IPS WORKING PAPERS

No. 10
(Volume 1)

THE EVOLUTION OF SINGAPORE BUSINESS: A CASE STUDY APPROACH

Anisha Sabhlok

Research Associate
The Institute of Policy Studies
e-mail: sabhlok@pacific.net.sg[1]

October 2001

[1] This paper was written while the author was a Research Associate at the Institute of Policy Studies. The author may be contacted at this e-mail address.

THE EVOLUTION OF SINGAPORE BUSINESS: A CASE STUDY APPROACH

Anisha Sabhlok

CONTENTS

ACKNOWLEDGEMENTS

The author is grateful to Professor Tommy Koh, Dr Lee Tsao Yuan and Arun Mahizhnan for lending their support to the pursuit of this study at The Institute of Policy Studies. The study was originally inspired by the idea of recording and analysing an era of growth and transition in Singapore business at the turn of the millennium. A micro-level approach and the engagement of views and insights of members of the business community were envisaged. It was hoped that the results might also provide a useful basis for policy discussion and pointers for benchmarking to members of the corporate community.

The encouragement from Dr Lee and comments from Professor Tan Kong Yam and Associate Professor Linda Low supporting the need for more micro-level case studies on Singapore's companies lent further impetus to the original idea. Dr Lee's pointers and suggestions on an earlier draft helped to provide a stronger focus on some of the perspectives outlined in the concluding remarks.

Special thanks are due to all the company representatives who participated in this study, generously contributing their time, information, data and insights to enrich its content.

Comments and reading materials shared by the IPS research staff also helped to develop some of the ideas for the project.

Editorial suggestions and assistance from Yap Mui Teng and Obood Talib and assistance from Gwee Wee Chen and Shobita Sabhlok in organising the graphs and charts is appreciated. All charts and graphs created in the case studies are based on company information provided, except where stated otherwise.

Anisha Sabhlok
Research Associate
The Institute of Policy Studies

THE EVOLUTION OF SINGAPORE BUSINESS:
A CASE STUDY APPROACH

ABSTRACT

This paper is the result of a pilot study conducted to track, explore and analyse various aspects of the evolution of Singapore business within a holistic framework using case study methodology.

The results of the pilot study are summarised in this paper which is structured as follows:

Following the Introduction in Section 1, Section 2 provides the backdrop against which the evolution of business organisations is viewed, i.e. a brief overview of the evolution of the Singapore economy from an entrepot in the mid-1960s to a globally connected manufacturing and services hub at the turn of the millennium. Section 3 provides an outline of the scope, methodology and rationale of this study. Section 4 contains summaries of the observations based on the case studies *(refer to volume 2)* for the three categories of business organisations in respect of the specified aspects of their business development. Section 5 contains notes and comments based on findings from existing studies and statistics relating to the size, composition and performance of Singapore companies to provide supplementary perspectives. The Concluding Remarks in Section 6 make a preliminary attempt to address questions raised on issues concerning Singapore's businesses and specified aspects of their evolution based on the perspectives gained from the case studies covered and some of the relevant existing literature and statistics. The advantages and limitations of the methodology adopted in the study and possible areas for further research are also outlined. The Appendices contain detailed explanatory notes on concepts, indicators and benchmarks relevant to the analysis in the study.

1. Introduction

The study was originally inspired by the idea of recording and analysing an era of growth and transition in Singapore business at the turn of the millennium through a microscopic lens. This turning point provides an appropriate juncture at which to undertake this exercise because it coincides with Singapore's strong thrust towards knowledge-based development, globalisation and world-class excellence.

The term 'evolution' implies "a gradual unfolding or development" and is also associated with the doctrine according to which "higher forms of life have gradually arisen out of lower". The question was, could such a concept of evolution be reduced to tangible indicators for business organisations and studied as such?

In the knowledge age, business organisations are evolving from mechanistic forms to organic structures, shaped and driven by a combination of external (state policies, market forces) and internal (human skills, innovation, organisational structure, culture, strategies) stimuli. The reference to "higher forms" would also call for the introduction of a normative aspect to observing and analysing this evolution. An added philosophical motivation is captured by Werner Karl Heisenberg's[2] comment that the very act of observation changes the thing observed i.e. the way we see someone affects the way they behave. Accordingly, the way business organisations are observed and analysed might affect the way they behave and perform in the future.

Evolution as a multifaceted concept offered several interesting possibilities for exploration. The evolution of Singapore's business organisations may be examined in the context of the development of new and improved products, processes and markets. It may also be viewed in the form of the movement towards world-class excellence in business practices and an expanding role as corporate citizens. Evolution as the changing historical part played by different organisational entities might be captured by using a methodology covering the foreign multinationals in Singapore (MNCs), the government-linked companies (GLCs), private sector big

[2] Professor and Theoretical Physicist. Awarded the 1932 Nobel Prize for Physics.

business, the small and medium enterprises (SMEs) and the emergence of the latest wave of dot.com companies.

The search for the elements of a conceptual framework within which various aspects of the evolution of business organisations could be viewed and analysed to yield perspectives that would be both of academic interest and useful to the business community, posed as much of a challenge as gathering material for the case studies. How many case studies would be sufficient to construct a reasonably representative picture? Because of all these challenges, it was felt that it would be useful to prepare a paper based on a pilot study covering a small number of companies so that it might serve as a basis for further research, analysis and discussion.

This paper summarises the results of the pilot study conducted to track, explore and analyse the various aspects of the evolution of the selected businesses in tandem with the evolution of the Singapore economy. The paper is structured as follows:

Section 2 provides the backdrop against which the evolution of business organisations is viewed i.e. a 'macro' brief of the evolution of the Singapore economy, from an entrepot port in the mid-1960s to a globally connected manufacturing and services hub at the turn of the millennium.

Section 3 provides an outline of the scope, methodology and rationale of this study.

Section 4 contains summaries of the observations based on the case studies for the three categories of business organisations.

Section 5 contains notes and comments based on findings from existing studies and statistics relating to the size, composition and performance of Singapore companies to provide additional perspectives to supplement the study.

The Concluding Remarks in Section 6 make a preliminary attempt to address questions raised on issues concerning Singapore's businesses and specified aspects of the evolution of Singapore Business based on the perspectives gained from the case studies covered and some of the relevant existing literature and statistics. The advantages and limitations of the methodology adopted in the study and possible areas for further research are also outlined.

The Appendices contain detailed explanatory notes on concepts, indicators and benchmarks relevant to the analysis in the study.

2. The Evolution of the Singapore Economy and its Public Policies – A 'Macro' Background

Singapore has developed rapidly from an entrepot port in the 1960s (when it became an independent republic) to an industrialised economy, and moved further towards establishing itself as a services hub in the 21st century. Its success is attributed to geographical, external, cultural and structural factors. Its strategic location at the hub of Southeast Asia's international shipping, trading, air and trade routes and a natural harbour laid the basis for its entrepot status. World market conditions favoured its export efforts. A culture that fostered Confucian values, respect for authority, hard work and frugality created conducive conditions for state-driven development. The political and administrative infrastructure created stable conditions in which the economy and businesses could grow (Menkhoff and Wirtz, 1998).

As the then Finance Minister Hon Sui Sen said in 1978, Singapore's evolution since 1960 was a prototype of economic development promoted by international institutions like the World Bank, IMF, and GATT, i.e. moving from simple to progressively skill intensive and value added (and now technology intensive) manufacturing.

This in turn has been catalysed by the pro-active industrial policy pursued by its government. Viewed in four phases, the import substitution policy of the early phase (mid-fifties to mid-sixties) was followed by export-orientation and industrialisation from the mid-sixties to the early seventies, followed by industrial restructuring from 1973 -1984. The mid-eighties onwards saw a thrust towards diversification and a move towards industries with high value-added products and services.

Mid-60s to mid-70s – Export-Orientation and Industrialisation

After the separation from Malaysia, Singapore found itself with low industrialisation, infrastructure, jobs, income, public health services and a rapidly increasing population. Given Singapore's small market and limited resources, an open economy and integration into the world economy were critical and inevitable and occurred in the phases outlined above.

The United Nations recommended the setting up of the Economic Development Board (EDB), which in turn implemented the MNC-based growth policy. Exports were encouraged through reduction of tariffs. Foreign investors received depreciation and tax incentives for capital investments, export incentives, cheap credit, and land concessions in the western part of the island developed by Jurong Town Corporation (JTC). The rapid development of the electronic, mineral oils processing, shipping and textile industries spurred Singapore's economic growth. State subsidies in health, housing and education helped to sustain low wages which in turn made Singapore an attractive base for MNCs. It was one of the first countries to implement the Workmen's Compensation Act. The Central Provident Fund (CPF) Act, a forced savings scheme, created a social safety net for the population. High savings were further boosted by the Government's control of the banking and financial sectors.

The Urban Redevelopment Authority (URA) oversaw the transformation of the city. Skyscrapers, high rise buildings, businesses, services, shopping centres and hotels replaced traditional Chinese shophouses. Much of the population was resettled in housing estates built by the Housing & Development Board (HDB). Today, more than 85% of the population live in these estates.

MNCs helped to create new jobs in the electrical/textile industries and demand for female workers. The government assisted this by legislating against unequal treatment of women in education and the workplace and implementing a family planning programme. Independent trade unions were eliminated to prevent strikes and social conflicts. Labour issues were settled by the government in collaboration with the National Wages Council.

Mid 1970s to mid 1980s - Industrial Re-structuring

The labour-intensive strategy of the 1970s led to a shortage of labour supply, slow wage increases and stagnation in productivity. The potential for increases in labour-intensive exports diminished with competition from other developing countries, and triggered a movement away from low-technology and labour-intensive production. The high wage policy pursued from 1979 onwards was aimed at motivating employers to automate production facilities and develop workers' qualifications to suit high-technology industries, especially in the metal and electronics industries. The setting up of the Skills Development Fund (SDF) supported this approach. Process and quality improvement was stressed to increase competitiveness vis-à-vis cheap-labour countries. Between 1979 and 1981, labour costs increased by 58% as a result of these policies. Between 1979 and 1983, investment in education and training increased by 1000%.

MNCs like Philips helped EDB manage vocational training centres. Modern technical institutions were set up. The National Computer Board (NCB) was formed to promote computerisation and the use of information technology (IT). Since 1980, research and development (R&D) linked to production was actively encouraged. The Singapore Science Park was set up.

More Government-linked companies (GLCs) like Singapore Airlines (SIA), Singapore Technologies (ST), Government of Singapore Investment Corporation (GIC) etc. were created, further strengthening the already strong role of the state in the growth of the corporate sector. Although they received the start-up capital required to promote key industries, they were not protected like state-owned enterprises in countries like China, Vietnam, and Russia. The dependence on foreign managers was in evidence at that time (in 1990, GLCs contributed 18.4% to Singapore's GDP).

Efficient macroeconomic management by agencies such as the EDB, Trade Development Board (TDB) and the Monetary Authority of Singapore (MAS) ensured regular budget surpluses and moderate inflation levels, creating an environment for steady growth. Strong leadership and rising prosperity kept the People's Action Party (PAP) in power and ensured political stability.

Mid 1980s to late 1990s - Regionalisation and Concentration on Value-Added Activities

The recession of the mid-80s was a turning point for Singapore. Shipbuilding and repair services were hit by stagnant demand. A rise in protectionism in several countries, a decline in demand for raw materials, a fall in some commodity prices and rising costs of doing business in Singapore, all resulted in a slowing down of growth. Rapid export industrialisation and infrastructure development in neighbouring countries challenged Singapore's role as an entrepot for trade. Corporate taxes and employers' CPF contributions were lowered to stimulate the corporate sector's growth. Annual wage increases and taxes on labour costs were frozen. The GLCs came under pressure to privatise. The need to diversify the industrial structure and promote banking and financial services was realised. Local companies were encouraged to grow an "external wing". The promotion of local industries and the SMEs gained momentum.

While rising labour costs and rentals posed a deterrence, Singapore's attractiveness as a business location to investors on account of the efficient transport and telecommunication system, excellent infrastructure, a pro-business environment and political stability continued to grow. The Strategic Economic Plan of 1991 emphasised the growth of high-value added sectors like telecommunications and information technology. The GLCs played a pioneering role in strategic regional investments through the foray into industrial parks in Indonesia, China and India.

The regional economic and financial crisis that erupted in 1997 with the devaluation of the Thai Baht marked another turning point. While Singapore remained relatively insulated and did not suffer as much as some of its neighbours, its vulnerability to disruptions in regional markets and further erosion of the competitiveness of its exports vis-à-vis those countries with highly devalued currencies became apparent. After two quarters of negative growth, the Singapore economy returned to positive territory driven mainly by the manufacturing sector. Export and industrial production picked up, visitor arrivals to Singapore recovered; the stock market rallied but the domestic-oriented sectors (financial services, business services and construction) remained weak. The importance of preserving the diversity in industrial structure, i.e. a globally competitive manufacturing sector and regionally competitive services sector as twin engines of growth, was realised. Labour market flexibility in the form of the rising share of the annual variable component in wages helped, by allowing a faster response to the recession by adjusting this component and making smaller cuts in the CPF (the annual variable component of wages rose from 11% in 1985 to 16% in 1998).

The need for Singapore to go beyond regional markets to preserve its competitiveness became apparent. This was accelerated by the revolution in ways of doing business with the arrival of Internet technology.

The year 2000 and Beyond – Transition to a KBE and Globalisation

The Competitiveness Committee convened in 1997 amidst concern about asset inflation and job-hopping before retrenchments came with the onset of the crisis, recommending short-term crisis management through a major cost-cutting package and long-term transformation to a knowledge-based economy. Since the wage component accounts for a major part of Singapore's production costs, a low cost strategy was not considered sustainable, as it would condemn Singapore's workers forever to low pay. Instead capabilities should be enhanced to justify the cost premium. The strategy of nurturing knowledge-based workers, technologies and talent regardless of nationality became the basis of the transition to the New Knowledge-based Economy (KBE).

The new "21" Plans are aimed at sustaining the new export-oriented sectors by developing Singapore's manufacturing and services into globally competitive sectors and developing local business sectors and world-class capabilities with the infrastructure necessary to support these objectives. It is envisaged that the Singapore economy will move from resource-driven to innovation-driven growth, and increasingly outsource its low-skill, labour-intensive manufacturing activities. The SME 21 Plan comprises enterprise-level, sector-level and broad-based strategies to help domestic businesses transform themselves (Sabhlok, 2000a).

Based on this vision, macroeconomic factors in Singapore are likely to remain stable. Sustained growth, low inflation, low unemployment and the pursuit of liberal trade policies within bilateral and multilateral co-operation frameworks with other countries will continue. GDP per capita today exceeds US$25,000 per annum (see Table 1 below). Singapore was ranked No.1 in the Global Competitiveness Rankings by the World Economic Forum (WEF) between 1996 and 1999 and the third best Asian city for business by Fortune magazine in 2000.

However, growth rates in the immediate future may not match the double-digit growth rates of earlier years and there is concern that income disparities between the Old economy and New Economy sectors may grow in the coming years.

Table 1

COUNTRY	COMPETITIVENESS RANK		MICRO COMP RANK		1998 GDP
	1998	1999	1998	1999	PER CAPITA
US	3	2	1	1	$ 31,438
FINLAND	15	11	2	2	$ 21,197
THE NETHERLANDS	7	9	3	3	$ 23,361
SWEDEN	23	19	7	4	$ 20,765
SWITZERLAND	8	6	9	5	$ 27,892
GERMANY	25	25	4	6	$ 23,313
DENMARK	16	17	8	7	$ 24,670
CANADA	5	5	6	8	$ 23,660
FRANCE	22	23	11	9	$ 23,908
UK	4	8	5	10	$ 22,303
AUSTRIA	20	20	16	11	$ 24,000
SINGAPORE	1	1	10	12	$ 27,754

Source: Microeconomic Competitiveness: Findings from the 1999 Executive Survey in *The Global Competitiveness Report, 1999* (World Economic Forum)

Political stability and sound macro-economic fundamentals are necessary, but not sufficient to guarantee sustained growth in GDP per capita without changes at the micro-economic level. The microeconomic foundations of economic development are rooted in company practices, strategies, the quality of inputs, infrastructure, institutions and the array of regulatory and other policies that constitute the business environment in which nations compete. According to the 1999 report of the WEF, Singapore is one of the countries whose GDP per capita exceeds that commensurate with its micro-economic foundations. To sustain high growth levels, weaknesses in institutions and company practices at the micro-level must be addressed.

Table 2 summarises the top three advantages and disadvantages in Singapore's company strategy and its business environment.

Table 2

COMPANY STRATEGY		NATIONAL BUSINESS ENVIRONMENT	
Competitive Advantages	**Competitive Disadvantages**	**Competitive Advantages**	**Competitive Disadvantages**
Attention to staff training	Product Designs	(Lower) Administrative burden for start-ups	Domestic supplier quality
Extent of regional sales	Extent of Branding	Port infrastructure quality	Domestic supplier quantity
Professionalism of senior management recruitment	Control of international distribution	Air transport infrastructure quality	Effectiveness of anti-trust policy

Source: Microeconomic Competitiveness: Findings from the 1999 Executive Survey

in *The Global Competitiveness Report, 1999* (World Economic Forum)

At the company level, broadening of international markets, value chain presence, proximity to customer bases, supplier quality and supply chain management, innovative capacity, product design capability, brand development and customer orientation are the key factors that require attention in moving up to the next level of sophistication in competitiveness, besides leveraging on the possibilities offered by Internet technologies (Sabhlok, 2000b).

In WEF's Global Competitiveness Report for 2000, Singapore ranked second after the US in the Growth Competitiveness ranking (equivalent to the earlier Competitiveness index) ranking. The new Current Competitiveness Index (building further on the Microcompetitiveness Index introduced in 1998 and 1999) ranked Singapore 9th after Finland, the US, Germany, Netherlands, Switzerland, Denmark, Sweden, and the UK.

The Economic Creativity Index introduced in 2000 ranked Singapore third after the US and Finland (the index attempts to measure and evaluate important aspects of innovation, technology transfer and diffusion as well as institutions that facilitate innovation and diffusion). Singapore did not rank among the top ten countries in the WEF Report's Environmental Regulatory Regime Index (also introduced in 2000).

3. Scope, Methodology and Rationale of the Study – A 'Micro' Approach

Scope

The study explores the evolution of business organisations in Singapore with the objective of capturing insights from their past history, as well as the transition taking place at the company levels as Singapore evolves into a knowledge-based economy and moves forward in its journey towards globalisation and world-class excellence.

The evolutionary patterns in the business organisations were studied within the scope of three themes:

A. Company History:

What were the main turning points for the company in terms of business growth and expansion in the domestic, regional and global markets? What were the strategies that led to its achievements? Were these the result of the company's own initiatives? What was the role played by and assistance received from the government in the course of its development?

B. Issues and Measures Relating to the "KBE" Phase of Evolution:

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 were examined under this theme. Was the organisation leveraging on innovation, R&D and technology to enhance growth? Were human resource policies designed to foster knowledge-based development? Was the organisational structure hierarchical or flat? Had the organisation evolved a culture of core values? Did the organisational structure, culture and management style encourage employee empowerment, information cross-flows and team-based initiatives? Was the organisation moving towards new accounting measures and metrics such as Economic Value Added (EVA) and Intellectual Capital to meet the needs of knowledge-based growth? These were some of the issues covered under this theme.

C. Efforts towards World Class Excellence (Including the Company's Role as a Corporate Citizen):

This represented the normative aspect of business evolution. Were the companies adopting best practices and moving towards a framework of world-class business excellence? Were the companies engaged in community initiatives? What was the nature of this engagement? Were these initiatives of a philanthropic nature or tied into the company's strategic interests?

Categories

Business organisations in Singapore were divided into three main categories by ownership/control for the study:

1. Government-Linked Companies (GLCs)
2. Foreign Multinationals (MNCs)
3. Local Private Sector Companies. These were further sub-categorised by size into Big Businesses and Small and Medium Enterprises (SMEs)

Singapore's state-owned enterprises fall into two categories: statutory boards, which are established by Acts of Parliament and supervised by ministers; and GLCs, which are established under the Companies Act and have the same freedom of manoeuvre as private sector companies. Of state-owned enterprises, only GLCs were covered in this study. Some of the businesses in fact grew into huge conglomerates comprising several companies bound only by a common culture. In such cases, the growth of the entire conglomerate has been dealt with as a single case study as it helped to capture the pattern of expansion as well as the cultural characteristics of the group as a whole.

MNCs covered included branches of foreign corporations as well as subsidiaries of foreign-controlled companies.

The distinction between big and small private sector organisations was based on the definition of SMEs used by the Singapore Productivity and Standards Board (PSB). Local SMEs are defined as enterprises having at least 30% local equity, fixed productive assets (defined as net book value of factory building, machinery and equipment) not exceeding $15 million, and employment size not exceeding 200 workers for non-manufacturing companies. Companies in the private sector with assets/employment sizes above those in this definition were regarded as Big Business organisations.

