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**AN EVALUATION OF THE FACTORS AFFECTING CORPORATE
PERFORMANCE OF MALAYSIAN LISTED COMPANIES**

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**A thesis submitted in fulfilment of the requirements for the degree of
Doctor of Philosophy of Cardiff University**

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ABSTRACT

This study investigated internal factors, including company's size, age, growth, capital structure and ISO 9000 registration, and an external factor, the category of industry, which impact corporate performance in a sample of Malaysian companies. To achieve this objective, the annual reports of 162 companies were collected and an seven-factor corporate performance evaluation model was tested based on the hypotheses created. The study has utilised seven different measures of company performance: Return on Assets (ROA), Return on Equity (ROE), Working Capital (WC), Return on Sales (ROS), Cash Flow (CF), Economic Value Added (EVA) and Tobin's Q (TQ) ratio, to act as dependent variables in order to examine their relationships with company's size, age, growth, capital structure, ISO 9000 registration and category of industry.

This study found that the significant dependent variables that determined Malaysian corporate success were ISO 9000, capital structure, company size and category of industry. On establishing the relationship between ISO 9000 registration and the seven financial performance measures, ROA, EVA, ROS and WC appeared to have significant positive associations with ISO 9000 registration. On establishing the relationship between ISO 9000 registration and the financial performance of Malaysian companies, this study reveals that ISO 9000 registered companies in Malaysia outperformed their non-ISO 9000 registered counterparts in terms of ROA, ROE, WC, ROS, CF, EVA and TQ during the period of this study. Thus, this study lends support to some of the findings reported in Haversjo (2000), Heras *et al.* (2002) and Corbett *et al.* (2002) regarding the impact of ISO 9000 registration on company performance. ISO registered companies were also found to be younger than their counterparts, and they also tended to be larger in size, based on total assets. The growth of ISO companies was better than that of non-ISO registered companies and their capital structure was much less than their counterparts.

In addition, company's capital structure was found to be another influential factor in determining Malaysian corporate success. On establishing the relationship between capital structure and the seven company financial performance measures, ROA, ROS and WC were found to have significant negative associations with capital structure. Another factor that was found to determine Malaysian corporate success was company size. This was based on the relationship established between company's size and the seven financial performance measures, wherein CF was found to have a significantly positive association with company size.

Category of industry was also found to determine Malaysian corporate success. This was based on the relationship established between category of industry and the seven financial performance measures.

With regard to the Pearson's correlation analysis, this study found that CF values rise with an increase in the size of the corporation; they also increase with growth rates. This would suggest that larger firms experiencing high growth rates would tend to have high CF. This supports earlier work that found that organizational attributes

were associated with more positive cash flows (Brush and Van der Werf 1992; Cooper 1993; Brush and Chaganti 1999).

This study also conducted a questionnaire survey in order to assess the impact of ISO 9000 accreditation on non-financial performance measures. Among the findings, ISO 9000 registered companies performed better than non-ISO 9000 registered companies in terms of managing information and analysis factors, strategic quality planning factors, human resource development and management factors, management of process quality factors, and comparative business outcome factors.

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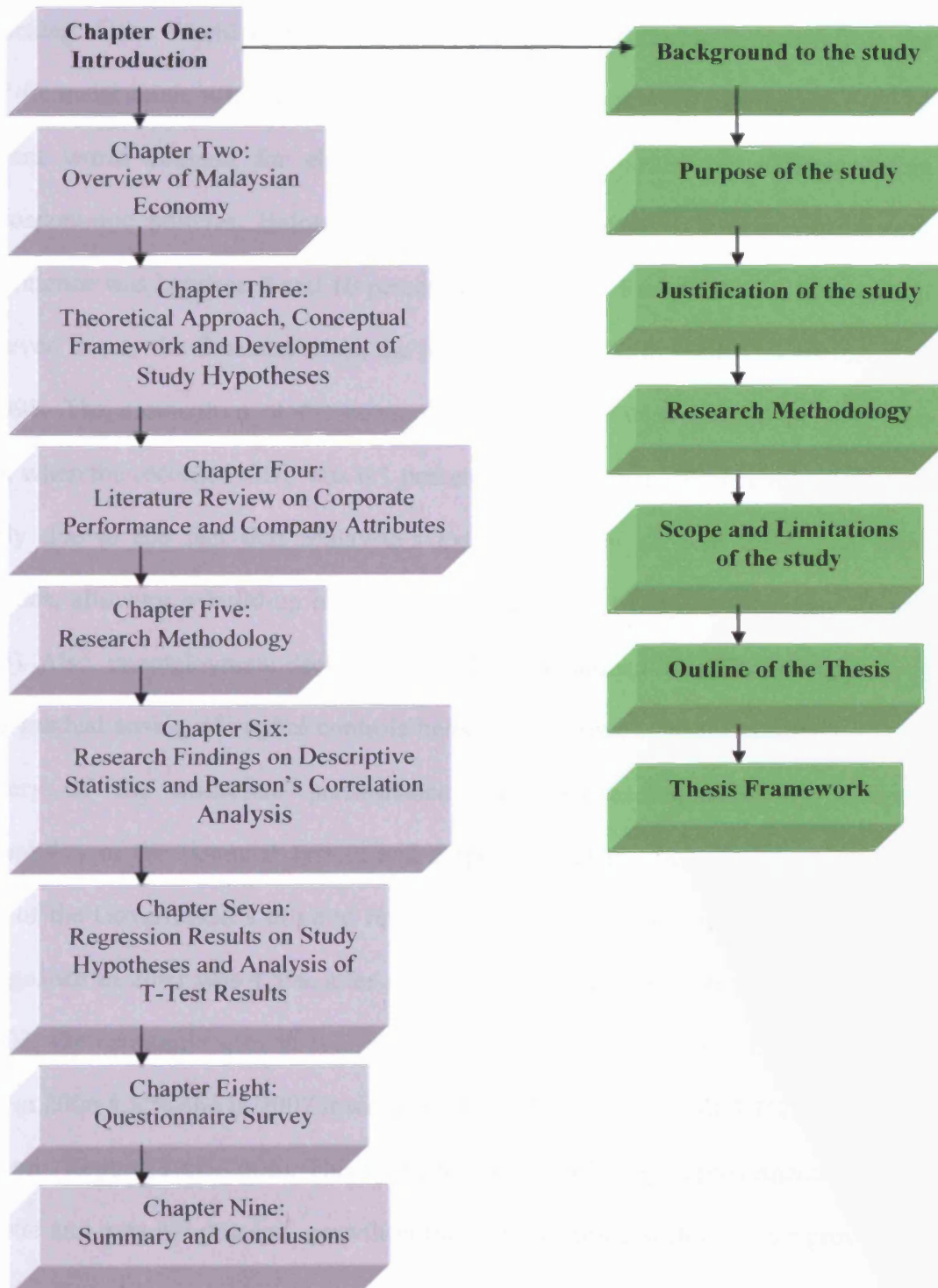
GLOSSARY OF ABBREVIATIONS

