share their vision.

Philips DAP, which employs about 1000 people and produces some 12 million units of irons and hair dryers in Singapore annually, also owes its success in winning the SQA to its keen innovation capability. Besides manufacturing and distributing garment care and hair-care products globally, it is also Philips Electronics' sole technology development hub world-wide for the production of irons and hair dryers. Through Philips DAP's innovations over the past five years, the delivery lead-time has been cut from eight weeks to two weeks, and delivery performance has improved from 80 per cent to 98 per cent. In the last three years, the company has filed 20 patents for new technologies.

Philips DAP spends 4.7 per cent of its payroll every year on training its staff, compared with the national average of 3.6 per cent. This amount is expected to increase in the future.

Philips (Taiwan operation) was the first company in Asia to win Japan’s prestigious Deming Award. PEPSL also benchmarks itself against the Taiwan operation.

Community Efforts

Each unit at PESPL makes its own contribution/donations towards community service. These efforts are employee driven but sponsored by Philips. Donations to charities are made in kind rather than cash. PESPL was one of the founding sponsors of the Singapore Symphony Orchestra. Philips contributed to the government's training institute in Jurong. Donations and community effort is encouraged at Philips but not used as a public relations or image-building exercise.

Environmental Performance

In 1994, the Philips management initiated defined measurable targets for eco-efficiency, laid down in four-year action programmes. Under the current programme (1998-2002), called EcoVision, Green Flagships or "green" star products, with better environmental performance than their predecessors or competitors, must be developed. Philips reports its world-wide progress on an annual basis in a Corporate Environmental Report.

The number of its manufacturing sites certified and managed in accordance with ISO14001, rose from 30% in 1997 to 81% in 1999. Energy saving improved from 20% in 1997 (reference year 1994) to 25% in 1999. In water consumption, the saving improved from 34% in 1998 to 40% in 1999. Several other eco-efficiency parameters are also monitored in the report.

Partnership with the Government

PESPL was conferred the Distinguished Partner in Progress Award by the Singapore Government in 1992. Right through its evolution in Singapore, it has enjoyed strong support from the EDB in the form of tax incentives (OHQ), recruitment of personnel, R&D grants (RISC), global connections, etc.

In turn PESPL has shown a strong commitment towards Singapore's national objectives, developing a local R&D infrastructure and a pool of local talent which helps to convince and attract alliance partners and other MNCs to locate their high technology and high value-added operations in Singapore.

Philips was also among the pioneers in the Local Industry Upgrading Programme (LIUP) scheme when the Singapore government introduced it. The local companies engaged with Philips under the scheme[7] acquired new technologies, upgraded their capabilities to support it, expanded their product range and now have access to an international network.

[7] Fu Yu, Hon Foong Plastics, Li Xin, Hoi Peng, Endela, First Engineering, PMI (Broadway), Meiki, Asmech (Automation), Evictronics among others.

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2.2 ST Microelectronics *(Case Study #5)*

(Based on an interview with Mr. JC Marquet, CEO STMicroelectronics, Asia-Pacific, and sources cited in the References)

Global Corporate Profile

STMicroelectronics (formerly SGS-Thomson Microelectronics) was formed as a result of a merger between SGS Microelecttronica of Italy and Thomson Semiconducteurs of France in 1987. Since its formation, the company has significantly broadened and upgraded its range of products and technologies and strengthened its manufacturing and distribution capabilities. A leading global independent semiconductor company, STMicroelectronics now designs, develops, manufactures and markets a broad range of semiconductor integrated circuits (ICs) and discrete devices used in a variety of microelectronic applications, including high-growth areas such as automotive products, telecommunication systems, computer peripherals, consumer products and industrial automation and control systems.

In 1999, it had sales of US$5.056 billion, 18 manufacturing sites and over 40,000 employees world-wide. Its customer base is now global, spanning North America, Europe, Asia-Pacific, Japan and emerging markets. It has 71 sales offices in 26 countries and offers 3000 main types of products to more than 1500 customers including Alcatel, Bosch, Creative Technology, Ford, Hewlett-Packard, IBM, Motorola, Nokia, Northern Telecom, Philips, Seagate Technology, Siemens, Sony, Thomson Multimedia and Western Digital. It ranks among the top 10 world-wide semiconductor suppliers and is ranked 7th largest based on first half 2000 data (ST Microelectronics, 1999).

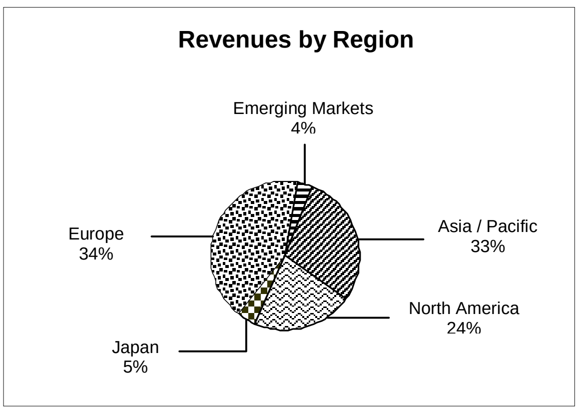
With 12 advanced R&D units and 33 design and application centres, STMicroelectronics possesses an extensive portfolio of intellectual property, which includes over 19,000 patents covering 11,000 inventions (http://us.st.com). It is quoted on the New York Stock Exchange, on the Bourse de Paris and on the Borsa di Milano.

A. Singapore Operations - History

SGS Thomson set up operations in Singapore in 1969. It was attracted by the Economic Development Board's efforts to promote investments in Singapore and by the prospects of capitalising on the lower cost of labour. Today, it continues to stay because it has developed extensive markets in the region as well. Revenue share derived from the Asia-Pacific region stood at 33% in 1999, second only to revenues from Europe (34%) and higher than those from North America, Japan and emerging markets.

Its operations in Singapore started in early 1969 with the setting up of an assembly and test site in Toa Payoh. SGS Thomson recognised the vast potential and growing significance of the Asia-Pacific rim. Its establishment of a wafer fabrication plant at Ang Mo Kio in 1984 was the first such investment on the Asian continent by any European or American semiconductor supplier. It received support from the Singapore government in the form of land leased for the wafer fabrication plants. The Asia Pacific Design Centre established in 1984 complemented the company's manufacturing strengths and spearheaded its penetration of the consumer and computer peripherals market. In 1998, it announced its plans to build a new sub-micron (8-inch) wafer fabrication plant in Singapore to further strengthen the capabilities of the existing plant at Ang Mo Kio. Its presence in Singapore now encompasses R&D, design, wafer fabrication, assembly and testing, sales and marketing, customer service and logistics in three locations. Starting with a staff of a few hundred, the number of employees in Singapore now exceeds 5000.

Chart 17



The company's ability to compete as a broad range supplier and achieve aggressive goals for revenue and market share relies heavily on the excellence of its manufacturing machine and technology. The Ang Mo Kio plant is considered state-of-the-art with proven success in delivering a portfolio in high volume, on time and at the right price. Equipment automation integration has been introduced to eliminate errors due to manual intervention. Advanced engineering analysis systems have been deployed to provide rapid access to historical information to better handle customer post-sales queries and problems.

Regionalising from Singapore: From the regional HQ at Ang Mo Kio, the company expanded into other countries in the Asia-Pacific region. With rising labour costs in Singapore, STMicroelectronics has, over time, outsourced parts of its operation in Asia to Taiwan, Korea, China and India but Singapore remains its regional HQ and decision-making base for the Asia-Pacific. Its operation in Singapore is increasingly focussed on marketing, R&D and automated technologies. The highly automated and computerised assembly and test plants in Toa Payoh and in Muar (Malaysia) are the pillars of the company's back-end operations. A third facility and design centre were set up in Shenzhen, China. Another full custom design centre was located in India (Noida) and Shenzhen, China. The regional logistics and warehousing centre in Singapore manages distribution activities and facilitates just-in-time delivery to customers in the Asia-Pacific region.

Outlook for STMicroelectronics' Future Operations in Singapore

The key problem in Singapore is costs of operations, especially salary levels which are approaching those in Europe and the USA. This entails limiting the company's activities to high value add if it continues its strategy in Singapore.

The company's confidence and satisfaction with its operations in Singapore remains. The management feels that Singapore has proven to be a jewel for the company's operations in the Asia-Pacific region. The company recognised Singapore's needs to move into higher value added and will pursue a strategy of locating such activities in Singapore. Its priority areas are R&D, design and high-end technology manufacturing. STMicroelectronics has consistently upgraded its operation from a labour-intensive one to a knowledge-based organisation. STMicroelectronics will over time move its lower value added operations to other Asian countries like China. It has already started an assembly and test plant in China. If any move in activities were envisaged, China would be its next choice. Another reason for this move is to better serve its customers who are also setting up offices/plants in China as earning the status of "local" manufacturer is also important.

Strategy: Three main strategic guidelines have served STMicroelectronics' road map since the company's foundation (STMicroelectronics, 1995):

1. Innovation, driven by market needs as expressed through its strategic customer alliances. Through the years, STMicroelectronics has focussed its R&D efforts on specific market opportunities to which its technological capabilities and resources were ideally suited. At the same time, it has taken advantage of its strong alliances with strategic partners to jointly develop new product designs to anticipate emerging market needs. The company filed a record number (671) of new patent applications in 1998.
2. Globalisation through an integrated presence in the major macroeconomic systems world-wide. STMicroelectronics' approach to globalisation goes beyond merely selecting sites on the basis of regional economic opportunities or local labour availability. The company concentrates on serving the needs of customers of each region by the ongoing establishment of well integrated R&D, design, manufacturing and marketing operations.
3. Productivity improvement through a workforce that is educated, empowered and encouraged to achieve Total Quality Management. The approach is "At STMicroelectronics, people are actors and not factors in the business process". The commitment of its employees has helped increase the productivity in its human, operational and financial resources.

STMicroelectronics' product portfolio strategy has been focussed on 2 categories:

- Differentiated or dedicated products for specific applications or customers.
- Standards products, memories, logics and discretes.

In 1999, 63.7% of the company's sales were derived from the first product category, and 36.3% from the second. Its application-driven product development strategy is geared to offer its customers competitive advantages. High growth applications emphasise its world-leadership positions. Within its priority segments, STMicroelectronics has focussed on specific applications, which are expected to experience significant growth in the years ahead.

The objective of these strategic guidelines is to realise its Vision 2000, i.e.

- Become a solid member of the top ten world-wide semiconductor manufacturers.
- Demonstrate superior financial performance.
- Be best-in-class in customer service, product quality and environmental protection.

The company has achieved these targets.

Table 11
Financial Performance (Global)

Year	Net Revenue ($US millions)	Net Income ($US millions)
1994	$2,644.90	$362.50
1995	$3,554.40	$526.50
1996	$4,122.40	$625.50
1997	$4,019.20	$406.60
1998	$4,247.80	$411.10
1999	$5,056.30	$547.30

From being a loss making company (posting a loss of US$200 million in 1987), STMicroelectronics has witnessed a dramatic turnaround and growth in its fortunes and developed a solid balance sheet. Global Net revenues increased from US$2644.9 million in 1994 to S$5056.3 million in 1999.

The last decade has seen strong year-over-year increases in the company's revenues and earnings and widening gross profit margins. Between 1995 and 1998, when the Asia-Pacific market for silicon chips contracted by 1% and most of the top ten companies witnessed negative growth, STMicroelectronics, with an average annual growth rate of 13% was outperforming the market (**The Business Times**, July 23, 1999). Revenues from the Asia Pacific region as a proportion of total revenue world-wide increased from 29% in 1998 to 33% in 1999.

(*Note:* STMicroelectronics does not use EVA or Intellectual Capital as accounting measures but may contemplate doing so in the future. Although it does not present results in an EVA way, a culture of EVA is coming. In terms of financial judgement, STMicroelectronics uses Return on Net Assets (RONA). The building up of Intellectual Capital receives attention in a qualitative rather than quantitative sense at STMicroelectronics)

Table 12
STMicroelectronics in Singapore

	Units	1987	1990	1995	1996	1997	1998	1999
Turnover – Asia Pacific	*(US$ m)*	149	246	925	1,135	1,069	1,248	1,651
World Share	*(US$ m)*	863	1,349	3,554	4,122	4,019	4,248	5,056
	%	17%	18%	26%	28%	27%	29%	33%
Manufacturing Revenue - Singapore	*(S$ m)*	N.A	N.A	1,700	1,855	1,836	2,009	2,293

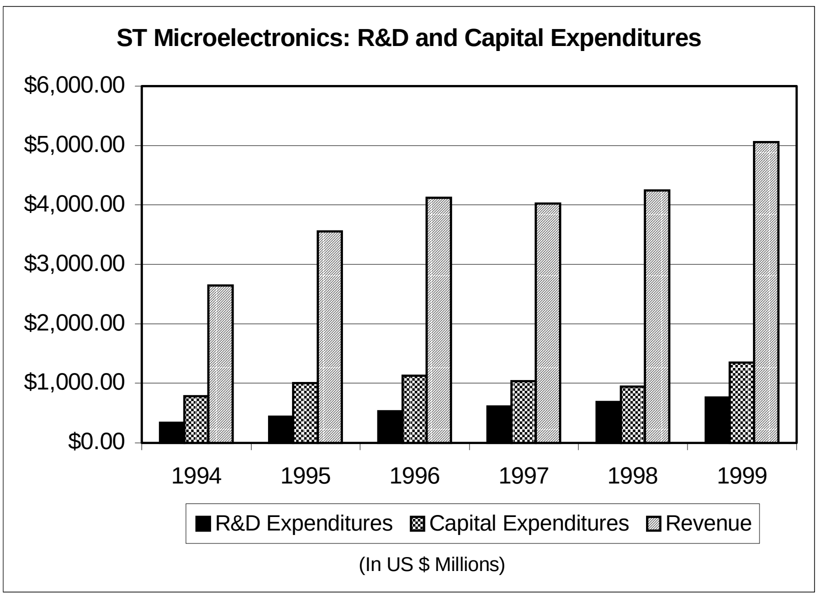
B. KBE Initiatives

Since the company's activities are intrinsically knowledge-based, the current trend towards knowledge-based practices is no new revolution for STMicroelectronics. What may change with the Internet is the way business is conducted. Currently, the company has a website and has also started supplying vast amounts of information through the web for supply management. It does not however practise e-commerce, as its objective is to increase its presence with a few big customers rather than widen its customer base.

Research and Development (Global)*:* The company spends a significant proportion of its sales in R&D and capital expenditures. In 1997, it invested over US$1.04 billion (25.8% of its revenues) on capital expenditure and US$610.9 million (15.2% of revenues) in R&D. In 1999, it spent 16.5% of its revenues on R&D and capital expenditure was $1.35 billion.

The fundamental goal of STMicroelectronics' R&D programme is to give customers a competitive edge by bringing to the market, as quickly as possible, advanced technologies to meet their evolving needs. The STMicroelectronics Central R&D organisation works at all levels, from fundamental research with academic partners to pilot production of devices built with newly developed technologies. It is augmented by divisional R&D centres. Most of its R&D work is located in Europe.

Chart 18



However, the activity is global with major centres in USA, India and Singapore. The company undertakes not only internal programmes, but also collaborative projects with academic, government and industry organisations as well as with customers, suppliers and other semiconductor manufacturers.

HR Policies, Organisational Structure, Culture, Management Style: STMicroelectronics exhibits a strong culture of concern for its people. It recognises employees as an asset and places them at the centre of the enterprise. Employees are made to feel that they are "actors" rather than factors in the business process. This is made real by empowering employees even at the lowest level of hierarchy to make decisions affecting the company's business processes.

STMicroelectronics uses a matrix organisation where its regional sales and marketing offices are matrixed against product/applications groups. In this way, the two groups are inter-linked in each region to the corporate groups.

In the manufacturing organisation there are 6 levels from the CEO to the operator in the line. In a non-manufacturing organisation, there are 5 levels from the CEO to the salesman.

STMicroelectronics believes that the hierarchy should be as flat as possible as it hopes to empower its staff in whatever they do.

STMicroelectronics' workforce is multinational and multicultural. The natural consequence of employee empowerment has been an increase in the productivity of the company's human resources. While companies' annual reports tend to focus on contributions of the top management, STMicroelectronics' 1997 Annual Report for instance highlighted the efforts of some of the many individual employees and teams who received recognition for contributing winning suggestions during the past year. Incentivisation is provided through the variable wage component assessed on an annual basis for professionals and quarterly basis for the other workers. An innovation award is given out each quarter.

Reward and Remuneration: Variable wage as a proportion of total wage in manufacturing organisation is about 0-7/8% and for non-manufacturing, it is about 0–

33%. The variable component is tied to both individual and team performance. Other awards include patent achievement, innovation, best suggestion and other TQM-related awards.

According to the management, so far the need for remote working and other family-friendly work practices has not arisen, as most of the staff has been able to balance work and family commitments.

Training opportunities are numerous, ranging from on-the-job training to computer-based instruction. On average, employees receive about 50 hours of training each year, higher than the national average of 32 hours. The importance of employee involvement is also recognised, with three-quarters of the employees participating in various team activities. Since 1995, team projects have led to total savings of $76 million.

At the heart of the training infrastructure and STMicroelectronics' attempt to be a learning organisation is the STMicroelectronics University. The STU campus is located in Fuveau, France with two regional centres in Phoenix (USA) and Singapore. A tried-and-tested trainer certification process provides the foundation for a dynamic cadre of in-house trainers. Training programmes are tailored to suit the business needs and strategic advantage of STMicroelectronics as well as the specific job evolution of individual employees. Basic, advanced and strategic course cycles target corporate culture and specific skills in managing a business and people.

Alliances: Central to STMicroelectronics' global success are the effective partnerships forged with leading participants in the world semiconductor industry including:

- Strategic alliances with key customers.
- Technology development alliances with both customers and other chip manufacturers.
- Development alliances with major equipment, materials and Computer Aided Design (CAD) suppliers.

- Partnerships with universities, research institutes and multinational R&D organisations.

The company has created 13 strategic alliances of which 7 are in the public domain. The value provided by these is evident from the fact that in 1999, more than US$2.104 billion (42%) of STMicroelectronics' revenues were derived from sales to strategic partners. Moreover, its leading-edge technologies have been significantly enhanced by working with these partners to optimise processes and design methodologies.

C. Excellence

STMicro won the European Quality Award in 1997, the 1999 Singapore Quality Award for Business Excellence and the Malcolm Baldridge National Quality Award for Excellence in the USA in 1999 as well.

In Singapore, the business excellence performance of STMicro has been the result of a concerted **Total Quality and Environmental Management** (TQEM) effort focusing on the five quality principles of Customer Focus, Employee Empowerment, Continuous Improvement, Fact-Based Decision Making and Management Commitment (Productivity and Standards Board, 1999). An excellent policy deployment process provides the links from the quality principles through corporate objectives and goals to the specific quality improvement projects now being carried out by more than 400 teams. The company's senior executives provide the strong leadership in cultivating an environment in which TQEM practices can thrive. They do so by chairing committees, conducting training, meeting regularly with customers and suppliers, and communicating through a variety of channels. These include newcomers seminars held twice a quarter, employee forums every quarter, skip level communications once a month (where staff and HR meet over any issues they like without the presence of the head of department), Speak Up channel (where staff can post anonymously any questions to senior management), newsletters and internal webpages. On a day to day basis, heads of departments meet with staff and walk the floor and executives actively spread and reinforce company goals and values through the organisation.