Pure Internet businesses based in Singapore (as distinct from new economy initiatives launched by “brick-and-mortar” companies as offshoots or subsidiaries of the core business) fall into a class of their own. They are not classified as SMEs as such and have yet to become large enough to qualify as big businesses (among government bodies, they generally fall under the supervision of the EDB and National Science and Technology Board [NSTB]). Hence these were covered as a separate category under Local Private Sector Companies.

Additional Contribution of this Study – A Holistic Framework of Analysis

The history, role, performance and impact of some of the main players in Singapore business have been documented through several macro-level studies and surveys and some case studies by researchers and authors during various phases of evolution (see References and Additional Reading). The differentiating approach of the case studies included here is the adoption of a holistic framework of analysis. These case studies:

- Provide micro-level insights into the companies' past evolution and strategies.
- Cover the more recent and planned developments with respect to the transition to knowledge-based growth, for the selected companies.
- Include normative aspects, i.e. efforts towards excellence in business practices and the role of business organisations as corporate citizens.

The last two provide a key link to analysing the evolution of the business organisations in a holistic manner. While no rigorous cause-effect relationships are hypothesised in this exploratory study, the need to recognise the possible linkages between certain aspects of evolution is suggested. The evolution of businesses into the era of knowledge-based growth and global markets will be increasingly interwoven with their efforts towards adopting best practices and higher levels of corporate social responsibility. Thus the coverage, for instance of human resource development, in the case studies has a bearing not only on the transition towards a KBE and enhanced global competitiveness but also on excellence practices and corporate social responsibility. There are therefore areas of overlap in classifying company achievements in these areas in the case studies. They are not mutually exclusive.

Inclusion of efforts towards excellence and corporate citizenship along with a review of strategies, market and performance also helps to keep in perspective the balance companies must strike between financial and non-financial objectives.

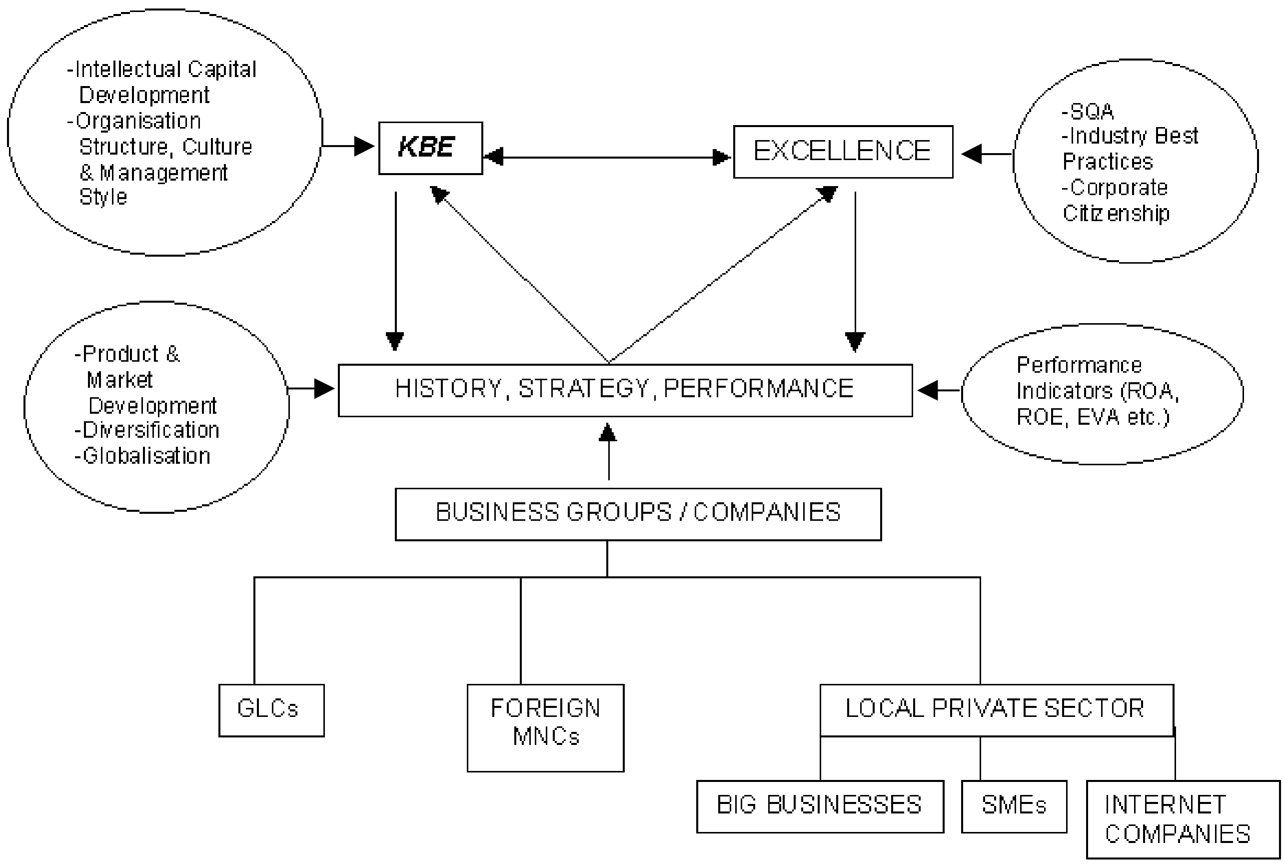
Financial performance is covered in each case study but is not in itself a key focus of the study. It can be interpreted as an indicator of the success of strategies pursued and adoption of best practices. To the extent that financial results at any point in time are affected by a variety of market forces, financial indicators are not 'sufficient' indicators. Moreover, in some cases there is a trade-off between investment in human resource development and R&D (which would be likely to yield returns in the long-term) and short-term financial performance.

The interpretation of some useful performance indicators used is provided in the notes attached in Appendix 1. Appendices II to V contain explanatory notes on theoretical concepts, indicators and benchmarks that help to enrich the review and analysis of the case studies (as such it is useful to refer to them in conjunction with or prior to reviewing the Summary of Observations and Concluding Remarks). These Appendices include:

- A theoretical framework from business literature relating to evolution from an organisational behaviour perspective. It describes five stages of growth and crisis defined as evolution and revolution accompanied by appropriate adjustments in management practices (Appendix 2).
- The measurement of Intellectual Capital relevant to understanding issues in the development of knowledge-based organisations (Appendix 3).
- An outline of the Singapore Quality Award (SQA) framework followed by some companies in Singapore as a model of excellence and used for benchmarking best practices (Appendix 4).
- General Perceptions and evolving ideas relating to corporate citizenship (Appendix 5)

Figure 1 below attempts to capture the framework created for the study. Past evolution is viewed in terms of the companies' history, strategy and performance. The upward thrust signifies the business organisations' evolution towards becoming knowledge-based and adopting excellent practices. The double-point and reverse flow arrows suggest that becoming knowledge-based and adopting excellent practices are not exclusive but mutually reinforcing and in turn, can impact the strategy, performance and future course of the organisation's evolution.

Figure 1
The Evolution of Singapore Business – A Holistic Framework



The Case Study Methodology and its Rationale

The case study methodology was inspired by the view expressed by senior business academics that the corporate sector in Singapore is under-researched at the micro-level. The 1999 Competitiveness Report of the World Economic Forum showed that Singapore's Microcompetitiveness ranking lags behind its macrocompetitiveness indices. This study therefore, hopes to make a useful contribution by providing micro-level insights using this methodology.

The case study methodology through interviews as opposed to mailed questionnaires was chosen because:

- The study was intended to be of a "ground-up" and exploratory nature rather than one intended to test a hypothesis.
- The detailed information and qualitative insights required into various aspects of evolution called for intensive follow-up and would have been difficult to obtain through a mailed multiple-choice questionnaire.

The "live images" of evolution yielded by the case study method would help present a more integrated and holistic picture of the selected companies' development, the reasons for strategies pursued, the character and culture evolved over time as well the changes put into motion as part of the KBE phase.

A list of about 50 business groups/companies in the three categories was compiled. An attempt was made to select business organisations of different sizes and across different sectors. Given the time-frame in which the interviews and secondary research for the initial phase of the study were to be completed (4-5 months), the selection was not random but based on availability and convenience of access to the relevant spokespersons of the business groups/companies. Some of the companies known to be key or long-standing contributors to the economy, market leaders in their industry, award winners or those that have distinguished themselves in some way, i.e. might be regarded as role models for a particular achievement or as good "all-rounders", were targeted. However, availability and willingness to participate within the designated timeframe available for the study determined the final selection. Based on a review of the initial draft report, the study period was extended to enable further follow-up and the expansion of coverage to a few more companies.

The study was based primarily on semi-structured interviews with the top/senior management of the relevant companies, supplemented where appropriate by information from secondary sources. In some cases, the CEO/MD delegated the interview and responsibility for providing information/material to designated senior executives in the corporate planning, human resource or corporate communications department as co-ordination of inputs from several departments was required. Information provided in the interviews/ meetings was supplemented by information requested or contained in follow-up phone-calls, e-mails, annual reports, prospectuses, websites, press reports, corporate books, etc.

Based on the response rate, extent of disclosure and adequacy of information supplied, twelve case studies have been reproduced in Volume 2. The interviewees' approach to addressing the issues discussed and the degree of disclosure varied. These differences are reflected in the construction of the case studies although an attempt was made to standardise the case study format (the Case Studies in Volume 2 and the Summary of Observations in Section 4 are broadly organised around themes A, B and C above).

All case studies prepared were sent to the designated company representatives for accuracy endorsement and vetting prior to publication. (The case studies were vetted by the company representatives during the period December 2000 to February 2001.) Some interviewees preferred not to have their names mentioned in the citations made in the case studies.

4. Summary of Observations and Comments

(Based on the case studies covered – Refer to volume 2 for the detailed case studies)

4.1 Government-Linked Companies

A. Evolutionary Pattern Revealed by the Group/Company Histories

The three groups whose case histories were compiled, showed two types of evolutionary patterns:

- A group like Singapore Airlines (SIA) which has thus far, pursued expansion based on its core competency and into related businesses only;
- Groups like Keppel and Singapore Technologies (ST), who have fanned out into a variety of industries and businesses.

Strategies

There were some common traits in the strategies pursued by Singapore's GLCs. These included:

- A strong profit focus.
- Use of market-based performance benchmarks.
- A strong thrust towards diversification and regionalisation.
- Collaboration and competition with other GLCs.
- Support for national objectives and policies.

The case histories collated in this study suggest that the profit-mandate imposed on Singapore's GLCs may have successively led to some of the other strategies mentioned above and contributed to the growth pattern that evolved overtime.

The small fragmented nature of local business at the time of Singapore's independence prompted a primary focus on the MNC-GLC led growth model. The profit-focus required that GLCs be allowed to make their decisions autonomously. The reluctance on the part of the government to bail GLCs out of financial troubles in fact motivated some GLCs to move beyond their initial corporate purpose and core business:

- To offset risks involved due to the cyclical nature of a vertically integrated core business.
- To leverage the core competency developed in the core business across different industries and beyond national boundaries to achieve economies of scale and critical mass necessary for cost-effective and efficient operations.

This pattern is evident in the evolution of both Keppel and Singapore Technologies Groups. SIA presents an exception to this pattern. It has been able to preserve its vertically integrated character on account of the fact that being the flagship carrier of a city-state, from its very inception, its outlook, focus and markets were international. It never had the luxury of a domestic market, protected or otherwise. This in turn motivated it to focus on building a service that was world-class and could compete globally by leveraging on a superior service based on quality and innovation, rather than offset the risks of operating in foreign markets by diversifying into alternative products and industries.

The reasons for this diversification by GLCs across several industries in the domestic market were not purely profit motivated. The GLCs also served as an important vehicle of state entrepreneurship at a time when private enterprise in certain industries was not forthcoming. However, faced with the difficulties of penetrating overseas markets and motivated by the need for profit realisation, their aggressive and continued expansion in the domestic market could have laid the ground for the crowding out of the private sector, given the resource and domestic market limitations of a city-state economy. This expansion over time resulted in a web of unwieldy cross holdings spanning diverse industries across the economy necessitating constant regroupings and restructuring. The diversity in some cases (e.g. ST Group) resulted in subsidiaries often competing with each other rather than leveraging on the expertise and name of a single large group.

Financial Performance

While its well diversified markets have helped SIA to remain consistently profitable, ST and Keppel witnessed mixed fortunes on account of cyclicity in their various industries of operation and exposure to downturns in the region. SIA and Keppel have experienced lower profitability in recent years compared to the returns achieved by them in the past. For both, returns on shareholder funds declined during the period 1995 to 1998 with some recovery in the years 1999/2000. SIA has remained consistently profitable but the returns on shareholder funds declined to levels between 8-10% compared to the double-digit returns experienced in the past years. ST also witnessed negative Group EVA between 1996 and 1999. Although employee productivity is high, value added per employee as a percentage of fixed investment cost is much lower at ST, thereby underscoring the need to benchmark productivity against the capital costs of operations.

Privatisation of GLCs

The pressure and motivation for the privatisation began in the mid-1980s and was the result of two factors:

- Political pressure on account of the "demonstration effect" of privatisation in other countries following the recession in the mid-1980s (GLCs were also accused by private sector critics of crowding out SMEs).
- The need to raise capital and effect share-swap arrangements in joint ventures or take-overs in strategic partnerships/alliances with other public-listed foreign companies as the process of internationalisation progressed.

Significantly, the privatisation drive at that time was not the result of any proven association of GLCs with inefficiency or high levels of subsidisation as in the case of state-owned enterprises in several other countries. In a paper presented in 1992, Dr Goh Keng Swee stated that the problem lay not in the production aspect but in the marketing in foreign markets. Moreover, the entrepreneurial function assumed by the GLCs also meant that the new ventures had to be sustained by other ventures, which were profitable. The privatisation method employed by GLCs in Singapore was also different from that in many other countries. It took the form of listings of successful enterprises rather than sale of assets of loss-making companies.

The consequence of the listings on GLCs was mixed. The immediate effect was sometimes an increase in the market value and share price of the company (e.g. SIA) and the listings were a welcome source of additional funds. However, it also led to greater public scrutiny due to disclosure requirements, greater accountability to public shareholders and in a sense, less autonomy and liberty to take risks. For businesses that were spun off as separate subsidiaries and listed, it gave them greater autonomy and freedom to grow their business. Listings also led to a progressive increase in share capital eventually impacting the returns on shareholder funds adversely even when absolute profits were increasing. It complicated the attribution of profits and financial management, and became associated in some cases (e.g. Keppel), with a revaluation of strategy and a shift/restructuring of the group's business away from the traditional core businesses.

B. Transition to KBE and Globalisation of Business

Organisational Structure, Culture and Management Style

A close-knit, core leadership drove the vision and strategic thrust of the GLC groups covered in the study. Although organised in several tiers and divisions (with growing diversification and regionalisation), the documentation in the corporate literature published by the companies studied suggests that functioning of some GLCs was more entrepreneurial in the early days than bureaucratic. Managers had a certain degree of autonomy and teamwork was encouraged.

As the companies grew in size, many evolved a culture of core values. SIA evolved its mission statement and core values early on and succeeded in imbuing its employees with the SIA spirit through a host of methods including mentoring, training, awards and newsletters. An increasing number of long-serving employees attest to the success of SIA's policies. ST felt the need for a proper framework to realise the energies and talents of its people in the mid-nineties. The changes implemented thereafter were aimed at improving the quality of thinking and vision of the senior management, cultivating an appropriate culture dealing with issues of organisational development, motivation, compensation schemes, people selection and internal power politics. The culture evolved thus is being used to provide the common binding force across the group's hundreds of companies spanning different countries and industries. Some of ST's companies today exhibit characteristics of a less hierarchical and more self-organising structure particularly suited to entrepreneurial organisations. SIA and ST have evolved employee suggestion schemes. Keppel had a more hierarchical and command control style of management in the marine business but maintained good relations with its unions.

Human Resource Development and Training

For all GLC groups covered, increasing realisation of the importance of HR training, skills upgrading and appropriate compensation and reward policies are evident. SIA, being in a service-based industry has a history of spending well above the national average on training (in 1996-97, it spent 14% of its payroll on training, well above the national target of 4%; in 1998-99, it spent S$4300 per employee which was above Singapore's national average of S$300 per worker). Keppel sets aside 4% of its annual payroll every year as a training budget although its actual spending can vary from the budget.

ST adopted a number of programmes to put in place a pro-active HR system. Training their workforce to be tech-savvy to meet the demands of the new KBE is an important part of their forthcoming plans. Keppel has engaged consultants to restructure its human resource practices and create a culture based on innovation and strong corporate governance.

SIA and ST set up their own training centres and college to promote training and the core values of the organisation in 1993 and 1995 respectively. All three have invested in scholarship schemes. For ST and Keppel, this is also a means of harnessing and grooming talent to man their companies.

There is a move towards more progressive HR policies including share options for all employees, empowerment, incentivisation through appropriate reward and compensation systems, more recreation facilities and activities to foster the team spirit. SIA has had loyalty awards for several years and introduced share options for all employees in 2000. ST and Keppel are considering increasing stakeholdership for employees, particularly in the New Economy businesses, listed as well as non-listed. In Keppel Group, while the executive stock option scheme tends to be linked to position rather than performance, a revised performance management system is being implemented linking rewards more to performance.

R&D, Innovation and Technology

GLCs have responded to the increasing need to harness technology to keep up their competitiveness although the form and extent of execution vary. Among the GLC groups included in the study, SIA has been leveraging continuously on innovation and technology to create differentiated products, ease and better passenger experience on board for its customers from online booking, and faster clearances to enhanced communication services. For ST, R&D and technology are a key ingredient of its strategy and operations. Significantly, even an "Old Economy" group like Keppel (where Keppel FELS was the only company with any notable R&D) is now repositioning itself to harness e-technologies to a variety of products across the board, from smart homes to banking services. In all cases, websites to disseminate better information and facilitate e-business have been launched.

New Accounting Measures

ST was the first to adopt EVA (explanatory note in Appendix 1) as an accounting measure among GLCs. Bonuses at ST are now tied to the EVA performance of the respective units reflecting an increasing alignment to shareholder interests. Keppel is in the process of spreading awareness of EVA among its staff. SIA is considering the efficacy of adopting the measure.

While Intellectual Capital (explanatory note in Appendix 3) metrics are not currently used by any of the GLCs, awareness of the practical aspect of the concept in the sense of the increasing importance of customer relationship management and enhancing human capital as opposed to merely structural capital, is increasing. SIA has always placed customer-focus and employee training at the top of its priority list. At ST too, the need to move towards greater alignment with markets and customers has been realised. Cultivating e-savviness is also seen as a means of using the information and data embedded in the group's own products, orientating it towards customer needs and leveraging on its large customer bases to create value. Keppel Group Chairman Lim Chee Onn has stated that it would be against shareholders interests to liquidate the group because its most valuable assets lie in the network of relationships with other corporations and governments, and that these needed to be leveraged through a different core business (**The Business Times**, August 8, 2000). All these point to the importance of looking beyond traditional measures of accounting and decision-making and also evaluating the human, customer and structural capital embedded in older organisations.

Alliances

The role of alliances with local and foreign partners to expand markets and products, leverage on cross-selling to expanded customer bases, share knowledge-bases and creation of 'one-stop shops' to cater to customer convenience, is increasing among these GLCs. SIA, despite its success as a global carrier, has tied up with Virgin and Ansett. Some of the companies of the ST and Keppel groups are also engaged in foreign tie-ups particularly in technology ventures. Following the regional economic crisis, the urgency of strengthening markets beyond the region and leveraging further on economies of scale and size have intensified.

C. Excellence/Corporate Citizenship

Given their alignment to national objectives, all GLCs are committed, in principle, towards making efforts to meet the quality, environment and human-resource development based regulatory standards such as ISO 9000 and 14000 and People Developer Standard (PDS), as well as other best practice benchmarks set by agencies like the PSB. In terms of the excellence framework, only some have actually acquired Singapore Quality Class (SQC) status within the Singapore Quality Award (SQA) framework. None of the GLC groups covered in the study have won the SQA award.

However, best practices adopted by GLCs are not based only on standards set by PSB but a variety of local, regional and global industry benchmarks. SIA for instance, has evolved a highly refined version of Total Quality Management (much before the institution of the SQA Excellence framework in Singapore) and benchmarks itself against global industry (award-based and other) indicators. It has also developed its own set of rigorous indicators that help to keep up its competitive position as one of the best global airlines, even though it is not formally a member of SQC.

Some of ST Group's companies have achieved SQC status and ISO certifications. They also adopt practices from a variety of sources. QUEST (Quality and Excellence in ST – a programme launched by ST "to inculcate a consciousness of productivity among workers and management and to encourage the participation of all in making operational decisions and suggestions) teams have brought tangible benefits to the group in the form of cost savings. Its commitment towards developing 'people' potential and becoming a learning organisation has sometimes taken it beyond its bottom line. Among Keppel companies, one has acquired SQC status and three have acquired the People Developer Standard. Keppel shipyards have good safety records. The drive towards acquiring internationally recognised ISO certifications, SQC membership, more transparency and working towards world-class accounting standards such as quarterly reporting is inspired by the realisation that meeting these standards is necessary to tap the international capital markets for funds, getting international contracts and facilitating foreign alliances.