AFTA	Asian Free Trade Area
ANOVA	Analysis of Variance
ASEAN	The Association of Southeast Asian Nations
BIS	Bank for International Settlements
BNM	Bank Negara Malaysia (Malaysian Central Bank)
CCM	Companies Commission of Malaysia
CDRC	Corporate Debt Restructuring Committee
CEO	Chief Executive Officer
CF	Cash Flow
CFO	Chief Financial Officers
COMMEX	Commodity and Monetary Exchange of Malaysia
CMM	Capital Market Masterplan
Danaharta	Asset Management Company
Danamodal	Capital Management Company
EPF	Employees Provident Fund
EPS	Earnings Per Share
EVA	Economic Value Added
FDI	Foreign Direct Investment
FSMP	Financial Sector Master Plan
GDP	Gross Domestic Product
GNP	Gross National Product
IFRS	International Financial Reporting Standards
IMF	International Monetary Fund
ISO	International Organization for Standardization
JEXIM	The Export-Import Bank of Japan
KLSE	Kuala Lumpur Stock Exchange
KLOFFE	Kuala Lumpur Options and Financial Futures Exchange
K-W	Kruskal-Wallis
KLSE-RIS	Kuala Lumpur Stock Exchange – RIIAM Information System
LS	Lender Security Ratio
LUTH	Pilgrimage Funds
MSC	Multimedia Super Corridor
MSCI	Morgan Stanley Capital International
NASDAQ	National Association of Securities Dealers Automated Quotations
NEAC	National Economic Action Council
NEAP	National Economic Action Plan
NEP	New Economic Policy
NPL	Non-Performing Loans
PNB	National Investment Board
RIIAM	Research Institute of Investment Analysts Malaysia
RM	Ringgit Malaysia
ROA	Return On Assets
ROE	Return On Equity
ROS	Return On Sales
S & P	Standard & Poor's
SIRIM	Standard Research Institute of Malaysia

Tenaga Nasional
TQ
WC

The National Electricity Company
Tobin's Q Ratio
Working Capital

The Thesis Structure



Chapter One

Introduction

1.1 Background to the Study

According to the World Economic Report, Malaysia's economic recovery from the 1997 financial crisis was among the strongest of the Asian crisis economies, led by buoyant world demand for electronic goods and supported by accommodating macroeconomic policies. Before the financial crisis, Malaysia's economic growth performance was between 8 and 10 percent GDP (1996 – Real GDP was 10 percent). However, due to the financial crisis, the real GDP retracted to minus 7.4, as recorded in 1998. The momentum of the economic performance was restored in 1999 and 2000, when the recorded GDP was 6.1 percent and 8.3 percent respectively. This was mainly due to the fact that Malaysia's external current account developed large surpluses, allowing a build-up of international reserves, Malaysian Treasury Report (2003). Also, unemployment declined and inflation remained low. The strong growth and a gradual easing of capital controls helped to improve investor confidence. The recovery of the economic performance was also accompanied by reduced vulnerability of the financial system and corporate debt restructuring practice. As a result of the Government's drive to revive the economic performance, the registered GDP growth in 2002 was 4.5%, after a marginal growth of 0.4% registered in 2001. In 2003, the economic growth was 5.6%, in 2004 it was 7.1% and in 2005 it was 5.3%, in 2006 5.5 % and in 2007 it was expected to have a growth of 5.7%, Malaysian Economic Report (2005/2006). This is attributed to continuing improvements in both domestic and external demand, growth in the manufacturing sector, higher growth of

the services sector to support the expansion in economic activities and the contribution of on-going public projects in the construction sector.

As global competition intensifies, performance becomes an important issue to companies. The two major forces that Malaysian businesses face are the rapid rate of technological change and increasing industrialization. The rate of change is likely to accelerate as further developments take place relating to the Multimedia Super Corridor (MSC). It has been widely suggested that the MSC will in time become Malaysia's "Silicon Valley" since its traditional palm oil estates are giving way to new, technology-based industries (<http://www.mdc.com.my>).

In Malaysia, the subject of corporate performance has recently become a matter of concern to decision-makers in both the private and public sectors. This is primarily due to the economic indicators of the high growth in gross domestic product, the low unemployment and the increasing level of company profitability and share prices in the Kuala Lumpur Stock Exchange, Malaysian Economic Report (2003). Also, awareness of this subject has been heightened recently due to Malaysia's acceptance of the Asian Free Trade Area (AFTA) Agreement in January 2004.

When the AFTA agreement was originally signed in January 1992, ASEAN had six members (Brunei, Indonesia, Malaysia, Philippines, Singapore and Thailand). Vietnam joined in 1995, Laos and Myanmar in 1997, and Cambodia in 1999. AFTA laid out a comprehensive program of regional tariff reduction, to be carried out in phases through to the year 2008. This deadline was subsequently moved forward to 2004 for Malaysia. Over the course of the next several years, the program of tariff

reductions was broadened and accelerated, and a host of "AFTA Plus" activities was initiated, including efforts to eliminate non-tariff barriers and quantitative restrictions, harmonize customs nomenclature, valuation and procedures, and develop common product certification standards, which could be certified by the International Organization for Standardization (ISO).

1.2 Purpose of the Study

The main purpose of this study is to determine and analyse empirically the factors that affect performance in Malaysian companies. In particular, the study analyses company attributes such as size, capital structure, age, growth, industrial category and ISO registration and correlates them with corporate performance measures. Therefore, the aims of this study are threefold:

1. To analyse company attributes and corporate performance measures used by previous studies.
2. To identify which factors: size, capital structure, age, growth, industry category and ISO 9000 registration, that determines the corporate performance of Malaysian companies through statistical analysis of secondary data.
3. To discover the impact of ISO 9000 registration on the financial and non-financial performance which include leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and comparative business outcome of Malaysian companies through questionnaire survey.

The results of this study will help the corporate managers to concentrate their limited economic resources to certain company attributes and to specialize on the main company attributes that could make their company perform better. As for investors, they can narrow down their investment portfolio on companies that have certain attributes which could produce a better return. Also, the findings of the study may be used as guidelines in advancing the relevant recommendations to help decision- and policy-makers engaged in strategy formulation and implementation to improve and enhance the performance of their companies, especially towards “AFTA Plus”.

1.3 Justification for the Study

The overall research question addressed by this study can be stated as follows: Why do some firms perform better than their counterparts? To answer this main research question, six important company attributes were selected based on the literature review that has been made. These company attributes include the size of the company based on total assets, company’s capital structure, the age of the company (years since incorporation), the growth of the company, measured by growth in sales, the industry category of the company, and lastly and most importantly, the International Organization for Standardization (ISO) registration of the company, which is used to identify configurations from a sample of 162 firms over a four-year period (1998-2001).