STMicroelectronics in Ang Mo Kio is total in its commitment to TQM. It has 80 teams for each 1000 employees working on quality improvement projects with a target of completing in excess of 62 projects per 1000 employees (SGS-Thomson Microelectronics, 1998). The beneficial result of employee empowerment is evident from the fact that the Employee Suggestion Scheme receives between three to four suggestions per employee aimed at improving the performance of the wafer fabrication plant. The Ang Mo Kio plant in fact provides about 50 hours of training per year per employee. A Central Training Department spearheads and co-ordinates comprehensive training programmes. Management and employees work in cross-functional Quality Improvement Teams using statistical tools, data collection and analysis to ensure fact-based decision making.

Using a Plan-Do-Check-Act approach, STMicroelectronics focuses constantly on measuring, reviewing and improving its processes. The continuous process improvement efforts have resulted in significant achievements in all facets of its operations. Between 1993 and 2000, the company improved fabrication yield from 93% to 98.5%, halved average cycle time for wafer fabrication and increased back-end manufacturing productivity from US$74,000 to US$90,000 per employee.

STMicroelectronics front-end and back-end manufacturing plants were voted the best plants in the Group consecutively for 1998 and 1999 for outstanding performance.

Customer Focus: The company uses a wide range of listening and learning strategies to capture information from customers, including contacts with customers, market analysis, customer audits and joint committees. It has also established a strong relationship with customers through business reviews involving customers, key customer partnerships, strong distribution networks and dedicated technical support. To serve its key customers better, it has even reduced the size of its customer portfolio. As a result, its overall customer satisfaction rating improved from

6.4 points (out of a possible 10) in 1995 to 7.7 in 1998. During the same period, its market share position in the Asia-Pacific improved from 13th to 5th in ranking in 1999.

The SQA is a recognition of the successful company-wide implementation of Total Quality and Environmental Management, or TQEM, across STMicroelectronics and confirms the positive trends achieved in the areas of innovation, customer satisfaction and service, employee involvement and motivation, market share and profitability. However, according to Mr Marquet, TQEM is part of a hard-headed business strategy to gain competitive advantage (**The Business Times**, July 23, 1999).

Other Awards: Appreciation for STMicroelectronics' achievements in Customer Service and Quality has been expressed in the form of Best Supplier Awards from multinationals such as Samsung, Sony, Sharp and others. Excellence and progress are rewarded by a series of internal Corporate Awards. For example, two excellence teams at the Ang Mo Kio plant won STMicroelectronics' top Corporate Executive Total Quality Awards relating to the environment and manufacturing process.

Perhaps the highest accolade accorded to the company's operations in Singapore is the Distinguished Partner in Progress Award conferred by the Singapore government to STMicroelectronics in November 1999.

It has also been recognised as one of the world's best-managed companies by **Industry Week** and **Upside** magazine.

Corporate Citizenship

Significantly, while STMicroelectronics makes periodic contributions to a variety of social and charitable causes, there is no specific mention of these in its Annual Reports and other corporate material issued for publicity purposes. This is because it has chosen to focus its corporate citizenship role on being a recognised champion of quality and environmental initiatives and a world leader in environmental protection.

Environment is a corporate priority for STMicroelectronics and encompasses taking care of its processes, products, workplaces and external communities by following its Environmental Decalogue and exceeding regulatory requirements in both degree and timing wherever possible. It also tries to involve suppliers and contractors in adopting an Environmental Management System (EMS). It strives for sustainability by:

- Minimising the impact of its processes on the environment.
- Maximising the use of recyclable or reusable materials.
- Adopting renewable sources of energy wherever possible.

The Corporate Environmental Steering Committee is chaired by the CEO. A comprehensive structure of Corporate Environmental Working Groups (CEWG) co-ordinates improvement actions at each site. Innovative solutions and 'best practices' are cascaded through the company to help build expertise and knowledge. A Site Environment Champion, along with local training organisations, offer courses for both internal and external contractor personnel.

STMicroelectronics believes that financial and ecological responsibilities are compatible goals. Caring for the environment is not only ethical but provides a competitive edge as well. It has appeal for young talent and helps to attract the best human resources. New, eco-friendly technologies and processes are also the leading edge ones, as well as more efficient and less costly. At STMicroelectronics, the average payback time on energy conservation has been less than two years. In 1998 alone, such investments allowed the company to save $12 million in electricity and $5 million in water consumption.

STMicroelectronics was the first semiconductor company to achieve EMAS (Eco Management and Audit Scheme) outside Europe. It was also the first company to achieve ISO 14001 certification in the US and probably the only one to have all its manufacturing sites world-wide certified ISO14001 (ST Microelectronics, 2000).

STMicroelectronics' environmental initiatives include setting clear, timed targets for energy reduction, water conservation and use of recycled materials as well as encouraging employees to support local community groups.

In Singapore, it has also achieved positive results through hazardous waste elimination and energy conservation. Notable improvements since 1994 include a 60% reduction in utility consumption and 60% in chemical waste generated.

Specific achievements at the Ang Mo Kio plant include:

- Energy Saving: STMicroelectronics set a corporate goal of reducing energy consumed per year by at least 5%. Over the period 1991-2000 despite an increase in production by 428%, energy consumption was more efficient with savings of 8% per wafer per year. Several energy saving projects were completed.
- Water Consumption: Despite an increase in water consumption since 1991, consumption per unit has been reduced by 8% per year.
- Safety of STMicroelectronics' people and property: One week is set aside annually for intensive education on safety programmes. Fire drills are organised periodically. STMicroelectronics also has an in-house Certified Emergency Response Team trained in fire-fighting skills.

Education: STMicroelectronics has also contributed to education and training through the STMicroelectronics University (STU). Although most of STU's programmes are designed for its own employees, some of its courses are open to outsiders as well.

Influencing Environment-related Policies: In Singapore, STMicroelectronics has also been involved with initiating and promoting focus group discussions on the use of the low fuel-consumption hybrid car.

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2.3 Mitsubishi Corporation *(Case Study #6)*

(Based on interviews with Mr. Keiichi Iwasawa, General Manager, Singapore Branch, and sources cited in the References)

Global Corporate Profile

Mitsubishi Corporation (MC) ranks as one of the world's largest and most diverse enterprises. Established in April 1950 and based in Tokyo, Japan, it is generally classified as a trading company (handling more than 10,000 commodities) although its operations go beyond serving as a trading agent. Through its investments in other companies, Mitsubishi is also involved in manufacturing, distribution, retailing, financing and many other activities through which it plays the role of supporting and even creating new markets. It has over 50 offices in Japan and almost 200 offices and subsidiaries world-wide. It has a staff of 13,000 professionals in Japan and overseas (Mitsubishi Corporation, 1998).

Group History

The first Mitsubishi Company started as a shipping firm in 1870. As the company grew, it branched into diverse fields including shipbuilding, steel making, banking, mining, insurance and trading. In 1918, the trading division became an independent company. Following World War II, the Mitsubishi organisation was broken up into scores of independent organisations without any central management or stock holding, united only by a common history and "alumni"-style links between the companies.

In 1947, the original Mitsubishi Trading Company was dissolved, its operations divided among over 100 new companies. Following mergers and consolidation, a new trading entity, namely Mitsubishi Corporation, with a separate identity and distinct ownership structure, emerged in 1971. Relationships with manufacturers and other Mitsubishi members continue to add value to MC's client services. However, non-Mitsubishi business relationships constitute a larger and faster growing element of MC's business volume.

A. MC in Singapore - History

MC is one of several Mitsubishi companies in Singapore. It set up a representative office in Singapore in 1954 and a full branch office in 1955 to service its ASEAN markets. Although its markets in Taiwan, Malaysia and Indochina are larger than the Singapore market, the choice of Singapore as a location for a branch office was based on:

- Political stability in Singapore.
- Good infrastructure facilities.
- Singapore's efficiency as an information and financial centre in the region.

Table 13
Mitsubishi Corporation – Subsidiaries in Singapore

Name of Subsidiary	Type of Business Activity
Ryoden(Singapore) Pte Ltd	Sales and maintenance Services for lifts & elevators
Tien Wah Press (Pte) Ltd	Printing services
Kurofuchi Packaging Singapore Pte Ltd	Manufacturer of packaging Materials
Nico-Nico Foods (S) Pte Ltd	Manufacturer and sales of seaweed products
MC Trans Singapore Pte Ltd	International logistics and Warehousing services
Mi-Mi Investment Singapore Pte Ltd	Investment-holding company
MC Development Asia Pte Ltd	Investment-holding company
Vietnam-Singapore Industrial Park Pte Ltd	Investment-holding company
Singapore-Suzhou Township Development Pte Ltd	Investment-holding company

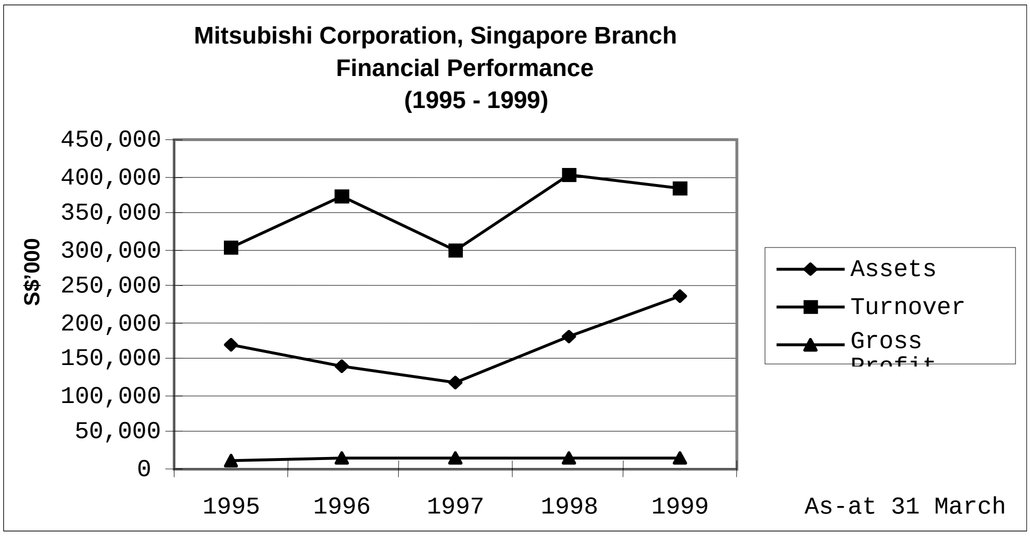
Trading, accounting and sales networking are the main functions centred in the Singapore branch office. More than 90% of its transactions are agency transactions for MC in Tokyo and other locations. It covers the offshore business in the region as well. MC also has minor shareholding in subsidiaries in Singapore (see Table 13) engaged in printing services, manufacture of packaging materials, seaweed production, etc, as well as alliances with local partners in investment holding companies. It has a partnership with Sembawang Corporation for the industrial park in Vietnam, which it is helping to market to other Japanese MNCs. It is involved with Temasek Holdings in the case of Suzhou Industrial Park. Although the latter did not prove profitable, the MC management views the relationship built with GLCs in Singapore as a positive development.

Its strategy is aligned to that of the head office in Tokyo, which in turn is based on the core strengths of extensive customer base, risk management, distribution and payment settlement systems, brand trust and equity and in-depth knowledge of products and industries.

Financial Performance

In 1999, turnover of the Singapore branch office was over S$375 million. The regional financial crisis benefited the Singapore branch's operations. The decline in local demand for produce from its production facilities in the ASEAN countries (e.g. petrochemical plants) necessitated export through Singapore. Assets and turnover in 1998 and 1999 were thus higher than pre-crisis levels although gross profits were not substantially affected and remained in the range of S$15-20 million.

Chart 19



(In comparison, gross profits of the branch were substantially affected by the crisis in the mid-eighties, sinking from over S$5 million in 1985 to S$2 million in 1987, and did not immediately recover to pre-crisis levels)

As a branch office without a capital or investment account, MC in Singapore does not use ROA and ROE measurement.

On a global basis, in the year ended March 31,2000, total trading transactions stood at US$127,309 million and gross trading profit at US$5583 million. Emphasis was given to improvement of asset efficiency through strict adherence to exit rules, strengthening risk management and shedding a high cost structure. Its profitability has been quite low in recent years. A world-wide average ROE of 6% is now being targeted.

B. KBE Initiatives

Being a branch office, all initiatives by MC in Singapore are aligned to the strategy of the head office in Tokyo. The central goal of MC2000 is corporate transformation (Mitsubishi Corporation, 2000). The new "dot commerce" strategy exemplifies the proposed, more offensive stance to launch the company into the 21st century. The aim is to leverage on old economy business expertise and “brick-and-mortar” strengths in Japan and overseas through the new platform.

- By reasserting its core strengths and coupling them with new technologies, MC hopes to deliver added value at every step of the value chain by harnessing its competency in delivering a whole suite of services.
- The New Business Initiative Group has been positioned as the vanguard of this strategy and is aimed at strengthening financial, information, logistics and marketing technologies and creating new business models and new services for its customers.
- The various business groups have identified almost 150 “dot commerce” projects.
- The “dot commerce” strategy will be further aided by embracing Customer Relationship Management (CRM) to make MC a total solutions provider.
- Employees are being asked to look beyond immediate areas of responsibility and tap the collective knowledge of MC to create new products and services.
- The Technology & Business Development Department will drive the incubation and commercialisation of promising projects rooted in sophisticated technologies, some of which are patented.

Since the home market in Japan is by far the largest market for MC, the new dot commerce strategy is likely to be implemented and tested in the Japanese market first before being implemented overseas. The Singapore branch office, however, is expected to add much value to the e-commerce strategy and expanding supplier-buyer links, because of the excellent communications infrastructure and the prevalence of English as the language of communication.

New HR Policies

- The Corporate Venture Initiative (CVI) fund has been established to encourage employees to propose new ideas, including IT-based businesses.
- A more performance-oriented pay system has been introduced and age and seniority-based systems abolished.

- Increased emphasis on specialised abilities and upgrading skills will give the employees more incentive to excel and translate into more value for MC's customers.
- A new stock option scheme has been introduced for its directors and associate directors.
- A slimmer organisational structure was implemented in fiscal 2000.
- A voluntary early retirement incentive initiative was also introduced.

At the Singapore Branch: The staff strength at the Singapore office is quite small (see Table 14). Training has hitherto been undertaken on an *ad hoc* basis and takes the form of On-the-Job-Training conducted by experts sent from Tokyo. Alternatively, local marketing personnel are sent to Japan to understand the technical aspects of traded products. From the year 2000, 50% of the staff are covered under the Critical Enabling Skills Training (CREST) Plan and will receive formal training. Branch offices have been asked to identify promising candidates to be allocated to the HQ. The percentage of payroll spent on training in Singapore is 1%.

Table 14
Staff Profile in Singapore

Year	Expatriate Staff	Local Staff	Total Staff	Turnover Rate (%)
1995	23	94	117	16.0
1996	23	102	125	15.2
1997	26	107	133	19.0
1998	29	103	132	16.2
1999	28	106	134	18.2
2000	26	99	125	

Despite the changes announced, fixed wages constitute over 95% of the wage structure and the proportion of performance-based variable wage is low. Even after the restructuring, there are currently 10 grades or levels of reporting at the Singapore office.

Deep-rooted conservatism, evident in financial policy and other aspects of management, characterise the corporate culture at all Mitsubishi companies (Mitsubishi Corporation, 1998a). The conservatism also reflects an acute sensitivity to the social context of business, hence the painstaking analysis in the process of decision-making. Employee importance was institutionalised through the practice of lifetime employment (as with other Japanese corporations) and cultivation of customers was done in a traditional way through informal networking. Emphasis on customer-orientation and shareholder focus is now growing stronger.

C. Excellence/Corporate Citizenship

Since it is not directly involved in manufacturing operations in Singapore, MC in Singapore is not directly engaged in major excellence initiatives. As an investor, it is conscious of evaluating projects keeping in view their adherence to the ISO criteria and other regulatory standards.

At a global level, community involvement and environmental responsibility is an integral part of MC's corporate philosophy. It was the first among Japanese general trading companies to establish a Global Environmental Issues Committee. This body was expanded in 1995 to function as a Global Environmental Committee. A rigorous set of environmental audit procedures ensures MC's business operations comply with all applicable standards and policies. It has participated in a number of environmental endeavours, e.g., in Sarawak, Malaysia, MC supported the Tropical Forest Regeneration Experimental Project. In Indonesia, it made significant contributions to Asia's largest botanical garden at Bogor. In the US, it supports environmental education programmes. It is a member of the Business Council for Sustainable Development.

In 1996, MC formulated its environmental charter and its head office obtained ISO 14001 certification in 1998. In 1999, it published an environmental report to provide the public with a detailed explanation of its policies and objectives in the area of environmental protection and resource management. This includes environmental risk management, an environmental and social responsibility office to increase environmental awareness among employees, prevention of global warming and pollution, recycling, waste management, etc. Its work in some of these areas has become part of its business consulting activity as an environmental solutions provider.

In Singapore, MC's contribution and engagement in community activities is routed through its support of the social and philanthropic activities of The Japanese Association and The Japanese Chamber of Commerce and Industry. These contribute S$600-700,000 annually towards the Community Chest of Singapore, education, sports and activities for the disabled and the elderly.

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3 Local Private Sector Companies: Case Studies #7 - #12

3.1 Overseas Union Bank *(Case Study #7)*

(Based on inputs provided by designated company representatives and sources cited in the References)

Company Profile

Overseas Union Bank (OUB) has grown to become a premier consumer bank in Singapore and a leading regional bank. It was rated the fourth largest Singapore bank and the fifth largest commercial bank in the ASEAN region in terms of shareholders equity[8] (http://www.oub.com.sg). Employing a staff of over 3500 employees, its group shareholders' funds stood at $4.72 billion and total assets amounted to over $39 billion in December 1999.

A. Company History

Beginnings

OUB was started by a group of Chinese businessmen rallied by Dr LienYing Chow. Dr Lien, a well-connected businessman in Singapore, first initiated the formation of the Overseas Chinese Union Bank in Chongqing in China (he fled to China during World War II). Seeing Southeast Asia as a better bet for expansion, he solicited and obtained the support of a prominent group of rubber and tin barons and property developers to sit on the board of the Bank in Singapore.

OUB started its operations with a paid-up capital of $2 million and a staff size of 27 people. Significantly, the newspaper coverage of the event headlined the story as “People’s Bank Opened” (**The Straits Times**, February 5, 1949). It opened its doors at Meyers Chambers in Raffles Place on 5 February 1949 with Mr Chi Owyang as the Bank Manager.

[8] As on December 1997.

Targeting a Niche Business

Banking in Singapore at that time was dominated by a handful of British banks and a few Chinese banks serving various dialect groups. OCBC was Hokkien, Sze Hai Tong and OUB were Teochew and Lee Wah Bank was Cantonese. (It was after Singapore became a nation-state in 1965 that the dialect and ethnic divisions became blurred). OUB could not compete with other banks on their own turf. It found a niche in trade financing for rice imports from Thailand. This became the mainstay of the business.

Cultivating Strong Customer Relationships

Relationships with rice merchants who were thinly capitalised but had good growth potential were carefully cultivated through regular personal visits and entertaining. A relationship was also built up with the State Commercial Bank in Burma, as Burma was the second-largest exporter of rice to Singapore. Soon OUB was handling all the Burmese bank's business in Singapore and later Hong Kong. The rubber commerce and tea accounts in Malaysia followed.