The GLCs studied in general were conscious of their role as corporate citizens in terms of making efforts towards adopting best practices, staff development and welfare and corporate philanthropy. This role has been extended not only within the local community but also (e.g. SIA and ST) to the local communities of the countries in which they operate.

SIA in particular, takes its role as corporate citizen seriously with donations and contributions spread over several causes benefiting the arts, sports, education etc. As the statement by Mr JY Pillay (Case Study #1, Volume 2) shows, given the lean-and-mean framework within which SIA functioned, these contributions were given very selectively in the early years. Over time, with increasing prosperity, the volume and spread of contributions across a variety of causes have increased. The ST Group has formalised its community efforts through the setting up of an endowment programme. The Keppel Group also contributes to a variety of causes and staff volunteerism is encouraged.

Have these GLC groups gone beyond corporate philanthropy to make these activities part and parcel of a strategic drive connecting to their corporate purpose? ST and Keppel have both invested in education as part of a talent-nurturing effort essential to groom appropriate candidates in their recruitment drive. The setting up of Lasalle-SIA College of the Arts by SIA and its sponsorship of sports events might be construed as being connected to its corporate purpose. It can help to promote tourist traffic through the development of Singapore as a regional centre for such activities plus bring image benefits. Similarly, event sponsorships and youth camps organised by Keppel and ST groups also serve to introduce these companies to a cross-section of people locally and regionally and thus boosts their image and employee morale. However, for the most part, corporate contributions by GLCs appear to have been motivated by a sense of serving the community and broader national objectives.

4.2 Foreign Multinationals in Singapore

A. Evolutionary Pattern Revealed by the Case Histories

The study covered three foreign MNCs, of which, two (Philips and STMicroelectronics) were involved in manufacturing operations and one (Mitsubishi Corporation) in trading operations.

Strategies

The MNCs engaged in manufacturing were encouraged to locate their operations in Singapore (by the EDB) and came, initially, to reap the advantages of the availability of cheap labour. Philips and Mitsubishi started with trading offices here. The manufacturing operations (for Philips and STMicroelectronics) started after the industrialisation policy took shape in the late 1960s. Both the MNCs engaged in manufacturing offered good employment and training opportunities for the local workforce and received strong support from the EDB. Philips, for example, was assisted in manpower sourcing through EDB's network, tax incentives and research grants. STMicroelectronics received assistance in the leasing of land for its factories. For trading companies like Mitsubishi Corporation, the locational advantages of Singapore and its value as a regional hub were the main attraction.

While cheap labour was the main attraction in the 1960s and 1970s, rising labour costs in the 1980s put pressure on maintaining efficiency and quality standards. The mid-90s therefore saw increasing regionalisation and outsourcing of operations from Singapore. The factors that have induced MNCs to continue to stay in Singapore are:

- Singapore's increasingly convenient infrastructure facilities, particularly its excellent IT infrastructure.
- Its attractiveness as one of the best residential locations (both on account of quality housing and good law and order) for the senior management of MNCs. This has helped it to sustain its popularity as the regional HQ for MNCs despite the outsourcing of some manufacturing operations to other locations.

- Some MNCs have also continued to stay because of the rising importance of their markets in the Asia-Pacific region over time.
- The availability of a more skilled labour force and the government's increasing focus on making Singapore a talent capital is making it a viable place to locate high value added manufacturing and R&D operations.

Financial Performance

All MNCs covered in the study showed healthy earnings from their Singapore operations. Philips financial statistics showed high ratios of Return on Equity (ROE) and Return on Asset (ROA) and good levels of Economic Profit (EVA). STMicroelectronics was outperforming the market between 1995 and 1998. Mitsubishi Corporation's branch office in Singapore gained during the region's downturn because of the routing of accumulated inventory trade through Singapore.

B. KBE initiatives

R&D

The most significant change for MNCs engaged in manufacturing operations in Singapore (e.g. Philips) is the deployment of greater funds towards R&D initiatives. This in turn has prompted the recruitment and nurturing of more highly qualified staff (foreign and local) to process high-end manufacturing and R&D. The proportion of engineers and R&D staff in the workforce is expected to increase. Philips has set strategic targets for the development of a talent pool. STMicroelectronics too has positioned its Ang Mo Kio operations as a world-class state-of-the-art facility with a multinational workforce. Also noteworthy in both companies are the increasing collaborative efforts with local institutes for R&D and human resource development.

HR Issues

Staff training receives a strong emphasis at both Philips and STMicroelectronics. Philips, on average, spends about 4% of its payroll on training.

For Philips Tuner factory and Philips DAP (who won the SQA awards in 1998 and 2000 respectively), the proportion spent was 4.13% and 4.7% respectively, higher than the national average of 3.6%. At STMicroelectronics, employees received on average, 50 hours of training each year, higher than the national average of 32 hours.

Mitsubishi Corporation's office in Singapore spent 1% of its payroll on training. Since 2000, 50% of its staff are covered under the CREST [Critical Enabling Skills Training] Plan and will receive formal training.

The emergence of a high labour turnover among the more qualified staff (following a period of low turnover from 1993-1998) at companies like Philips is attributed to the strong trend towards high value activities among MNCs in the electronics sector in Singapore. The need for increasing incentives such as stock options to retain highly skilled employees is being realised. On the part of the companies (Philips and STMicroelectronics), the variable wage component is being increasingly linked to value creation, and team or unit performance and *ad hoc* performance-based rewards are being increased.

The dual incentive structure emerging at Philips (one for R&D engineers and one for the workforce at its factories) is an interesting manifestation of the 'reflective' and 'habit' work structures referred to by Greiner (see explanatory note in Appendix 2).

New Accounting Measures

Of the three MNCs in the study, only Philips uses Economic Profit as a measure. At STMicroelectronics, a culture of EVA is expected to emerge although a specific time frame was not mentioned. None of the MNCs formally measure their Intellectual Capital as a whole. However, both Philips and STMicroelectronics publicise expenditures on R&D, numbers of patents filed etc. each year in their annual reports providing some estimates of their innovation capital (see explanatory note in Appendix 3). Workforce training is recorded in terms of expenditures, man-days and competencies attained. Regular customer surveys, employee motivation surveys etc, conducted across their global operations, indirectly help to monitor their customer and human capital.

C. Excellence/Corporate Citizenship

Both Philips and STMicroelectronics have not only won the SQA Excellence award, but set new, improved benchmarks for best practices, e.g. their BEST (Business Excellence through Speed and Teamwork) and TQEM (Total Quality and Environmental Management) programs respectively (See Case Studies #4 and #5 in Volume 2 for details).

A strong culture of concern for and empowerment of employees at every level is practised in both. Participation in quality improvement teams, particularly cross-functional teams, and employee suggestion schemes is high. Their workforce is multinational and multicultural. The companies encourage a sense of stakeholdership among employees through team effort. The new management style is to engage rather than manage employees. Communication of a consistent vision to employees and harnessing their co-operation in achieving it is the key to the success of these companies. In the case of STMicroelectronics (and some units of Philips), the expenditure on training exceeds the national average. The qualitative aspect of benchmarking the translation of training to enhanced employee competence at Philips was commended by PSB.

A strong focus on customer satisfaction is also a key ingredient in these companies' excellence programming. Benchmarking of delivery schedules, time-to-market etc, presence of a strong communication network with customers augmented with regular customer satisfaction surveys are part of this increasing customer orientation.

While all the MNCs covered in the study contributed to local charities and causes, these "goodwill" efforts have not been significantly advertised or used as part of their image-building exercise in the local context (moreover, their philanthropic efforts are directed towards helping countries they perceive as being more needy than Singapore). Instead they concentrate on their role as global drivers of best practices, often regarded as strategic investments, across their operations world-wide, setting specific indicators and targets to achieve these objectives (e.g. people development targets, global R&D expenditure to drive innovation, eco-efficiency targets or specific environmental programmes).

All three MNCs provide reports on their annual progress in the achievement of eco-efficiency targets, development of green products or particular projects (reforestation in the case of Mitsubishi). STMicroelectronics has chosen to champion and create a world leadership position for itself in environmental protection, exceeding regulatory requirements and involving suppliers and contractors in its Environmental Management System (EMS).

Contribution to education, training and becoming learning organisations are routed through the development of specific or general training programs at their own educational institutions (e.g. STMicroelectronics University), or through on the job (OJT) methods at their HQs (Eindhoven for Philips and Tokyo for Mitsubishi).

Some MNCs have also contributed to Singapore's national development by assisting several local SMEs under the umbrella of the Local Industry Upgrading Programme (LIUP).

4.3 Local Private Sector Companies

(i) Big Businesses in Singapore

A. Evolutionary Pattern Revealed by the Case Histories

Of the three companies covered under this category in the study, Overseas Union Bank (OUB) and City Developments Limited (CDL) started their businesses in banking and property respectively, before Singapore became an independent republic. JIT (now merged with Flextronics International) represents the wave of hi-tech start-ups that sprang up in the late 1980s and grew rapidly from a small to midsized contract manufacturer, moving on to acquiring a world-class ranking among EMS providers in a very short span of time.

Strategies

Even though the companies covered (OUB, CDL and JIT) represent diverse sectors, as successful Singapore-based businesses, some common features in the strategies pursued are discernible. Targeting of niche-markets, aggressive expansion, diversification of earnings base, early attempts at development of overseas markets and clients and above all, strong top management drivers, were the basis of their success.

JIT rose from the SME fold. The growth of SMEs in Singapore has been in the form of “satellite” industries. The rapid development of JIT too was on account of its ability to develop strong client relationships with big players like Hewlett Packard, understand their requirements and eventually become a full-service EMS provider.

Financial Performance

Both CDL and OUB have experienced substantial growth in turnover and profits and high ROE in past decades. Both were affected during the regional crisis as the property and finance sectors were the worst hit. For CDL profits, ROE and ROA declined between 1997 and 1998. Because of its diversified structure, it continued to thrive with positive net profits. For OUB, net profits and ROE declined in 1997 and 1998 because of the regional crisis and a jump in non-performing loans. Net profit rebounded to a record level in 1999 with the improvement in the region’s economies and financial markets.

Both OUB and CDL were among Singapore’s top 10 companies by market capitalisation in 1999. CDL derived more than half of its revenue from overseas. For OUB, Singapore accounted for 78% of its assets and 18.2% of its net profits. JIT’s compounded annual growth rate was outperforming the market rate and it was aiming for sales from overseas operations to exceed 50% by 2001 before its merger with Flextronics International.

None of these companies use EVA or formally measure their intellectual capital.

B. KBE initiatives

OUB and CDL have placed a significant emphasis on improvement in IT infrastructure and are leveraging on the Internet to launch e-portals. Both have done this in collaborative efforts, CDL with a local industry partnership and OUB with a foreign partner.

OUB, being in a service-based industry, has placed emphasis on staff training (including setting up its own training institute) and inculcating a culture of service and improving CRM (Customer Relationship Management) practices. CDL is working towards achieving the People Developer standard and promotes staff welfare activities. JIT's expenditure on training was about 4% of its wage bill.

For manufacturing companies like JIT, moving towards expanding size and critical mass capabilities, improving communication networks with suppliers and clients, people's developer standard and extension of share options to executives at lower levels as well, were part of the plans going forward. The merger with Flextronics points to the fact that size is perceived as critical to such operations in improving competitiveness.

C. Excellence/Corporate Citizenship

Although these companies did not follow the SQA framework per se, they benchmark themselves against their respective industry best practices and have received recognition through various industry awards. All three companies had a cadre of professional management.

ISO certifications (regulated by PSB), client awards, etc, form part of their excellence benchmarking. Emphasis on quality is a part of their customer-focussed strategy.

Community Efforts

Increasing success and prosperity has seen an increasing engagement of groups like CDL and OUB in a variety of philanthropic causes ranging from contributions to charity, education, youth development, benefits to senior citizens, arts and environment protection including event sponsorships. While these are motivated by a sense of community service, these activities are also a means of boosting employee morale and enhancing the image of the company.

Younger companies like JIT, focussed on maintaining lean and cost-efficient operations, were not engaged in such endeavours as corporate entities to a significant scale. Contributions from the management were made from their personal funds.

(ii) Small and Medium Enterprises (SMEs) in Singapore

Due to the low response rate from the SMEs approached for this study, only one case study in this category could be prepared within the targeted timeframe. As such a representative evolutionary pattern for SMEs was difficult to establish based on one case study. Moreover, Beca Carter Hollings & Ferner (BCHF), the SME covered, has been classified as both a promising local enterprise (PLE) as well as a promising SME, and is among the largest engineering consulting companies in Singapore.

A. Evolutionary Pattern Revealed by Company History

As in the case of several other SMEs whose development was linked to that of MNCs or other big businesses in Singapore, BCHF's Singapore practice also started as a joint venture with an international group, going on to become a local company with local partners. The local practice followed the strategy, culture and vision of the international group based on developing diversified services, overseas expansion and strategic alliances with world technology leaders resulting in transfer of technology.

Being linked to an international group, the regionalisation drive came earlier for BCHF than for most SMEs. In 1995, 30% of its revenue came from overseas projects. The need to go regional for SMEs too has been prompted by the limitations of the domestic market, protection against cyclicity in specific industries and to balance the differential impact of economic cycles in different regional markets. Given the competition in the small local market, this outward thrust is expected to grow in coming years.

The strong Singapore dollar and high costs have also prompted BCHF to set up overseas production facilities in low cost countries like Indonesia, Malaysia and other alternative locations and to cut costs.

For BCHF, while services offered to Singaporean clients venturing overseas remain the same, for overseas indigenous clients, local competitors in the respective countries have comparative advantage in cost, specialised local knowledge and dealing with their local authorities. Hence, its services tend to be confined to higher value added services like concept and schematic design.

Role of the Government

For SMEs constrained by manpower and resources, strategic planning tends to be *ad hoc*. As an SME and PLE, BCHF received assistance from the government (through grants) to develop a Total Business Plan and to develop an automated management and resource planning software to implement best practices and improve productivity.

Financial Performance

BCHF's total revenue tripled between1991 and 1996. Its Compounded Annual Growth Rate (CAGR) was 29%. While ROE showed fluctuations on account of restructuring in certain years, it has remained above 20% since 1996. While many SMEs were severely hit by the regional economic crisis in 1997-98, BCHF managed to survive the downturn by diversifying and developing into an integrated services solutions provider. Its income from overseas was higher than revenue from overseas as a proportion of turnover, implying higher profitability from overseas projects.

B. KBE Initiatives

Technology/R&D

Substantial productivity gains have now become possible for SMEs through the adoption of new Internet-based technologies. The implementation of the E-1 software system at BCHF is a case in point. However, R&D efforts and expenditure even in relatively progressive SMEs like BCHF tend to be *ad hoc* rather than continuous. This is because operating a separate R&D department is not feasible for many small-sized companies.

HR Issues

At BCHF, expenditure on training is about 5% of its payroll. Rewards and remuneration are being tied to the individual's career path progress and employee ownership (for employees above a certain seniority level) has been introduced. As a service-based organisation, it has also been able to introduce practices like hot desking and remote-working promoting both rent and cost savings and a better work-life balance for employees. Staff turnover however, is high, a problem commonly cited by SMEs.

Organisational Structure/Culture

Growth of the company has resulted in evolution from a "family culture" to organisation of work groupings by speciality, formalisation of meetings, development of a recreation club to promote interaction, etc. While cross-functional work teams operate across employee ranks in a non-hierarchical manner, employee rankings are maintained to provide differentiative salary bands.

New Accounting Measures

Under the SME21 plan which envisages a key role for SMEs in the coming years, SMEs are being urged to adopt EVA systems. BCHF's plans to adopt EVA in the near future are indicative of the progressive and receptive mindset of its management.

C. Excellence/Community Contribution

For many SMEs, adoption of best practices amidst time and resource constraints could pose difficulties. BCHF managed to qualify for the SQC and ISO9001 through its own efforts and is moving towards the People's Developer practices proving that size need not be a deterrent to the adoption of best practices. Outside SQC, BCHF follows best practices through participation by its representatives in committees, and trade and industry associations. Philanthropic contributions are factored into its Annual Budget plans each year.

(iii) Internet Companies in Singapore

A. Evolutionary Pattern Revealed by the Case Histories:

The two Internet companies covered in the study fell into two categories:

- Mediaring.com Ltd, which was started in 1993 to develop video-conferencing but "re-invented" in 1997 as an Internet-based voice services company. Its revenue model evolved from a B2C consumer model based on advertising revenues to a total solution product and service provider to the corporate enterprise market, deriving revenue from licensing, customisation and other fee-based revenue sources.

- BeXcom, which was started in 1996, focussed in the B2B market space with revenue charged on a fee per transaction basis.

Both companies were started by technopreneurs influenced by the Silicon Valley "phenomenon" in the US. The government's support of technology initiatives provided further encouragement. Both received a grant from NSTB to help defray part of the initial costs of R&D and angel back-up/support from Asian venture capitalists (government-linked and others). Build-up of market shares and long term shareholder value were targeted rather than quick, short-term profits.

In both cases, the underlying technology/business model was not entirely new as companies from the US and some other countries were also operating in similar market spaces. Thus, their differentiative advantage was not based on global first mover status (although they did benefit from first mover advantage in specific niche markets in Asia). It was built up by refinement of the technology and business idea, with a strategic thrust towards creating comparative advantage in the Asian market space vis-à-vis competitors through better customisation, logistics backup, and local interface features suited to the local and regional context. Their growth strategies targeted:

- Fast paced globalisation based on the setting up of regional blocs through strategic alliances in countries included in the blocs.
- Quick build-up of alliances in each regional bloc to help spur business growth.
- Rapid growth of user base with a view to achieving world leadership positions.
- Diversification of revenue sources.
- Evolution towards providing total solutions and services.

Noticeable features distinguishing the growth pattern of these companies from the old economy companies were:

- The necessity of competing in the global market (i.e. beyond the local market space) from an early stage.
- The primacy of the topline model and capturing of market shares in the initial phases of expansion.

- High and continuous expenditure on R&D, marketing and brand-building to maintain market leadership through innovation and market shares.
- The critical importance of speed as an organising principle for all operations due to short product lifecycles in the Internet industry.

Financial Performance

Only figures for MediaRing.com, listed in 1999, were available (BeXcom was unlisted at the time the study was conducted. Financial figures relating to the company were not disclosed).

After two years in operation, Asia remained the major market for MediaRing, contributing over 80% of revenues followed by America. But the rate of growth of sales in the US markets was higher pointing to vast potential and easier penetration in the US market. Losses before taxation were almost ten times its reported turnover in 1999. Losses incurred were higher in the American market due to the higher costs of sustaining marketing, branding and R&D operations in this market. Advertising revenues contributed the bulk of revenues although it is envisaged that the contribution from licensing, customisation and other fee-based services will increase in the future.

Accounting Measures

Traditional accounting measures like price-to-earnings ratio used to value old economy companies (and even measures like ROA, ROE or EVA) are not considered relevant to the Internet companies' growth since at the start-up stage, they have no earnings, only losses. At MediaRing, it was perceived that the availability of funding for the company is essentially determined by its quarterly revenue growth rates.

Overseas investors tend to base their valuations of web companies on a variety of indicators such as price-to-sales ratio, burn rate, cash in hand, growth rates of users and revenue, market share, market position, and the need for diversification of revenue sources, etc. Asian companies are hampered by a less well to do and wired clientele, and culturally and linguistically diverse markets each of which need a customised and differentiated service. Evaluation of Asian companies based on indicators applied to US companies may not necessarily be appropriate and more refined indicators should be developed to suit the Asian context.

B. KBE Initiatives

Technology/R&D

Both Internet companies studied are investing heavily in R&D on a continuous basis to maintain lead positions in the market. The R&D effort is driven by the revenue potential of the innovations.

At MediaRing, expenditure on R&D was S$6.6 million in the first half of 2000, more than five times the amount spent on R&D in the corresponding period in 1999. Juxtaposed against a total turnover of S$7.1 million during this period in 2000, the implication is that MediaRing's expenditure on R&D as a percentage of its turnover was over 90 per cent for this particular period.

At BeXcom, it was disclosed that a substantial proportion of the S$100 million plus raised in funding has been spent on setting up and refining the Global Transactions Infrastructure, its software engine for B2B commerce (the actual figure for expenditure on R&D was not available). Continuous enhancement of the technology is carried on at its three R&D centres set up in the US, Singapore and China.

Expenditure on R&D at such companies is likely to be sustained although the relative share of expenditure on R&D is expected to decrease overtime.

HR Issues and Development

A high percentage of the workforce is engaged in R&D. At MediaRing, almost 100 employees of a total workforce of about 250 world-wide, are engaged in R&D

with an engineering focus. The proportion of foreigners among R&D engineers is about 40%.