In order to achieve the objectives of the study, as mentioned above, this study was guided by seven main hypotheses related to corporate financial performance measures, which include Return on Assets (ROA), Return on Equity (ROE), Working Capital (WC), Cash Flow (CF), Return on Sales (ROS), Economic Value Added

(EVA) and Tobin's Q (TQ). Besides that, for non-financial performance measures, another seven hypotheses were created base on leadership management, managing information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and business outcome.

1.4 Methodology

This study was carried out in two stages. First, as this study aims to identify factors that lead companies to perform better than their counterparts, a literature review on performance was conducted and six attributes of companies' internal and external factors were identified, which include company's size, growth, age, capital structure, industry category and ISO 9000 registration. In order to achieve the objective of the first part of the thesis, secondary data analysis was carried out, as in previous studies by researchers such as Gupta (1969), Porter (1979) and Corbett *et al.* (2002). The main sources for the secondary data analysis were gathered from the Kuala Lumpur Stock Exchange (KLSE), Malaysian Standard (SIRIM) and Corporate Information databases. Data for the years 1998-2001 have been used in this study. This time frame has been chosen in order to exclude the period before 1997, the year of economic crisis in Malaysia. The six main company attributes identified acted as independent variables, which were then regressed against seven selected corporate performance measures, which were selected based on the literature search, namely: Return on Assets (ROA), Return on Equity (ROE), Working Capital (WC), Cash Flow (CF), Return on Sales (ROS), Economic Value Added (EVA) and Tobin's Q (TQ). These corporate performance measures were used as dependent variables in the models created. Descriptive analysis was undertaken for all dependent and independent

variables, and correlation analyses were subsequently carried out between all the variables. After that, a linear multiple regression analysis was used to estimate the coefficients and the direction of relationships between the dependent and the independent variables in each of the models specified in this study.

This study also attempts to establish whether ISO 9000 registration has an impact on the performance of Malaysian companies. To achieve this objective, a T-test analysis was used in order to assess whether the mean scores for the selected company attributes and corporate performance measures of two groups (ISO and non-ISO companies) were statistically different from each other.

In the second part of this study, primary data analysis was carried out in the form of a questionnaire survey on samples of ISO and non-ISO 9000 registered companies. Studies that have used questionnaire surveys include Powell (1995), Carr *et al.* (1997), Jeng (1998) and Quazi and Padibjo (1998). In order to establish whether ISO 9000 registration has an impact on companies' non-financial performance measures, seven non-financial performance measures were selected based on the literature review, namely leadership management, managing information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and comparative business outcome. Non-parametric statistical test were used, that is, the Mann-Whitney test and Kruskal Wallis test. This was due to the fact that relatively small amounts of ordinal data were collected from the questionnaire survey as a result of poor response rates from the respondents to the survey.

1.5 Scope and Limitations of the Study

With regard to the secondary data analysis, data on the 162 companies for the years 1998-2001 were used in this study. This time frame has been chosen due to the 1997 economic crisis in Malaysia and the fact that starting from 1998, the Malaysian government has taken steps in order to restore the economic performance of the country. Secondary data from the Kuala Lumpur Stock Exchange database, Malaysian Standard database and Corporate Information database were used in the study.

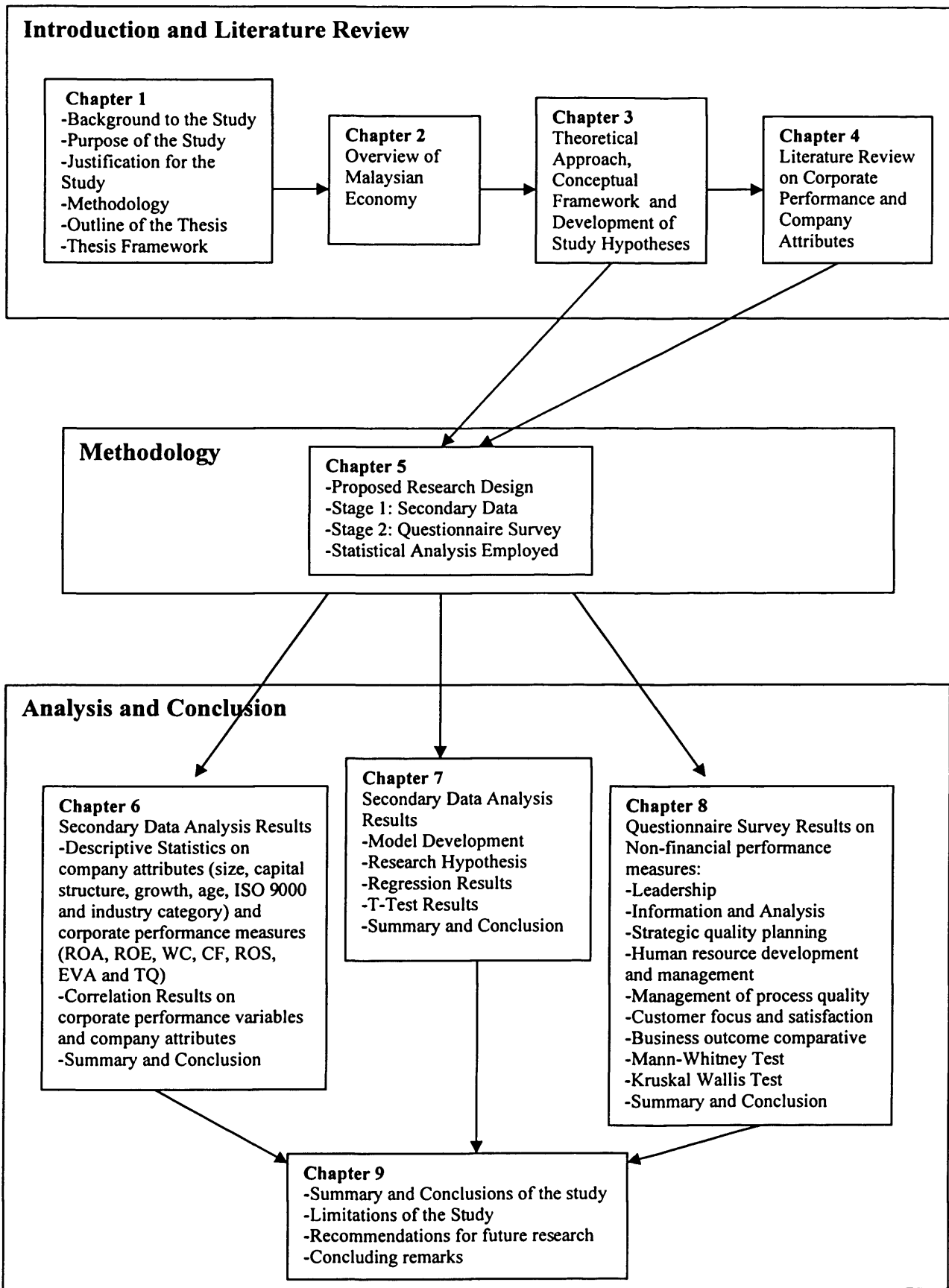
As for primary data analysis, questionnaire survey was being conducted on the same sample of 162 companies that was selected for secondary data analysis. The same sample of companies was selected in order to determine whether the analysis carried out on the secondary data corresponds with the analysis undertaken on the primary data, especially with regard to ISO 9000 implementation.