Building a Local and International Branch Network: OUB expanded locally by setting up other branches in Singapore, e.g. at New Bridge Road in 1957, where the vegetables and spice trade was carried on. Branches were opened in Penang and Malacca in 1958 and in Kuala Lumpur in 1959. It became the first Singapore bank to have a presence in Tokyo (1963), London (1963), New York (1973) and Brunei (1974).

Diversification in the Local Market: In 1964, Dr Lien diversified into the hotel and property businesses.

As Singapore emerged from the turbulence of the previous decade, the 1970s marked an era of industrialisation. Singapore also became a financial centre serving the region and banks had to upgrade to meet the new challenges. The Post Office Savings Bank (POSB) was revitalised and The Development Bank of Singapore (DBS) set up to provide long-term credit to industries. The decision to set up the Asian Dollar market heralded the opening of the industry to foreign banks.

New Products and Services: OUB became the pioneer local bank to enter into the credit card business. It launched the Overseas Union Bank Americard in collaboration with the Bank of America in 1976. This was the first Singapore dollar-based international credit card. Bank of America's operations were taken over by Chase Manhattan and OUB subsequently bought over these operations from Chase Manhattan (including the infrastructure, systems and manpower, etc, in 1993). It therefore did not need to re-invent the wheel. This represented a quantum leap in terms of OUB's objective of broadening its products and services.

Today, the bank is not only one of the largest credit card issuers in the republic but has carved niches for itself in other areas like treasury, fund management, corporate finance and capital markets. The OUB Group has subsidiaries and associated companies engaged in a diverse range of financial activities. These include stockbroking, investment management, general and life insurance, trustee services, nominee and custodian services.

The Corporate Banking Division grew in tandem with the growth of the corporate sector in Singapore. As the environment in the finance industry became more deregulated, treasury activities thrived since OUB had built up its competitive edge through an understanding of local market practices and idiosyncrasies and translated this knowledge into an integrated value chain. The investment banking business was also built up from scratch. It entered corporate finance in 1990 and became a significant player in the local equity market, handling 22 IPOs [Initial Public Offers] on the stock exchange of Singapore in 2000. It also developed its capital markets and syndication business. All these helped the bank to diversify its domestic earnings base and build up fee-based income sources.

Recruitment of Professionals: Mr Lee Hee Seng (the current Chairman), who joined OUB as its Chief General Manager in April 1974, played a pivotal role in transforming it from a privately owned and managed bank to a more professionally managed organisation. The company was listed on the Stock Exchange of Singapore on 21 August 1975. Fresh and experienced talent was recruited and proper personnel policies instituted. OUB's people-focussed strategy, reflecting the far-sightedness of its management and founders, had started to take shape. A number of talented individuals, who had been trained in major foreign banks, joined OUB.

Institutionalising a Service-Based Culture and Best Practices: Dr Lien and Mr Lee set out to build a business culture based on service, prudence and professionalism and an organisational culture based on integrity, meritocracy and teamwork. To avoid conflict of interest, it was agreed that relatives of board members, management and staff would not be recruited.

Mr Peter Seah took over as President and CEO in 1991 and Mr Lee became the Chairman, following Dr Lien's retirement in 1995. OUB's management under Mr Seah was driven by a singularity of purpose, "to create an institution we could be proud of" (Lim, 1999). It transformed itself from a local consumer bank to a regional consumer bank. In 1995, it was ranked among the top ten institutional investors in Singapore.

Computerisation: A major computerisation drive was launched early on. A consortium was formed with three other local banks (Asia Commercial Bank, Far Eastern Bank and Industrial Commercial Bank) in 1978. The Modular Terminal System was the first of its kind in Southeast Asia. Associated Data Processing Pte Ltd (ADP) provided data processing services. In 1979, the Bank's savings and current account and fixed deposit systems went online. OUB eventually absorbed ADP in 1993 as the other banks developed their own data processing units. A whole division, i.e., the Information and Systems Services Division, at the OUB Tampines Centre, now handles computerisation.

Early Efforts at Globalisation: To facilitate global expansion and establish the presence of Singapore banks internationally, OUB, along with three local banks (Development Bank of Singapore, Overseas-Chinese Banking Corporation, and, United Overseas Bank), set up the International Bank of Singapore (IBS) in May 1974. It set up branches in several countries including Korea, Taipei and Manila. In

1983, OUB won the bid for IBS (this was later merged with the OUB in August 1998). The acquisition gave OUB the largest combined network overseas among Singapore banks.

Expanding Overseas Operations: Beyond Singapore, OUB is represented in Australia, China, USA, Thailand, Japan, Taiwan, South Korea, Hong Kong, Myanmar, Ho Chi Minh City and Malaysia. Since 1990, OUB's operations in Hong Kong, restructured into a wholesale corporate business, achieved record profit growth. In 1994, it became the first Asian bank to provide a US$175 million multiple option facility for an Australian bank, and to raise funds for a New Zealand financial institution. From focussing on providing financial services and support to Asian investors, OUB in Sydney also became a player in the wholesale and investment banking arena. The Malaysian operations also contributed to the group's performance.

A Landmark Centre: The persevering vision of OUB's founder, Dr Lien, was exhibited in the building of the current OUB Centre, which in itself served to strengthen the bank's identity and presence. It took him 35 years to acquire No 1 to No 8 Raffles Place and five years to construct it. Designed by renowned architect Kenzo Tange, OUB Centre was then the tallest building outside the U.S. The building was officially opened by the then Prime Minister, Lee Kuan Yew on 8th August 1988.

Financial Performance

Started in 1949, OUB was able to declare a dividend of 5% by 1952. The mid-sixties were turbulent for Singapore but highly profitable years for the Bank. The acquisition of IBS in 1983 required the writing off of part of its goodwill. The mid-eighties recession also affected the Bank's bottom line but it remained profitable. Since 1991, the bank has experienced steady growth from year to year and become one of the best performing local banks in Singapore. Fresh new capital was injected through rights issues and private placements. The bank consistently turned out better bottom line results than forecast by analysts. From 1992 to 1996, OUB ranked as the fastest growing among the Big Four local banks with an average annual after-tax profit growth of 28.6 per cent, despite being the smallest of the Big Four.

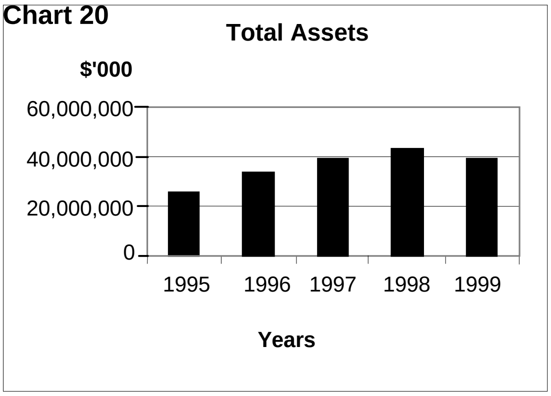
Table 15

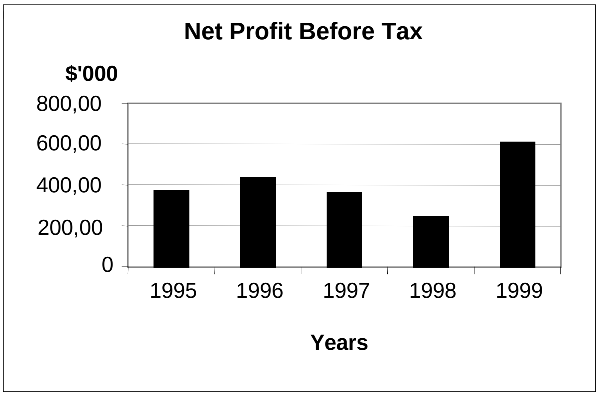
	1995	1996	1997	1998	1999
Total Assets (S$'000)	25,614,563	33,519,337	38,860,666	43,472,048	39,372,025
Net Profit before tax	370,404	437,687	361,480	242,725	606,160
Shareholders' funds	2,937,779	3,188,325	4,041,758	4,306,501	4,720,935
Return on Equity(ROE) (%)	10.5	10.1	7	4	9.9

Source: OUB Annual Report 1999

In the years 1995-1999, the Group Operating Profit witnessed an overall increase from approximately $428 million to $772 million. However, net profit saw declines in 1997 and 1998 on account of the regional financial crisis and the jump in non-performing loans. In 1999 however, the net profit bounced back touching a record level of $450 million on account of gains in the consumer and investment banking businesses, and a lower level of provisioning required with the significant improvement in the region's economies and financial markets. Group Total Assets also increased steadily between 1995 and 1998 but declined in 1999 to $39.4 billion. Return on equity (ROE) improved from 4% in 1993 to 9.9% in 1999, but this was lower than the level achieved in 1995 (10.5%).

Chart 20





Contributions by geographic segments were based on the locations where the transactions were booked. Operations in Singapore contributed to the bulk of the Group's pre-tax profit (81.8%) while profits from transactions booked overseas were 18.2% of total profits (Overseas Union Bank, 1999).

Chart 22

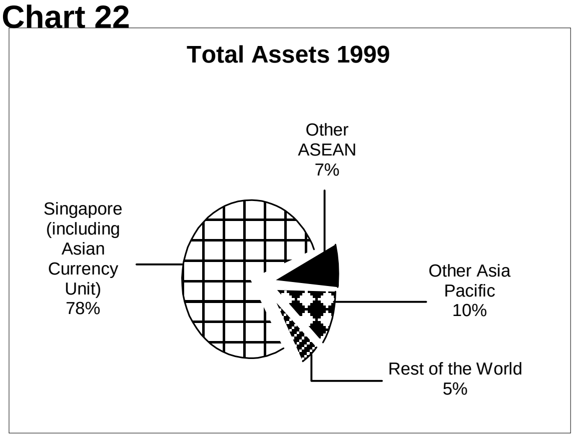
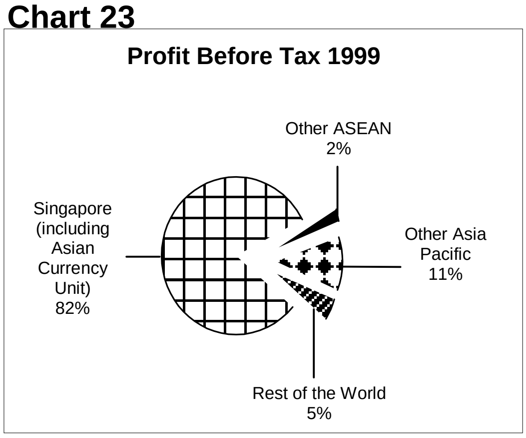


Chart 23



The OUB2000 initiatives targeting the consumer market paid off with an increase of 35.1% in housing loans in 1999. The Group's net exposure to the region (covering Malaysia, Indonesia, Thailand, South Korea and Philippines) fell 14.5% from the previous year. The net exposure as at end 1999 represented 8% of the Group's total assets. On a country basis, 83.6% of the regional net exposure was to Malaysia, representing 6.7% of Group Total Assets. Exposure to other regional countries accounted for 1.3% of the Group's assets. The Group's global NPLs, constituting 7.6% of global assets, increased marginally from the previous year, 27% accounted for by the region.

Its Capital Adequacy Ratio (CAR) improved from 15.6% in 1996 to 18% in 1999, which is more than twice the Bank of International Settlements (BIS) requirement and higher than the Monetary Authority of Singapore (MAS) requirement of 12%. However it was lower than the 19.1% level reached in 1995 before the decline. Total shareholders' funds, rising steadily since 1995, reached $4.72 billion in 1999.

(Note: OUB does not use EVA as an accounting measure)

B. KBE Initiatives

A major business process engineering exercise was launched in national banking, a strategic blueprint to prepare the bank for the challenges of the 21st century. The implementation began in 1998. A Branch Operations centre to take over all backroom operational branches at OUB branches in Singapore was launched. People in the branches were prepared for a selling culture and a strong customer-focused approach. Selling and conduct awareness programmes were conducted to start changing the mindsets of the staff. Products like Club55 Plus and Multilink were launched and proved successful. In 1997, Mr Peter Seah headed the Finance and Banking Sub-Committee, which was part of the larger Committee on Singapore's Competitiveness. A new operations division was formed in 1998 to further increase the efficiency and productivity of the Bank's overall operations and manage strategic projects like redevelopment of the call centre, the Customer Relationship Management (CRM) project and the Management Information System (MIS) project.

Millennium Vision and Plans

The OUB2000 Plan unveiled in February 1999, in conjunction with its 50th anniversary celebrations, envisioned OUB as Singapore's premier consumer bank in the new millennium, providing seamless delivery of innovative, customised services and products. It aims to provide one-stop banking services, personalised financial solutions enabled by leading-edge technology aimed at achieving a number of industry “firsts”, and setting benchmarks for excellence.

Technology

OUB became known for taking the lead in harnessing technology to develop cutting edge financial infrastructure and services. The bank's S$300 million integrated technology plan was designed to acquire a distinct competitive edge and bring the benefits of smart, intelligent technology with a personal touch to customers to “better deliver the OUB Experience”[9] (Overseas Union Bank, August 20, 1999). Under this plan, (driving its OUB2000 plan) a series of products and services was launched:

- OUB PhoneBanking, the first fully integrated 24-hour call centre among Singapore banks.
- OUB Global Debit MasterCard, the first global debit card in the Asia-Pacific region with full Internet purchase capability.
- OUB Mobile Buzz, the first comprehensive range of alert services via mobile phone by a Singapore bank.
- oub2000.com.sg, the first fully customisable financial services website by a Singapore bank. Services available at the website include banking transactions, information on financial products and services and financial tools.
- IPO applications, including those managed by other banks, foreign currency IPO and bond IPO applications as well as CPF applications, can be made on-line through the OUB website.
- On 30 March 2000, OUB became the first bank in Asia to launch wireless Internet banking enabled by WAP technology, with OUB MobileNet – a service that allows customers to access Internet Banking via handheld devices such as mobile phones.

[9] Statement by Mr Peter Seah, OUB, August 20,1999.

- OUB's Customised Financial Solutions (CFS) Platform integrates the bank's marketing and sales processes and is supported by a powerful data warehouse and CRM tools.
- OUB's Mobile Sales Force, equipped with 'smart laptops' and backed by the CFS Platform can put together a housing loan for customers and meet them, wherever they may be. A large percentage of its staff strength is concentrated in sales and mobile.
- Through OUBS Online, OUB Securities offers personalised online trading capabilities with special features for investors such as real-time information/prices, market intelligence and OUB treasury/economic information.
- On 3 April 2000, OUB announced a joint venture with Europe's first Internet-only bank, first-e, to establish the first stand-alone e-bank in Asia.
- On 18 April 2000, OUB along with Crosby Group and other regional partners launched growasia.com to enable sourcing and execution of corporate transactions between Asian SMEs and cross border investors, and provide access to an experienced advisory service at radically lower costs. "OUB's investment in growasia.com underscores our commitment to provide innovative, technology-enabled solutions to companies in Asia to propel expansion beyond their home ground", noted Peter Seah (Overseas Union Bank, 2000, April 18).

Human Resource Development and Policy

Staff training, skills and best practices were given high priority at OUB. From 40 graduates and professionals among a staff of 1000 in the 1970s, OUB now has over 600 graduates and professionals. A fully equipped training centre with a staff of 25 was set up as early as 1976.

In 1999, OUB was the first service organisation to receive the National Training Award in the service sector category for the second time in recognition of its training efforts. It is the only local bank which has won the award and the only financial institution to win it twice. In 2000, OUB became the first bank to be awarded the People Developer Standard on a bank-wide basis.

- The bank's 21-member team housed at the state-of-the-art Training Centre at Tampines conducts and organises hundreds of courses annually for its staff, ranging from customer service skills to IT and managerial skills courses.
- A series of training courses relating to CRM, Internet Banking and e-commerce, to support the initiatives under OUB2000 were introduced in 1999.
- External courses include diploma courses from the Institute of Banking and Finance.

Rewards and Remuneration

Salaries include a two month annual bonus in addition to a variable bonus based on individual performance which Division heads use to reward their respective star performers. Long service awards (for service exceeding 10 years) are given to staff to honour loyalty and commitment to the bank. OUB staff from assistant vice-president level and upwards are entitled to stock options.

In the opinion of a company representative, the increasing emphasis on technology is also due to the realisation that good staff is hard to come by and scarce. The staff turnover at OUB is roughly 10%-12% a year, which is about the same as the industry average. Turnover is highest at middle management positions in cases of employees leaving to join foreign banks.

Organisational Culture, Structure and Management Style

Although the organisational structure is hierarchical, management plans and objectives are communicated to staff regularly through communication sessions, newsletters, exchanges, the intranet, etc. Suggestion schemes reward staff whose suggestions are accepted. Social and leisure activities organised by the OUB Recreation Club and generally sponsored by the bank include sports events, a

Family Day, the annual Children's Christmas Fair and the Annual Dinner and Dance celebration. All these help to foster teamwork and fellowship beyond the office boundaries.

Rankings and Ratings

OUB was ranked 137 out of the world's top 200 banks by **Euromoney** in June 2000. **The Banker's** July 2000 survey of the world's top 1000 commercial banks ranked OUB 128th based on Tier One Capital. Among Asian banks, **The Banker** ranked OUB 15th out of 200 banks based on Tier One Capital. In Singapore, OUB ranked 8th of 381 companies in terms of market capitalisation (Stock Exchange of Singapore Ltd, 1999).

C. Excellence Initiatives

- The Group Audit & Inspection Division has obtained ISO 9002 certification from the PSB. The Division has participated in exercises including re-engineering, risk management framework, IT planning and CRM projects.
- Apart from having ISO certification for the Audit Department, the bank is an accredited test centre for computer courses.
- OUB staff works closely with the Singapore Association of Quality Circles.
- OUB was the only financial institution amongst 16 corporations to participate in the Integrated Management of Productivity Activities Programme (IMPACT), a tripartite national effort to raise productivity.
- Customer Service Excellence initiatives and programmes have been an integral part of OUB's culture. Results of industry studies on product-based customer service surveys are factored into the organisation's plans. Quality Service Teams (QST) identify and implement innovative ideas to improve efficiency and effectiveness in the workplace. These include initiatives and contests for telephone excellence, courtesy, projecting a professional image, star service and service ideas. Achievements and contributions in tapping the potential of

the staff and motivating them to take greater ownership of their work are rewarded with the QST of the Year award.

- OUB was part of a Work Improvement Team (WIT) which received the Gold Award in the 1999 PS21 Public sector WITS Convention for a project aimed at reducing the time taken to pack high denomination loose notes for return to Board of Commissioners of Currency Singapore (BCCS).
- OUB received the inaugural National Training Award from PSB in 1988 and won it again in 1999.
- OUB's "Big Hearts, Little Ones" Credit Card was voted Card of the Year with an innovative menu of privileges and facilities in 1999.
- OUB received the Best Website Award in a survey of bank websites conducted by **Smart Investor** magazine, for being comprehensive, informative, well structured and user-friendly with a strong brand identity and image.
- OUB clinched top honours at the Asian Banking Awards, which honours banks in Asia for outstanding and innovative products, services and projects implemented in the past year. In 1999, OUB's Electronic Signature Verification System won the award for Operational Efficiency. In 2000, the award-winning entries were OUB Global Debit MasterCard for Pioneering Product Service, and OUB2000 which topped the Marketing, PR or Brand Management project category.
- OUB was named the Best Domestic M&A House (Singapore) in the Euromoney awards for Excellence.
- OUB Internet Banking emerged as the best Internet banking site among 50 Asian banks' sites in a survey by **Asian Banker Journal**.
- OUB's Global MasterCard was the winner in the Pioneering Product or Service category in the DHL Asian Banking Awards.