Training patterns are also different from some of the old economy businesses studied. Because of short product life cycles (sometimes lasting only a few months), learning curves are short and employees are mostly knowledge-based workers with high skill levels. Moreover, for pioneering companies penetrating unexplored markets, there are not many precedents to follow vis-à-vis training. Employees tend to chart a non-formalised, on-the-job training path. At MediaRing, expenditure on training is also not formally measured, as much of it takes the form of exploratory travel expenses in new markets and is categorised under marketing and sales expenditure.

A high proportion of the workforce is located in overseas centres. At MediaRing, about 100 of a workforce of 250 are in regional bases located abroad. At BeXcom, about 200 of its 350 employees are based in overseas locations providing localised support for the company's regional hubs in a global network.

The staff turnover varies. At BeXcom, the staff turnover in Singapore is not high. This is attributed to the relatively risk-averse culture vis-à-vis changing jobs and the fact that the rate of hiring exceeds the rate at which employees are leaving the company as the company is in a fast expansion mode. As a young company with IPO potential, it is attractive to employees. At MediaRing, the turnover was between 10-20%, being lower for engineers and higher for the frontline staff for whom fast response to changing environments is critical.

MediaRing was the first Internet start-up to be listed on Singapore's stock exchange. Although all employees are eligible for stock options, long-term incentives like these alone do not motivate employees to stay or leave. The challenging work environment and their response to it ultimately determines their survival. Moreover, short-term incentives like individual bonuses are tied to territory bonuses assigned according to targets achieved in each geographical territory.

Organisational Structure/Culture and Management Style

Being young, the culture and management style at Internet start-up companies tend to be adaptive, informal and evolving with employees being given autonomy to manage their goals. The organisational structure tends to be relatively flat facilitating the operation of self-organising teams, trust, prompt communications and quick decision-making among employees suited to fast-changing environments and short product cycles in the Internet industry. R&D engineers and marketing and sales staff are required to work in close co-operation.

At MediaRing, company activities are divided into product and territory groupings. Engineering managers responsible for product groupings work closely with front-line territorial managers to develop sales goals, process customer feedback and develop customised solutions for end-users.

At BeXcom, activities are grouped under five divisions: R&D, Legal, Administrative Operations, Marketing and Strategic Alliances, in addition to the Sales and Customer Support Services division. Video-conferencing is used often to facilitate prompt communications and feedback across different time zones and locations. Its basic vision and strategy is closely driven by its young technopreneur-founder, supported by other members of the senior management with MNC experience. Because of the thrust to grow fast into a global company, there has been a concerted policy to recruit “MNC-trained” senior staff to help develop an MNC-culture, structure, processes and mindsets. It has defined its core values in terms of customer and people focus, trust, reliability and accountability.

Strategic Alliances

MediaRing’s alliances are in the nature of distribution and “bundling” partnerships with Internet communities, telecommunication companies and other industry participants. Other alliances are aimed at improving efficiency and service quality and reducing the cost of operations. BeXcom solicited collaboration with banks (in Singapore and other overseas centres) early on to service the banking needs of firms using its infrastructure. Other alliances, e.g. with bolero.net and Ariba Inc., were aimed at improving time-to-market and providing its customers connectivity with other logistics and financial services networks and trading communities. The strategic value of such overseas alliances for Internet businesses lies not in the provision of funding as much as the expansion of business through their local networks and goodwill.

C. Excellence/Corporate Citizenship

Young and small Internet companies like MediaRing and BeXcom, launched on high-cost technology infrastructures, are preoccupied by the need for fast and aggressive capturing of global market shares and breaking-even within a reasonable time-frame. The latter is generally dictated by their financial strength, which in turn depends on funding available from institutional and other investors. Therefore, efforts towards best practices and good corporate citizenship in companies like MediaRing are largely focussed on creating a good working environment within the company and building up its internal systems, etc. Significant engagement in corporate philanthropy or community involvement projects is unlikely to be considered till the company turns profitable. Sharing knowledge and creation of awareness on industry issues through participation in conferences and seminars are considered feasible contributions the company can make without undertaking a financial burden.

At BeXcom, efforts to provide the highest possible security standards for Internet transactions reflect responsibility towards clients and users of its transactions infrastructure while being part of a strategic differentiation initiative. Its representatives also participate in seminars to promote e-commerce among SMEs as the low entry costs and low fee-per-transactions pricing make its Global Transactions Infrastructure especially useful for SMEs who lack the resources, time and skills to set up independent B2B structures to explore global markets. Its sponsorship of four educational scholarships for e-commerce and logistics students, hiring of vacation trainees, etc, are motivated by the objective of building more skills into the e-commerce market and contributing to education. Thus, despite being a young company, BeXcom has taken an initiative to make a societal contribution that is aligned to its mission and strategic purpose.

Outlook for the Future

The B2B business model appears to hold more promise for Asian Internet companies than the B2C Internet start-ups. The free service model based on advertising revenues could be sustained only as long as capital markets remain vibrant. Some Internet companies are therefore converting their revenue models and undergoing a transition towards developing diversified revenue sources (e.g. MediaRing).

The need for a highly trained, talented and internationally experienced workforce to fill specific time-critical resource gaps has in some cases necessitated the hiring of a high percentage of foreigners. Given the short product cycles, the ease of obtaining qualified manpower locally will have a bearing on the ability of these companies to maintain their market positions. For some companies, development of advanced technical products could be moved to more mature markets like the US which have easier availability of trained manpower with a higher receptivity to risk-taking and job changes.

Targeting a listing on the NASDAQ is attractive to Asian Internet companies as these can help to meet the high funding and branding needs of the Internet industry. However, the fact that the main market for these companies (i.e. Asia) is fragmented rather than homogenous poses a major challenge. Success for companies operating in Asia will also depend on their ability to develop customised user interface services suited to local environments.

5. Singapore Companies – Size, Composition and Performance *(Findings from existing studies and statistics)*

5.1. Studies on Singapore's Corporate Sector

Past studies by the Department of Statistics on Singapore's corporate sector have presented data on its size, composition, the performance of all companies and comparative figures on the performance of foreign-controlled and local-controlled companies (Tables 3-8 below reproduce selected data from these studies). The studies have shown that the efficiency of Singapore companies as measured by ROA was moderate (Singapore Department of Statistics, 1992). Between 1980 and 1989, the average ROA ratios for all companies did not exceed 5.1%. The average ROA ratio for all companies was 4-5% in the early eighties and was halved during the mid-1980s recession. During the same period, average size of the companies (as measured by their assets) was increasing at 9% per annum. This implies that despite getting bigger by pooling resources, companies were not getting higher returns on their resources. By end-1989, only foreign-controlled manufacturing and local-controlled transport sectors had recovered to pre-recessionary levels (Table 5). Between 1990 and 1997, the average ROA ratio for all companies remained below 5%, with a peak of 4.4% being attained in 1995 (Table 6). Average ROE for the period 1990-95 was 14.5%. The ROE has generally been declining since reaching a peak of 15.4% in 1990 and 1993. It fell below 11% following the outbreak of the regional economic crisis (Table 7) (Singapore Department of Statistics, 2000).

Foreign-controlled enterprises had a lower ROA but were more profitable (as measured by ROE) than local enterprises. Greater access to capital from related companies and the international capital market was identified as a possible reason. The financial leverage (i.e. total assets to equity) ratio (FLR) of local-controlled companies was 2.9% compared to foreign-controlled companies' average FLR of 8.2 % in 1997 (Table 8).

The relatively lower ROA of foreign-controlled companies was due to their higher average asset base, especially in financial services. Of the total assets of $1949 billion in the corporate sector in 1997, foreign-controlled companies controlled about 55% in 1998 (Table 4). The relative share of foreign-controlled companies has been declining since 1986 when they controlled 74.2% of total assets.

In the financial services, manufacturing and commerce sectors, foreign-controlled companies accounted for 67%, 62% and 53% of the assets respectively in 1997 (Singapore Department of Statistics, 2000). The lower ROA of foreign-controlled companies in financial services was not because they were less efficient but because a substantial part of their assets were channelled back to their head offices/related companies and hence not recorded as profits.

Within the non-financial sector, foreign-controlled companies were both more efficient and profitable than local companies during the period 1990-1995 (Singapore Department of Statistics, 1997a). The lower efficiency of the local–controlled enterprises could be attributed partly to under-capitalisation, a common problem faced by the smaller businesses. The average size of foreign-controlled companies was over six times larger than local-controlled companies. Foreign manufacturing companies were concentrated in capital-intensive, technology-based petrochemicals and electronics, which explained their high yields on assets and equity.

In transport, local-controlled companies performed better than foreign-controlled companies during the period 1990-1995. In commerce, foreign-controlled companies had higher ROE and ROA on account of their wider sources and marketing networks.

In 1996 and 1997, non-financial sectors were more profitable than the financial services sector in general. With the crisis in 1997, the profitability of both local and foreign-controlled companies was adversely affected. However, the ROE of foreign-controlled companies fell by a larger margin than local-controlled companies. Prior to 1997, foreign-controlled companies were more profitable in the financial services sector but witnessed a significant drop from over 15% to less than 5% in 1997 (Singapore Department of Statistics, 2000).

Table 3
Size of Singapore's Corporate Sector (at year-end)

	Unit	1986	1989	1992	1995	1998
Number of Active Companies	No.	32,923	34,653	44,681	62,390	91,283
Shareholders' Equity	$ M	74,227	120,268	182,289	306,592	438,513.4
Shareholders' Equity as % of GDP	%	160.0	193.1	235.7	298.7	364.5
Average Shareholders' Equity per Company	$ M	2.3	3.5	4.1	4.9	4.8
Total Assets	$ M	641,744	882,153	1,048,387	1,444,248	2,069,256
Total Assets as % of GDP	%	1,383.4	1,416.2	1,355.3	1,406.9	1,719.8
Average Total Assets per Company	$ M	19.5	25.5	23.5	23.1	22.7

Source: Department of Statistics, Singapore (1997, 2001)

Table 4
Number and Size of Companies by Type (at year end)

	Unit	1986	1989	1992	1995	1997	1998
Local-controlled Companies							
Number of Companies	No.	25,995	26,739	34,263	51,100	73,664.0	71,925.0
Shareholders' Equity	$ M	49,995	79,313	126,162	219,785	280,883.8	290,975.1
Average Shareholders' Equity per Company	$ M	1.9	3	3.7	4.3	3.8	4.045
Total Assets	$ M	165,590	242,397	363,422	597,642	826,424.4	917,045.2
Average Total Assets per Company	$ M	6.4	9.1	10.6	11.7	11.2	12.75
Foreign-controlled Companies							
Number of Companies	No.	6,928	7,914	10,418	11,290	16,190.0	19,358
Shareholders' Equity	$ M	24,232	40,954	56,127	86,806	127,442.8	147,538.3
Average Shareholders' Equity per Company	$ M	3.5	5.2	5.4	7.7	7.9	7.62
Total Assets	$ M	476,154	639,756	684,965	846,606	1,122,197.5	1,152,210.9
Average Total Assets per Company	$ M	68.7	80.8	65.7	75	69.3	59.52
Foreign-controlled as % of Total							
Number of Companies	%	21	22.8	23.3	18.1	18	21.2
Shareholders' Equity	%	32.6	34.1	30.8	28.3	31.2	33.64
Total Assets	%	74.2	72.5	65.3	58.6	57.6	55.68

Source: Department of Statistics, Singapore. (1997, 2001)

Table 5
Pre Tax Rates of Return on Total Assets 1980 – 1989

Sector	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989
Total All Companies										
Total	4	4	4	5	4.9	2.5	2.4	2.3	2.9	3.7
Financial Services Sector	2	2	2	5	4.7	1.9	1.5	1	1.4	2.5
Non-Financial Sectors	9	9	8	7	5.3	4.1	5.2	7.1	8.5	8.1
Local-Controlled Companies										
Total	6	6	6	5	4.4	3.4	3.7	4	4.7	5.2
Financial Services Sector	4	4	6	5	4.8	3.9	3.6	3.3	3.6	4
Non-Financial Sectors	7	7	6	6	4.2	3	3.8	4.7	6	6.6
Foreign-Controlled Companies										
Total	3	3	3	5	5.1	2.1	1.9	1.8	2.3	3.2
Financial Services Sector	1	1	2	4	4.7	1.4	1.1	0.5	0.9	2.2
Non-Financial Sectors	12	12	10	9	7.2	6	7.4	10.3	11.5	10

Source: Department of Statistics, Singapore (1992)

Table 6
Return on Total Assets 1990 – 1997

Sector	1990	1991	1992	1993	1994	1995	1996	1997
Total All Companies								
Total	4.2	4.1	3.6	3.6	4.1	4.4	4.1	4.1
Financial Services Sector	2.8	2.7	2.3	2.2	2.7	3.2	2.9	3
Non-Financial Sectors	8.6	7.9	6.7	7.4	7.3	6.9	6.5	6.2
Local-Controlled Companies								
Total	5.3	4.6	4.4	4.9	5.5	5.3	5.2	5.1
Financial Services Sector	4.2	3.7	3.3	3.9	4.8	4.9	4.9	5
Non-Financial Sectors	6.7	5.6	5.8	6.3	6.3	5.6	5.5	5.2
Foreign-Controlled Companies								
Total	3.7	3.8	3.1	2.9	3.2	3.8	3.3	3.3
Financial Services Sector	2.4	2.4	2	1.5	1.8	2.4	1.9	2
Non-Financial Sectors	10.9	10.7	7.9	9	8.7	8.9	8.1	7.9

Source: Department of Statistics, Singapore (2000)

Table 7
Return on Equity 1990 – 1997

Sector	1990	1991	1992	1993	1994	1995	1996	1997
Total All Companies								
Total	15.4	15.1	14	15.4	14.1	12.9	12.4	10.6
Financial Services Sector	11.7	13.2	12.7	13.2	11.5	10.2	10.4	7.1
Non-Financial Sectors	17.9	16.5	14.9	17.1	16	14.8	13.8	13.1
Local-Controlled Companies								
Total	11	8.8	9.6	11.8	11.1	9.7	9.7	9.1
Financial Services Sector	8.8	7.4	7.2	10.5	9.6	8.7	8.6	8
Non-Financial Sectors	12.9	10	11.7	12.9	12.5	10.6	10.5	10
Foreign-Controlled Companies								
Total	23.2	26.8	22.4	23	20.3	20	18.5	13.8
Financial Services Sector	19.3	28.9	27.5	20.6	17	14.7	15.4	4.8
Non-Financial Sectors	25	25.8	19.8	24.4	22.1	22.7	20.2	19

Source: Department of Statistics, Singapore (2000)

Table 8
Financial Leverage Ratios by Main Industrial Sectors 1990 –1997

Sector	1990	1991	1992	1993	1994	1995	1996	1997
Total All Companies								
Total	6.6	6	5.6	5.4	5.1	4.7	4.6	4.6
Financial Services Sector	12.4	10.8	9.7	9	8.3	7.7	7.4	7.2
Non-Financial Sectors	2.6	2.6	2.7	2.7	2.7	2.6	2.6	2.7
Local-Controlled Companies								
Total	3	2.9	2.9	2.9	2.8	2.7	2.8	2.9
Financial Services Sector	3.6	3.4	3.4	3.4	3.3	3.2	3.2	3.3
Non-Financial Sectors	2.5	2.5	2.5	2.4	2.4	2.4	2.4	2.5
Foreign-Controlled Companies								
Total	13	11.6	11	10.7	9.8	9.1	8.6	8.2
Financial Services Sector	35.4	31	26.8	24.4	22.3	20.5	19	17.4
Non-Financial Sectors	2.8	2.9	3	3.1	3.1	3	2.9	2.9

Source: Department of Statistics, Singapore (2000)

5.2. The Performance of GLCs in Singapore

Since questions are often raised about the performance of Singapore's GLCs in particular, this section is devoted to highlighting some studies, statistics and issues relevant to their performance.

The government's equity in the various companies was originally held under the Ministry for Finance, Inc.. Temasek Holdings was incorporated in 1974, to serve as the government's premier investment holding company. Temasek Holdings, MND Holdings and Singapore Technologies became the three major government holding companies.

According to Vennewald (1994), state enterprises controlled between 44% and 69% of the assets and 75% of all the profits of all Singapore controlled companies at the end of the 1980s. Today, Temasek Holdings' major listed companies account for about 27% of the total market capitalisation on the Stock Exchange of Singapore. The group commands total assets in excess of S$70 billion. Temasek companies include DBS Bank, Keppel Corporation, Neptune Orient Lines, PSA Corporation, SembCorp Industries, Singapore Airlines, Singapore MRT, Singapore Power, Singapore Technologies and Singapore Telecommunications (www.temasek.com.sg).

Were GLCs profitable? How did their performance compare with that of non-GLCs in the same sectors?

Compared to the generally poor performance of state-owned enterprises witnessed in many countries, GLCs in Singapore have been profitable. However, although past studies on GLCs found them to be highly profitable (Alten, 1995; Low, 1984; Pillai, 1984; Sikorski, 1989; Tan, Yeo & Kwok, 1993; Vennewald, 1994), a comparative analysis between the profitability of GLCs and non-GLCs within the same industries was not conducted (Singh and Siah, 1998). In the studies conducted by the Department of Statistics referred to in the foregoing section, it has published comparative data on the efficiency and profitability of local-controlled and foreign-controlled companies but within local-contolled companies, segregated data on GLCs and non-GLCs is not available.

A comparative analysis by Singh and Siah (1998) based on data for the years 1991-1995, found that:

- Of the 24 GLCs reviewed (selected from those listed on Singapore's stock exchange), all but one were profitable in 1995.
- By total size, GLCs were over-represented among the top 20 performing firms in Singapore in terms of total assets, gross turnover and market capitalisation.
- By average size based on total assets and gross turnover, in five industries, GLCs had significantly higher assets than non-GLCs. In seven industries, they had significantly fewer assets than non-GLCs.
- GLCs had a higher turnover in five industries and a lower turnover in another five industries.

The general conclusion drawn by that study was that GLCs were approximately equal in size, as measured by assets and turnover to non-GLCs.

Comparision of average ROE and ROA achieved by GLCs and non-GLCs in different industries by Singh and Siah revealed that:

- GLCs had a lower ROE in five industries, while returns in all other industries were not significantly different.
- GLCs had higher asset turnover in three industries and lower turnover in another four industries.

With the exception of finance related and properties industries in which GLCs achieved a significantly lower ROE than non-GLCs, the finding of the study was that on average, GLCs have been able to achieve similar levels of profitability and efficiency as non-GLCs.

Although GLCs have generally been profitable, they have achieved only industry standards of profitability and efficiency. However, the same study also showed that the approximately similar level of performance was achieved based on the GLCs having higher risks as measured by the variability of returns in four industries. Also, GLCs such as SIA, Keppel and Singtel achieved world levels of operating efficiency, technological leadership and customer recognition without the advantages of protected home markets as in the case of state enterprises in many other countries.

5.3. Study on the Performance of Singapore's External Economy

Another perspective on performance was provided by a study done by Morgan Stanley Dean Witter Research (Lian and Chung, 2000, September 14). It showed that the Government (including GLC-owned) external economy constituted about 60% of Singapore's total external economy. While foreign MNCs accounted for 29%, the local private sector (excluding GLCs) owned 11%. Profitability of the external economy had been declining in the past few years coinciding with the period in which the government and GLCs build-up of the external economy in real investments with higher risk-return profile took precedence over the past practice of accumulating foreign reserves. Poor returns could be due to a longer gestation period for real investments, the Asian crisis and currency devaluation and poor investment decisions. The study concluded that failure to secure a good return on their external economy by the government and GLCs could affect the performance of the overall economy.

Table 9:
Singapore's External Economy 1989-1996

	1989	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**
Nominal Return of External Economy (%)	17.1	8.7	8.2	7.5	7	6.1	6

Source: Morgan Stanley Dean Witter Research (2000)

5.4. Size and Performance Among Singapore's Top 20 Performing Companies. Based on 1999/2000 Financial Statistics (Tables 10 to 14 Below)

- GLCs were strongly represented in the list of top 20 performing companies in Singapore by market capitalisation in 1999. The total market capitalisation of GLCs was much higher than that of non-GLCs among these 20 companies (Table 10).
- Among the top 20 companies by sales/turnover, MNCs figured prominently, their sales outweighing those of GLCs and local private sector companies (Table 11).
- Among the top 20 public-listed companies in Singapore, the sales/turnover of GLCs far exceeded those by local private sector companies (Table 12).
- Local companies dominated over MNCs among the top 20 companies in terms of total assets owned. The share of GLCs was slightly higher than that of local non-GLCs (Table 13).
- Among the top 20 companies by net profit, MNCs had the highest share followed by GLCs. The share of local private sector companies was much lower (Table 14).

5.4. Profitability of GLCs as Reflected in the Current Case Studies

This study showed that although GLCs like SIA remained profitable, return on shareholder funds for the other two GLC groups studied (SIA and Keppel) showed a declining trend from 1995-1998 but started rising again with the recovery in 1999. ST group (comprising over 200 companies) exhibited negative Group EVA in the years 1996 -1999 but its results also showed improvement in the year 1999. However, since the case studies covered GLC *groups,* some spanning businesses across several industries, group and division-based financial figures were highlighted rather than those of individual companies within the group. Accordingly, comparision of the profitability of individual GLCs with non-GLCs in the same industry was outside the ambit of these case studies.