1.6 Outline of the Thesis

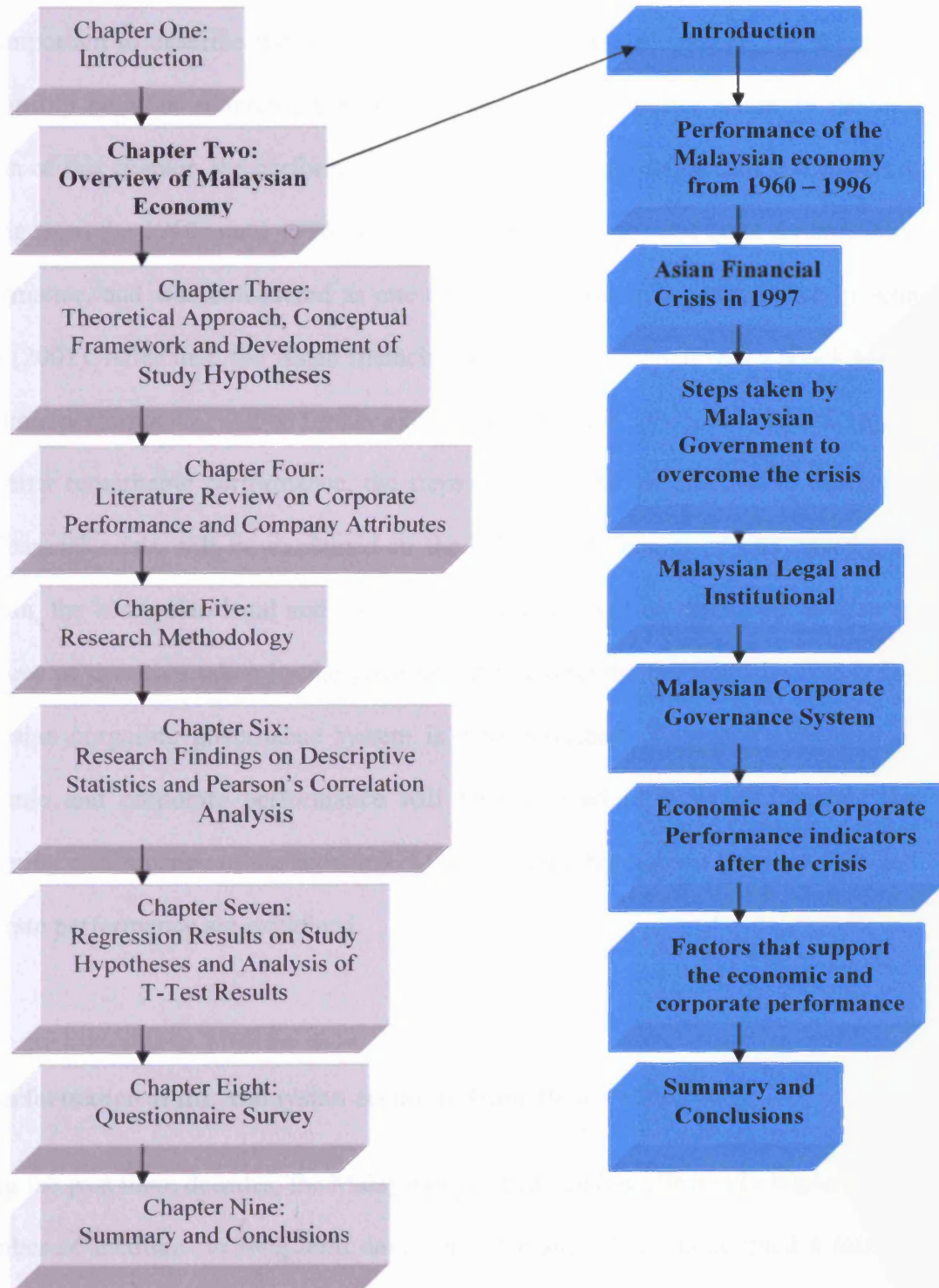
Starting with Chapter One, the introduction will discuss the background, purpose and justification of the study. In this chapter, the methodology for the research is presented and the scope and limitations of study are explained. The outline of the thesis is being summarised together with the thesis framework. In Chapter Two, an overview of the Malaysian economy is explained, and the performance of Malaysian economy from 1960-1996 is highlighted; the Asian financial crisis in 1997 is explained, along with the steps taken by the Malaysian government to overcome the crisis; the Malaysian legal and institutional structure are described, together with the Malaysian corporate governance system. Then, economic and corporate performance indicators after the crisis were being explained and lastly, factors that support the

economic and corporate performance are presented. Chapter Three explains the theoretical approach, conceptual framework and the development of study hypotheses. Measures of financial corporate performances used in the study together with factors influencing financial performances were being further clarified. Chapter Four contains a literature review on the corporate performance in developed and developing countries; and the literature review on company attributes. Chapter Five focuses on the methodology of the study, which consists of two parts, firstly, secondary data collection, and secondly, the questionnaire survey. Chapter Six will explain the secondary data analysis results, presenting the descriptive statistics and correlation analysis on the dependent and independent variables selected based on the conceptual framework design. Chapter Seven presents the findings of the research hypothesis created with regard to the financial performance measures and company attributes, together with the regression analysis and t-test results, so as to achieve the objectives and enhance the findings of the study. Chapter Eight presents the findings of the questionnaire survey based on the hypotheses created on the non-financial performance measures where the Kruskal-Wallis and Mann-Whitney test results were presented. Lastly, Chapter Nine concludes the study, presenting a summary and conclusion of the research, the implications for theory and practice, the limitations of the study and suggestions for further research.

1.7 Thesis Framework



The Thesis Structure



Chapter Two

Overview of Malaysian Economy

2.1 Introduction

As this thesis is about the corporate performance evaluation of Malaysian companies, it is important to describe the performance of the Malaysian economy, as there is a relationship between economic performance and company performance. In the first section of this chapter, the performance of the Malaysian economy will be described, starting from the 1960s until 1996, during which period it showed quite a remarkable performance, and was considered as one of the best economic performance in Asia Jomo (2001). After that, the Asian financial crisis in 1997, which was a shock to the economic performance, will be further explained in the next section. In order to regain its former remarkable performance, the steps taken by the government to overcome the financial crisis will be explained in the subsequent section of this chapter. In addition, the Malaysian legal and institutional structure will be described, to give an overview of the steps taken by the government to overcome the financial crisis. The Malaysian corporate governance system is also described. Then, the indicators of economic and corporate performance will be presented in order to illustrate the recovering performance of the economy. Lastly, factors that support the economic and corporate performance are explained.