  OUB's management benchmarks itself by global rather than local standards in banking.

Contribution as a Corporate Citizen

Early contributions: OUB, United Overseas Bank (UOB) and DBS were called upon to help the two rival major newspaper companies to jointly produce an English language newspaper by the government. The **Singapore Monitor** (TSM) was launched in 1982 with Mr Lien as Chairman. The 2 local language papers were merged to form Singapore News and Publications Ltd (SNPL). OUB was allotted 30% equity and charged with playing a lead role in managing the company. The rivalry between SNPL and TSM proved counter-productive and the two were merged to form Singapore Press Holdings in 1984, with Mr Lien as Chairman and Mr Lee as a Director and member of the Executive Committee. SPH went on to become one of the largest and most profitable companies on the stock exchange of Singapore. Although the bank played a role in this restructuring of the newspaper industry as a corporate citizen, the venture also proved to be a sound investment for the group.

The Bank also played a similar role when the Pan Electric Group collapsed in 1985. OUB was then the chairman bank of the Association of Banks in Singapore. Mr Lee and Mr Peter Seah, along with representatives from MAS, the other Big Four local banks, stockbroking firms and legal advisors, came up with a ‘life boat’ that helped to restore investor confidence in the market.

Recent Contributions: The Bank’s senior management participates in the activities of the committees instituted by the government in connection with financial sector issues. Its organisation and culture strongly encourages community service. It is involved in particular with offering support to the needs of children, the elderly, youth and education. Thus some of the events/awards supported by the bank in 1999 include:

- The People’s Association Senior Citizen’s Sports Fiesta, which also attracts OUB Club 55 Plus members.
- National University of Singapore’s Academic Week 2000, which the bank has supported for more than a decade.

- OUB Gold Medal Award given to the top graduating student from the IDSS Master of Science course.
- Children's Charities Association (CCA). The Bank's "Big Hearts, Little Ones" Credit Card raised $200,000 for the CCA and is part of its 10-year commitment to the Association.
- Singapore Symphony Orchestra (including the sponsorship of a Musician's Chair). The bank has received an Associate of the Arts Award from the National Arts Council.
- Donation of $2 million to the newly established SMU to sponsor a Professorship in Banking to commemorate its 50th Anniversary in 1999.

Government Support

The Singapore government protected the banking industry from foreign competition for three decades because it believed that strong, well-managed banks were critical to the resilience and stability of the financial system. Close monitoring and rigorous supervision by the MAS has ensured that the local banks did not fail. Political stability and good governance created a scenario where the local industry was relatively less impacted despite high levels of regional NPLs during crises. However, local banks were protected from foreign competition only in the sense of the product range and number of branches permitted for foreign banks vis-à-vis local banks (only a limited number of full-bank licenses are available to foreign banks operating in Singapore). The individual achievements and progress made by local banks depended on their responses to the competition and their internal management initiatives.

Outlook for the Future

With the liberalisation in the banking and financial industry since 1998, local banks were urged by the government to consolidate operations and merge given the small market size. In a statement on September 21, 2000, Deputy Prime Minister

Lee Hsien Loong further urged local banks to think about cross-border mergers or face the prospect of losing out to foreign banks (**The Straits Times**, September 22, 2000).

OUB has exhibited readiness to strike up new alliances with foreign partners who can add value to its operations. Its tie-ups with Dublin-based first-e and ING Group's asset management arm to form OUB Optimix attest to this.

Although OUB is the smallest of the Big Four banks in Singapore, it has been the most dynamic in terms of inroads made in the domestic retail and underwriting market, and in the unveiling of a comprehensive e-banking strategy. It was among the few banks to expand its market share during the down cycle, which, among other factors, underpinned its ability to bounce back quickly. All these factors should hold OUB's future performance in good stead. Differing regulatory structures and standards of corporate governance in emerging markets in neighbouring countries, however, will continue to have a bearing on the bank's ability to penetrate these markets.

(Postcript: On 29 June 2001, United Overseas Bank (UOB) and OUB issued a joint announcement of the takeover of OUB by UOB. Following the successful completion of UOB's bid for OUB, which was accepted by an overwhelming majority of OUB's shareholders, the process for the integration of the two banks was set in motion in September 2001.)

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3.2 City Developments Limited *(Case Study #8)*

(Based on information supplied by CDL's Corporate Communications department and sources cited in the References)

Corporate Profile

CDL has been at the forefront of Singapore's property sector ever since its inception in 1963. An international property and hotel conglomerate operating in 15 countries spanning Asia, Europe, North America and Australasia, the CDL Group has over 200 subsidiaries and associated companies including eight companies listed on the stock exchanges of Singapore, London, Hong Kong and Amsterdam (http://www.cdl.com.sg).

As a leading residential developer with a track record of over 37 years, CDL has built more than 60 projects (over 12,000 homes) in Singapore and the region. These include some of the distinctive residential landmarks in Singapore. The Group is one of Singapore's biggest commercial landlords, with approximately 5 million square feet of office, industrial and retail space. In land scarce Singapore, CDL also owns a land bank of over 5 million square feet comprising residential and commercial land.

The Group's London-listed subsidiary, Millennium & Copthorne Hotels plc (M&C) is one of the largest hotel owners and operators in the world. Its stable of 112 hotels is located in 13 countries, including the cities of London, New York, Paris, Sydney, Singapore and Taipei. The majority of its hotels operate under its Millennium and Copthorne brands. It holds the master franchise for the Quality brand in New Zealand. Other international chains manage seven hotels including the renowned The Plaza New York and Grand Hyatt Taipei. M&C is 52.4% owned by CDL, through its (wholly owned) subsidiaries, Singapura Developments (Private) Limited and Reach Across International Ltd.

The Group has also set up a subsidiary, City e-solutions, to spearhead Internet investment and e-commerce initiatives to complement and add value to the core business of the Group.

A. Company History

CDL began as a company set up to acquire, develop and sell property in a small rented office in 1963 with just seven employees. The Company went public within two months, i.e. in November 1963. Its shares were listed on what was known then as the Malayan Stock Exchange.

In 1965, CDL completed its first housing project in Johore Bahru, pioneering the "show house" concept. This was followed by the launch of its first high-rise residential development in Singapore, City Tower, completed in 1966.

Having launched two residential projects in Malaysia and in the process of developing its first residential project in Singapore, CDL was badly hit by a downturn in the property market in 1969.

The turning point for CDL came when the Hong Leong Group acquired a controlling interest in it in 1972 and embarked on a diversification strategy to increase the company's sources of income, converting it from a loss-making company to one of the largest and most profitable companies in Singapore.

Strategy

CDL's strategy has been marked by:

- Clear identification of its core businesses.
- Aggressive expansion in the domestic market.
- Diversification.
- Rapid expansion overseas.
- Building of a global brand in hotel management.
- Good financial management and a focus on creating shareholder value.
- Rendering quality products and services to customers.

- Fast response to New Economy challenges.

Diversification and Regionalisation

In the 1980s, CDL launched 21 residential projects and completed 12 investment properties. The recurrent income from its properties portfolio represented only part of the total earnings of the Group. Building up a vast holding of land and commercial buildings with potential for substantial long term capital gains was followed as a concurrent strategy. By 1989, CDL emerged as the largest property developer listed on the Stock Exchange of Singapore with a market capitalisation of almost $2 billion.

Having established itself in Singapore, the Group embarked on a regionalisation drive with property development in Malaysia, Indonesia, China, Australia and New Zealand.

Its foray into the hotel businesses began with the acquisition of King's Hotel and Orchid Inn (now rebranded as Copthorne King's Singapore and Copthorne Orchid Singapore respectively). CDL took a strategic decision to make hotel ownership and management one of its core businesses. CDL Hotels International Limited was incorporated and listed on the Hong Kong Stock Exchange in 1989. CDL became an international property and hotel conglomerate in 1990. Rapid expansion into the hotel business started from the early 1990's with a view to diversifying in terms of both geographical location and income sources.

Globalisation

In 1995, CDL Hotels launched Millennium Hotels & Resorts as the Group's new global brand. In 1997 Millennium and Copthorne Hotels plc (M&C), CDL Hotel's subsidiary, was listed on the London Stock Exchange, making it the first Singapore-controlled company to be listed on the London bourse. M&C undertook two major acquisitions including the Seoul Hilton in South Korea and the Regal Hotels USA from Regal Hotels.

In June 2000, CDL unveiled a billion-dollar restructuring plan to create value for the shareholders of both CDL and CDL Hotels and also remove the multi-layered shareholding structure of M&C. Under the plan, CDL acquired CDL Hotels' entire 52.4% stake in M&C for S$1.36 billion. CDL Hotels was renamed City e-Solutions, and became an investment holding company in e-commerce. It will spearhead the whole group into the New Economy through the new business strategy of developing hospitality-related Internet businesses leveraging on its Old Economy core competency as well as other e-commerce initiatives in various industries.

These changes have transformed CDL into three business groups (City Developments Limited, June 26, 2000):

1. Real estate development and investment.
2. International hotel operation and ownership.
3. An Internet investment company.

It is envisaged that these will balance CDL's earnings consistency and enhance its overall growth aspects in the future.

Financial Performance

The financial statistics of CDL Group reveal a dramatic growth path. Group assets have multiplied from S$13.5 million in 1964 to S$11,117.4 million in 1999. Group turnover has increased from S$49,000 in 1964 to S$2015.1 million in 1999. The most dramatic increase occurred in the decade following the takeover of CDL by the Hong Leong Group in 1972.

Overseas revenue as a proportion of total Group revenue stood at 50.84% in 1999, i.e. more than half the Group's income is now derived from regional and global markets.

Chart 24

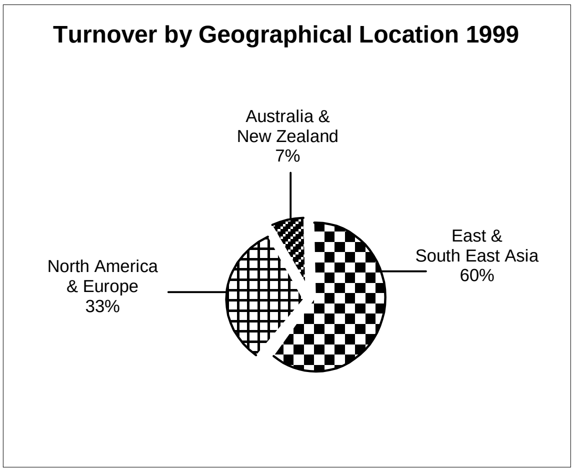
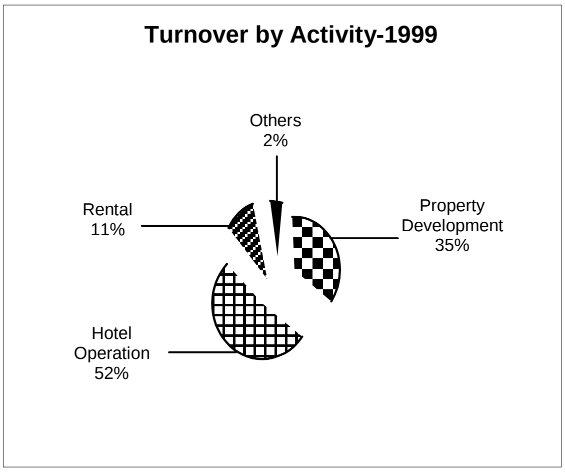


Chart 25



As a result of the impact of the regional economic crisis on the property market, profits declined between 1997 and 1998 but improved with the recovery in 1999. ROA and ROE also declined between 1997 and 1998 but rose in 1999. On the whole however, given its diversified structure, the Group continued to thrive with positive net profits. Further acquisitions led to an increase in its assets between 1998 and 1999.

Group operating profit after tax before extraordinary items attributable to shareholders increased by 106.7% to $260.6 million in 1999. This performance compares favourably with the $123.7 million figure for 1998, which was achieved against the backdrop of the worst year of the Asian economic crisis (City Developments Limited, 1999).

CDL continues to adopt a conservative accounting policy of depreciating its investment properties even though some of the other listed property companies in Singapore do not do so.

Table 16

CDL COMPANY	**1964**	**1973**	**1983**	**1993**	**1999**
Total Assets S$'000	15,333	41,903	674,892	1,929,504	4,061,769
Turnover S$'000	47	571	50,380	228,520	529,370
CDL GROUP	**1964**	**1973**	**1983**	**1993**	**1999**
Total Assets S$'000	13,511	42,808	860,331	4,459,134	11,117,418
Turnover S$'000	49	588	172,398	751,787	2,015,112
CDL – COMPANY	**1995**	**1996**	**1997**	**1998**	**1999**
Total Assets (S$'000)	2,869,085	3,390,916	3,834,120	3,837,669	4,061,769
Net Profit after tax before extraordinary items (S$'000)	293,561	446,298	422,670	239,974	225,337
S/holders' Fund (S$'000)	1,720,928	2,131,921	2,493,010	2,707,253	2,922,366
ROA (%)	10.23	13.16	11.02	6.25	5.55
ROE (%)	17.06	20.93	16.95	8.86	7.71
CDL – GROUP	**1995**	**1996**	**1997**	**1998**	**1999**
Total Assets (S$'000)	7,130,215	8,315,435	9,276,920	9,182,849	11,117,418
Net Profit after tax before extraordinary items (S$'000)	400,162	535,418	409,196	123,705	260,582
S/holders' Fund (S$'000)	2,132,915	2,655,708	3,020,281	3,127,847	3,457,654
ROA (%)	5.61	6.44	4.41	1.35	2.34
ROE (%)	18.76	20.16	13.55	3.95	7.54

Source: Estimates collated by CDL Corporate Communications

CDL does not use EVA as an accounting measure.

B. Transition to KBE

Information Technology and Innovation

CDL is investing in a company-wide integrated Enterprise Resource Planning (ERP) system. This system not only integrates all the internal functions of the company but also provides links to business partners and customers through the Internet to facilitate efficient transactions and better decision-making.

- The development of an electronic procurement system will further support its core business in property and land development.

- Besides traditional voice communication, electronic data and pictures will become the norm of businessmen's daily communication over the Internet. There will be wider use of extranet to share information between offices and businesses going beyond the traditional Intranet that is currently used within each office.
- CDL is embarking on providing fast wide band Internet access to selected commercial buildings for tenant use.
- CDL is also investing in portals related to its core business to enhance its services and offerings.
- Together with other leading industry partners, it launched **Cxhub[10].** Asia's first industry-led online construction exchange for the industry to advertise, bid for and procure construction and building materials as well as professional consultancy services. Localised versions of CXHub are proposed to be launched in Malaysia, Thailand, China, Korea, Australia and the rest of Asia at a later stage.
- CDL has acquired a 16.67% stake in the property portal, Propbuzz.com. Having invested a million dollars, it joins Pidemco Land, MCL Land, CB Richard Ellis and Jones Lang LaSalle as a shareholder of the portal.

These portals will help bring about economies of scale, lower costs, increased productivity, bring together larger pools of buyers and sellers and facilitate cross-border transfers of best practices and best products.

[10] http://www.cxhub.com
CXhub is the first industry-led B2B e-marketplace that provides functionality, content and integration of supply chain for the construction industry in Pan-Asia. Established to be the Internet community of the construction industry in Pan-Asia, its business and services will include e-procurement, e-tender, e-project management and e-archival to be built on leading edge Internet infrastructure and software applications. CXhub will provide an open, reliable, scalable, portable, secured and user-friendly Internet hub for all players in the construction industry. Shareholders of CXhub are UniG Pte Ltd (UniG), Keppel Corporation, KeplandeHub Limited (Keppel Land Limited's technology spinoff), Hyundai Engineering & Construction Ltd, Bouygues Batiment, mother company of Dragages, Mitsui & Co. Ltd, Nissho Iwai Corporation and Ssangyong Engineering & Construction Co Ltd. The major shareholder of UniG are City Developments Limited (40%) and Far East Organization & its listed companies Sino Land Company Limited, Orchard Parade Holdings Limited and Yeo Hiap Seng Limited (40%).

Other efforts:

- CDL has harnessed IT to build its first i-Home (intelligent, interactive and internet-ready) in Singapore, 'The Equatorial'. The IT infrastructure in this and future i-homes will connect residents and condominium management, allows residents exclusive access to a wide array of information and services including special security features, e-bookings, e-shopping, e-education, e-classified advertisements, etc, thereby creating a virtual community among residents.
- CDL supported the government's effort to improve productivity in the construction industry by participating in the Internet-based 'Project Website'. This entails an extranet collaboration, and communication software tools that track electronic discussion and facilitate decision-making from product concept design to completion and maintenance. This Internet-based communication tool will enhance productivity, reduce wastage in human resources and cut down delays in product delivery.
- Data on product development, design improvement and cost efficiencies for all the developments are compiled on a regular basis.
- CDL's employees are sent to advanced countries to source for new ideas in product design and acquire know-how on the latest techniques in building and construction.

Human Resource Policies and Development

- CDL is in the process of restructuring various departments and the existing job titles and functions of staff. The restructuring is aimed at streamlining the operation, bringing about greater efficiency and higher productivity, meeting the aspirations of job seekers and be in line with market trend, and re-deploying employees to areas where they are best suited through training & retraining so that they can maximise their potential.

- It is working towards implementing a structured training and development programme with the objective of achieving the People Developer standard.
- Improved welfare/ better working conditions such as alternate Saturday work-week, holiday incentive, recreational and sporting activities, etc, are being considered. Some activities like "Family Day" include the families of staff.
- Employees are incentivised and rewarded through a system of annual increments, bonuses, promotions, incentive trips, job enlargement, etc. The variable wage component/bonus depends on the company's profitability and employee performance. CDL has applied for official approval to offer share options to its employees. The local employees at CDL are primarily Singaporean. During the period 1997-1999, the staff turnover was 2%.

Organisation Culture, Structure and Management style

The current leadership under Executive Chairman Kwek Leng Beng and Managing Director Kwek Leng Joo is a dynamic, professional and open one with an international outlook and progressive thinking. It is founded on an in-depth understanding of the market and the vision/determination to bring the Group to greater heights. The leadership is supported by experienced professionals on the board as well as in the management. The organisation structure is kept optimally flat to allow efficient communication between the various levels. The management style is open and consultative and decision-making often involves input from team members of relevant expertise. The Group is committed to providing the best value to its customers and shareholders.

Government Support for KBE initiatives

Some new initiatives on R&D/technology, such as the Project Website extranet collaboration software, are being driven by government schemes. CDL, like other large companies, bears the full cost of adopting new Internet based tools as government grants only extend to the SMEs.

Worker training initiatives are supported by the Skills Development Fund (SDF) where applicable.

Difficulties Faced by the Company in Adopting New Technologies

- Hardware and software is costly and requires an annual or biannual update of new software. New software very often requires larger memory and faster hardware. As a result, hardware is obsolete after three years but it is often written off only after five years.
- The staff needs to take time for training, which has become a regular and continuous task. This adds to further costs for the company.
- Changing the practices and habits of the older staff is difficult. They need to see the benefits derived from these practices before they can accept new technology and new ways to communicate & store information.
- Changing mindsets of holding back rather than sharing information and data poses a problem.
- Employees fear that electronic data and information can be stolen.

Difficulties Experienced in Improving the Quality of the Management Staff

- Job-hopping on account of the search for more lucrative opportunities and a 5-day work-week.
- Scarcity of suitable candidates for some areas such as Corporate Secretarial work, IT positions, etc.