5.5. Difficulties Faced in Conducting a Comparative Analysis of Profitability

A GLC vs. non-GLC profitability analysis is faced with several difficulties. Firstly, only data from listed companies is easily available. Secondly, since GLCs have varying levels of shareholding in various businesses, another problem would be identifying the level of shareholding at which an individual company might be regarded as a GLC or non-GLC. Thirdly, many Singapore-listed companies, GLCs and non-GLCs, are investment holding companies covering unlisted businesses in different sectors. Whether the comparision between such multi-industry companies itself is between like and like would be questionable in some cases. Some of the GLC conglomerates have undergone several restructurings over the years making it difficult to compare trends in indices such as ROE/ROA over time. The company entity and business or combination of businesses conducted by it, and the sectors to which these belong, have changed over the years. This difficulty is particularly evident in collating and comparing recent financial statistics in the aftermath of the economic crisis of the late 1990s, which also triggered restructurings, mergers and acquisitions among Singapore companies, aside from those prompted by the general process of globalisation.

5.6. ***A Comment***

The profitability and performance of GLCs versus non-GLCs assumes relevance in connection with the debate surrounding the divestment of GLCs. It is possible that the difficulties of accurate measurement and the mixed or unreliable picture that might emerge from the statistics available accounts for the fact that not many comparative studies have been undertaken. Moreover, the case for divestment or non-divestment of GLCs must rest on the merits and demerits of individual GLC groups or companies rather than the focus on GLCs as a class. However, the visibility and high representation enjoyed by GLCs in terms of total assets, turnover and market capitalisation among Singapore's top companies places a high accountability on GLCs in general, to produce higher returns to sustain high levels of national economic growth. In this context, the adoption of alternative accounting measures such as EVA, positive Net Present Value in project evaluation, etc, rather than traditional accounting measures alone, will provide a more comprehensive framework for long term decision-making.

Table 10
Market Capitalisation
Top 20 SGX Mainboard Stocks

Company	Market Capitalisation As At 30.12.99 (S$ million)
1. Sing Tel *	53.229
2. DBS *	32.153
3. SIA *	23.913
4. OCBC	19.652
5. UOB	15.462
6. SPH *	13.211
7. Chartered *	11.635
8. OUB	9.657
9. City Devt	7.81
10. Pacific Century	7.331
11. ST Engrg *	7.324
12. Hong Kong Land	6.39
13. Data Craft	5.997
14. Jardine Matheson	5.302
15. Shang Asia	4.465
16. Venture Mfg	4.354
17. DBS Land *	4.27
18. Keppel Tatlee Bank*	4.03
19. Jardine Strategic	4.024
20. NatSteel Electronics*	3.785

Source: *Companies Handbook*, Part One, 1999.

**Government-linked companies as determined by ownership / majority shareholding in 1999.*

Table 11
Top 20 Companies in Singapore Ranked by Sales / Turnover

Ranking 1999/2000	Company	Sales / Turnover Current SGD '000
1	Caltex Trading Pte Ltd**	20,074,488
2	Hewlett-Packard Singapore (Private) Ltd**	9,788,079
3	Shell Eastern Trading (Pte) Ltd**	8,165,458
4	Nissho Iwai Petroleum Co (Singapore) Pte Ltd**	7,876,071
5	Singapore Airlines Ltd*	7,795,900
6	SK Energy Asia Pte Ltd**	7,219,393
7	Neptune Orient Lines Ltd*	6,485,268
8	Mitsui Oil (Asia) Pte Ltd**	6,459,978
9	Asia Matshusita Electric(s) Pte Ltd**	5,761,099
10	The Development Bank of Singapore Ltd*	5,407,126
11	Kuok Oils & Grains Pte Ltd	5,275,768
12	Singapore Telecommunications Ltd*	4,883,500
13	Toshiba Capital (Asia) Ltd**	4,869,775
14	Oversea-Chinese Banking Corporation Ltd	4,747,639
15	BP Singapore Pte Ltd**	4,577,404
16	Hong Leong Investment Holdings Pte Ltd	4,555,564
17	Hitachi Asia Ltd**	4,202,974
18	STMicroelectronics Asia Pacfic Pte Ltd**	4,095,505
19	Asia Pulp & Paper Company Ltd**	3,978,191
20	Shell Eastern Petroleum (Pte) Ltd**	3,925,409

Source: *Singapore 1000* (1999/2000)

**Government-linked companies as determined by ownership/ majority shareholding in 1999.*

***Foreign MNCs in Singapore.*

Table 12
Top 20 Public Listed Companies Ranked by Sales/Turnover

Ranking 1999/2000	**Public Listed Company**	**Sales / Turnover SGD '000**
1	Singapore Airlines Ltd*	7,795,900
2	Neptune Orient Lines Ltd*	6,485,268
3	The Development Bank of Singapore Ltd*	5,407,126
4	Singapore Telecommunications Ltd*	4,883,500
5	Oversea-Chinese Banking Corporation Ltd	4,747,639
6	United Overseas Bank Ltd	3,560,463
7	Keppel Corporation Ltd*	3,527,904
8	Overseas Union Bank Ltd	2,944,469
9	The Great Eastern Life Assurance Company Ltd	2,773,700
10	Fraser and Neave Ltd	2,516,151
11	Natsteel Electronics Ltd*	2,458,272
12	Cycle and Carriage Ltd	2,408,200
13	Creative Technology Ltd	2,092,587
14	City Developments Ltd	2,043,321
15	Natsteel Ltd*	1,482,812
16	Singapore Petroleum Company Ltd*	1,438,423
17	DBS Land Ltd*	1,419,776
18	Asia Pacific Breweries Ltd	1,401,214
19	Acer Computer International Ltd	1,352,035
20	Keppel Tatlee Bank Ltd*	1,030,562

Source: *Singapore 1000* (1999/2000)

**Government-linked companies as determined by ownership/majority shareholding in 1999.*

Table 13
Top 20 Companies Ranked by Total Assets

Ranking 1999/2000	Companies	Total Assets Current SGD '000
1	The Development Bank of Singapore Ltd*	98,975,316
2	Oversea-Chinese Banking Corporation Ltd	55,736,855
3	United Overseas Bank Ltd	50,469,338
4	Overseas Union Bank Ltd	43,269,081
5	Keppel Corporation Ltd*	28,614,681
6	Asia Pulp and Paper Company Ltd**	25,360,860
7	Keppel Tatlee Bank Ltd*	20,095,569
8	Hong Leong Investment Holdings Pte Ltd	19,320,049
9	Singapore Airlines Ltd*	17,198,600
10	JP Morgan Securities Asia Private Ltd**	15,800,656
11	Singapore Telecommunications Ltd*	12,936,500
12	Singapore Power Ltd*	12,011,949
13	The Great Eastern Life Assurance Company Ltd	10,886,700
14	Glaxo Far East Pte Ltd**	10,568,977
15	City Developments Ltd	9,158,857
16	Glaxo Wellcome Manufacturing Pte Ltd**	8,532,191
17	DBS Land Ltd*	7,308,880
18	Neptune Orient Lines Ltd*	6,961,783
19	Fraser and Neave Ltd	6,683,371
20	Powergrid Ltd*	6,588,320

Source: *Singapore 1000* (1999/2000)

**Government-linked companies as determined by ownership/ majority shareholding in 1999.*

***Foreign MNCs in Singapore.*

Table 14
Top 20 Companies Ranked by Net Profit

Ranking 1999/2000	Companies	Net Profit Current SGD '000
1	Glaxo Far East Pte Ltd**	2,125,044
2	Glaxo Wellcome Manufacturing Pte Ltd**	1,994,352
3	Singapore Telecommunications Ltd*	1,974,600
4	Singapore Airlines Ltd*	1,022,400
5	Asia Pulp & Paper Company Ltd**	986,469
6	Singapore Power Ltd*	924,381
7	Powergrid Ltd*	475,437
8	Oversea-Chinese Banking Corporation Ltd	428,910
9	Hong Leong Investment Holdings Pte Ltd	381,422
10	United Overseas Bank Ltd	373,934
11	Compaq Asia Pte Limited**	284,428
12	Singapore Press Holdings Ltd*	277,482
13	Maxtor Peripherals (s) Pte Ltd**	268,677
14	Baxter HealthCare Pte Ltd**	239,063
15	Creative Technology Ltd	225,492
16	Powerseraya Ltd*	202,601
17	City Developments Ltd	202,444
18	Singapore Telecom Mobile Pte Ltd*	183,438
19	Powersenoko Ltd*	181,608
20	Overseas Union Bank Ltd	181,421

Source: *Singapore 1000* (1999/2000)

**Government-linked companies as determined by ownership/ majority shareholding in 1999.*

***Foreign MNCs in Singapore.*

6. Concluding Remarks

A host of questions on a variety of issues concerning Singapore business were raised in the feedback received on the paper based on the initial phase of this study. While it is difficult to draw generalisations based on the limited number of case studies, to further research and discussion on some of the issues raised, the following remarks attempt to address these based on the perspectives gained from this study and existing literature and commentary on the subject. The importance of size and the outlook on the relative roles played by different business organisations are discussed in the context of the process of regionalisation/globalisation of Singapore's companies, the transition to knowledge-based development, adoption of best practices and corporate citizenship.

Regionalisation/Globalisation

Clearly, the destiny of Singapore's business sector has been influenced by two key geographic factors: its 'regional hub' advantage and small domestic market disadvantage. Since the recession of 1985-86, international markets and overseas investments have been identified as a strategic thrust. For larger businesses the possibilities of expanding and maintaining returns within local markets may be diminishing. For the manufacturing sector in particular, size and cost competitiveness have become key factors in maintaining competitive advantage. Hence, the trend towards outsourcing labour-intensive activities and alliances with local and foreign partners has not only been gathering speed among MNCs but also gaining currency among local businesses.

Was Singapore's small domestic market itself a limitation to company size?

A recurrent theme in the case histories covered in the study was the outward thrust of all companies as they grew. The drive to regionalise was prompted by the limitations of the small size of the domestic market. However, although some big businesses managed to set up overseas branches and operations earlier, for the majority of Singaporean companies that did venture out, regionalisation has been a 1990s phenomenon. The lack of physical infrastructure and uncertain political and economic systems outside posed a deterrent to overseas expansion. Only companies that had the size, financial strength, government backing or multinational links attempted to venture beyond the comfort zone of the domestic market and negotiate the difficulties of penetrating the legal, institutional, cultural and language barriers to entry in overseas markets. Conversely viewed, Singapore's small domestic market itself, coupled with a risk-averse corporate culture and the temptation to stay within Singapore's comfortable environment, may have posed a limitation to increasing company size beyond that sustainable by the domestic market. No Singaporean company has grown large enough to be classified as a Fortune 500 company. Only 34 Singaporean companies were listed in the Asiaweek1000 published in 2000 and their share of sales and profits among these 1000 companies was 1.9 % and 6.5% respectively.

How did companies like SIA and ST become large and how are they placed in the global context?

Being the airline carrier of a city-state, SIA presented an early exception. In absence of a domestic market, it had no choice but to grow quickly into an international airline that could generate profits by leveraging on the economies of scale and diversified markets. To compete globally, it built a superior airline service based on quality and innovation. While its initial marketing strategy was centred on the Southeast Asian hub, it was able to build markets and routes beyond this hub by a strategic pursuit of bilateral and multilateral alliances. However, despite growing to become Singapore's second largest company by market capitalisation and an internationally respected brand name, its comparative ranking among international airlines varies depending on the criteria adopted (see chart on "Comparative Ranking among Top 25 International Airlines" in Case Study #2 in Volume 2). According to the **World Airlines Report** (July 2000), SIA was the eleventh largest passenger carrying airline and the fifth largest cargo carrier (SIA's share of world traffic in terms of passengers and cargo carried was 2.28% and 4.42% respectively in 2000). Airlines catering to large domestic markets are in a relatively 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 (Granitsas, 2000).

Groups like ST and Keppel grew large by fanning out into a variety of industries and businesses. ST started out as a defence-related entity to serve Singapore's defence equipment needs in the 1960s but became a broad-based industrial group by its third decade of operation. This was because cost-effective and efficient operations could not be achieved without stretching its technical core competencies to commercial operations and across national boundaries to achieve economies of scale and critical mass. Commercialisation and diversification were the only ways to lower costs, retain skills and buffer the uncertainties of defence sales. ST's foray into semiconductors and business parks also represented the state's role as an entrepreneur in areas that local private enterprise considered too risky to venture into at the time.

ST Engineering and Sembcorp Industries (belonging to ST Group), and Keppel Corporation are among the top 20 companies by market capitalisation listed on the Mainboard of Singapore's stock exchange (as in December 1999). Although the ST Group has been expanding its markets overseas, about 55% of its sales were derived from Singapore and Southeast Asian markets in 1999. Keppel Group derived more than 85% of its revenue (from third parties) and pre-tax profits from Singapore in 1999.

How do local private sector companies fare in the context of globalisation?

A largely similar scenario prevails for some of the local private sector companies studied. Some of them also tended to branch out and diversify into alternative businesses locally before venturing overseas. Overseas revenue as a proportion of total revenue exceeded 50% for CDL in 1999, but East and Southeast Asia still accounted for 60% of its turnover. For OUB, operations in Singapore contributed the bulk (81.8%) of the pre-tax profits and 78% of its assets were Singapore-based. Before its merger with Flextronics in December 2000, 77% of JIT's revenue was derived from Singapore and 23% from operations in other locations within Asia. For BCHF, an SME, revenue generated outside Singapore was 26% of its total revenue in 2000. For Internet start-up MediaRing, after two years in operation, Asia remained the major market contributing over 80% of the company's revenues. Although figures for BeXcom were not available, representatives stated that its main market at the time of the study was Asia.

In short, the majority of assets and sales of the local Singaporean companies covered are still largely focussed around Singapore and other Asian countries. By contrast, statistics show that in some of the world's most global companies, foreign sales, assets and employees comprise between 70% to over 90% of their total sales, assets and employees (Global Business Policy Council and AT Kearney, 2000) .

Annual reports of some Singaporean companies have started presenting segment information by geographical and business areas thereby providing a better focus on the extent of diversification by businesses and markets. However, in comparison to the "old economy" businesses, the high technology, high-growth and new economy companies such as the Internet start-ups exhibited active strategies targeted on rapid development of regional and global business segments in relatively short time-spans.

Some of the largest business groups studied did derive a high percentage of revenue from overseas operations. But others that were also among the top 20 companies in Singapore by sales, assets and market capitalisation did not necessarily have higher proportionate revenues and profits from overseas compared to companies that were much smaller in size. Among the list of Enterprise-50[3] companies announced in November 2000 (**The Business Times**, 2000, November 23), 25 companies derived 50% - 100% of their turnover from overseas operations. Accordingly, size is not a factor in determining the proportion of a company's revenue and profits that could be derived from overseas markets.

Can Singapore companies become truly global or only hope to be regional players? Can Singapore truly aspire to have homegrown MNCs?

With escalating global competition, mergers, acquisitions and successful cross-border alliances offer a route to faster globalisation and the opportunity to acquire complementary intangible assets, technology, human resources and brand recognition. Strategically therefore, future evolution may see an increasing wave of domestic and cross-border mergers, acquisitions, collaborations and consolidations across Singapore's businesses as vehicles for further growth.

Second, the advent of the Internet offers new possibilities for leveraging old economy businesses on parallel "suprastructures" to scale and service new markets. Leveraging on the Internet and e-commerce also offers "leapfrogging" opportunities to local business including SMEs. All business organisations studied showed an awareness of these issues at policy-making levels.

Third, homegrown Internet companies with viable business models have the potential to launch themselves globally in a relatively short time-span.

Can the potential of these options be realised by Singapore's businesses? While some companies have been successful in concluding some cross-border acquisitions and forging mutually beneficial alliances, others have found it difficult to

[3] The list of Singapore's most enterprising, privately held companies prepared jointly by Anderson Consulting, The Business Times and the EDB.

surmount the legal, cultural, financial and other complexities of effecting such cross-border mergers and alliances. A study by Morgan Stanley Dean Witter Research showed that the profitability of Singapore's external economy following the build-up of real investments with a higher risk-return profile has been declining during the period 1994 to 1999 (see Section 5). Mergers with foreign partners are expected to provide a means of magnifying size and enhancing shareholder value, but some may be at the cost of dilution of the existing local corporate entity with attendant implications for the workforce engaged in these companies.

Given Singapore's excellent IT infrastructure, the possibilities offered by the Internet offer substantial opportunities but have yet to be fully exploited. Several local brick-and-mortar companies have developed e-business strategies and have launched Internet websites providing company information to investors, customers and suppliers including product descriptions, annual reports, etc. Most have yet to set up fully integrated infrastructures offering full transactions online, from ordering to payment, with a link to the company's back-end systems. The scope of Internet-based customer service and supplier relations needs to be tapped further .A National Computer Board survey found that only 9% of Singaporean companies are operating online (**The Business Times**, 2000, October 13). However, with the advantages of Singapore's strong IT infrastructure, the process of business restructuring by e-transforming businesses is a key initiative that should continue to grow in momentum.

Pure-play Internet businesses also face an uphill task. Some use refined or adapted versions of models successfully applied in the US. In absence of a global first mover advantage, their markets tend to be based on regional niche advantages based on customisation suited to the different parts of the fragmented Asian market. Net use has not reached critical mass in several parts of Asia due to low incomes, inadequate telecommunications infrastructure and government restrictions. Viable payment and logistics support systems need to be worked out. Advertisement expenditures being lower in Asia, Internet businesses based on B2C advertisement-revenue models are particularly hard to sustain. The free services business model was viable only as long as the stock markets remained vibrant. Less than five years in operation, most B2C companies are still incurring losses. By contrast, their American competitors will always have the comparative advantage of a large home market to cross-subsidise losses sustained in Asian markets to build up market shares. Moreover, the availability of a skilled and trained workforce that can operate in the short product cycle, high speed and high stress environment prevalent in "dotcoms" will also determine the ability to sustain these businesses in Singapore. Internet companies in the B2B market space based on fee-based revenue models expect brighter prospects.

Local Internet companies are faced by lower availability of venture capital funding, less developed and often less vibrant capital and stock markets than those faced by their American competitors. This may result in dependence on direct grants from the government and funds and support from government-linked and other local companies to sustain these new generation companies in Singapore (GLC support, in some form, benefited both the Internet companies covered in this study). Thus, the possibility that local Internet start-ups, which have started out as vehicles of private sector entrepreneurship like their Silicon Valley counterparts, might fall under the control of entrenched players cannot be ruled out.

The forces of globalisation and liberalisation in the domestic market have (metaphorically speaking) brought Darwinian natural selection into play, i.e. survival of the fittest species. **Will the future evolution and relative roles played by the GLCs, MNCs and the local private sector in Singapore business be affected by these changes? Can the big business MNC/GLC-led growth model continue to sustain Singapore in the knowledge age? Are the GLCs undergoing transformation to meet the demands of the knowledge age? Will the local private sector be able to make a stronger contribution in the future?**

Again, while generalisations are difficult to make, some possible scenarios are outlined below and could be the subject of further research and discussion.

GLCs: Debate surrounding the divestment of GLCs in Singapore continues (it first erupted in the aftermath of the mid-eighties recession). Setbacks faced by some GLCs in regional acquisitions have once again led to calls for divestment. The perception of their state linkage appears to have some bearing on the success of their overseas ventures. For some GLCs, the loss of identity resulting from going beyond their areas of core competence might affect the ability to attract global alliances.

On the other hand, with new knowledge-based technologies, it may be that less value-creating GLCs have the chance to leverage on their size advantages and create better shareholder value by harnessing their existing intellectual capital advantage in innovative ways. Market dominance and a commitment to worker training and staff welfare motivated by an alignment to national objectives has helped some GLCs to build up large reserves of customer and human capital. These could be tapped and nurtured through the adoption of suitable e-technologies and creating appropriate organisational structures and cultures. Some GLCs are also making progressive moves in creating a mindset for knowledge-based learning and improved incentive structures such as share options for all employees. The increasing orientation of GLCs towards the adoption of value-based and risk-management indicators and financial systems (such as EVA and RAROC – referred to in Case Study #3 in Volume 2) will also help to make more prudent decisions on future investments or divestments. Increasing attention to shareholder value will create a basis for corporate governance, ensuring that corporations are run to serve the interests of big and small shareholders alike.

Are GLCs profitable? How does their profitability compare to other companies in the same sectors?

Past studies have shown that GLCs were highly profitable but did not compare their performance with companies in the same industries. A more recent study based on data for the years 1991-1995 found that with the exception of finance and property related industries, in which GLCs showed lower ROE than non-GLCs, on average GLCs achieved the same levels of profitability and efficiency as non-GLCs. Although they had achieved only industry standards of profitability and efficiency, the approximately similar level of performance was achieved based on the GLCs having undertaken higher risks as measured by the variability of returns (see Section 5 for details).