2.2 Performance of the Malaysian economy from 1960 – 1996.

During the past three decades, the Malaysian government has effectively implemented a number of medium- to long-term development plans. Malaysia adopted a *laissez-faire* economic system in the 1960s. Malaysia is a constitutional democracy with a

population of 25.5 million, of which 70 per cent are below the age of 35 and 58 percent are urban residents.¹ The private sector constituted the engine of growth, while the government sector tended to undertake investment in social and physical capital, Rahman (1998). The inception of the New Economic Policy (NEP) in 1971 saw a more interventionist role of the government in the economy. The primary objective of the NEP was national unity and this was to be achieved via a two-pronged strategy of eradication of poverty and overcome the identification of occupation with ethnicity. A former British colony, Malaysia is distinguished by its multi-ethnic social structure consisting of approximately 60 per cent Malay Muslims, formerly associated with rural peasant agriculture, 30 per cent Malaysian Chinese, associated with urban commerce and 10 per cent Malaysian Indians and others, the Indians being formerly associated with rural plantation labour, Smith and Abdullah (2004). Since the NEP era, Malaysia has been highly dependent on foreign direct investment (FDI), and hence foreign management software, Smith (2003) and did achieve rapid economic growth from 1960 until 1996.

The Malaysian economy experienced positive growth of 1 per cent in 1986, 5.4 per cent in 1987, and an acceleration to 8.9 per cent in 1988, Ghazali and Alias (2001). In fact from 1998 until prior to the economic and currency crisis in mid-1997, Malaysia achieved growth rates in excess of 8 per cent each year. This achievement has been a remarkable one, according to Ghazali and Alias (2001). During the same period per capita income increased 2.5 times. Sound macroeconomic management and an outward-oriented growth strategy facilitated the social and economic development. Furthermore, according to Ghazali and Alias, the positive results achieved are: low inflation rates, high savings rate, low external debt, investments in human capital,

¹ See <http://www.statistics.gov.my/English/framesetKeystats.htm>

high inflow of foreign direct investment, and good physical and social infrastructures. The sustained growth of the Malaysian economy over the period from 1970 to the mid-1990s may be attributed to the country's wealth in natural resources, a predominantly outward-oriented growth strategy, generally prudent economic and financial management, and not least, social and political stability, Rahman (1998).

Under the NEP, liberalization measures were introduced across the board that helped to improve competitiveness and productivity. Much of the investment went into electronics and other export-oriented industries, while a large portion also went into non-tradable sectors including capital-intensive infrastructure and the real estate sector, Malaysian Treasury Report (2002). Malaysia is amongst the world's largest producers of semiconductors, video cassette recorders, and room air-conditioners, with these accounting for 44 per cent of manufacturing output in 1994, Ling and Yong (1997). Malaysia was considered the best "development success story" among the second-tier newly industrializing economies in East Asia, Athukorala (1998). Rapid economic growth was accompanied by rising living standards, and improvement in the distribution of income, ameliorating the twin problems of poverty and racial imbalances. Malaysia's strong economic performance continued during the 1990s prior to the currency crisis in 1997. Real output growth averaged approximately 8.5 percent a year; unemployment was below three percent; prices and exchange rate remained stable; and international reserves were robust. The country's per capita income had risen sharply from US \$304 in 1965 to US \$4,465 in 1996, Malaysia Economic Report (2003). According to Bank Negara Report (1997) Malaysia is considered one of the highest growth rates country in the region – nearly 8.0 per cent in 1997 – relatively low debt service ratio of 5.7 per cent, healthy foreign exchange

reserves amounting to nearly \$22 billion, high savings rate amounting to 42 per cent of GDP, low inflation rate of 2.7 per cent, fiscal surplus, low unemployment, and a regulatory structure that had historically taken an aggressive stand against capital outflow and currency speculators, Bank Negara Annual Report (1997: 49). All these factors contributed to the fact that the country's investment ratio was among the highest in the Asian Free Trade Area (AFTA), region which includes Singapore, Thailand, the Philippines, Indonesia and Vietnam resulting in a dramatic shift in the structure of the economy from one of agriculture and mining to a growing reliance on manufacturing, Meesok (2001).

The Malaysian corporate sector is large and has been characterized by rapid growth, mainly driven by increasing stock prices and a high level of new equity issues and privatisations during the 1990s. According to Bhattacharya (2001), lured by high returns, strong economic growth and financial sector liberalization in Asia, institutional investors and hedge funds had poured billions of dollars into the emerging markets of Asia during the early 1990s. Total net private capital inflows (including foreign direct investment, portfolio investment, and bank lending) to the Asian emerging markets increased substantially, from \$19 billion in 1990 to \$110 billion in 1996. By mid-1997, about a quarter of the stock in the Kuala Lumpur Stock Exchange was in foreign hands. The total capitalization of the Kuala Lumpur Stock Exchange, including financial and non-financial corporations on the main and second boards, amounted to RM424 billion (US\$112 billion) or 125 percent of GDP at end of 2000, Khatri (2001). The International Finance Corporation's *Emerging Stock Markets Factbook 1999* ranked Malaysia's market capitalization at end of 1998 as the

twenty-third largest in the world; its total value traded was twenty-ninth highest in the world; and by number of listed companies, Malaysia ranked fifteenth in the world.

According to Khatri (2001) the number of listed companies in Malaysia increased from 285 to 795 by the end of the year 2000. The number of listed companies grew by an average of fourteen percent for the period 1990-96. Market capitalization grew by an average rate of over 40 percent in the same period. By the mid-1990s, with a market capitalization of around US\$200 billion, the Kuala Lumpur Stock Exchange (KLSE) was the third largest in the Asia-Pacific Region after Tokyo and Hong Kong. There were days when the turnover on the KLSE was higher than that in New York, Athukorala (1998). In relation to GDP, stock market capitalization in Malaysia (over 300 per cent of GDP) was substantially higher than any other significant economy, Henderson (1998, p.21).

The growth was driven mainly by increases in stock prices, but also by new equity issues and privatisation. Privatisation of infrastructure projects and Government companies was undertaken with a view to reduce Government involvement in economic activities, to reduce the size of the public sector, to improve efficiency and quality of service, and to increase the Bumiputra participation in business, Ghazali and Alias (2001). Malaysia was at the forefront of Asian privatisation, which accounted for a large portion of the total new equity raised in the country, and also constituted around one-third of the total revenue from privatisation in the region, Harvey and Roper (1999). In early 1991, Malaysia published its privatisation master plan, which had the objective of privatising key industries, and proceeded with

Tenaga Nasional, the national electricity company, one of the largest privatisations to date in Asia at US\$1.2 billion. Between 1992 and 1995, privatisation revenue averaged three percent of the annual GDP, Ghazali and Alias (2001).

Besides that, globalization has yield benefits to the Malaysia economy, according to Bhattacharya (2001) the integration of global financial markets, brought about by deregulation and liberalization, advances in information technology, introduction of around-the-clock trading, and use of innovative financing tools such as derivatives, results in increased efficiencies from a freer flow of capital across national borders.