C. Excellence/ Corporate Citizenship

- CDL projects are benchmarked against the national industry quality standard managed by BCA (Building & Construction Authority), a board under the purview of the Ministry of National Development. The BCA uses CONQUAS (Construction Quality Assessment Score) set up in 1989 to measure construction quality. It is now considered a *de facto* quality yardstick for the industry (the industry average CONQUAS has improved steadily from 65 in 1989 to 76 in 1999). CDL received 3 awards for Construction Excellence (the highest in the industry) for the year 2000. CDL has consistently ranked among the top 3 CONQUAS scorers since 1996.

- CDL's flagship building, Republic Plaza is the first Singapore property to be conferred the prestigious "Best of World Real Estate" award in 1997 by the International Real Estate Federation (FIABCI).
- CDL's residential project, Spring Grove, was conferred the Special Recognition Award in 1998 by the International Real Estate Federation (FIABCI).
- CDL has also received the Commendation Award for Employers of NS men by both Singapore Armed Forces (SAF) and Ministry of Home Affairs (MHA).
- It is embarking towards achieving the People Developer Standard (PDS) in Human Resource Management (HRM) & Human Resource Development (HRD).

Other industry awards recognise CDL's management and financial strength and provide a gauge of CDL's standing as compared to other public companies/developers. These include the Singapore 1000 ranking, **Asiamoney** and **Far Eastern Economic Review**'s REVIEW 200 Survey which assess companies in terms of the company's Net Profit, vision, leadership, quality of products and services, financial soundness, transparency of accounts, respect for minority shareholders, corporate strategy, reliability in forecasting and access to management.

As an international property and hotel conglomerate, CDL has received a number of awards and accolades in recognition of the Group's performance. These include:

- Finance Asia Award 1999/2000 as one of Asia's Top Performing Companies.
- *Singapore 1000* 1999/2000 Ranking for the Highest Industry Sales/Turnover (Property).

- It was among the top ten companies in Singapore in the **Far Eastern Economic Review**'s REVIEW 200 Survey 1999.
- **Asiamoney** called it one of Asia's Best Managed Companies in 1996, 1997, 1998 & 1999.
- It had the highest growth in market capitalisation in 25 years on the Singapore Exchange in 1998.
- **The Business Times**, on 30 June 1997 said it was among the top five companies listed on the Stock Exchange of Singapore.
- **Business Week's** Global 1000 Ranking in May 1997 rated it among the world's top 500 Companies by market capitalisation.
- **Financial Times**, on 30 Sept 1996 counted CDL among the top 50 companies in the Asia Pacific.
- It was winner of the Financial Management Award 1996 from the Asian Institute of Management.
- M&C, the international hotel arm of CDL group, was ranked as one of the top 100 of "Britain's most admired companies" in a survey by business magazine **Management Today**.

Community Contributions

CDL is committed to being a responsible corporate citizen by supporting various worthy causes including charity, sports and youth development, the arts and environmental protection. The top management demonstrates very strong support and takes the lead in such initiatives. Employees are also involved in the planning process.

Charity

The late Mr Kwek Hong Png, founder of the Hong Leong Group which acquired a controlling interest in CDL in 1972, made several donations to charitable and worthy causes. In 1980, he established the Hong Leong Foundation to carry on the Group's charitable work and to help the less fortunate. The Foundation, along with the Hong Leong Group of companies, contributes annually to a variety of welfare, educational and charitable causes. Since taking over the reins in the early 1990s, the second generation leaders, Mr Kwek Leng Beng and Kwek Leng Joo have continued with the tradition of contributing to various worthy causes.

CDL has been a strong supporter and major sponsor of the annual National Kidney Foundation Charity Drive since 1996. It has also organised Charity Bowling Tournaments to raise funds for cancer patients at the Assisi Home & Hospice and Children's Cancer Foundation.

In the past five years, apart from donating to charitable causes, CDL has added a personal touch in its efforts by setting up City Sunshine Club, a staff volunteer club. It organises monthly food distribution and sessions to befriend lonely elderly beneficiaries and visits to the homes for the aged and underprivileged children.

Arts

CDL has played an active role in support of the national aspiration to be a world-class cultural city with a "renaissance spirit". CDL has received the Friends of the Arts Award for four years in recognition of this contribution. Arts projects sponsored by CDL include:

- the Exhibition on the Masterworks of South-East Asian Paintings.
- the Canadian Art Exhibition, Inspirit Crossing – The Making of First Nations and Inuit Art.
- the Singapore Arts Festival, the world-renowned Guggenheim Museum exhibits from New York.

- Sculpture Square.
- Singapore's first Art e-Auction in aid of Renci Hospital.

Environmental Protection

CDL makes a conscientious effort to be environmentally friendly through its business operations and community programmes.

- It is the first developer to win the Green Leaf Award 2000, organised by the Ministry of Environment.
- It was the main sponsor of the Singapore Green Map, the first in South Asia initiated by Singapore Environment Council, to promote Singapore as a country rich in ecological attributes as well as an environmentally sensitive city.
- In 1999, CDL launched a nationwide Shop & Conserve campaign in conjunction with the Ministry of Environment's Clean and Green Week.
- CDL also makes a conscious effort, in its building projects, to plant and preserve trees and install energy-saving and eco-friendly lifts. It has also been recognised for its fire prevention efforts in building management.
- Overseas, CDL encourages environmental protection through its sponsorship and support to China Exploration & Research Society (CERS), whose mission is to conserve the natural and cultural heritage of China.

Education, Sports & Youth Development

- A Professorship in Ophthalmology has been set up at The National University of Singapore through a donation of S$1.5 million by the Hong Leong Group and its sister companies to engage eminent professors from overseas to share their expertise and experience through research and teaching.
- CDL contributed $100,000 towards grooming Singapore's youths into entrepreneurs. It is the sole sponsor of the Young Entrepreneurs Programme (YEP) launched by the National Youth Achievement Award Council in 1998.

- The Hong Leong Group of Companies committed $500,000 to the Chinese Heritage Centre, a data resource centre for Chinese history, language, culture and the arts.
- CDL contributed $500,000 to the Goh Chok Tong Football Talent Award, which aims at grooming young soccer talents.
- CDL has also contributed $250,000 to the Football Association of Singapore in support of GOAL 2010, a project to achieve the Singapore Dream of competing in the FIFA World Cup Finals in 2010.

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City Developments Limited (2000, June 26). “City Developments Plans to Acquire Hotel Portfolio from CDL Hotels”, **News Release**, CDL, retrieved August 3, 2000, from the World Wide Web: http://www.cdl.com.sg/main_what’snew2.html.

3.3 JIT Holdings *(Case Study #9)*

(A subsidiary of Flextronics International, effective 1 December 2000)

(Based on an interview with Mr Seah Cheng San, Corporate Services Director, JIT Holdings Limited conducted in July 2000, and sources cited in the References)

Corporate Profile

JIT was one of Singapore's largest home-grown electronics contract manufacturers. Its business operations have expanded beyond Singapore to Malaysia, China, Indonesia, Hungary and USA. With a staff strength of 4500 employees group-wide, it owned and operated from one million square feet of production space world-wide. It provided one-stop manufacturing and distribution services to Original Equipment Manufacturers (OEMs) in IT, consumer electronics, telecommunications and industrial electronics as well as a wide range of other services including:

- Design/development of manufacturing processes.
- Pilot run of product prototypes.
- Materials sourcing.
- Assembly/testing of PCBs.
- Complete product build services.
- Warehousing.
- Distribution.

A. Company History and Strategy

Founded by Tommie and William Goh, JIT Electronics (Singapore) commenced operations in 1988 in the distribution of electronic components and the assembly of PCBs. It had factory premises of approximately 5000 sq. ft, staff strength of 20 employees and 2 manual TH PCBA lines[11].

Although it started out as an SME, JIT experienced a progressively exponential growth path. In 1989, following business expansion in its very first year of operation, it invested in additional automated equipment. By 1990, it had 3 manual and 3 automated TH PCBA lines. In 1991, it leased additional premises at Kallang Avenue and increased its employee strength to 280 employees. The acquisition of 4 SMT PCBA lines helped to enhance its capabilities. With growing experience and reputation, it secured customers like Aiwa Singapore Pte Ltd and Mitsubishi Corporation.

In 1992, the group set up operations in Malaysia and further enhanced its capabilities from the assembly of PCBs to the assembly of complete products. It set up two complete product build lines in Singapore and one semi-complete product build line in Malaysia, its first regional operation. It commenced the assembly of multimedia and imaging products such as sound cards and computer peripherals in Singapore and consumer electronics like VCRs in Malaysia.

The group progressively widened its capabilities and product range as it moved steadily up the value chain. In 1994 and 1995, it started assembly of computers and television monitors. In 1994, it was awarded the ISO 9002 certification for its manufacturing processes reflecting delivery of quality products. In 1995, it leased further factory space to accommodate its expanding business as sales crossed $100 million. In 1996, it completed the development of its flagship building, JIT Electronics Building at 1 Kallang Place, enabling it to consolidate its production facilities into one multi-purpose factory employing 1000 employees.

By 1997, the group operated 8 complete product build lines, 10 TH PCBA lines and 19 SMT PCBA lines in Singapore and Malaysia. Its sales crossed $380 million and it employed 2,500 staff group-wide.

[11] TH and SMT comprise the processes by which electronic components are inserted or mounted on the surface of printed circuit boards (PCBs), the main component of any electronic or electrical product.

Regionalisation

To meet growing customer demand in some of the fast-developing markets, it started replicating its production facilities in Indonesia and China, close to its existing customers' plant sites. This regional presence is aimed at enabling the group to maintain and strengthen links with existing customers who have expanded their manufacturing activities in the region, and will also reduce the logistics cycle time and handling costs. JIT Electronics in Shanghai and Indonesia started operations in 1998. JIT Tianjin was established in May 2000.

Logistics Centre

To enhance supply chain capabilities for global customers and boost regional distribution, the JIT Logistics Centre at Changi South Lane in Singapore was built up as its warehousing and distribution hub.

An International Network of Sales and Marketing Offices was set up, with Singapore as the base for the Asia-Pacific market and Silicon Valley in USA for the North American market.

Despite the Asian economic crisis that erupted in 1997, the outlook for the contract manufacturing industry remained bullish and was expected to grow to US$178 billion globally by 2001[12] (JIT Holdings Limited, 1998). However, the crisis and currency turmoil made Singapore a relatively expensive location compared to regional countries and accelerated JIT's shift of mature products from Singapore to lower cost centres. It was envisaged that the Singapore operation would concentrate increasingly on product development and new products. Moreover, since JIT's revenue and costs are dollar-denominated, the turmoil highlighted the need to monitor foreign exchange movements closely. Measures to manage it on a real time basis to deal with currency volatility were implemented.

[12] Estimate by Technology Forecasters, Inc, a marketing research and consulting company.

Table 17

Product Segmentation

	1999	2000
Telecoms	20%	46%
Computer Peripherals	74%	49%
Consumer Electronics	3%	2%
Others	3%	3.4%

Keeping its vision on becoming a world-class Electronics Manufacturing Services (EMS) provider, JIT's growth strategy remained highly focussed (JIT Holdings Limited, 1998).

- High growth contract manufacturing remained its main business.
- It established a presence in the three main economic blocs, i.e. North America, Europe and Asia-Pacific.
- With the increasing trend in global outsourcing OEMs, it continued to consolidate its production facilities, sales and marketing network and distribution hubs in these regions. The differential costs at its manufacturing centres increased its flexibility in pricing and shortened time-to-market for customers.
- It broadened its customer base in various electronics sub-sectors including computer peripherals, telecommunications, industrial electronics and consumer electronics.
- By expanding its capabilities up the value chain, it became a one-stop integrated service provider, servicing its customers from early involvement in product and process development to production to distribution and logistics management.
- It cultivated and nurtured its relationships with its existing customers resulting in a high level of repeat business and simultaneously broadened its customer base.

Chart 26

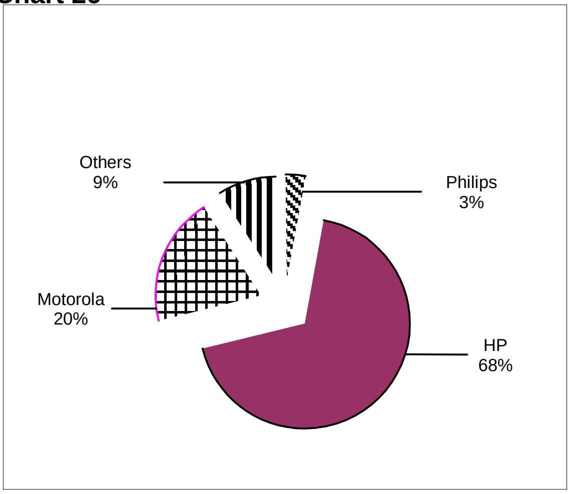
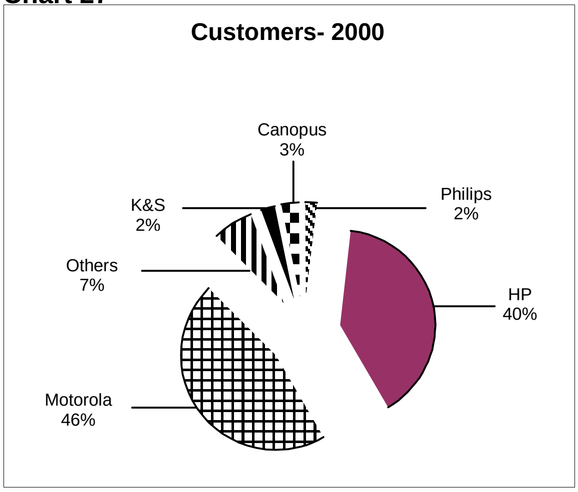


Chart 27



Financial Performance

JIT was incorporated in Singapore in April 1997 as a private limited company (as JIT Holdings Pte Ltd) and converted into a public company in October 1997. JIT Holdings Ltd, the investment holding company of the group, was listed on the Mainboard of the Singapore Exchange in November 1997. Its IPO was well received and 41.4 times oversubscribed (**The Business Times**, November 11, 1997). The proceeds were employed to fund its expansion in Singapore and overseas.

Over the 5-year period between March 1993 to March 1998, JIT's turnover and profit before tax grew at a Compounded Annual Growth Rate (CAGR) of 86% and 149% respectively. Between 1994 to 1999, the CAGR was 56% and 70% respectively. JIT outpaced the EMS industry's average CAGR of 25-30% during this period.

Chart 28

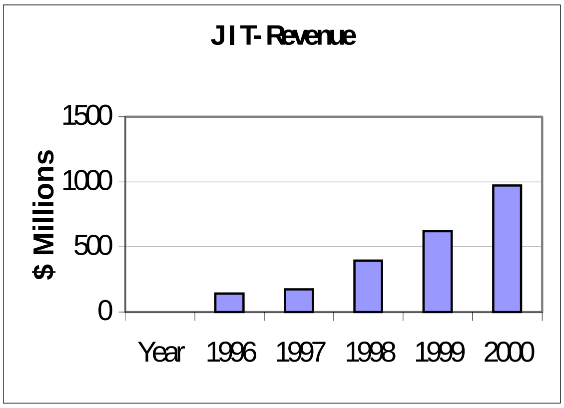
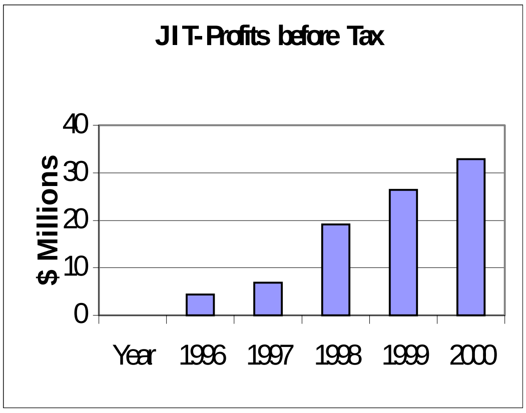


Chart 29



By March 1999, JIT's turnover increased to $621.1 million, an increase of 57% from 1998. The 54% increase in profits from 1998, also reflected the tax savings from Development and Expansion Incentive (DEI) (see "Support from the government" below) in Singapore and overseas tax incentives.

For the year ended March 2000, JIT's net profit rose 29.5% to $27.24 million and sales rose 56.6% to $972.6 million. It was envisaged that the company's performance in the coming months would be affected by the relocation of manufacturing out of Singapore and the new operations in Hungary started in April 2000 (http://www.jit.com.sg).

In the year 2001, it was envisaged that more than 50% of JIT's sales would be derived from overseas sites. Production capacity in Malaysia was expected to more than double, the capacity of the operations in China and Hungary were boosted and a prototype facility in San Jose, California was set up. However, this increasing globalisation of operations occurred at the expense of the Singapore operations, which would be scaled down from 480,000 sq. ft to 280,000 sq. ft due to the high cost of land and labour. Several jobs would also be affected by the closure of the 2,500 staff Kallang operations. Most of the staff at JIT's remaining Changi facility would be at least at technician level.

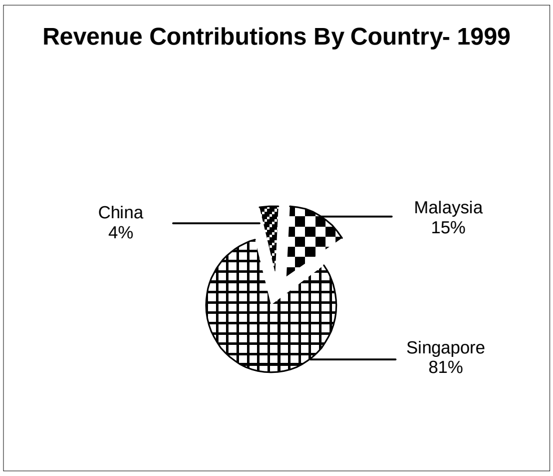
(Note: JIT did not use estimates of EVA or Intellectual Capital as accounting measures)

Support from the Government

In November 1998, JIT was awarded the Development and Expansion Incentive (DEI) by the EDB. The DEI is for a period of five years, extendable for another two years. It gives JIT a preferential tax rate on incremental profits derived in Singapore, which will result in significant tax savings for JIT.

JIT was also awarded the Research Incentive Scheme for Companies (RISC) grant by the National Science and Technology Board (NSTB). This will co-fund the product and process development JIT is engaged in with its customers and boost its effort in developing Advanced Manufacturing and Development capabilities.

Chart 30



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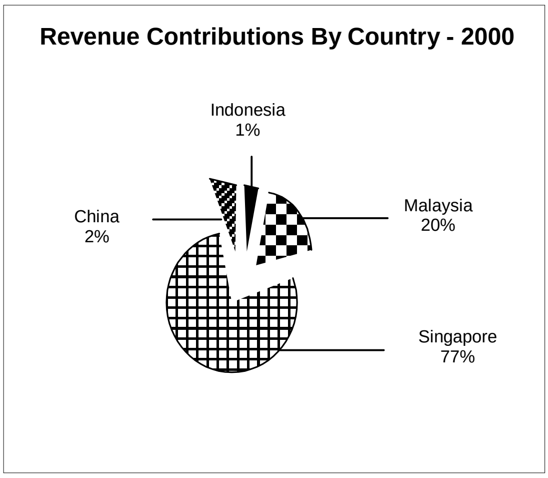

B. Transition to KBE

Technology

JIT continued to make investments to enhance its IT infrastructure and competencies with a view to link its global network of manufacturing plants, sales and marketing and international procurement offices, and eventually link up with its suppliers and customers as well. In addition:

- JIT Investments Pte Ltd was established, making its first investment in ehoo.net.
- The new posts of Chief Information Officer and Director, Technology were added to the senior management to spearhead these efforts.
- Development of new product lines with current customers like HP, Motorola, K&S and Canopus.
- New customers in networking devices and telecom products are expected to boost growth in revenue.
- Advanced Manufacturing and Development (AMD) competency is being developed in Singapore, San Jose (California) and Shanghai (China) (JIT Holdings Ltd, 1999).
- SMT lines were increased from 35 to 73 in 2000.