Meaningful comparisons between the profitability of GLCs and non-GLCs in the same sectors based on reliable data following the crisis of 1997 have become more complicated due to the escalation in restructuring, mergers and acquisitions among GLCs and other companies triggered by the crisis and the urgency to globalise. However, statistics do show that GLCs in general continue to have a high representation in terms of assets, revenue and market capitalisation among the top companies in Singapore.

The case studies included here showed that some GLC groups experienced a decline in the return on shareholder funds since 1995/96 but with the economic recovery, there was an upturn for some in 1999 and others in 2000. In terms of net profits in 2000, SIA ranked high (4^{th}) in the global airlines industry. With increasing competition, it is likely that it will become more difficult for SIA and some of the other GLCs to match the double-digit growth rates experienced by them in the past.

Divestment of GLCs however, if or when it occurs, must be an informed choice based on a careful evaluation of a variety of factors. The case for divestment must focus on the merits and demerits of individual GLCs rather than focus on GLCs as a class. As some GLCs proceed with divestment of non-core businesses and rationalistion and restructuring, they may also proceed to create new or separate businesses. Singapore Technologies **Summary Annual Report 1999** stated: “We will continue to seed new opportunities, even as we nurture established businesses. We will continue to spin out companies or prune unsuccessful ones”.

There is a view that faced with global competition, many GLCs are too small to become global on their own and would stand to benefit by being taken over by more aggressive competitors. Statements by top government officials expressing the government's increasing willingness to sell off even large stakes in GLCs provided the right partners could be found also appears to reflect an open attitude and receptivity to divestment. Some GLCs however, will continue to be considered too strategic to be allowed to fall under foreign control.

MNCs: The MNCs in the manufacturing sector originally came to Singapore to reap the advantages of cheap labour. Despite the rise in business costs, many have chosen to stay because of Singapore's excellent infrastructure, attractiveness as an HQ to monitor Asia-Pacific operations and markets and the location of high–end manufacturing and R&D operations. As a regional company HQ and entry point into Asia, Singapore's superior infrastructure will continue to attract MNCs. The possibilities of future engagement of MNCs will be determined by the availability of the talent pool necessary to process R&D and high-end operations in Singapore. The need for local public and private sector companies to increasingly seek foreign alignments to scale global markets will also provide avenues for further engagement with MNCs.

With regional HQs in Singapore, some MNCs have set up not only manufacturing but R&D centres in other Asian countries with cheaper but skilled technical manpower as well. Further movements of lower value-added operations to other Asian countries like China over time might also be prompted by the need to move closer to customer bases as many of their customers are setting up offices in China.

Local Private Sector: This study covered some of the more successful local private sector groups/companies. Some of these businesses achieved commendable success and became large despite the GLC-MNC dominated domestic market through niche strategies, good financial management and early diversification into overseas markets, and have been driven by a strong top management.

It is said that private sector businesses, often starting out as family-owned businesses, are unable to sustain their success beyond the vision of the founder. Introducing professional management, being open to going public and adopting industry best practices are factors that have helped some of them sustain their success.

Among the local private sector companies, SMEs have been constrained by manpower, technology and resource limitations, lack of strategic planning and for some, their reluctance to go public. Exploiting the possibilities offered by new technologies and the various kinds of assistance offered under the SME21 Plan by government agencies can help to achieve substantial gains in productivity and market share.

General Outlook on Relative Roles: In the short-term therefore, the big business MNC-GLC dominated growth model is likely to prevail. In the local private sector, some big businesses have made a significant impact on the national economy and are trying to expand their markets and alliances overseas and in some cases, beyond Asia. SMEs are emerging gradually. Some are venturing beyond national boundaries and thriving well in terms of profitability. However, their success tends to be tied to that of local or foreign big businesses. They account for only about one-third of Singapore's GDP but more than half of its total employment. 'Leapfrogging' opportunities offered by the new Internet technologies may offer opportunities for faster growth and see an expanding contribution from these enterprises in the long-term. A new breed of Internet companies has mushroomed but is likely to experience an uncertain future in the short term.

The dominance of the big business framework in Singapore begs the question, does size indeed matter and in what way? To what extent has company size in the sense of higher sales/revenue, assets and employee strength been an advantage in the pursuit of financial success and value creation?

The foregoing analysis showed that local companies had to look outward to establish critical mass. Building critical mass to reap cost advantages and the economies of scale in manufacturing operations has clearly been an issue not only for local companies but also MNCs in Singapore. With rising costs of operating businesses in Singapore, only those MNCs that were also able to build regional markets are more likely to continue to successfully locate their manufacturing operations in Singapore. For example, STMicroelectronics' Asia/Pacific markets brought in 33% of global revenues in 1999. This was second only to that contributed by its European markets.

The importance of size is increasing with globalisation. The surprise merger of the highly successful homegrown EMS provider JIT Holdings with NASDAQ-listed Flextronics would also appear to endorse the view that size matters. Being part of a larger group is expected to bring access to a larger customer base, better shareholder value as a result of higher capitalisation, better discounts on equipment purchases and priority delivery of certain raw materials. Enhanced size and capacity through pooling complementary facilities, expertise and experience in different locations help to meet the volume demands of global customers and thereby improve the combined group's competitive position.

Size also matters for example, in the semiconductor industry where a new fab can cost hundreds of millions to billions of dollars. Smaller companies might be unable to afford the fixed costs involved, which are not proportional to size. Only large companies can afford to invest at this level.

However, shareholder value and profitability per se are not size dependant. Size alone does not automatically guarantee value creation as measured by Economic Value Added (EVA). An economic profitability study of 85 Singapore-listed companies by KPMG for 1997-98, showed that many companies that were large in terms of sales and assets were not the largest value creators but were destroying value.

For this study, EVA estimates were available only for the ST Group (who pioneered EVA measurement among Singaporean companies), and for Philips. Other groups/companies covered had not yet implemented the EVA system. Philips enjoyed positive economic profits in 1998 and 1999. Singapore Technologies Group experienced a negative EVA between 1996 and 1999.

The merger of ST Group's Pidemco Land and DBS Land to form CapitaLand, its largest listed subsidiary in SE Asia, was also aimed at achieving a larger market capitalisation, geographical presence, operational synergies and economies of scale. CapitaLand announced a drop in earnings of 43% for the year ended December 2000. Even though group revenue had increased, it was accompanied by higher interest on borrowings and lower contributions from the residential property market due to poor market sentiment.

The fact that even relatively smaller companies have enjoyed high profits and had high ROE levels proves that size alone does not guarantee profits or profitability.

Transition to a KBE

In all the businesses covered in this study, broad policies and plans to adopt knowledge-based practices including use of the Internet, to negotiate the transition to a KBE had been formulated and were at various stages of implementation (to what extent this awareness of the advantages of such practices percolates down the ranks could not be determined by this study as it was based primarily on inputs provided by designated senior management representatives of the relevant companies).

There is an increasing realisation that the capacity to create new, differentiated products through innovation will be a key determinant of future growth. To create innovation-based growth, becoming a learning organisation is being considered necessary. At the micro-level therefore, allocation of more resources towards creating the capabilities necessary for this and benchmarking them in qualitative and quantitative terms may be critical. Some of the big businesses studied are trying to meet or exceed regulatory and "national average" norms (e.g. ISO certifications, annual training expenditures and hours of training per worker). Understanding the process of translating this expenditure and time into value creating competencies and benchmarking the latter will further enhance their usefulness.

The knowledge-based evolution phase has also spawned the emergence of performance-based rather than rank-based reward and remuneration systems among MNCs and some local companies. In the long run these should force the pace for flatter and less hierarchical organisation structures across businesses in the public and private sectors.

Private sector businesses will also have to create a culture of distributive leadership and reward systems to nurture a cadre of professional managers who can help to sustain future success and value creation. The practice of introducing Executive Stock Option schemes is taking root in some companies but is often confined to senior level management. Progressively expanding stakeholdership to all employees and inculcating innovation mindsets down the line will help to create organisations that can re-invent themselves.

Singapore's excellent IT infrastructure has enabled faster adoption of Internet-based communications. Better communications through company Intranets and the Internet can help to offset inefficiencies that may have been introduced by hierarchical and bureaucratic structures, and facilitate faster vertical and horizontal information flows.

Did group/company size also have a bearing on Training and R&D/technology expenditures, innovation and adoption of knowledge-based practices?

While SIA's expenditures on training were well above the national average, Philips, Keppel Group, JIT and BCHF spent or budgeted between 4-5% of their payrolls for training even though the companies varied vastly in size[4].

Some companies were reluctant to release statistics relating to their expenditure on training as a percentage of their payroll. Figures for Expenditure on

---

[4] This is higher than the national average of 3.6%.

R&D as a proportion of Turnover were also not released by many companies either for competitive reasons or because Expenditures on R&D and technology were not necessarily a budgeted and benchmarked annual expense but one that was undertaken on an *ad hoc* basis.

At SIA, the innovation culture is well entrenched but being a service-based industry, R&D does not hold the same interpretation as in the case of R&D in manufacturing companies. At Keppel, expenditures on R&D were negligible. Philips spent 3% of its turnover on R&D in Singapore. OUB embarked on a S$300 million integrated technology plan as part of its Millennium vision which will help it to launch new and innovative products and services in the future. BCHF undertook some R&D supported by a government grant and developed some technologies based on *ad hoc* expenditures. In relative terms, the Internet companies studied spent the highest proportion of their turnover on R&D.

MNCs like Philips and STMicroelectronics publicise statistics such as their (global) annual expenditures on R&D and the number of patents recorded in their annual reports. Their global annual expenditures on R&D as a percentage of their turnover have ranged from about 6-7% for Philips to 15-25% for STMicroelectronics in the late nineties.

Hence, the perspective gained was that the relative expenditure on training and R&D depended not only on size but also on other factors such as:

- the extent to which continuous knowledge-based inputs were required given the type of industry or business.
- the progressiveness of the attitudes of the management.
- the degree to which lifelong learning and innovation had become entrenched as a part of the culture of the organisation.

The results of another survey among firms in Singapore showed that Knowledge Management (KM) practices are more apparent in firms with greater size. A possible reason cited for this may be that bigger firms surpass smaller firms in terms of human capital. The results of that survey also indicated that the appropriate level of KM is not industry specific but dependant on firm size (Yeo, 2000).

Some company representatives interviewed as part of this study also commented that smaller companies would be constrained by cost in the adoption of knowledge-sharing technologies. The availability and speedy disbursement of government grants for SMEs can ensure that SMEs who are receptive to change and new technologies can overcome this problem. The PSME covered in this study (BCHF) experienced marked benefits in productivity from the adoption of an enterprise-wide automated management and resource planning software.

Excellence / Corporate Citizenship

There is increasing awareness among local business managers that adopting a culture of best practices and meeting world-class standards in corporate governance will hold the local business sector in good stead particularly in competing for international finance and contracts, and building brand image in global markets. The progressive MNCs in Singapore however, continue to set norms as drivers of best practices and excellence. The majority of SQA winners since the launch of the award in 1994 have been MNCs.

Notably, self-organised team initiatives have been a key factor in the quality efforts of business organisations operating within systematically benchmarked excellence frameworks especially among MNCs (Case Studies #4 and #5 in Volume 2). Some companies among the GLC groups covered in this study and one local private company had qualified for the SQC under the SQA Excellence framework (Appendix 4). Local private sector companies and the GLCs covered also use a variety of industry best practices for benchmarking outside the SQA framework.

PSB statistics showed that overall quality circle participation by 1998 was less than 10 per cent of all companies in Singapore (the total number of active companies in Singapore was over 91,000). While more than 50 percent of companies in the public sector participated, the private sector participation rate was less than 5 percent of companies in the private sector in 1997. Increased participation of the local private sector in Quality circles will help to create a more broad-based culture of best practice.

In 1998, about 150 companies in Singapore had acquired Singapore Quality Class (SQC) status. By September 2000, of the 184 organisations that had become members of the SQC scheme, 80% were from the private sector and 39 are SMEs. Over 1300 organisations in Singapore have participated in People Developer programmes, 600 are working to achieve the standard in the next three years and 93 organisations are certified as People Developers.

While family friendly work practices are being strongly promoted by the government in the civil service, these may take time to take root among local businesses. For manufacturing businesses (some of whom have attendance-linked productivity bonuses), changing mindsets towards introducing practices like flexitime may raise a number of issues. Some managers perceive that workers (including ageing workers) are in fact happy to come to work because for many, social interaction has become closely connected with associations formed at the workplace. Some companies have introduced second Saturdays off and 'Family Day' activities. However, attention towards staff welfare, recreation benefits and sports activities is increasing, the latter being used to foster the team spirit in larger business organisations.

The coverage of the role of Singapore's companies as corporate citizens as perceived by the companies themselves posed some problems. This was partly because of the differing levels of understanding of the concept of corporate citizenship and ways of identifying the areas in which such contributions are possible, and partly because of the difficulty of obtaining adequate recorded information on the subject at the company or national level (a query sent to the Department of Statistics in Singapore revealed that data reflecting the extent of corporate philanthropy at the national level had not been compiled).

Many global organisations have started publishing annual progress reports on their social and environmental activities separately. Among local Singaporean companies, some big businesses have started providing details of HR and community activities as part of their annual reports, with some quantitative details of expenditures or numbers of beneficiaries of specific schemes. Some local companies in Singapore have started including a statement on corporate governance in their annual reports. A few of the older and larger companies also highlight some of their staff welfare and community contributions in corporate publications released as part of silver or golden anniversary celebrations, or collated at specific turning points such as a major re-structuring or consolidation.

Corporate contributions to the community are motivated by several factors. They may be regarded as charity or strategic social investment. Some contributions may be prompted by the government's regulations or tax incentives (see Appendix 5). Given the difficulty of obtaining corporate disclosures on quantitative estimates relating to community contributions and determining the decision-making framework for financial and non-financial contributions by the business community, the coverage in the case studies confined itself broadly to:

- Identifying the basic existence or non-existence of the instances of corporate citizenship and responsibility exercised by the different types of business organisations covered.
- Identifying the broad/specific areas of such engagement as disclosed in the interviews or corporate publications provided.
- Making a general comment in some cases, on whether these contributions (besides those aimed at serving the welfare of staff and customers or prompted by regulatory requirements) could be construed as falling within the realm of corporate philanthropy or were tied to the strategic purpose of the company.

The indication from the study was that most local big businesses prefer to project their roles as corporate citizens in the form of community service and philanthropic contributions outside the realm of strategic business interest. Hence their contributions are often spread over several social and charitable activities. Some have set up foundations or training institutes to organise and monitor their contribution to such causes.

As local businesses go global, they may increasingly feel the need to focus on a few areas and drive the chosen 'causes' systematically in their various operations, evolving appropriate quantitative targets to be achieved in driving them. These would also be helpful in harnessing the intangible image and brand building value imparted by these efforts and bring intangible benefits to the companies' financial performance.

Was the adoption of best practices, degree of corporate philanthropy and community involvement exercised related to company size, age and ownership? With size, the obligations towards employees increase, as larger organisations also need to provide better benefits to project themselves as good employers to attract the best talent. The need for maintaining harmony, co-operation and cohesion among an expanding employee base also increases. These necessitate increasing allocation of resources towards staff training, welfare activities and the fostering of team efforts.

As business organisations grew in age and size, they tended to move towards organised adoption of best practices and community contributions as opposed to *ad hoc* efforts. Adoption of best practices through certification programmes run through under the umbrella of the PSB, formalisation and regularity of events and programmes organised for employees and the community characterised the activities of larger and older organisations, although efforts towards excellence and best practices existed in both large and small organisations. Clearly, the motivation to make community contributions was not confined only to very large businesses although the extent and volume of contribution was higher for larger and older business organisations judging by the type and number of activities listed in the case studies. For some of the larger business groups, corporate philanthropy became formalised and institutionalised under foundations and programmes, some of which are supported irrespective of the business group's annual financial performance and prevailing economic conditions as they become part of the branding and public image of the organisation. In the smaller or younger businesses studied, financial contributions, if any, often consisted of personal or proportionately larger contributions made by the top management. In some cases these were supplemented by non-financial contributions connected to education/knowledge-sharing activities aimed at contributing to the industry of operation.

Contributions by GLCs and local private sector big businesses for the promotion of arts, sports, education, addressing the problems of the aging workforce, etc, tended to be aligned to national objectives. Instances of encouraging staff volunteerism, cause-related marketing, event sponsorships, etc, are also emerging among some of the big businesses. According to the three stages of evolution outlined by Austin (**The Straits Times**, 2001, January 7) in the relationship between companies and charities (Appendix 5), these reflect an evolution from the philanthropic to the transactional stage where value flows in both directions.

MNCs have contributed to charities in Singapore but the progressive MNCs tend to focus and highlight their contributions as global drivers of best practices rather than their philanthropic efforts in Singapore per se. The contributions of some MNCs to national development in Singapore have been recognised through the Distinguished Partners-in-Progress award conferred by the government of Singapore.

There is a view among some commentators that while corporate citizenship and a sense of community contribution is present or at least not absent in most Singaporean companies, awareness, discussion and exercise of the scope of corporate social responsibility (CSR) should be enhanced (Roche, 2000; **The Business Times**, 2000, September 20). Not many studies examining the connection between company performance and CSR have been undertaken in Singapore. Since the government plays a large role in areas like education, lifelong learning, monitoring environmental standards, etc, companies are not compelled to take up major value-driving contributions or to engage in business/community partnerships in critical areas. Many company representatives contribute time to government committees appointed on such issues and part of CSR activity is subsumed under regulatory requirements. The approach to CSR therefore assumes a hue of practicality and value-neutrality rather than ideological passion. In the public eye, the initiative is not always seen to emanate directly from the companies. Many CSR issues facing companies in other countries such as environmental contamination, unhealthy working conditions, low wage issues, etc, are not relevant in Singapore. The scope for Singapore's companies to exercise CSR and display corporate citizenship may therefore be higher in their overseas operations, especially in less developed countries. This would also serve these companies well in their thrust towards becoming global players.

Stages of Evolution and Revolution

Greiner's model (Appendix 2) also provided a tool for some interesting reflections on Singapore business's past and current state of evolution. Greiner postulated that the future of an organisation might be less determined by outside forces than it is by the organisation's history. Factors like age, size and growth rate of the industry had a bearing on the stages of evolution and revolution experienced by a business organisation. According to Greiner, evolutionary phases are characterised by steady growth and only moderate adjustments in management practices. Revolutionary phases are characterised by an upheaval in management practices in response to a crisis.

Did the fast-paced economic growth in Singapore delay necessary changes in management practices in some business organisations, which only became evident during recessional periods? Are Singapore businesses moving, as predicted, towards Greiner's Phase 5 of evolution at which the 'psychological saturation' of employees by the intensity of teamwork and pressure for innovative solutions will lead to the need for new work structures to replace the old? Or have exogenous changes like the advent of the Internet and the import of the informal dot.com culture been the main harbinger of change and revolution in business communications, culture and practices?

Among the companies covered in the study, Philips and BCHF exhibited the emergence of dual work structures or signs of change-induced “fatigue” among employees leading to new work patterns as envisaged by Greiner. Many of Keppel and ST groups’ proposed strategies to negotiate the transition to a KBE are inspired by the possibilities offered by Internet-based technologies. The answer to the above questions therefore, may vary for each business organisation. In general, it can be stated that the evolution of business organisations in Singapore has been shaped by a combination of past management practices and the push from external forces.

Limitations of this Study and Areas for Further Research

- Although coverage of corporate groups rather than individual companies helped to capture their pattern of evolution and the reasons for expansion across sectors well (especially for GLCs), the differences in the practices and policies of the individual companies within the group tended to be overlooked by using this approach. For example, HR units across different companies of a group are often decentralised and autonomous with differing priorities vis-à-vis staff development rather than common group-wide policies.
- The groups/companies were categorised by ownership and size. This allowed some analysis and discussion of the issues of size and relative roles played in the course of evolution based on ownership and control. However, because the companies belonged to different industrial sectors, meaningful comparisons of specific indicators across groups/companies covered in the case studies could not be easily made. Industry-based studies using structured questionnaires in the area of human resource and R&D practices,

for example, would yield useful results in analysing the transition towards knowledge-based development.

- The study was based on inputs from designated senior management staff of the companies covered, supplemented by information obtained from published sources. Hence, whether it adequately captured the broad-based employee view on subjective issues such as the organisational culture and management style is not conclusive.
- The expansive coverage of several themes within each case study helped to formulate a more holistic picture of the evolution of the selected business organisations, but limited the total number of case studies that could be covered within each category in the designated time frame. SMEs in particular, could not be adequately represented within the designated time frame on account of the low response rate.

Understanding and analysing the various aspects of the evolution of business organisations to a 'higher' state must necessarily involve defining the higher state at each point in evolution and continuously refining the indicators benchmarking the path towards it. For example, two new KBE-relevant indicators were introduced into the criteria for the selection of Enterprise-50 companies in November 2000: the percentage of payroll spent on training and percentage of revenue spent on R&D. The excellence framework in Singapore is also evolving, from being defined not only in terms of quality-based excellence but also innovation-based excellence in keeping with the trends observed in world-class organisations today. Inclusion of family-friendly work practices as a criterion in the SQA framework has also been proposed.