Khatri (2001) published a report comparing the corporate performance of Malaysian companies with other countries that had been affected by the currency crisis, including Indonesia, Korea, Philippines, Taiwan and Thailand, before the crisis. Among the measures used are net profit margin and return on assets. He found that the corporate performance of Malaysian companies seemed relatively healthy compared to the other crisis countries. However, Claessens, Djankov, and Xu (2000) compare real return on assets, which they define as return on assets less the inflation rate, in a sample of Asian countries and the United States and Germany. The findings reveal that Malaysia's average for the period of 1988-96 was 6.3 percent, ranking eighth in the sample of 36 – greater than that of either the United States (5.3 percent) or Germany (4.7 percent).

Alternatively, Harvey and Roper (1999) report statistics on the entire distribution of returns on equity and returns on invested capital from firms' level ratios for a number of emerging markets. They determine that the median of these indicators had clearly

declined in Indonesia and Thailand, and less clearly so in Korea, the Philippines and Malaysia. Harvey and Roper estimate the buy-and-hold returns accruing to investors between January 1990 and December 1996 for various countries and conclude that Malaysia and the Philippines outperformed the World Morgan Stanley Capital Index, while the U.S. Morgan Stanley Capital Index had both a higher return and lower volatility (or risk) than all of the Asian countries. They also found that leverage in the corporate sector, measured as a ratio of total debt to equity, was rising rapidly in Malaysia before the currency crisis period, but has stabilized after the crisis.

Besides that, according to Bank Negara Report (1996, 1997), both in 1996 and 1997, Malaysia had a high economic growth that was above its potential output, rising wage pressures in a tight labour market, supply constraints especially in infrastructure, a large and persistent current account deficit amounting to more than 5 per cent of GNP that was financed by massive short-term capital inflows from abroad, asset price inflation due to overheated equity and property markets, a banking sector heavily dependent on making loans to the speculative property and equity sectors, a slowdown in exports caused mainly by competition from lower-cost neighbouring countries, and high investment rate in excess of the domestic savings rate that had to be financed primarily by foreign capital, Bank Negara Annual Report (1996), Foreword; and Annual Report (1997: 35, 95).

2.3 Asian Financial Crisis in 1997

The Asian financial crisis that happened in 1997 has affected the equity market of the Malaysian economy where most of the companies' equity or share prices went down drastically, from 1300 points of the stock market index in February 1997, to 262

points on 2 September 1998, Jomo (2001). The Malaysian economy experienced the regional shocks of 1997 – monetary crisis – precipitated by the devaluation of the Thai Baht in July 1997. The so-called contagion effect triggered Malaysia's economic downturn, Ghazali and Alias (2001). Ghazali and Alias further commented that, even though the economy had achieved tremendous economic growth for about a decade prior to the crisis, the underlying structural weaknesses of the economy led to several outcomes viz. loss of investor and consumer confidence, capital outflows, asset price deflation, increase in interest rates, and more significantly, a “marked” depreciation of the Malaysian Ringgit. Similar to its neighbours, Malaysia went into a currency crisis, but its low level of external debt enabled it to avoid a major external debt crisis. The Asian financial crisis has been highlighted by Levine (1996) where high and rising ratios of financial assets and liabilities to GDP have been seen as beneficial to the economic development of developing countries, but the higher they rise, the farther they can fall when there is serious loss of confidence in the viability of the financial institutions that hold those assets and liabilities, and they can also create the preconditions for a dramatic financial collapse, especially in the liberalized world.

In addition, there are two views on the causes of the crisis, Bank Negara Annual Report (1998: 11-16). The first view, propounded by the International Monetary Fund (IMF), the World Bank, Paul Krugman and Rudi Dornbusch, attributed the crisis primarily to domestic policy weaknesses. These weaknesses included overheated economies, fixed exchange rates, exorbitant public sector spending, large current account deficits, speculative property and stock markets, poor risk management techniques resulting in poor-quality investments and non-performing loans, unhedged borrowing by local corporations of short-term foreign capital denominated in foreign

currencies, inadequate financial sector supervision, and lack of transparency in data. The second view, propounded by Jeffrey Sachs and regulators in Malaysia and Hong Kong, blamed the crisis primarily on external factors, particularly on weaknesses in the international financial system. They maintained that the economic fundamentals in the affected Asian countries were basically sound. The crisis was hastened by massive movements of portfolio capital by relatively unregulated and highly leveraged institutional investors that overwhelmed small financial markets in Asia. When these investors panicked, the results were capital flight aggravated by the mismatch of maturities and currencies of Asian borrowers, Bhattacharya (2001).

According to Khatri (2001) despite the good aspects of the privatisation plan conducted by the Malaysian government before the crisis, there were, however, signs of stress as exports decelerated and a large current account deficit developed in the context of a gradual appreciation of the effective exchange rate. While the investment-led growth strategy was successful in raising output and income, the quality of investment had deteriorated. This eventually led to major balance sheet weaknesses in the banking and corporate sectors, exposing the Malaysian economy to the financial crisis.

However, Jomo (2001) reported that the Malaysian exposure to foreign bank borrowings was relatively much less than that of the economies that were most adversely affected by the crisis, such as Thailand, Indonesia and South Korea. He found that although foreign banks' borrowings rose rapidly during 1996 and the first half of 1997, exposure to foreign loans was still relatively lower in Malaysia.

Consequently, Malaysia's economic vulnerabilities increased significantly from early 1997 through to the period following the onset of the crisis in mid-1997, as market confidence increasingly diminished along with the rest of the region, Olin (2001). According to Bhattacharya (2001), in the aftermath of the Asian crisis, total net private capital inflows to the emerging markets in Asia fell dramatically to only \$13.9 billion in 1997, representing a substantial decline of about \$67 billion. In Thailand, Malaysia, Philippines, Indonesia, and Korea, net inflows of \$73 billion in 1996 were replaced by net outflows of \$11 billion in 1997. In the fourth quarter of 1997, international banks reporting to the BIS reduced their outstanding claims to Asia by \$27 billion, and international bank loans to non-banks in Asian emerging markets fell by more than \$9 billion. Malaysia net assets of international banks reporting to the BIS fell from \$3.2 billion in the third quarter of 1997 to negative \$1.9 billion in the fourth quarter of 1997, IMF, International Capital Markets (1998: 12-14) and BIS Annual Report (1998: 133).

The decline of the Malaysian stock market index, after reaching its peak of around 1300 points in February 1997, was greatly exacerbated by the currency crisis as well as its repercussions for the banking system. The stock market had fallen by about four-fifths (80 per cent) to reach its low of 262 points on 2 September 1998, on the day after the announcement of capital controls by the government, Jomo(2001). With the relatively much higher stake of foreign portfolio investors in the Malaysian capital market, especially on the main board of the Kuala Lumpur Stock Exchange (KLSE), came its greater collapse. Evidence of this was demonstrated by large portfolio outflows and equity, and a substantial decline in property values. The Malaysian Ringgit (RM) inevitably came under pressure as currency traders took speculative

positions in the offshore RM market in anticipation of a large devaluation, and the offshore RM interest rates also increased markedly relative to domestic rates, Olin (2001). Olin further elaborated that, this upward pressure on domestic interest rates intensified outflows of RM funds and exacerbated banks' liquidity problems and overall financial distress. Essentially, the Malaysian corporate sector experienced significant loss of wealth as a direct result of sharp falls in the value of real estate and equities used as bank collateral. Corporate incomes and cash flows also declined, leaving some corporations unable to service their debt.