Generally, JIT planned to continue to reduce its revenue dependence on Hewlett-Packard, its most significant customer, increase proportional revenue from overseas sites and continue to expand its SMT lines globally (expenditure on R&D prior to the JIT merger with Flextronics was minimal).

Human Resource Development and Policy

JIT spends about 4% of its wage bill on worker training (approximately 30% of JIT's workforce in Singapore consists of temporary workers). The productivity bonus given to workers is attendance-based. It achieved the People Developer standard in the year 2000.

During JIT's IPO in November 1997, shares for subscription were offered to all staff to allow them to have a stake in the company. An Executive Share Options Scheme was implemented in 1998 through which options could be offered not only to management staff but also to staff at the executive, engineer, engineering assistant and supervisor level, based on their performance and contribution to the company.

Organisational Culture, Structure and Management Style

What were the underlying "software" strengths that gave JIT its competitive edge? The JIT culture instilled into employees was based on 4 pillars (JIT Holdings Ltd, 1999):

- *Customer Focus:* JIT recognised that each customer is unique. Its representatives discussed improvement plans with customers to understand their demands in order to offer cost effective solutions to them.
- *People:* considered the cornerstone of the organisation's success.
- *Attitude:* A positive work attitude and 'can do' mentality instilled into the staff to produce top quality finished products.
- *Cost-consciousness:* Staying lean and cost-effective, an important part of JIT's competitive strategy and culture.

Executive Chairman Tommie Goh followed the “HP Way” of “management by walking about.”

C. Excellence

JIT’s quality standards and commitment to excellence were recognised by the government, private institutions and customers. It achieved globally acceptable standards in quality (ISO 9000 Certification) in Singapore and overseas (Malaysia, Indonesia, China and Hungary). It received the British Approval Board for Telecommunications (BABT) approval for product quality assurance for its operations in Singapore, China and Hungary. With a continuous improvement culture, it is working towards QS9000 and QSR awards in Singapore.

The Shanghai operation acquired the ISO 14000 certification in 2000. In Singapore, JIT has also received the Ministry of Labour’s Annual Safety Performance Award (ASPA) in 1997.

JIT also received a number of awards from its customers for its excellent performance in meeting their requirements such as Hewlett-Packard Best Contract Manufacturer, Motorola Product Quality and On-time Delivery Award, Sanyo Best Contract Manufacturer, etc.

In 1996, JIT ranked No 32 among Singapore’s 50 most enterprising privately held companies. In 1997, JIT was ranked 3rd in the Enterprise-50 list and JIT’s Chairman received the Rotary ASME Entrepreneur of the Year Award. Between 1998 and 1999, JIT enhanced its position from being the 88th largest company on the Singapore exchange to 35th largest with a market capitalisation of S$1.44 billion, and from being the 29th largest EMS provider world-wide to the 17th largest. In 1999, **Asiamoney** named it among the top ten best managed companies in Singapore.

Company Strengths (JIT, October 28, 1997)

- *Strong top management and leadership:* The core management team comprising the two founders and the other Executive Directors of JIT had several years of experience in the electronics industry.
- *Strong Customer Base:* JIT's customers included Hewlett-Packard, Motorola, Philips, Canopus, Adaptec, Mitsubishi, Creative Technology, Fujitsu, Sanyo and Siemens-Nixdorf. Complete Product Build and direct-status has been granted to JIT by its key customers, testifying to their confidence in the Group's ability to deliver.
- *One-stop Manufacturing and Distribution:* The ability to provide a broad spectrum of capabilities and cost effective solutions for the entire manufacturing supply chain enhanced the group's competitive edge and strategic value.
- *Ability in Manufacturing Critical Mass:* The short turnaround time for high-volume, quality manufacturing ensures that customers enjoy fast time-to-market and quick market penetration for their new products. Continuous upgrading of technology and equipment strengthened this ability for critical mass production. JIT paid close attention to inventory turns and inventory holding days.
- *Strategic Long-term Relationships:* More than 90% of the group's turnover was derived from repeat business, a majority of customers having worked with the group for over 5 years (In 1999, Hewlett-Packard accounted for 68% of JIT's revenue).

Community Contribution

There was no mention of community contributions in JIT's annual reports (Mr Tommie Goh contributed S$2 million towards setting up a Chair for Entrepreneurship at the Singapore Management University in 2000. This contribution was made in his personal capacity as an entrepreneur and not by the company).

****New Developments**

On 10 August 2000, it was announced that NASDAQ-listed Flextronics International would acquire JIT Holdings Limited for a US$640 million share-swap deal at a premium of 42%. Flextronics' operations are based in the US, close to its customers. With a turnover exceeding US$11 billion, it is rated among the world's top three contract manufacturers with a total manufacturing capacity of 11million sq. feet. JIT ranked the 17th largest EMS provider, with revenues at about US$0.6 billion and over one million sq. feet of manufacturing capacity. Flextronics would pay for the acquisition with new shares to be valued at US$65 and US$88 each (**The Business Times**, August 11, 2000). JIT would be de-listed from the Singapore Exchange and become a wholly listed subsidiary of Flextronics, and Mr Tommie Goh would join the Flextronics Board.

The merger would bring benefits to both parties:

- For JIT: It would become part of a group that is ten times bigger with a broader and more diverse customer base. It will unlock shareholder value as Flextronics shares enjoy better valuation with a bigger capitalisation. JIT's shareholders would own 4% of Flextronics. As part of a larger group, JIT will also enjoy better discounts on equipment purchases, priority delivery of certain raw materials, etc.
- For Flextronics: JIT would bring in the advanced electronics manufacturing operations in Tianjin and Shanghai as well as its expertise and experience in Northern China and Malaysia. The enhanced size and capacity will help the group meet the volume demands of global customers and thereby improve its competitive position.

(On 18 October 2000, Singapore-headquartered Flextronics International announced its plans to set up a product introduction centre in Singapore in the first quarter of 2001 to carry out electronics and mechanical product design, after the completion of its share-swap deal with JIT Holdings) (**The Straits Times**, October 18, 2000).

From a SME to one of the top 50 companies on the Singapore Exchange, JIT leapfrogged into the world-class league of the top EMS providers within a span of 12 to 13 years. Despite its growth and success, its merger with Flextronics emphasises the continuing importance of size and critical mass in manufacturing operations.

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3.4 Beca Carter Hollings & Ferner *(Case Study #10)*

(Based on interviews with Mr. Lee Chuan Seng, Managing Director, BCHF and internal company reports provided by BCHF)

Corporate Profile

Beca Carter Hollings & Ferner (SE Asia) Pte Ltd. is among Singapore's largest[13] consulting engineering companies in the construction sector offering civil and structural (C&S) and mechanical and electrical (M&E) professional engineering design services throughout the ASEAN region, Indochina and China. Outside Singapore, professional services are offered on an offshore basis or through affiliated companies. The client base of the company consists of developers, architects, design and build contractors, industrial clients, financial institutions and government agencies.

Company History and Strategy

BCHF is linked by cross holding to the Beca Group, an international group of consulting engineering companies with its head office in Auckland, New Zealand. The group currently has a staff of 1100 located in offices in Singapore, New Zealand, Australia, Indonesia, New Guinea, Brunei, Malaysia and Myanmar and has serviced projects in Asia, Australia, South and Central America.

The group traces its origins to a partnership formed in 1916. One of the partners, George Beca, started promoting the role of engineers as principal advisors. This ultimately changed the profile of the practice from a C&S engineering base to a multidisciplinary consultancy. The practice also adopted a policy of establishing overseas subsidiaries and affiliates with local equity partners, and increasing that equity as the technical and managerial expertise of the local partner advanced.

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[13] There are over 700 engineering consulting practices in Singapore of which 85% have staff strength of less than ten staff.

The Singapore practice was started as a joint venture in 1977 with an M&E focus and became a separate company in 1979. From 10 staff in 1979, BCHF's staff strength grew to over 180 staff in the 1990s. The first local Managing Director was appointed in 1984. Singaporean professional engineers Goh Kng Yan, Lee Chuan Seng and Leong Kok Yong now jointly own the practice together with the New Zealand group.

The local practice followed the strategy, culture and vision of the international group outlined by Group Chairman Sir Ron Carter, i.e.

- The delivery of a wide range of superior professional services for planning, design and administration of engineering projects in a cost-effective, timely and efficient manner.
- Continuous refinement and improvement of technical and administrative capabilities.
- Professional diversity to provide stability in workload within the company.
- Expansion of overseas projects.
- Use of the latest proven technology and strategic alliances with world technology leaders resulting in a natural transfer of technology.

The recession in 1985-87 had an adverse impact on the construction sector and thereby the practice in Singapore. However, after the economy recovered, 1989-90 turned out to be a boom period. The company started securing increasingly larger projects and was able to start implementing improved and rationalised work flows and processes. The company experienced an 80% increase in revenue.

Regionalisation

The company started on a consistent drive to go regional in 1992 even before the government set up the Committee to Promote Enterprise Overseas in 1993. It took up large projects in Myanmar, Malaysia, Indonesia and Vietnam. By 1995, 30% of BCHF's revenue came from overseas projects. The need to diversify overseas was motivated by:

- The limitations of the local market, which makes it increasingly difficult to support a company size of more than about 100 staff.
- The need for protection against cyclicity in the construction sector.
- The need to balance market niches, which may be diversely affected by economic cycles. For example, in the last recession, Indonesia and Thailand were worst hit while Taipei and Korea rebounded faster.

Overseas expansion has been undertaken under two models:

- In cases where Singaporean clients engage BCHF for overseas projects, generally the same portfolio of services as those offered in Singapore is expected by the clients.
- In cases where overseas indigenous clients engage BCHF, the consulting is generally confined to concept and schematic design. BCHF does not compete with the local consultants in areas where they have cost and local knowledge advantages. Dealing with local authorities, for example, is left to local project partners/consultants.

Government Assistance

In the early days, planning was done on an "as the need arises" basis. As the company grew in size, it was felt that the business focus, management and control of quality needed review. In 1996, BCHF was designated a Promising Local Enterprise by the EDB which gave grants to assist in its strategic planning through the formulation of a Total Business Plan. The plan outlined strategic thrust areas for BCHF in its established areas and new areas of work including intelligent buildings, maintenance and management, industrial parks and food processing as well as viable strategies for each service segment.

BCHF was also classified as a Promising SME by the PSB (following a change in the criteria for classification). Further studies were undertaken to look into computerisation feasibility and introducing formalised training needs analysis.

In 1997, BCHF received a grant from the CIDB/EDB under the Innovation Development Scheme. The Enterprise-1 programme developed under the grant along with Fullmark Ltd was implemented in 1998. Enterprise-1 is an enterprise-wide automated management and resource planning software offering online real time intelligent control and monitoring of business documents and processes to achieve maximum efficiency in business operations, strict compliance of standards and hence improved quality and consistency in products/services with minimum human intervention. Acting as a Virtual Manager, it helps to implement and enforce best practices in an organisation, issuing timely reminders for impending deadlines. BCHF staff can channel their expertise and time into real value-adding tasks such as better design, improving delivery and quality of products and services, training and development of staff and pursuing new areas of business.

With the strong Singapore dollar and high costs in Singapore, BCHF has been setting up and using overseas production facilities in Indonesia and Malaysia and are now looking further afield. It managed, through the use of Internet technology, to use this operating model to cut costs.

Diversification of Services Offered

In 1998, the workload from overseas projects decreased on account of the Asian economic crisis. Between 1998-2000, the company undertook several Y2K due diligence projects for businesses where computerised functioning is critical, e.g. global financial institutions like Morgan Stanley Dean Witter, Union Bank of Switzerland, Credit Suisse First Boston, etc, and also local financial institutions like DBS, OUB, UOB, GIC etc.. It sorted out related engineering problems such as electricity and air-conditioning for the computerised workplaces. These helped to buffer it from the negative impact of the economic crisis on the construction industry. With the upturn of the property sector in 1999-2000, there was an increased demand for evaluations of buildings from an engineering perspective. The crisis thus helped the company to further diversify into other types of services and minimise retrenchment. The company has also moved towards providing an integrated and customised package of engineering service solutions. Where clients require a one-stop service centre, the Project Management Division leads the team.

Outlook for the Future

The targeted “thrust” areas for the company going forward are:

- Higher Value Added including initiatives to add value to the services rendered to the client by moving beyond the realm of engineering.
- Productivity (increase)/Cost (decrease).
- Regionalisation/Moving out of Singapore (not only within ASEAN but beyond ASEAN, e.g. Hong Kong, China etc.).
- Design/Build Approach for higher value added.

Difficulties

The biggest challenge faced by the company relates to change management within the company. Finding suitable alliances for expansion, severe competition, the small size of the local market and manpower constraints represent some of the other challenges faced by BCHF as an SME. While government assistance has been forthcoming in the form of grants for computerisation and for the development of a Total Business Plan, tax incentives etc., the slow disbursement of funds caused cash flow problems for the company in the relevant period. An additional challenge is posed by the necessity of building competencies in sync with changing client and competitor profiles.

Financial Performance

BCHF’s total revenue more than tripled from S$3,447,823 in 1991 to S$12,377,847 in 1996. The compounded annual growth rate was about 29%. Pre-tax profit as a percentage of revenue, however, was erratic between 1991 and 1996 varying in the range of 1%-5%. Despite the economic downturn that started in 1997, total revenues increased slightly between 1996 and 1998. Billable fees per Technical Staff Payroll Cost dropped between 1996 and 1998 due to increasing payroll and reduction in fees per project. Operating profit as a percentage of Total fees and as a percentage of capital employed dropped between 1997 and 1998 due to lower fees secured on account of an increasingly competitive market and additional capital employed for computerisation respectively. Enterprise-1 has yielded good returns in terms of productivity increase, which was 22% in 1999.

Table 18

BCHF-Singapore Group

	Mar 2000	**Mar 1999**	**Mar 1998**	**Mar 1997**	**Mar 1996**	**Mar 1995**	**Mar 1990**	**Mar 1986**
Shareholders equity	3,254	3,046	2,690	1,743	1,556	1,351	694	252
Total Assets (S$'000)	10,990	8,158	7,522	6,173	5,723	3,968	1,603	518
Turnover (S$'000)	10,557	10,580	12,915	12,438	12,280	9,276	2,980	1,050
Profits (S$'000)	821	814	621	754	464	154	441	58
Income from Overseas/Total Turnover	41%	40%	29%	25%	NA	NA	NA	NA
ROA (Profits before tax / Total Assets)	7%	10%	8%	12%	8%	4%	28%	11%
ROE (Profits before tax/Shareholders Equity)	25%	27%	23%	43%	30%	11%	64%	23%
No of employees	119	127	158	144	145	146	38	18
% change in Labour Productivity	7%	22%	-4%					
Expenditure on skills development/training as a % of Staff Wages + CPF	5%	5%						
Staff Turnover (Total staff resigned p.a. Average Staff Strength)	26%	28%	31%	NA	NA	NA		

Turnover, in the year ending March 2000, stood at S$10,557,000 and Total Assets at S$10,990,000. ROE has been high but erratic, touching 43% in 1997 and declining to 25% in 2000. Income from overseas as a percentage of total turnover has been increasing steadily and reached 41% in 2000 even though revenue generated outside Singapore was only 26% of Total Revenue thereby implying higher profitability from overseas projects. BCHF's goal is to increase the revenue from overseas to over 50% of total turnover.

Table 19

Revenue by countries	**Mar 2000**	**Mar 1999**	**Mar 1998**	**Mar 1997**	**Mar 1996**
Singapore	74%	84%	78%	75%	NA
Indonesia	1%	1%	8%	7%	NA
Malaysia	0%	4%	1%	6%	NA
Vietnam	0%	2%	8%	8%	NA
Myanmar	13%	0%	1%	3%	NA
China	0%	3%	5%	0%	NA
Taiwan, Japan, Korea, Australia	11%	6%	0%	0%	NA

Note: BCHF plans to implement EVA measurement shortly. It does not have a formal system for quantifying the value of its Intellectual Capital.

B. KBE Initiatives

Technology and R&D: The implementation of the Enterprise-1 software system (developed at a cost of S$1.4 million) within the company has revolutionised its way of conducting business and internal communications. It has brought about substantial gains in productivity, and savings in time and resources, and a move towards the "paperless office" vision. IT support groups have been set up to help staff cope with the new method of working, diffuse the opposition to change and relieve the "fatigue" engendered by continuous change. In the changing milieu, a self-help "movement" is blossoming among staff as they adapt to new knowledge-sharing methods. Each staff member is equipped with a computer workstation or notebook and can plug into the central network developed by the company from any location. Designated "gurus" in each department seek out new developments in technology and engineering.

BCHF is also the only engineering company in Singapore so far doing process simulation of air-conditioning systems with object technology. The system was developed at a cost of S$80,000. Environmental engineering knowledge was obtained through overseas attachment at a cost of S$50,000. At the company's current size, a separate R&D division with annual R&D budget allocations is not considered feasible.

HR Policies and Training

BCHF's staff is assessed twice in a year. The reward and remuneration system consists of salary, year-end bonus and bonus based on individual performance for the senior staff and performance and overtime for the junior staff. Overtime hours are weighted by the performance rate. Remuneration and rewards are increasingly being tied to the career path programme for the individual. A rank-based employee share ownership programme was started in 1997. Senior engineers and those above are entitled to own shares under the scheme which now includes over 20 staff members.

Although a 5-day work-week has always been in place, increasingly practices like "hot-desking" and "working remote" are being considered both on account of potential rent and time saving and easier work-life balance choices for employees. Its staff turnover in the past three years has been high, exceeding 25%.

Organisational Structure/Culture/Management Style

In the early days, a "family" culture prevailed at the company. As numbers grew, employees were split into groupings based on specialty work delivery. In the early days, the management initiated meetings and social gatherings for staff interaction. Later, staff were asked to form committees to organise such events. A recreation and social club now organises weekly and monthly activities on a formal basis.

The Executive and General Management meets on a fortnightly basis. All staff meetings and technical group meetings are held on a monthly basis with the objective of cascading organisation plans to departmental levels, discussing problems and exchanging information.

While the organisational structure comprises 7-8 ranks, at the work team level it operates in a "flat" and flexible manner without compromising discipline. Managing Director Lee Chuan Seng attributes the number of rankings to the Singaporean need for "differentiation" and salary bands.

Since 1995, the top management has adopted a more delegative style. The middle management is being encouraged to take over increasing responsibilities in their respective work areas while the Executive Committee explores new initiatives.

C. Excellence/Corporate Citizenship

In 1996, as part of the Total Business Plan exercise, the middle management of the company helped to formulate its Mission Statement. Its mission to be a leading regional consulting engineering group was to be achieved through Best-in-Industry Service, Engineering Excellence, Client Satisfaction and Active Development of it people. Its core values were stated as follows: Trust and Integrity, Teamwork, Relationships, Excellence (as measured by results) and Perseverance.