Moving towards knowledge-based practices and world-class excellence must involve receptivity to and adoption of new indicators such as EVA, Human Capital Index, etc, and creation of new measures that capture the development of customer capital and organisational capital within each organisation. Business organisations will need to move from shorter-term product focus strategies to long-term development of human, structural and customer capital strategies. In general, new

Intellectual Capital measures are required to manage knowledge assets. CSR auditing and analysis must eventually become part of bottom line accounting practices. Each organisation should be encouraged to develop its own customised metrics suited to its strategic interest in addition to using those defined by external agencies. Developing and defining finer measures will help to take the evolution towards knowledge-based excellence out of the realm of the intangible to the tangible and thereby make it an accessible goal to a larger mass of business organisations.

Appendix 1: Useful Performances Indicators (Explanatory Notes)

Return on total assets (ROA) equals the pre-tax net profits plus interest payments of the current year divided by the average of total assets in the beginning and at the end of that year. It measures a company's operating **efficiency**, its ability to derive returns from both equity and non-equity capital, and is not affected by the capital structure or by taxation.

Return on equity (ROE) equals the pre-tax net profits of the current year divided by the average of total equity in the beginning and at the end of that year. It measures **profitability,** i.e. the rate of return that companies have earned on the capital provided by shareholders after accounting for payments to all other capital suppliers. Companies' ROE is affected by their capital structure or financial leverage.

Economic Value Added (EVA) is computed as after-tax operating profit minus a charge for the capital employed to produce those profits (i.e. invested capital multiplied by the cost of capital). In recent years, EVA has gained importance as a more appropriate measure of overall company performance. Benchmarking returns against the total cost of capital invested is necessary to maximise capital productivity and ensure value creation. A positive EVA implies that a company is increasing shareholder value and vice-versa. Companies that create shareholder wealth will find it easier to raise additional capital.

Economic Profit (EP) = (Net Operating Profit After Tax) - (Invested Capital x Cost of Capital)

A positive EP ➡ Company is increasing Shareholder Value
A negative EP ➡ Company is destroying Shareholder Value

Market Value Added (MVA) = Market Capitalisation – Invested Capital

A positive MVA ➡ Company is creating long-term Shareholder Value
A negative MVA ➡ Company is destroying long-term Shareholder Value

In Singapore, Singapore Technologies group, some companies of Temasek group, the PSA Corporation and Singapore Power Ltd are now moving towards adopting the EVA system. This covers not only calculating EVA but also, a full range of managerial decisions such as strategic planning, allocating capital, pricing, acquisitions or divestitures, and setting annual goals. Thus EVA may be used for performance measurement, financial management, as a motivation tool, e.g. EVA-linked uncapped bonuses, and a vehicle of transformation of corporate culture by facilitating communication and co-operation among divisions and departments to achieve common targets) (Singapore Productivity and Standards Board, June 2000)

Revenue/Sales from Overseas to Total Turnover (ratio) provides an indication of the extent of overseas expansion in markets achieved by the company.

Revenue/Asset/Profit Analysis by geographical segments provides an indication of the extent to which the company has regionalised/globalised and generally diversified its markets and operations.

Revenue/Profit Analysis by business or product segments provides an indication of the extent of diversification in different products or industries.

Worker training and research and development activity help to boost the Intellectual Capital of the company which is generally regarded as an intangible asset (see Appendix 3 also). Quantitative indicators like **Training Expenditure as a percentage of payroll** and **Expenditure on R&D as a percentage of Revenue** (among several other possible metrics, see Bontis, 1998 and 2001) provide some indication of the level of knowledge management in the company.

Labour Turnover provides a measure of the outward mobility of a particular segment of the workforce in a company or for the company as a whole over the specified time period. A high labour turnover relative to the industry average, and sustained over time could be indicative of a variety of conditions. It could be indicative of worker dissatisfaction/satisfaction with company HR policies, working conditions, culture, management style or simply be the result of robust economic conditions and abundant alternative opportunities in the job market.

Appendix 2: Stages of Evolution and Revolution as Organisations Grow

Larry E.Greiner (1972) proposed that organisations exhibit five predictable stages of growth called evolutions and five periods of crisis called revolutions. The growth pattern consists of tightening and loosening of management reins in response to changes within the organisation and the environment. This theory has been found to be relevant to the growth of several organisations. A company's past has clues for management that may be critical to its future success. According to Greiner, the future of an organisation may be less determined by outside forces than it is by the organisation's history.

Greiner used the term 'evolution' to describe prolonged periods of growth where no major upheaval occurs in organisation practices. The term 'revolution' was used to describe periods of substantial turmoil in the organisation's life. Each evolutionary phase creates its own revolution.

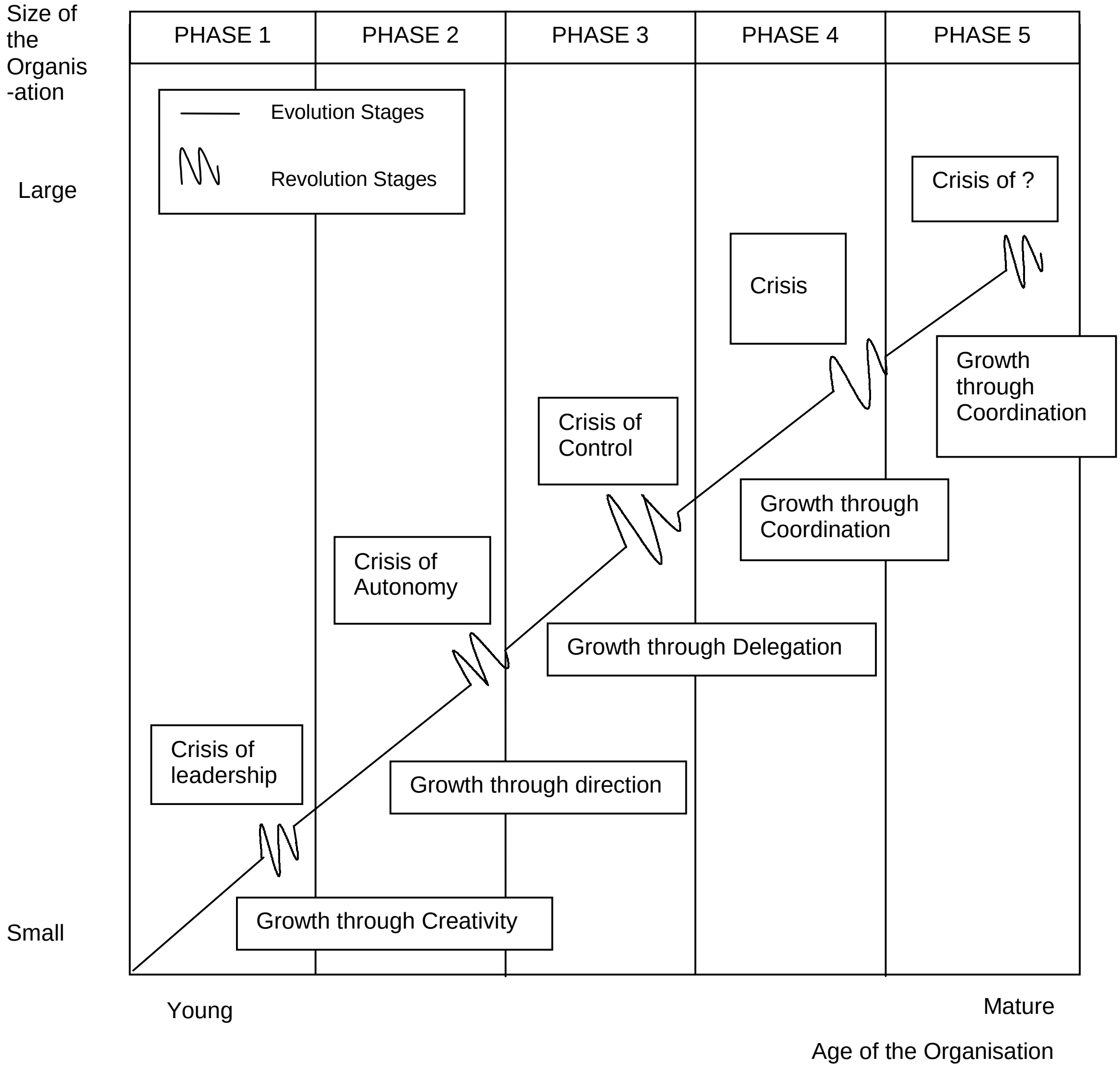
Five key dimensions were used to build this model of organisational development.

1. Age of the organisation: The same organisation practices are not maintained over long time spans. On the other hand, passage of time contributes to the institutionalisation of managerial attitudes which become more difficult to change.
2. Size of the organisation: As the number of employees and sales volume increase, problems of co-ordination and communication magnify, new functions emerge, levels in the management hierarchy multiply and jobs become more interrelated.
3. Stages of evolution: usually last 4-8 years of continuous growth and only moderate adjustments are necessary to maintain growth under the same overall pattern of management.

4. Stages of revolution: exhibit a serious upheaval of management practices. During these periods, companies that are unable to abandon past practices fail or experience falling or slow growth rates.
5. Growth rate of the industry: Evolutionary periods tend to be short in fast-growing industries and longer in slowly growing industries. Evolution can be prolonged and revolutions and necessary changes in management practices delayed when profits come easily.

Each evolutionary period is characterised by a dominant management style used to achieve growth (see chart below). Each revolution is characterised by a management problem that must be resolved before growth can be resumed. Each phase, in Greiner's model, is both an effect of the previous phase and a cause for the next. Moreover, each phase of evolution and revolution represents accumulation of learning experiences, which are essential for future success. The five stages of evolution and revolution are shown in the figure on the following page.

Evolution and Revolution as Organisation Grow



Source: Harvard Business Review (July - August 1972)

Management Practices During Evolution

CATEGORY	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5
Management Focus	Make & Sell	Efficiency of Operations	Expansion of market	Consolidation of Organisation	Problem Solving & Innovation
Organisation Structure	Informal	Centralized & functional	Decentralised and geographical	Line-staff & product groups	Matrix of teams
Top Management Style	Individualistic & Entrepreneurial	Directive	Delegative	Watchdog	Participative
Control System	Market Results	Standards & Cost Centers	Reports and Profit Centers	Plans & Investment centers	Mutual goal setting
Management Reward Emphasis	Ownership	Salary & Merit increases	Individual bonus	Profit Sharing & Stock Options	Team bonus

Source: "Evolution and Revolution as Organisations Grow", *Harvard Business Review* (July-August 1972).

Greiner predicted that since most US companies were already in Phase 5 of evolution, the next revolution would centre around the "psychological saturation" of employees who grow emotionally and physically exhausted by the intensity of teamwork and the pressure for innovative solutions. It would therefore be resolved through new structures and programmes that allow employees to periodically rest, reflect and revitalise themselves. He also foresaw the possibility of dual organisation structures emerging: a "habit" structure for getting the daily work done and a "reflective" structure for stimulating perspective and personal enrichment. Reflective practices might include: providing sabbaticals for employees, moving managers in and out of "hot spot" jobs, establishing a shorter workweek, assuring job security, building physical facilities for relaxation during the working day, making jobs more interchangeable, creating an extra team on the assembly line so that one team is always off on re-education, switching to longer vacations and more flexible working hours, etc.

Appendix 3: Intellectual Capital and Related Indicators

Intellectual Capital can be broadly described as a company's intangible resources. The Swedish company, Skandia, pioneered the development of a reporting system for a company's Intellectual capital (http://skandia.com). While concepts of IC were regarded as an academic fad in the 1980s, interest in Skandia's work has grown in recent years, congruent with the transition to KBE. Development of new ways of IC reporting is now in progress in the USA, Canada, the UK, Austria, Denmark, Australia and other countries.

Several ways of measuring IC have been developed. It can be assessed as the difference between its market value and its book value, expressed as adjusted shareholders' equity. Alternatively, IC is assessed as the difference between the market value of a company and the replacement cost of its fixed assets. Another measure calculates IC as the discounted present value of the company's excess profitability in comparison with its competitors.

IC embodies the relationship processes between people for mutual growth in value and is difficult to quantify in traditional bookkeeping systems. Only when an acquisition or merger occurs is a goodwill amount entered into the balance sheet to indicate a firm's value at that point in time. The core of IC is a company's future earnings capability with a deeper, broader and more human perspective encompassing employees, customers, business relationships, organisational structures and the power of renewal in organisations through innovation. A pro-active stance on future evolution can be taken by making these connections visible and tangible.

The Skandia Value Scheme (shown on the following page) shows the building blocks of IC that contribute to the creation of market value.

Human Capital refers to the people in the organisation and depends on the quality of human resource that the firm employs (i.e. educational/vocational qualifications, work-related knowledge, competency levels, personal habits etc.)

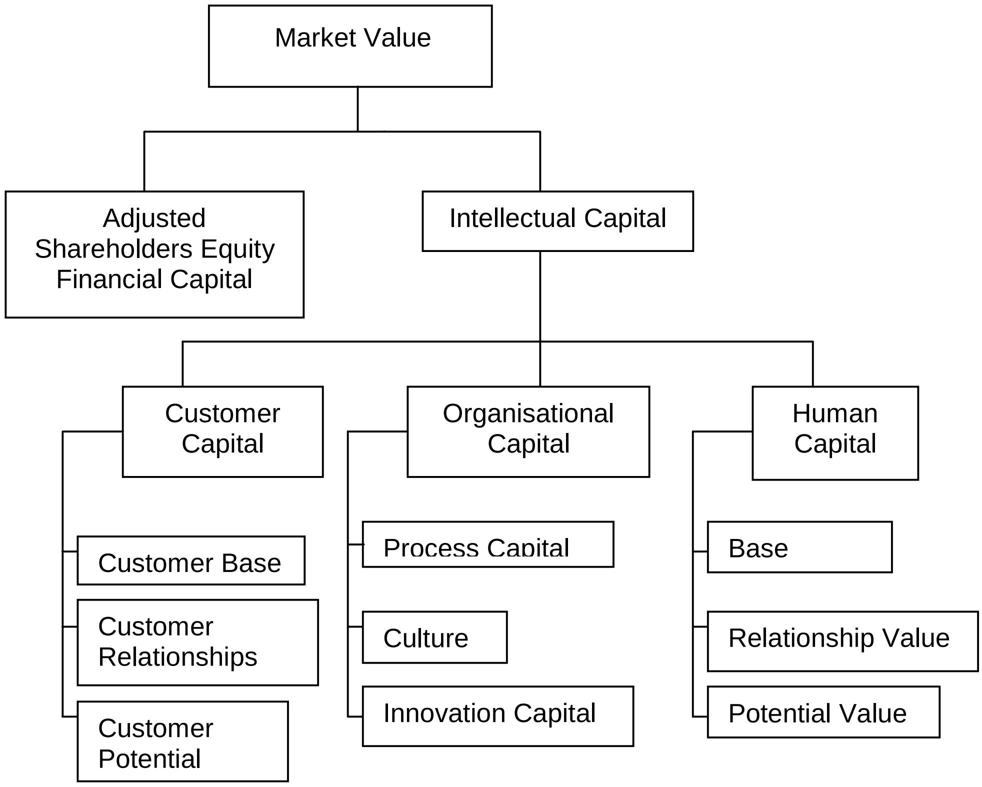
Customer Capital and Organisational Capital represent the external and internal focus of Structural capital i.e. everything that remains once the employees have gone home (information systems, databases, IT software etc). Under organisational capital, process capital may consist of value-creating or non value-creating processes. Innovation capital includes intangible rights, trademarks, patents, knowledge recipes and business secrets.

A report by Human Resource Management specialist Watson Wyatt Worldwide, based on its **Human Capital Index** (HCI) Analysis, suggests that superior human capital practices are the key to maximising shareholder returns (**The Business Times**, 2000, July 11). The HCI covers recruiting excellence, clear rewards and accountability, a collegial and flexible workplace, communications integrity and prudent use of resources.

Measures of IC and human capital may rival traditional financial performance measures as tools in evaluating the prospects of knowledge-based companies for investors.

Knowledge Management (KM) and Intellectual Capital: KM is the art of creating value from an organisation's intangible assets. It involves Knowledge Need Identifcation, Knowledge Audit, Knowledge Acquisition/Creation, Knowledge Diffusion/Transfer, Knowledge Exploitation, Knowledge Protection and a Knowledge Management team. A survey among firms in Singapore showed that KM practices are more apparent in firms with greater size (Yeo, 2000). This is because bigger firms surpass smaller firms in terms of human capital. A firm with increasing KM efforts may experience increases in IC and subsequently greater profitability. The appropriate level of KM is not industry specific but dependant on firm size.

Skandia Value Scheme



Appendix 4: World-class Business Excellence – The SQA Framework

"Today, SQA represents business excellence in Singapore"

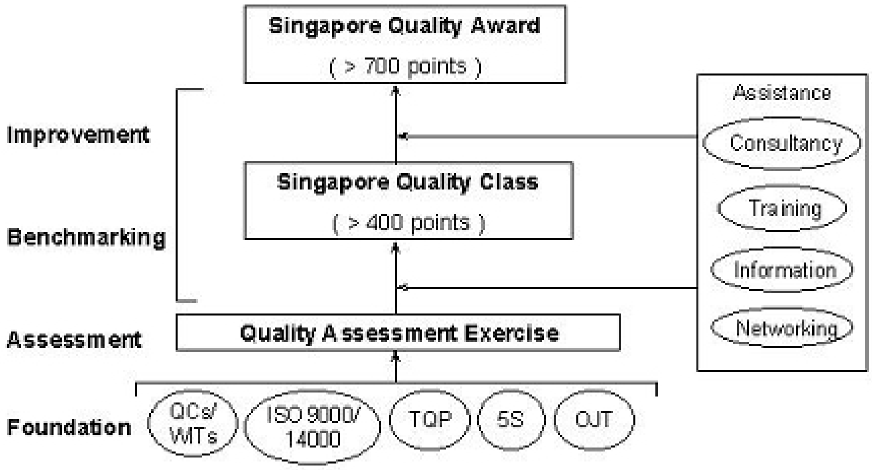
Brigadier General George Yeo, Singapore's Minister for Trade and Industry (2000a).

Based on the Malcolm Baldridge National Quality Award in the US, the European Quality Award in Europe and the Deming Prize in Japan, the Singapore Quality Award (SQA) framework provides a comprehensive model that encompasses various aspects of world-class business excellence. The model comprises seven categories of best practices:

1. Leadership and Quality Culture.
2. Use of Information and Analysis.
3. Strategic Planning.
4. Human Resource Development and Management.
5. Management of Process Quality.
6. Quality and Operational Results.
7. Customer Focus and Satisfaction.

Higher weightage is allotted to customer focus, quality and operational results and leadership. It has helped several companies experience growth in productivity, profits and development (Singapore Productivity and Standards Board, 2001). Organisations scoring 400 out of 1000 points on self-assessment of their management strengths and weaknesses qualify for Singapore Quality Class (SQC) status and become eligible for training and assistance to compete for the Singapore Quality Award (refer to Figure 2 next page).

Figure 2
The Journev to Business Excellence



Source: Singapore Productivity and Standards Board

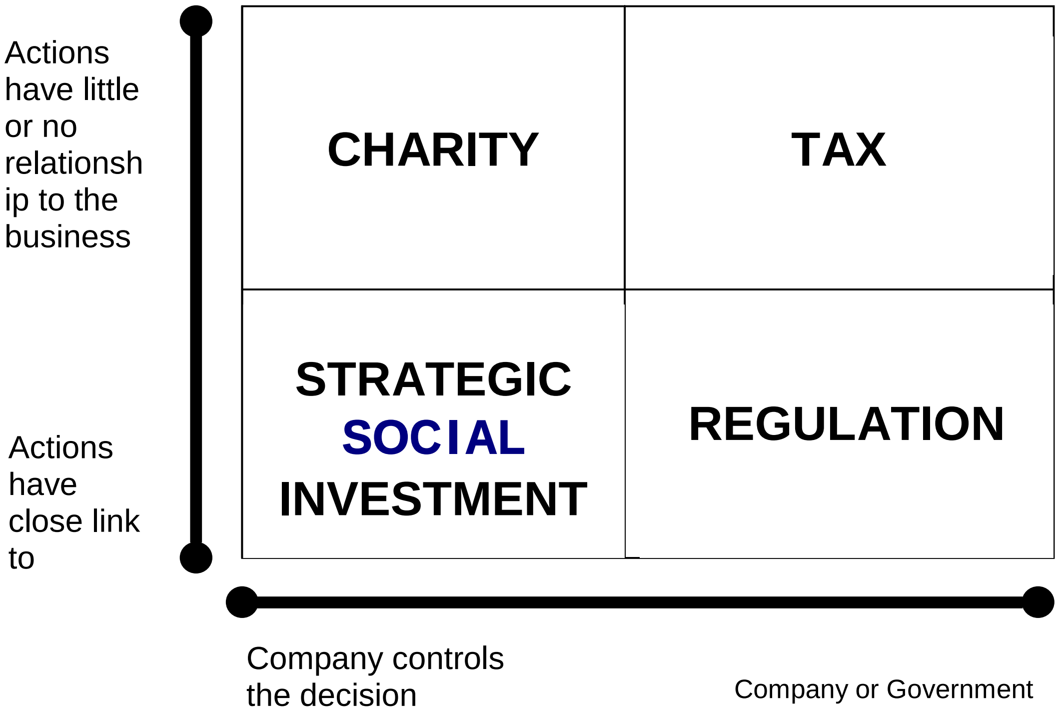
In 1998, about 150 companies had acquired SQC status. Overall quality circle participation by 1998 was however less than 10 per cent of all companies. While more than 50 percent of companies in the public sector participated, the private sector participation rate was less than 5 percent of companies in the private sector in 1997 (http://www.psb.gov.sg/statistics_faq/statistics/quality.html). The scope for expansion of this scheme to private sector organisations therefore is potentially larger. By September 2000, almost 184 organisations had become members of the SQC scheme, 80% are from the private sector and 39 are SMEs. SQA award winners (since the inception of the award in 1994) have all been subsidiaries of MNCs based in Singapore, PSA Corporation, a GLC and the Housing & Development Board, which is a statutory board.