2.4 Steps taken by the Malaysian Government to overcome the crisis

In order to overcome the currency crisis, the response of the Malaysian central bank, Bank Negara, was to defend the currency, the Malaysian Ringgit (RM), at all costs, including maintaining high interest rates, and intervening in the spot foreign exchange market. The Bank Negara increased the overnight and three-month interbank rates from 7.5 per cent and 7.9 per cent to 40 per cent and 8.6 per cent respectively on 10 July 1997, Bank Negara Annual Report (1997: 57, 69) and Quarterly Bulletin Third Quarter (1998: 217).

Besides that, the Malaysian government responded to the crisis by invoking standard macroeconomic stabilization measures during September 1997 and in February 1998. The Malaysian authorities took several steps such as limiting bank loan growth, strengthening prudential standards for non-performing loans of banks, increasing bank reporting requirements, initiating cutbacks in government expenditure, deferring implementation of large non-essential projects, and raising import duties on consumer

goods, Bank Negara Annual Report (1998) and Foreword; Quarterly Bulletin Third Quarter (1998: 216)

In addition, the Malaysian government established the National Economic Action Council (NEAC) in January 1998. The NEAC then published a comprehensive report called The National Economic Recovery Plan in August 1998. The principle objectives of the plan were to stabilise the Malaysian Ringgit, to restore market confidence, to maintain financial stability, to strengthen economic fundamentals, and to preserve equity, Ghazali and Alias (2001). The initial response of the government to the currency crisis was twofold. First, interest rates were raised and second, fiscal policy was tightened in an attempt to anchor market confidence in the financial system. In early 1998, the fiscal policy was further revised to a more expansionary stance Malaysia Treasury Report (1999). This policy mix proved to be insufficient to correct external imbalances and bring about the needed economic adjustment. The effects of the crisis and the associated economic contraction were far worse than anticipated. Domestic imbalances quickly emerged as growth rates slowed and then turned sharply negative in early 1998, Tamarisa (2001). Market confidence faltered amid adverse regional developments and uncertainties. In August 1998, the stock market had fallen to its lowest level in recent history. As a result, in September 1998, the government implemented a policy designed to insulate monetary policy from external volatility. Measures included an exchange rate pegged to the U.S dollar (RM3.80: US\$1), - prior to the currency crisis (i.e. at end of second quarter 1997), the exchange rate was RM2.52: US\$1 - and selected exchange and capital controls, complemented by a fiscal stimulus package that stepped up capital spending. The pegging of the U.S dollar was important, as United States is a major trading partner

for Malaysia and the U.S. dollar is given a dominant weighting in the basket of currencies to which Malaysia has pegged its exchange rate, Yap (2002) and Rajan (2002). According to Ibrahim (2003), Malaysian exports to the United States as a proportion of total exports were 16.5 per cent in 1987, while those to Singapore and Japan were 18 and 19.5 per cent respectively. However, by 1994, Malaysian exports to the United States ranked first. In 2001, exports to the United States made up 20 per cent of total exports, while exports to Singapore and Japan stood at 16.9 and 13.3 per cent respectively. Apart from this increasing importance of the United States for Malaysian exports, the United States is also one of the major sources of Malaysian imports and foreign direct investment. The importance of the U.S economy is further reflected in the fact that the U.S dollar is the main currency used in international transactions, Ibrahim (2003). According to Yap (2002), 74 per cent of Malaysia's exports and 65 per cent of its imports in 1997 were dominated in U.S. dollars.

The pegging of the US dollar, capital controls and other measures taken by the government permitted the subsequent lowering of interest rates. This attracted worldwide attention, as the Malaysian approach was then deemed to be anti-IMF (International Monetary Fund), which at that time was perceived to be prescribing the right 'medicine' in the form of higher interest rates and fiscal restraints for the crisis-affected economies of South Korea, Thailand, Indonesia and Malaysia, Lin (1999). Lin further clarified on the findings of the survey of about 80 finance directors of major corporations in Malaysia were carried out in late 1998. Among the findings, more than 70 per cent of respondents were pleased with the capital control measures, especially the pegging of RM3.80:US\$1 exchange rates and the lowering of interest rates. Many of the respondents said they were forced to suspend business when

exchange rate fluctuations were volatile. With external trade accounting for more than 160 per cent of GDP, a wide swing in the foreign exchange environment would sharply increase these manufacturers' hedging costs.

On the other hand, the capital controls that have been implemented by the Malaysia government had a temporary adverse effect on Malaysian access to international capital markets and short term financing, according to Tamarisa (2001). Following the introduction of the capital controls in September 1998, the international rating agency downgraded Malaysia's credit and sovereign debt ratings. In order to overcome this, the government has taken steps to increase the funding required for Malaysia by launching a US\$1 billion sovereign bond issue in May 1999, the first time it directly tapped international investors since horrifying them by imposing exchange controls. It was three times oversubscribed. Furthermore, Japan also increased its funding for Malaysia: in addition to the pledged US\$500 million loan from JEXIM and US\$560 million in government-guaranteed loans, Japan provided up to US\$2.5 billion in standby, short-term financing under the Miyazawa plan, Business Asia (1999).

Furthermore, the government also pursued fundamental reforms in the financial and corporate sectors, including a bank consolidation program and an upgrading of prudential regulation and supervision in line with international best practices, National Economic Recovery Plan (1998). Such prompt and successful actions by the government reduced the adverse impact of the financial crisis on the real economy.

Accordingly, the Malaysian Finance Minister, Daim Zainuddin, pronounced that the financial crisis was over when presenting the 2000 budget speech. He said that the

strong recovery was supported by the rapid expansion in output and export of manufactured goods, in addition to the recovery in the construction sector. This is also due to the increased in domestic demand supported by both public and private expenditure, Jordan (2000).

2.5 Malaysian Legal and Institutional Structure

The legal and institutional structure of the non-financial corporate sector in Malaysia is mainly governed by three acts: the Companies Act, 1965; the Securities Industry Act, 1983; and the Securities Commission Act, 1993. The Kuala Lumpur Stock Exchange's listing requirements and rules also play an important role in regulating investors, brokers and issuers. The Companies Act deals with the pre-incorporation, incorporation, operations and duties of companies and their directors, as well as the rights and obligations of shareholders and directors. The Securities Industry Act and Securities Commission Act make up the legislative and regulatory frameworks of Malaysia's capital markets, under the authority of the Ministry of Finance. The powers of the Kuala Lumpur Stock Exchange were recently strengthened through amendments to the Securities Industry Act, such that the exchange may now take action against directors and any person involved with its listing requirements. The legal and institutional structure has affected the study where it involves the industry structure which is one of the independent variables used in the study. It is also due to the turnaround performance of companies that are being helped by the government through Danaharta, Danamodal and Corporate Debt Restructuring Committee that were being established by the government in order to overcome the financial crisis.