BCHF is the only engineering services company to qualify for Singapore Quality Class. In its early years it benefited by following the best practices of its overseas affiliates. It decided to apply for SQC in 1996 because of the envisaged benefits of improved human resource practices by following an established road map. Since qualifying, it has been filling the gaps in this area in particular. Continuous refinement in work quality is being done based on customer feedback, complaints and industry benchmarking.

Employee involvement is encouraged through Job Teams, Internal Gurus, Quality Teams, and Technical Groups. Team effort and co-operation has resulted in a number of CIDB awards and other awards for outstanding work undertaken by BCHF.

BCHF embarked on the ISO 9001 programme in 1994 without any external consultants and was certified by PSB/CIDB in 1996. Quality is now part of the company's culture.

Under the People Developer Standard, training objectives and post-training performance objectives are laid out. A pre-course and post-course evaluation of competencies attained is conducted. To minimise costs and maximise benefits of training, individual employee's requirements are specifically identified.

Key staff from Work Improvement Teams made up of cross-functional team members are sent on learning trips to identified Centres of Excellence overseas.

Supplier performance is annually reviewed to spread the quality culture down the supply chain. Contractors for buildings and installations, suppliers of equipment etc are first tested on smaller projects. Their performance is reviewed annually to rate quality of service.

Outside the SQC, BCHF follows best practices with an engineering focus through committees, and trade and industry associations.

Community Efforts

As part of their efforts towards playing a role as corporate citizens, some of the Directors, managers and engineers have participated in SME21 Working Committees, KBE Workgroups, committees of professional and educational bodies like Association of Consulting Engineers (ACES), Institution of Engineers (IES) etc. The management feels that this type of contribution does have some strategic value for the company as it helps to train future leaders and enhance technical knowledge and communications. Corporate contributions are made to charities (from an annual budget set aside for this purpose) including the Community Chest of Singapore but the involvement of the general staff in such contributions is not high. Leave is granted for those who want to undertake community service but is deducted. However, leave taken for training or examinations related to upgrading of skills/qualifications is not deducted from annual leave.

Environment

The company is conscious of providing energy efficient solutions e.g. safer and non-ozone depleting chilling gases, non-toxic material in transformers etc. It strives to promote solutions, which are simultaneously environment- and cost-friendly, as divergence on cost might cause such solutions to be met by resistance from clients.

Does Size Matter

An industry study to increase productivity of Local Small & Medium Consulting Engineering Firms in Singapore, conducted by Arthur Anderson Business Consulting in 1999, revealed the following:

- Given the project basis nature of engineering consulting and minimal economies of scale requirement, size does not constitute a barrier to entry of new players.
- Value-added (VA) per firm increases with firm size. (The average VA per firm for 100-200 employee firms was found to be almost 44 times that of the small firm (less than 5 employees) average.)
- Labour costs constitute an increasing proportion of VA as firms increase in size. For firms with more than 15 employees, labour costs constitute over 80% of VA.
- Smaller firms exhibit relatively higher employee turnover rates as even a single resignation constitute a higher proportion in the turnover ratio.
- Larger firms incur higher proportions of expenditure on R&D although IT and work automation constitutes the top expenditure in absolute terms, on average, for firms of all sizes.
- Firms that are ISO certified belong to the medium and large size categories.
- The majority of firms prefer economic grouping irrespective of size or type of business entity i.e. sole proprietorships, partnerships, private limited companies etc.
- The majority of firms in favour of economic grouping preferred loose alliances rather than mergers or formal alliances.
- Smaller firms prefer to group with firms from different engineering disciplines while larger firms prefer to partner up with non-engineering firms or with overseas firms because they already have multi-disciplinary practices.
- Inclination to share a common brand name through alliances appeared to increase with size.
- Inclination to outsource drafting functions appears to increase with size.
- Larger sized firms have a larger proportion of their work overseas compared to smaller sized firms.

3.5 MediaRing.Com Ltd *(Case Study #11)*

(Based on an interview with Mr Ng Ede Phang, CEO, MediaRing.com Ltd. and sources cited in the References)

Corporate Profile

MediaRing is a leading global provider of Internet-based voice services for businesses and consumers aimed at enhancing commerce and communication. The first Internet start-up to be listed in Singapore, it has offices in Singapore, Hong Kong, London, New York and San Jose in the USA, Taipei, and Beijing and Shanghai in China. In November 2000, the company had over 8 million registered users in 144 different countries with 99% of its registered user base outside Singapore (http://www.mediaring.com).

A. Company History and Strategy

The company was founded in 1993 as Mediacom Technologies by a group of eight engineers and was centred on developing video conferencing using the "plain old telephone". It developed applications involving electronic transparency, real-time application and file transfer.

Re-inventing the Company

By 1997, the price of the technology (the hardware and software) had fallen. Inadequate bandwidth of phone lines, however, posed a limiting factor. Where the required bandwidth was available, it was prohibitively expensive. Observing the explosive growth in internet-based activities in the years following, it shifted its focus and technological expertise to voice-enabling Internet communications and was renamed MediaRing.com in 1999 (MediaRing.com, 1999). Part of the knowledge base accumulated in the infrastructure underlying video-conferencing technology comprising video, voice, systems and communications protocols, was thus leveraged on a new platform. The National Science & Technology Board (NSTB) provided a grant of S$3 million to defray the cost of R&D.

The basic technology was not new. Several American and Israeli companies were operating in this market space. MediaRing was able to fine-tune the technology to provide good, workable solutions. In the PC-to-PC market, it had the benefit of first mover advantage and led the market for over a year, till the new technology spun off new competitors.

MediaRing's Business Model

While the revenue source in the earlier video-conferencing technology in 1993 was licence-based, the "reincarnated" voice-over–the-Internet technology (comprising telephony and messaging services) in 1999 was delivered free to the consumer. The revenue was advertisement-sponsored.

The new model was based on:

- Utilisation of a range of high quality integrated voice communication technology-based services as a platform to build higher traffic and thus higher online expenditure among Internet voice communities globally.
- Diversified revenue sources include banner advertising, direct marketing with newsletters, voice communication service hosting, PC-to-PC phone calls, licensing of technology to partners to voice-enable their applications and e-commerce.
- Prioritisation of the quick growth of its user base to reinforce its world-wide leadership position. Most of its software and services are provided free to encourage registration and usage.
- Strategic investments in marketing and R&D to position it for the future and consolidate a leadership position in the world-wide voice communications arena.
- Strategic alliances to lower costs of testing new ground and improving the infrastructure and quality of services. These were also part of its strategy to

extend its regional presence and increase its penetration into new market segments.

The new revenue model thus evolved from a B2C consumer model to a total voice solution product and service provider to the corporate enterprise market, deriving its revenue from up front licensing and customisations and the recurring maintenance fees and monthly usage fees.

Core Services

- telephony services which include PC-to-PC, PC-to-Phone (*VoizFone*), Phone-to-Phone.
- messaging services (such as V*oizmail, Voizcard, Voizletter*).
- integrated services (such as *MediaRing Talk*, *VoizCentral*).

MediaRing Talk PC-to-PC for example, enables Internet phone calls without time-based international and long-distance call charges, user privacy is protected and its patented "Knocking" technology automatically prompts on an Internet connection when an incoming call arrives at a PC. It is available in 10 languages and currently used in over 140 countries.

Alliances

MediaRing entered into numerous strategic alliances through distribution and bundling partnerships with Internet communities and telecommunication companies, as well as other industry participants after its IPO launch. Distribution alliances include:

- Partnership with IBM to offer *Voizmail* service to its Owner Privileges Program's newsletter for Aptiva PC and Thinkpad I Series Owners (MediaRing.com, January 12, 2000).
- An arrangement with Seednet, Taiwan's largest privately owned Internet Provider, to package *Voizmail* service as a tool to support candidates running in the Taiwan Presidential Elections (MediaRing.com, January 28, 2000).

- A tie-up with Australian LookSmart to enable the sending and receiving of voice messages via e-mail through the use of MediaRing.com's *VoizMail* service (MediaRing.com, February 21, 2000).
- A partnership with Chinese88.com Pte Ltd, the first Chinese Internet Portal in Singapore to provide a web-based voice messaging service to its users. This would be especially useful to Mandarin speaking users who may find it difficult to type in Chinese scripts.
- An alliance with ITXC.net to offer *ValueFone* service to the US.
- A three-year multimedia agreement with China Netcom Corporation Ltd. to deploy MediaRing's web-based *VoizMail, MediaRing Talk* and *ValueFone* services to users in China (MediaRing.com, September 20, 2000).

Bundling alliances include:

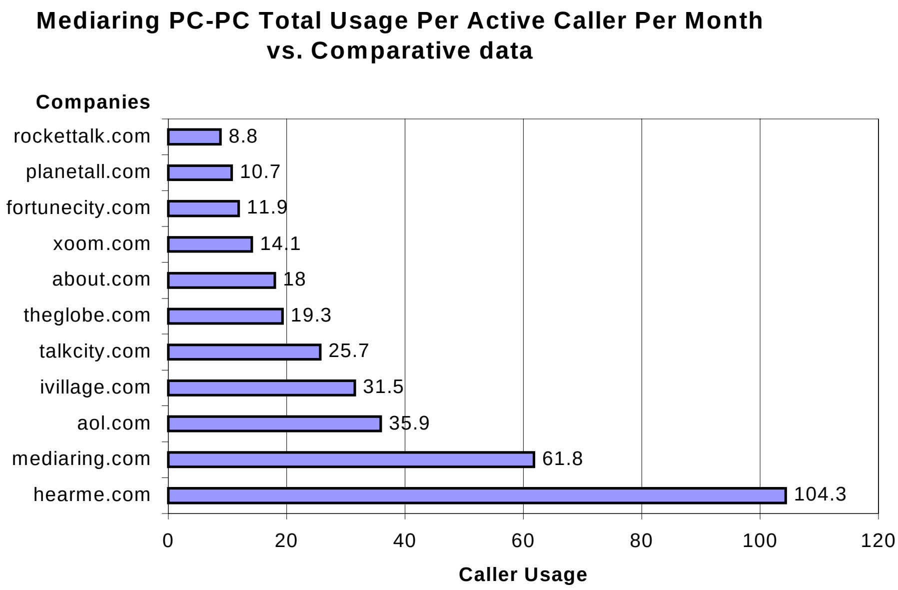
- Bundling *MediaRing Talk* software into Taiwan-based Gigabyte, a world-class motherboard manufacturer (MediaRing.com, February 2, 2000).
- Packaging *MediaRing Talk, VoizMail* and Internet instant messaging service (OICQ) with Shenzhen Tecet Computer System Co Ltd (MediaRing.com, February 10, 2000).
- Pre-loading MediaRing Talk in Hewlett-Packard's Pavilion home PCs throughout the Asia Pacific (MediaRing.com, February 17, 2000).
- Bundling MediaRing voice technology on all CDs and OEM modems of Taiwan-based Askey Computer Corporation (MediaRing.com, July 17, 2000).

In another alliance, Trans Cosmos, Inc., Japan's leading outsourcing company and largest call centre operation, selected MediaRing's VoIP technology to develop a next generation call centre allowing customer service calls from the Internet. This would increase call efficiency and service quality while reducing the total cost of operations (MediaRing.com, September 19, 2000).

Growth of User Base

The new platform was launched in November 1998. The registered user base grew rapidly. Within a span of three months, i.e. fourth quarter of 1999, its cumulative number of registered users increased 45% from 1.6 million to 2.3 million. The user base in China represented over 9% of the new users acquired in the fourth quarter. By December 2000, the users base more than tripled to over 8 million.

Chart 32



Source: PC Data Online (December 1999)

Approximately 2.24 million PC-to-PC calls were made using the MediaRing Talk software in the fourth quarter of 1999, a 4% increase over the previous quarter. The number of Valuefone calls increased 144% quarter-on-quarter. New services like *My Talky, Voizmail* and *Voizcard* were also well received. The number of *Voizmail* messages sent grew by 60% during this period.

Listing

Given its high growth potential, MediaRing was listed on the Mainboard of Singapore's Stock Exchange in November 1999, the first Internet start-up company to be listed in Singapore. Over 98% of its shareholders are located in Singapore (as on May 8, 2000). The major shareholders of MediaRing are Creative Technologies, Walden, ST Vertex and TDF Venture.

Key Differentiating Factor

Most Voice over Internet Protocols (VoIP) have positioned themselves as phone substitute companies. MediaRing is not just an Internet telephony company. Its strength lies in developing software that allows it to be a package solution provider of Internet Voice Messaging systems, integrating with partners who need voice technology over the net. For example the alliance with Seednet, one of the largest Internet Service Providers (ISPs) in Taiwan, to allow the Taiwanese Presidential candidates to address their supporters through the net and enable voters to leave voice messages for the candidates.

MediaRing believes that voice is an integral part of every Internet application rather than a separate application which has to be activated from a separate manual and user interface. Hence, MediaRing has integrated voice into key applications on the Internet with seamless access to most popular email applications such as web based email, Lotus Notes, Microsoft Outlook, customer relationship management applications, e-commerce, and supply chain management applications.

With its world-wide presence, strong ties in Asia, solid partnership and revenue models, superior technology and team of talented employees, MediaRing hopes to remain on the forefront of the communications revolution and integrated voice communications solutions.

Financial Performance

In its annual report for 1999, the group reported a turnover of S$2.5 million. In the previous year, the turnover was S$90,000. Growth in turnover was derived mainly from advertising (contributing 77% of revenue) and its Valuefone service, which commenced only in July 1999. Asia remained the group's major market, contributing 83% of its turnover, followed by America, which contributed 17% of turnover. Sales increase in 1999 was 2308% for Asia and 10,600 % for America.

Chart 33

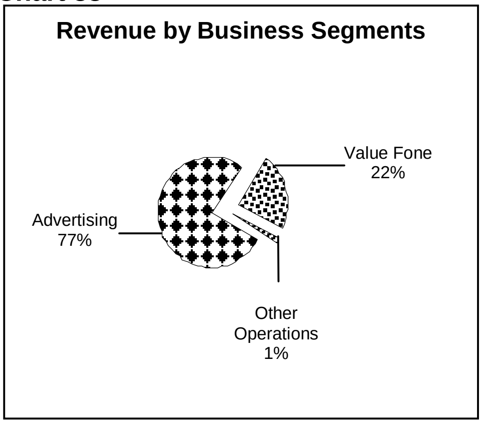
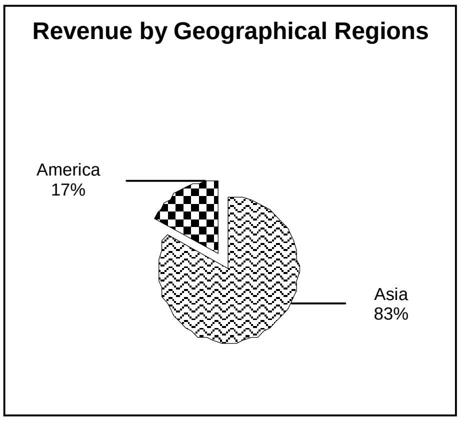


Chart 34



(The figures in reflected in the charts are for the year 1999)

Loss before taxation was S$25.868 million for the group, up from S$5.724 in 1998. According to CEO Ng Ede Phang, if MediaRing chose to be profitable, it could be, but it would be a disservice to its shareholders given the fast-paced rate of growth of the global Internet market (120% per year). The losses incurred are on account of the company's strategy of continuous investment in R&D and marketing to build market shares and a strong brand image to keep ahead of the competition and thereby, create higher shareholder value in the future.

MediaRing's interim results for the first half of fiscal year 2000 (MediaRing.com, September 11, 2000) ending 30 June 2000 showed a significant increase (2.8 times) in revenue to S$7.1 million with an interim loss of S$21.7 million. The increase in turnover was the result of rapid growth in user base, double-digit growth in advertising revenues, and telephony and messaging revenues, particularly in the Asia-Pacific region. The company's cash reserves were S$105.6 million with no outstanding debt.

Note: Given the overarching concern with turning profitable as soon as possible, accounting measures such as ROA, ROE and EVA are not considered relevant to the company at this point as investors' valuation is based on revenue growth rates from quarter-to-quarter. Intellectual Capital is not formally measured but there is an awareness that the main asset of the company is the engineering and market knowledge vested in its people.

According to CEO Ng Ede Phang, MediaRing's current burn rate is about S$3 million per month. Based on current funding, the company would be in a position to sustain itself for three years more, even if no further revenues were forthcoming.

B. KBE Initiatives

Technology and R&D

MediaRing has invested heavily and continuously in R&D to maintain its leadership position. Expenditure on marketing and R&D together constituted 73% of the S$28.3 million spent in total operating expenses in 1999. The expenditure on marketing was S$8.3 million. In the first half of the year 2000, R&D expenditures alone totalled S$6.6 million as compared to S$1.2 million for the corresponding period in the previous year. It has filed for 13 patents, of which one has already been awarded.

The R&D effort is driven by the revenue potential of the innovations. Over time, it is expected that the relative expenditure on R&D may decrease although absolute expenditure on R&D may continue to grow.

HR Issues and Policy

The company employs about 250 people world-wide, of whom 150 are based in Singapore. Almost 100 employees are involved in R&D with an engineering focus. In Singapore, about 40% of the engineers are foreign nationals from various countries including China and India.

Training employees in marketing, sales, accounts, engineering, etc is considered critical and a top priority. The difficulty lies in the fact that being a pioneering company creating and penetrating new markets in new or differentiated products, there are few training precedents to follow. Training therefore takes the form of an informal process of learning-by-doing and through communications with colleagues rather than formalised courses (expenditure on training is also not calculated as a formal accounting measure; training based on exploratory travel in potential and existing markets, for example, is categorised under sales and marketing expenses).

The staff turnover at MediaRing varied between 10-20% in the past one year. The turnover among engineers is lower than among front-line staff for whom fast response, taking initiative, etc, is of the essence.

Remuneration and Rewards

At MediaRing these include basic salary plus short-term incentives in the form of individual bonus or commission and long-term incentives in the form of stock options. Individual bonuses are tied to “territory” bonuses assigned according to targets achieved in each geographical territory. All employees are eligible for stock options. However, according to CEO Ng Ede Phang, it is not stock options alone that lure and motivate employees to stay or leave. It is the challenging work environment that determines their survival.

Organisational Structure/Culture/Management Style

Being a young company, the culture and working style at MediaRing is adaptive, informal and still evolving. A Management-by-Objectives system is followed. Employees are given autonomy to manage their goals. Company activities are divided into product and territory groupings. Self-organising teams operate within these groupings. Engineering managers are responsible for product groupings and work with territorial managers to develop sales goals, process customer feedback and develop customised solutions for end-users. Salesmen report to sales managers who then report to the territorial heads, who in turn report to the executive office.

The fast speed of change and short product cycles in the industry demand quick decision-making, enhanced communications and trust among employees. Staff members are encouraged to "pick up the phone and call" to enable faster execution rather than await responses to formal communications.

C. Excellence/Corporate Citizenship

Corporate benchmarking at MediaRing is primarily dictated by the need to break even and increase market share. Given the small size (250 employees) and young age of the company, efforts towards excellence and corporate citizenship are largely confined to creating a good working environment within the company and building up its internal systems. Significant engagement in corporate philanthropy or community involvement is unlikely to be considered until the company turns profitable. Contributions such as knowledge sharing through participation in conferences/seminars, etc, at universities, which also serve to create more awareness on industry issues without imposing a financial burden on the company, are considered.