Appendix 5: Corporate Citizenship – General Perceptions and Evolving Ideas

> "There is growing acceptance that corporate citizenship is the practice of a corporations' direct responsibilities - to employees, shareholders or owners, customers and suppliers, and the communities where it conducts business and serves markets."
>
> Laurie Regelbrugge (1997)

There are differing perceptions about corporate citizenship. At a minimum, it would entail adherence to the local laws, regulations and accepted business practices. Successful, long-lived companies take a more pro-active approach to community involvement. Increasingly, corporate citizenship is an issue of competitiveness. Some companies regard engagement with the development, maintenance and health of communities and people as "strategic social investment." On the other hand, many corporate and community leaders continue to define corporate citizenship as charity and are reluctant to accept the strategic social investment argument. The characteristics of corporate citizenship are shaped by customs, traditions, societal expectations, company culture and industry, and differ in each country and company. Countries have different tax incentives and regulatory norms to encourage corporate citizenship. How social investments are funded and who makes the decision may be influenced by these factors (refer to Figure 3 on the next page).

Figure 3
HOW WILL SOCIAL INVESTMENTS BE FUNDED?
WHO MAKES THE DECISION?



Source: Logan, Roy and Regelbrugge, 1997.

Broadly a company's engagement in community activity may be defined by:

- Strategic business interest.
- Business/community partnerships.
- Corporate philanthropy.

These strategies are not necessarily exclusive but can be distinguished by their decision-making framework.

According to Austin[5] (**The Straits Times**, Jan 7, 2001), alliances between companies and charities evolve in three stages:

1. The initial philanthropic stage, which generally involves an annual donation and is characterised by resources flowing in one direction.
2. The transactional stage in which resources are exchanged revolving around specific activities such as cause-related marketing, event sponsorships, licensing, employee involvement and provision of services. Value flows in both directions.
3. The integrative stage in which the relationship evolves into a significant strategic alliance in which the partners' missions, people and activities are enjoined in collective action. These are more difficult to manage than the traditional philanthropic relationship but result in greater strategic value for the corporation.

The rewards for shareholders, customers and employees from social and educational participation include increased returns and confidence in management, improved customer satisfaction, brand position, sales, employee morale, productivity and increased respect in society in general.

With globalisation, some trends are emerging:

- For some corporations, all corporate activities must serve a "strategic" business purpose with consideration given to short-term bottom-line results as well as long-term "positioning".
- Multinational corporations often transfer corporate responsibility practices to their operational bases worldwide. Social engagement acts as a plus helping them to compete for the most attractive investment opportunities.
- The drive to "do more with less" is making companies more dependent on partnerships.

---

[5] Prof. James Austin is the Mclean Professor of Business Administration and Chair, Initiative on Social Enterprises, Harvard Business School.

- With increasing pressure on corporate funds, companies are increasingly using volunteerism and giving in kind as opposed to cash contributions.
- A closer alignment of community engagement with business objectives and capacity allow choices to be more strategic than personal.
- Some corporations are trying to develop bottom-line measures of accountability for strategic social investments.
- Philanthropy is no longer reserved for a company's country of origin but practised everywhere the company does business.
- With growing competition resulting in price and quality parities, increasingly discerning consumers are basing their buying decisions on socioeconomic, cultural and environmental distinctions among companies.

In Singapore, the government has put in place a number of measures to promote and regulate corporate citizenship including the following (http://www.psb.gov.sg):

- The Singapore Productivity and Standards Board (PSB) promotes the ISO 9000 and 14000 standards for quality management and environmental management systems. These are also part of the SQA/SQC framework outlined in Appendix 4.
- The PSB has introduced the People Developer Standard (PDS) which recognises organisations for their commitment to people development and offers a systematic process for reviewing people practices and staff development. Over 1300 organisations in Singapore have participated in People Developer programmes, 600 are working to achieve the standard in the next three years and 93 organisations are certified as People Developers (Productivity and Standards Board, Singapore, 1999a).
- The Ministry of Community Development and Sports (MCDS), the Singapore National Employers' Federation (SNEF), the Ministry of Manpower and the National Trade Union Congress (NTUC) introduced the Family Friendly Firm

Award in 1998. The award recognises companies for their pro-family efforts and encourages them to introduce innovative pro-family practices and policies (such as part-time, flexi-time and flexiplace work options, benefits for families, inclusion of family members in company activities etc) (www.mcds.gov.sg).

REFERENCES

Air Transport World (2000). **World Airlines Report**, retrieved December 15, 2000 from the World Wide Web: http://www.atwonline.com.

Alten, F. (1995). **The Role of Government in the Singapore Economy**, Frankfurt: Peter Lang.

Bontis, N. (1998). "Intellectual Capital: An Exploratory Study That Develops and Measures Models", **Management Decision**, Vol.36, pp.63-76.

Bontis, N. (2001). "Assessing Knowledge Assets, A Review of the Models Used to Measure IC", International Journal of Management Reviews**, Vol.3, pp.41-60.**

DP Information Network and Ernst and Young Consultants (1999/2000). **Singapore 1000**, Singapore: DP Information Network.

Global Business Policy Council and AT Kearney (2000). "How Global is my Company", **Communique**, Issue 2, pp.2-3.

Granitsas, A. (2000). "Crowded Skies", **Far Eastern Economic Review**, Vol. 163, pp.58-64.

Grant, R. (2000). **Contemporary Strategy Analysis**, Oxford: Blackwell, Third Edition.

Greiner, L. (1972). "Evolution and Revolution as Organisations Grow", **Harvard Business Review**, Vol.50, pp.37-46.

Hamel, G. and C. Prahalad (1994). **Competing for the Future**, Boston: Harvard Business School Press.

Hesselbein, F., M. Goldsmith and R. Beckherd (eds.) (1997). **The Organisation of the Future**, San Francisco: Jossey-Bass.

Lian, D. and Chung, A. (2000, September 14). "Singapore: External Economy -- Low Return Is a Concern", **Global Economic Forum**, Morgan Stanley Dean Witter, retrieved September 4, 2001, from the World Wide Web: http://www.morganstanley.com/GEFdata/digests/20000914-thu.html#anchor1.

Menkhoff, T. and Wirtz, J. (1998). "From Entrepot to NIC – Economic and Structural Policy Aspects of Singapore's Development", **Research Paper Series #98-21**, Faculty of Business Administration, National University of Singapore.

Regelbrugge, Laurie (1997). "Engaging Corporations in strengthening Civil Society" in Fox, Leslie M. and Shearer, S. Bruce (ed.) ***Sustaining Civil Society: Strategies for Resource Mobilisation***, Washington: Civicus.

Roche, J. (2000, October). "Singapore: Corporate, Social and Responsible but no CSR", **MHC International Limited: Monthly News Item**, retrieved February 10, 2001, from the World Wide Web: http://www.mhcinternational.com/singapore.htm.

Sabhlok, A. (ed.) (2000a). **EDB Society & Partners Millennium Conference Report**, Singapore: EDB Society.

Sabhlok, A. (2000b). "A World-Class Destiny - Is Singapore Business Ready?", **@IPS**, Vol. 1, pp.i-iv.

Sandhu, K. & P. Wheatly (eds.) (1989). **Management of Success: The Moulding of Singapore**, Singapore: The Institute of Southeast Asian Studies.

Sikorsky, D. (1989). “Case Studies: Singapore” in **Management Dynamism in State-Owned Enterprises in Asia**, Tokyo: Asian Productivity Organisation.

Singapore Department of Statistics (1992). “Efficiency of Singapore Companies: A Study of Returns to Assets Ratios”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Singapore Department of Statistics (1997a). “Performance of Singapore Companies: Efficiency and Profitability Ratios”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Singapore Department of Statistics (1997). “Singapore’s Corporate Sector 1986-1995”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Singapore Department of Statistics (2000). “Singapore’s Corporate Sector 1996-1997”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Singapore Department of Statistics (2001). “Singapore’s Corporate Sector 1997-1998”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Singapore Productivity and Standards Board (1999a). **People Developer Practices 1999**, Singapore: PSB.

Singapore Exchange Limited (1999). **Companies Handbook**, Singapore: Singapore Exchange Limited.

Singapore Productivity and Standards Board (2000, June). **Productivity Digest**, Singapore: Productivity and Standards Board.

Singapore Productivity and Standards Board (2001). “Singapore Quality Award for Business Excellence”, **Productivity and Standards Board Website**, retrieved June 5, 2001, from the World Wide Web: http://www.psb.gov.sg/awards/sqa/SQA.html.

Singapore Productivity and Standards Board (2001). “Business Excellence Assessment: Introduction”, **Productivity and Standards Board Website**, retrieved June 5, 2001, from the World Wide Web: http://www.psb.gov.sg/Beacon/HTML/Introduction.html.

Singh, K. and Ang S. H. (1998). “The Strategies and Success of Government Linked Corporations in Singapore”, **Research Paper Series #98-06**, Faculty of Business Administration, National University of Singapore.

Tan S. K., Yeo H. H. & B. Kwok (1993). “Aftermarket Share Price Performance of Government-Linked Companies Upon Privatisation”, **Securities Industry Review**, Vol. 19, pp.25-31.

The Business Times (2000, July 11). “Do Employees Hold the Key to Shareholder Returns”.

The Business Times (2000, August 8). “Keppel Should Speed Up On Its New Core Business”.

The Business Times (2000, September 20). "Why Asian Business has to care about poverty".

The Business Times (2000, October 13). "Asia Still Not Prepared for New Economy".

The Business Times (2000, November 23). "Special Supplement on Enterprise-50".

The Straits Times (2001, January 7). "The Age of Ethical Alliances Dawns".

Vennewald, W. (1994). "Technocrats in the State Enterprise System of Singapore", **Working Paper No 32**, Murdoch: Asia Research Centre, Murdoch University.

Yeo, G. (2000a). "Building up Homegrown World-class Organisations", Speech by the Minister for Trade and Industry, given at the 2000 Singapore Quality Award Presentation Ceremony on July 19, reproduced in **Productivity Digest**, September 2000.

Yeo, K. H. (2000). "Knowledge Management Among the Major Firms in Singapore - An Empirical Analysis", **Academic Exercise – School of Management**, Faculty of Business Administration, National University of Singapore.

ADDITIONAL READING

Asean Small and Medium Enterprises (1997). **Small and Medium Enterprises in Singapore**, retrieved November 17, 1999 from the World Wide Web: http://aemp.brel.com/sme.

Barnard, M. and R. Rodgers (1998). "What's in the Package? Policies for the Internal Cultivation of Human Resources and for High Performance Operations", **Research Paper Series #98-44**, Singapore, Faculty of Business Administration, National University of Singapore.

Bendell, T., L. Boulter and K. Gatford (1997). **The Benchmark Workout: A Toolkit to Help You Construct a World-Class Organisation**, London: FT Pitman.

Brown, A. (1998). **Organisational Culture**, London: Financial Times Pitman Publishing, Second Edition.

Buchanan, D. and A. Huczynski (1997). **Organisational Behaviour**, London: Prentice Hall, Third Edition.

Cartledge, S., R. Meyer and R. Tang (2000). "Beyond the Bamboo Network – Successful Strategies for Change in Asia", **Research Report**, Singapore: The Economist Intelligence Unit and Anderson Consulting.

Chan, K. B. and Chiang S. N. (1994). **Stepping Out: The Making of Chinese Entrepreneurs**, Singapore: Centre for Advanced Studies, National University of Singapore and Simon & Schuster.

Ching C. Y., M. Bradbury and Mak Y. T. (1999). "The Adoption and Structure of Executive Stock Option Plans", **Research Paper Series #99-33**, Faculty of Business Administration, National University of Singapore.

Committee on Singapore's Competitiveness (1998). **Report of Committee on Singapore's Competitiveness**, Singapore: Ministry of Trade & Industry.

Faithfull, T. W. (2000). “Corporate Citizenship and Civil Society”, in G. Koh and Ooi G. L. (ed.), **State Society Relations in Singapore**, Singapore, Institute of Policy Studies and Oxford University Press, pp.77-91.

Fox, L. and S. Shearer (eds.) (1997). **Sustaining Civil Society: Strategies for Resource Mobilisation**, Washington: Civicus.

Kanter, R. (1984). **The Change Masters**, London: Allen & Unwin.

Kotter, J. and L. Schlesinger (1980). “Choosing Strategies for Change”, **Harvard Business Review***,* Vol.57, pp.106-114.

Law Y. F. and Joo E. L. (1999). “Knowledge Management Issues in Singapore”, **Research Paper Series #99-43**, Faculty of Business Administration, National University of Singapore.

Lee K. S., Tan S. J. and Lim G. H. (1998). “Market Penetration Strategies for Entrepreneurs - Theory and Asian SMEs’ Experiences”, **Research Paper Series #98-51**, Faculty of Business Administration, National University of Singapore.

Lee K. S., Lim G. H. and Tan S. J. (1998). “Dealing with Resource Disadvantage: Generic Strategies for SMEs”, **Research Paper Series #98-49**, Faculty of Business Administration, National University of Singapore.

Lee K. S., Lim G. H. and Tan S. J. (1998). “Limitations of Conventional Strategy Frameworks when Applied to SMEs: Lessons from a Case Study”, **Research Paper Series #98-60**, Faculty of Business Administration, National University of Singapore.

Lee K. S., Lim G. H. and Tan S. J. #98-62 (1998). “Strategic Alliance as an Entry Strategy into Markets Dominated by Major Corporations”, **Research Paper Series #98-62**, Faculty of Business Administration, National University of Singapore.

Lee T. Y. & L. Low (1990). **Local Entrepreneurship in Singapore: Private & State**, Singapore: Institute of Policy Studies and Times Academic Press.

Lee T. Y. and A. Mahizhnan (1992). “MNCs and Local Enterprise Development: The Case of Singapore’s Manufacturing Sector.” **Borneo Review**, Vol.3, pp.152-179.

Lee T. Y. (1994). **Overseas Investment: Experience of Singapore Manufacturing Companies**, Singapore: Institute of Policy Studies and McGraw-Hill.

Lim G. H., Tan S. J. and Lee K. S. (1998). “SMEs Market Entry Strategy: Substitution Instead of Niching”, **Research Paper Series #98-61**, Faculty of Business Administration, National University of Singapore.

Loizos, H. (1998). “Privatisation: Global Trends and Implications of the Singapore Experience”, **Research Paper Series #98-45**, Faculty of Business Administration, National University of Singapore.

Low, L. (1984). “Public Enterprises in Singapore”, in You P. S. & Lim C. Y. (eds.), **Singapore: Twenty-Five Years of Development**, Singapore: Nan Yang Xing Zhou Lianhe Zaobao.

Low, L. and Toh M. H. (eds.) (1992). **Public Policies in Singapore**, Singapore: Times Academic Press.

Low, L. (ed.) (1998). **Singapore: Towards Developed Status**, Singapore: Oxford University Press.

Lynch, R. (2000). **Corporate Strategy**, London: Financial Times Prentice Hall, Second Edition.

National Productivity Board, Singapore (1991). **The First 10 Years of the Productivity Movement in Singapore**, Singapore: National Productivity Board

Pillai, Philip N. (1984). **State Enterprise in Singapore: Legal importation and Development**, Singapore: Singapore University Press.

Porter, M. (1980). **Competitive Strategy: Techniques for Analysing Industries and Competitors**, New York: The Free Press.

Ranganathan, C. and J. Dhaliwal (1998). “A Survey of Business Process Engineering Practices in Singapore”, **Research Paper Series #98-26**, Faculty of Business Administration, National University of Singapore.

Singapore Department of Statistics (1998). “Efficiency of Singapore Companies: A Study of Returns to Assets Ratios”, **Singapore Department of Statistics Occasional Paper**, Singapore: Department of Statistics.

Tan C. H. (1995). **Venturing Overseas: Singapore’s External Wing**, Singapore: Mcgraw-Hill.

Tan C. H. (1995). **Strategic Policies & Businesses in Singapore**, Singapore: Mcgraw-Hill Book Company.

Tan, M. (1998). “Creating the Digital Economy: Strategies and Perspectives from Singapore”, **Research Paper Series #98-54**, Faculty of Business Administration, National University of Singapore.

Tan S. J., Lee K. S. and Lim G. H. (1998). “Sun Tzu on Battlegrounds and Strategies: Seven Managerial Rules for Successful Market Targeting and Penetration Strategies for SMEs”, **Research Paper Series #98-50**, Faculty of Business Administration, National University of Singapore.

Tan S. J., Lee K. S. and Lim G. H. (1998). “Deferring Aggressive Reactions from Bigger Firms: Use of Strategic Moves by SMEs”, **Research Paper Series #98-59**, Faculty of Business Administration, National University of Singapore.

Teo, A., Teo S. H., Lim K. G. and C. Low (1998). “Institutionalisation of Electronic Commerce: The Case of Singapore”, **Research Paper Series #98-41**, Faculty of Business Administration, National University of Singapore.

Teo S. H. and Teo B. L. (1999). “Orientation and Business Use of the Internet”, **Research Paper Series #99-37**, Faculty of Business Administration, National University of Singapore.

The Business Times (1999, April 12). “Creating Value for Shareholders”.

The Business Times (2000, July 5). “Singapore’s Dotcoms Feel the Burn”.

The Business Times (2000, October 3). “Hybrids will Inherit the Earth”.

The Business Times (2000, November 1). “Which GLC is next?”.

The Business Times (2000, November 20). “The End of the Freebie Era”.

The Business Times (2000, November 23). “Managing Intangibles”.

The Straits Times (2000, October 18). “US Firm to Merge With JIT Holdings of Singapore”.

The Straits Times (2000, November 23). “Enterprise 50 Recognises Dot.com Gems”.

The Straits Times (2000, December 16). “SIA Remains Coy on Bid”.

The Straits Times (2001, February 13). “CapitaLand earnings drop 43% to $105.7m”.

Tng S. H. (2000). “The KBE: How Ready are Singapore’s SMEs”, **Academic Exercise – School of Management**, Faculty of Business Administration, The National University of Singapore.

Wong, Y. Y. (1998). “The Coming Challenge: An Entrepreneurial Pathway for the 21st Century”, in A. Mahizhnan & Lee T. Y. (eds.) **Singapore: Re-engineering Success**, Singapore: Institute of Policy Studies and Oxford University Press, pp.152-162.

Wyer, P., G. Boocock and I. Abdul-Hamid (1998). “The Internationalisation of Small- and Medium-Sized Enterprises: Towards an Alternative Conceptual Framework”, **Journal of Enterprising Culture**, Vol 6, pp.283-308.

IPS Working Papers

1. Ramkishen S Rajan, "The Currency and Financial Crisis in Southeast Asia: A Case of 'Sudden Death' or 'Death Foretold'?", August 1998.

2. Ramkishen S Rajan, "The Japanese Economy and Economic Policy in Light of the East Asian Financial Crisis", August 1998.

3. Ramkishen S Rajan, "Restraints on Capital Flows: What are They?", September 1998.

4. Venil Ramaiah, "European Views on Asia and Europe-Asia Relations", September 1998.

5. Ooi Giok Ling, Tan Ern-Ser and Gillian Koh, "Survey of State-Society Relations, Social Indicators Research Project: Executive Summary Report", October 1998.

6. Ramkishen S Rajan, "The Economics of the European Monetary Union and Some Implications for Asia," December 1998.

7. Ramkishen S Rajan, "Sand in the Wheels of International Finance: Revisiting the Debate in Light of the East Asian Mayhem," April 1999.

8. Chang Li Lin and Ramkishen S Rajan, "Regional Responses To The Southeast Asian Economic Crisis: A Case of Self-Help or No Help?", June 1999.

9. Tan Tay Keong, "Social Capital and State-Civil Society Relations in Singapore", June 2001.

10. Anisha Sabhlok, "The Evolution of Singapore Business: A Case Study Approach", October 2001. *(Volumes 1 & 2)*