Awards

MediaRing was one of the ten companies chosen in the inaugural Enterprise 50 dotcom list announced on 22 November 2000 to give recognition to the most innovative internet companies in Singapore[14] (**The Business Times**, November 23, 2000). Companies were evaluated on a weighted average of computation performance indicators including quantitative indicators such as valuation, funding and profit, as well as qualitative indicators such as business model, market impact and quality of management.

[14] The Enterprise 50 dotcom list is jointly organised by Anderson Consulting and the Business Times and supported by the EDB and IDA.

Outlook and Issues for Future Growth

According to International Data Corporation, the Internet-based voice services industry is expected to reach a revenue potential of US$18 billion in 2004. MediaRing currently ranks among the top five companies world-wide, among the top three in the UK and No 1 in Asia in terms of branding and market share. Its main global competitor is US-based Net2Phone.com.

Having developed and packaged Web-based solutions to voice-enable the Internet, its spending on infrastructure, development and marketing should level off, narrowing loss margins going forward.

The growth of the China telephony market has been particularly encouraging for MediaRing. Through the partnership with China Netcom, it plans to expand its IP telephony services to more than 100 cities by 2001, to make it the leading provider in China.

The evolution of MediaRing's revenue model from licensed to free services was driven by market trends influenced by capital markets. The model was successful as long as stock markets remained vibrant. This revenue model is now undergoing further transition. Future revenue sources will include:

- Licensing.
- Hosting (as an Application Service Provider).
- Maintenance services.
- Customisation.

The critical concern for MediaRing in sustaining its market position going forward is the difficulty faced in getting qualified manpower trained in this market space given the demands of the exceptionally short product life cycle. Product life tends to be a few months rather than a few years in the Internet industry. Since the product cycle is so short, training people with learning curves of 6 to 12 months before they can deliver is no longer viable. Moreover, training time and costs for engineers in Singapore are higher than in the US because skill sets relevant to the industry are of lower quality here. Hence even though wage costs are also commensurately lower in Singapore, since time and speed are of the essence given the short product cycle, operations located in the US may have better chances of success in this industry. The maturity of the US market, the easier availability of trained manpower, the existence of a pool of free-lancers to draw from, receptivity to risk-taking and quick job changes are factors in its favour vis-à-vis Singapore as a location.

While stable operations such as software maintenance with less frequent updates and technology innovation and requiring a local presence may continue to be located in Singapore, it is conceivable that the development of advanced technical products may move to US locations.

Role of the Government

While the launching of the Technopreneurship 21 initiative by the Singapore government is a step in the right direction to help create a supportive environment, it cannot influence demand or revenue generation in the regional and global market space in which Singapore-based Internet companies need to operate. According to Mr. Ng, the latitude provided by the government to Internet companies to pursue market penetration rather than profits in the short-term has been helpful. However, provision of higher levels of funding to subsidise R&D costs and training of manpower are areas where a larger role can be played by the government.

Size in terms of financial strength and funding is critical to create global market reach and branding for Internet companies which may otherwise be small in terms of assets and number of employees. It is perceived that MediaRing's global competitors have access to cheaper capital markets and funding than is available in Singapore.

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3.6 BeXcom Pte Ltd *(Case Study #12)*

(Based on an interview with Phyllis Tan, Vice-President, Marketing, BeXcom Pte Ltd and sources cited in the References)

Corporate Profile

BeXcom is a leading global Business-to-Business (B2B) Internet transaction infrastructure and solutions provider and e-market maker. It enables procurement of both direct and indirect goods and services (http://www.bexcom.com). Founded in 1996, it now operates a global network of e-commerce hubs in the world's major trading zones with its HQ located in Singapore. It also maintains offices, R&D centres and subsidiaries in several parts of the world. In September 2000, the company had about 350 staff world-wide. Its shareholders include large companies such as Vertex (ST Group), ST Telemedia, DBS Bank, Koo Group, Industrial Bank of Taiwan, Intel, ABN-AMRO Bank, Temasek Holdings, Creative Technologies, Sakura Bank, Mitsui and Toshiba (**The Straits Times**, September 7, 2000).

Company History and Strategy

BeXcom was founded by entrepreneur Yong Voon Fee and his brother Yong Boon Chung in 1996. This came soon after the former's Silicon Valley venture Lyrehc, started in 1994, went bankrupt and folded. The reason identified for the failure was a business plan that was not in alignment with market realities. Learning from past mistakes, the founders refined the concept for the new business by consulting potential customers and investors.

After being turned down by several venture capitalists in Singapore, the new company was finally set up with the help of a new loan from venture-capital company, Vertex (ST Group), who understood the vision represented in the new business model. The National Science and Technology Board (NSTB) also provided a grant of almost $500,000 under its R&D Assistance Scheme.

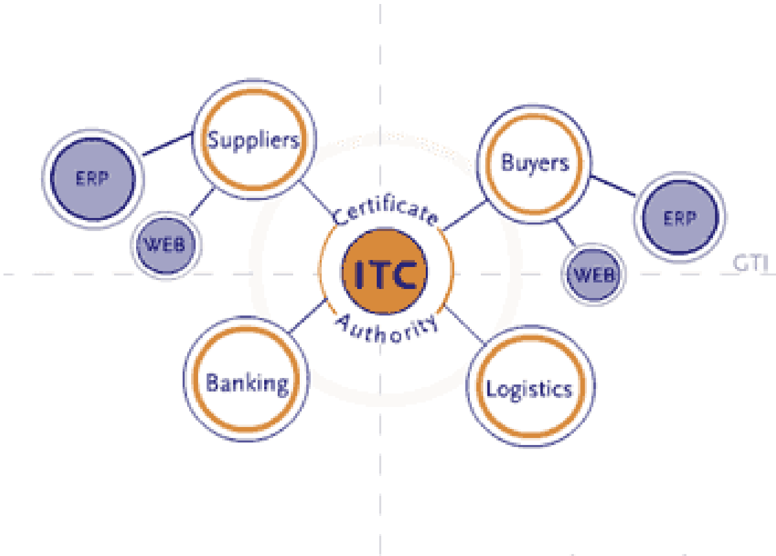
Business Model

Lyrehc's earlier model was based on a known business plan, i.e. developing software that enabled client companies' various computerised systems such as accounting, ordering, inventory, etc, to exchange information. The new business plan centred on using the Internet to allow buyers and sellers to conduct their business transactions online. It envisioned a Global Transactions Infrastructure (GTI) that would enable companies and exchanges to conduct business electronically, both locally or with multiple trading partners around the world. It would integrate all processes and functions required to complete a trade from sourcing and marketing to logistics and payment, thus offering an end-to-end B2B solution. It would help businesses to reduce operational costs, optimise cash use and grow revenues. It would also reduce IT complexity and costs and streamline implementation for faster time to market. Moreover, low entry costs and low fee-per-transaction pricing would make it especially useful for SMEs who lacked the resources, time and skills to set up B2B structures independently. A basic registration fee and charges (based on the volume of business conducted) imposed on clients using BeXcom's trading infrastructure would provide the recurring revenues.

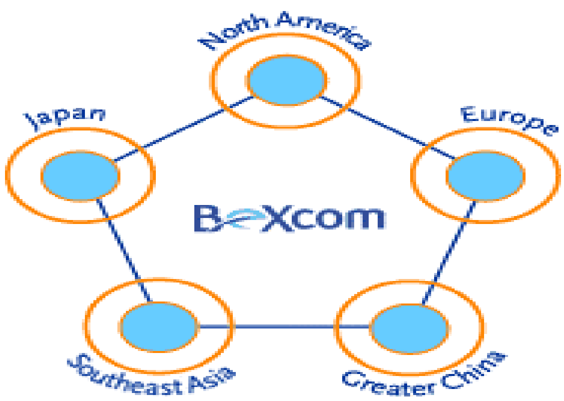
BeXcom's other sources of revenue come from providing professional services and licensing its B2B software engine, Internet Trading Centre (ITC) to help organizations automate its supply/demand chain process or build e-marketplaces.

Features

- **Internet Trading Centre (ITC)** is an Internet-based B2B transaction platform delivering highly flexible business procedures, rules and forms with integrated banking, logistics and certification services. Allowing easy integration into in-house ERP systems, it is usable for direct materials procurement, mission-critical purchasing and JIT environments.



- **Global Transactions Infrastructure (GTI)**: The ITC runs on the GTI which consists of BeXcom Internet Trading Centre hubs in Southeast Asia, Greater China, Japan, North America and Europe. These hubs are linked together via BeXcom's very own Virtual Private Network (VPN), a high performance, secure and scalable global network which clients utilise on a fee per transaction basis without having to expand their own structure.



- **Vertical and Horizontal Markets**: The GTI architecture supports both vertical and horizontal markets. Vertical exchanges are generally supported by companies or consortia in specific industries by customising the e-solution to the unique business rules and templates for each vertical community (for e.g., a "hospitality vertical" has been constructed in collaboration with Raffles Holdings Group to serve the requirements of the hospitality industry).

Horizontal exchanges comprise buyers, sellers and suppliers, thus connecting in supply and demand chains.

Strategic Alliances

- Banks were engaged early on to service the banking needs of firms using BeXcom's network. The banks offered online banking services to BeXcom's e-procurement users while BeXcom's consultation services would be available to banking customers planning to undertake e-procurement. DBS Bank's entry as a business partner provided a seal of credibility, a major boost and turning point for the company. This, in turn, led to other tie-ups and collaborations.
- BeXcom tied up with the Koos Group conglomerate which owns Taiwan's ChinaTrust Commercial Bank and 80 other companies world-wide. ChinaTrust Commercial also provides banking services to BeXcom's users in the Greater China market.
- In June 1999, BeXcom formed an alliance with ABN AMRO Bank to provide global payment services for BeXcom's business communities.
- In October 1999, BeXcom Japan was set up with Mitsui, Toshiba and Sakura Bank, to tap the large Japanese buyer-supplier market.
- In March 2000, it entered into an agreement with bolero.net, the leading network for international electronic trade communities to collaborate on building a seamless global e-trading and e-commerce system for B2B applications to conduct secure online business transactions from front-end order processing and management to back-end trade document exchange. BeXcom was the first e-commerce service provider to be integrated into the bolero.net network helping it to further improve its time-to-market solution for companies seeking new markets through the Internet and providing its customers connectivity to the world's logistics and financial services community.

- In May 2000, BeXcom signed a Memorandum of Understanding with NASDAQ-listed Ariba Inc. (BeXcom, May 23, 2000), another leading B2B e-commerce provider to establish mutually beneficial sales and marketing initiatives including the development of a portal linking their trading communities. BeXcom would host a vertical portal, using Ariba technology on its Global Transaction Infrastructure that allows businesses to conduct secure, online business transactions from front-end order processing and management to back-end trade document exchange, financial payment, logistics and settlement. Ariba customers would have access to the additional distribution channels via BeXcom's network of manufacturers and supply chains throughout its regional marketplaces in Greater China, Southeast Asia, Japan, the U.S., Australia and Thailand. BeXcom might also recommend Ariba's relevant software solutions to the vertical market places that might be built on its horizontally–linked e-commerce business exchange hubs known as BEXes. Ariba might recommend hubs to its software licensees so that they use the e-commerce services provided by BeXcom or create portals on their system.
- In July 2000, BeXcom formed a joint venture with Taiji (a subsidiary of the Ministry of Information Industry, China) to form a R&D joint-venture called BeXcom Taiji. The aim of this R&D joint venture is to develop B2B e-commerce standards in China. Later in August 2000 it partnered Taiwan's First Commercial Bank, allowing the bank's customers to use its e-procurement services.

While overseas alliance partners provided funding, their strategic value lies in bringing in more business through their local networks and goodwill.

Table 20
BeXcom-Company History Chart

YEAR	NO. OF EMPLOYEES	DEVELOPMENTS
1996	7	Company started by Yong Voon Fee with personal funds; operating as a group of engineers and programmers doing R&D work in an office at Science Park; searching for venture capital.
1997	23	A 2-yr grant from NSTB and loan from Vertex (ST); accelerated development of software; expansion of Science Park office and staff.
1998	98	Tie-up with DBS Bank.
1999	150	Started hubs in Taiwan, North America, Japan; R&D centres in US, San Diego to support the hubs. Globalisation drive; company name changed from Lyrehc to bex.com; consolidation of hubs.
2000	350	Additional funding of US$75 million for global expansion program; company name changed again to BeXcom used with territory name suffixes to establish a unified global brand image; set up R&D JV in China, Beijing

Differentiative Advantages

BeXcom did not have first mover advantage in B2B commerce. US-based Ariba (established in 1995) and CommerceOne were the first on the scene and continue to be the global market leaders supported by a large home market and entrenched customers. In Singapore, ECNet started before BeXcom but confined its services to the manufacturing sector. Sesami.com started after BeXcom in Singapore using CommerceOne's software but providing similar services.

BeXcom has tried to distinguish itself from the competition by providing:

- A Global Transaction Infrastructure to facilitate secure, reliable and highly available x-border business trading between buyers and sellers.
- Seamless end-to-end automation of business processes from marketing and sourcing to logistics and payment (the BeXcom Electronic Banking (BeB) software and solution through tie-ups in each hub, e.g. DBS Bank in

Singapore, ChinaTrust Commercial Bank in China, Sakura Bank in Japan etc, adds a unique feature of BeXcom).

- A solution that is suitable for all industries with an emphasis on direct materials.
- A solution based on its own technological infrastructure, which offers quick adaptability and integration, security and customisation to suit the local Asian environment.

Difficulties Experienced and Outlook for the Future

BeXcom is hopeful of a NASDAQ listing in the near future. The IPO would represent a statement of having "arrived" as a global player as well as providing an alternative means of raising funds for expansion. However, its primary focus continues to be on bringing in more revenue to enable it to break even, and improving its market share and position to become the largest global on-line B2B trading community. This presents a special challenge, as its main market, i.e. Asia, is more complex and not homogenous like the US market. A single type of software cannot satisfy all Asian customers but needs to be customised. Breaking into the US market also poses a challenge because of the need to compete with entrenched players. However, because of its localised user interface services, it may be able to offer the advantage of bringing more Asian cross-border business to American companies.

In relative terms, BeXcom's market share is highest in Taiwan, the second superhub to be set up after the Southeast Asian hub based in Singapore, because it had:

1. First mover advantage as Taiwan's first B2B service provider.
2. A good strategic partner in the Koos Group.

Government Assistance

Besides the R&D grant from NSTB, BeXcom has gained from its association with GLCs. The backing provided by Vertex (ST Group) helped to bring in DBS Bank as a partner. This in turn helped BeXcom build up its local market share and network with other businesses of these groups. ST Telemedia became a business partner and hosted its data centre in Singapore. It also gave BeXcom the credibility to approach Koos Group of Taiwan. The alliance with Koos group led to the tie-up with Toshiba, Mitsui and Sakura Bank of Japan.

Financial Performance

BeXcom was unlisted at the time the study was conducted and its company representatives did not release any financial figures (figures of the expenditure on R&D as a percentage of turnover, the number of patents registered, expenditure on training as a percentage of payroll, etc, were also not released by the company representatives).

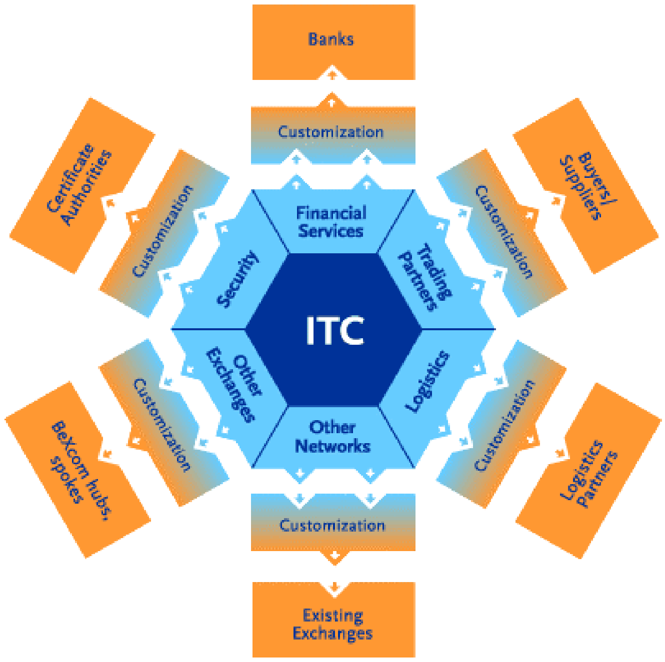
B. KBE Initiatives

Technology and R&D

Bexcom's Trading Solution is based on its vast investment and innovativeness in developing "killer applications" that include:

- Its base infrastructure, i.e. GTI of 5 interconnected hubs around the world powered by its flagship B2B software engine, ITC, for global B2B transactions.
- Integrating of the in-house ERP, MRP II systems of client companies in a flexible yet secure manner.
- Enabling existing enterprises and markets to integrate and collaborate with each other.
- Integrating commerce and electronic banking/financial services.

- Authentication by multiple certification authorities on a global basis such as Netrust for Southeast Asia, TaiCA Inc of Taiwan and Alpha Trust of the US.



Moreover, while the bulk of global e-commerce today, is based on an English User Interface, a single hub or data server and absence of certificate authorities, BeXcom invested in R&D to further enhance its infrastructure to provide:

- Localised Language User Interfaces.
- Regional Servers.
- Certification by local authorities.
- Low latency (i.e. better performance and faster response rate).

Bringing in the local Asian flavour has also entailed higher translation costs. Of the US$100 million plus raised by the company in funding, a substantial proportion has been consumed by the hardware, software and people costs.

Continuous development and enhancement are conducted at BeXcom's three R&D centres in Beijing (China), Singapore and San Diego (USA).

HR Issues and Policy

As part of a fast-moving industry and a young company with IPO potential, the company is attractive to employees. About 150 of its total of 350 employees are based in Singapore. The staff turnover in Singapore is not high (the rate of hiring in fact exceeds the rate of employees leaving the company) on account of the company's rapid expansion and also a relatively risk averse culture vis-à-vis job changes.

Organisational Structure, Culture and Management Style

BeXcom has been driven largely by CEO Yong Voon Fee's vision. He adopted a policy of recruiting senior staff with MNC experience who could imbue it with an MNC culture, structure, processes and mindsets because of the need to grow fast into a global company. Activities are grouped under five divisions, namely, R&D, Legal, Administrative Operations, Marketing and Strategic Alliance besides Sales and Customer Support services.

A consultative relationship exists between the Board of Directors, the CEO, the Chief Technical Officer, Chief Financial Officer, Chief Operating Officer and the functional heads of the five divisions. Communications among them often take the form of video-conferencing to bridge the gaps due to different time zones and locations of operation. The vision and strategy charted out by senior management is communicated to all employees at regular top management meetings.

C. Excellence/Corporate Citizenship

The drive to meet top line and bottom line targets does not leave much time for a young company like BeXcom to actively explore and engage in defining excellence norms and adopting best practices and community activities.

Its core values have been defined as:

- Customer focus
- Trust

- Reliability and Accountability
- People focus

Its efforts to offer the highest security standards on its B2B Internet infrastructure reflect its concern with responsibility to clients besides being part of its differentiation strategy.

It has participated in seminars to promote e-commerce among SMEs.

It sponsors four scholarships at The National University of Singapore supporting e-commerce and logistics students for a 5-year period of study. The recipients of the scholarships are not bonded to BeXcom. The company also hires vacation trainees. These initiatives are motivated by the objective of building more skills into the e-commerce market and making a contribution in the field of education while being aligned to its own strategic purpose.

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