Meanwhile, relatively successful early policy responses to the financial crisis may well have served to contain the potential spread of a banking and financial crisis in Malaysia. Danaharta, an asset management company, was established in June 1998 with the objective of removing large non-performing loans (NPLs) from the worst affected banks and financial institutions. Danaharta has acquired a total of RM23.1 billion NPLs, amounting to 31.8 per cent of the total NPLs in the banking system. The level of NPLs has been significantly reduced to 12.4 per cent, Mahani (2000). The government hopes that this will allow bankers to focus more on lending, which is a key ingredient to restarting the economy, rather than debt collecting. Although loan approval seems to be rising, bankers, who are generally facing rising non-performing loans and lack of qualifying borrowers, were still very cautious in their lending at this time. Loan growth for 1998 was only 1.3 per cent, far short of the 8 per cent target the authorities recommended, Lin (1999).

Another companion agency, Danamodal, was established with the aim of recapitalization of decapitalised banks, to restore liquidity to the banking system, Jomo (2001). Danamodal has injected RM6.4 billion into 10 financial institutions, pre-empting potential systematic risks to the financial sector. As a result, the capital adequacy ratio of the banking system was increased to 12.7 per cent, Mahani (2000). This has also helped maintain the capital adequacy ratio of commercial banks (13.6 per cent), finance companies (17 per cent) and merchant banks (17 per cent) – above the internationally recognized standard of 8 per cent, Lin (1999).

Malaysia has moved to another stage of the restructuring process of its financial institutions. The restructuring of the financial system undertaken since the Asian

financial crisis and the subsequent successful consolidation of 54 domestic banking institutions into 10 banking groups has further increased the resilience of the financial system. The 10 domestic banking groups with a much larger capital base are able to provide a broader range of services and are more efficient in terms of cost and management. Financial stability has also been enhanced through strengthened supervision on a consolidated basis with an appropriate risk management framework in financial institutions. Early warning systems are in place to detect emerging risks and the implementation of prompt corrective measures, Anonymous (2002).

The Malaysian banking system was awash with liquidity, with the excess funds mopped up by the Central Bank via the interbank market rising from \$10.6 billion at the end of December 2001 to \$13.4 billion by the end of June 2002. Corporate profitability is set to improve more significantly as utilization rates rise from low levels and with a favourable monetary environment, and a brighter outlook for the equity market is predicted. As the health of the corporate and banking sectors are intertwined, restructuring of corporations and corporate debts to improve efficiency would ensure that viable companies continue to receive financing, Anonymous (2002).

According to Jordan (2000), the Corporate Debt Restructuring Committee (CDRC), set up in August 1998 to help Malaysian companies reorganise debt, received 67 applications for debt restructuring, amounting to RM36.6 billion. The ultimate objectives of corporate restructuring will enhance process and management efficiency, focusing on managerial accountability and increasing transparency. The CDRC had already restructured RM14 billion worth of debt for 19 companies, while

13 applications were withdrawn or rejected by the committee because of non-viability. In order to restore foreign investors' confidence, it is important to ensure that the use of public funds is kept to a minimum, as shareholders should bear the brunt of excessive 'hair cuts' for their mismanagement decisions, Anonymous (1999). The CDRC terminated its activities in July 2002. Restructuring under the CDRC, as well as under private initiatives and new corporate governance practices, has created a stronger Malaysian corporate sector which is now better positioned to compete in the more competitive global environment.

2.6 Malaysian Corporate Governance System

The Malaysian corporate governance system has affected this empirical study through the attributes selected under this study which are the size of the company and the capital structure of the company. Most of these companies were involved in large amount of debt especially, Tenaga Nasional and Telekom, and these companies were assisted by the government in order to overcome their financial difficulties.

Malaysia has comprehensive laws relating to corporate governance, and the laws governing creditor rights are comparable to those of the developed countries. Malaysia, like the other crisis countries, is characterized by the insider system of corporate governance, in which there is a high degree of ownership concentration, cross holdings, and participation of owners in management, Khatri (2001). A few large corporations account for a significant proportion of financial assets and productive capacity in the country. Concentration also occurs at the level of stock ownership, which, given the large capitalization, is in the hands of relatively few

institutional and corporate investors, a situation that can lead to poor governance, Claessens *et al.* (1999). Also, the cross-holding structures can create incentives for double leveraging and therefore a multiplier effect in the sensitivity of corporate wealth to changes in the equity market, Kochhar *et al.* (1999). Corporate governance relates to ways in which investors and owners (principals) oversee managers who run the firms (agents). There are essentially two main systems of corporate governance, referred to as the insider (most other countries, including continental Europe and Asia) and outsider systems (mainly the United Kingdom and the United States). The insider system is characterized by the following features: there is a high concentration of ownership; the corporate sector has controlling interests in itself; the number of listed companies is relatively small; the capital market is illiquid because controlling blocks are held rather than traded; there are large number of holdings or interlocked companies acting to deter outsiders from acquiring control; and major shareholders typically also play an active role in management and have the decisive vote in major decisions. La Porta *et al.* (1998) find the average share of common stock owned by the largest three shareholders in the largest companies to be 54 percent in Malaysia, 46 percent in Thailand, 20 percent in Korea, and 18 percent in Japan, compared to less than 15 percent in the United Kingdom and the United States.

While corporate governance and accounting standards are also good, enforcement and actual practice have been weaker, Khatri (2001). The Financial Reporting Act of 1997 was designed to address this issue by giving the force of law (i.e., requiring all companies to comply) to the accounting standards approved by the national accounting body, the Malaysian Accounting Standard Board. Most of the accounting standards approved by this board are based on International Financial Reporting

Standards (IFRS). While progress with improving standards and adopting international best practices has been notable, the accuracy of financial data needs to be improved by bringing financial disclosure requirements into line with international best practices. The broader legal and institutional environment is strong, although transparency and accountability in the public sector need more attention, World Bank (1999). There are a number of alternatives for dealing with distressed corporations. The Companies Act allows creditors to petition the high courts to wind up a company if that company defaults on debt payments, and allows debtors to petition for court protection under Section 176 until a group of creditors (representing three-fourths of the outstanding debt) agree to a reorganization plan. Companies and creditors can also opt for voluntary out-of-court restructuring of the debt or, for companies with debt exceeding RM50 million and having more than three creditors, the voluntary out-of-court restructuring can be done through the Corporate Debt Restructuring Committee.

According to La Porta *et al.* (1998), Malaysia has fairly strong legal and institutional frameworks and laws relating to corporate governance, and those governing creditors' and shareholders' protection are comparable to those of developed countries.

2.7 Economic and Corporate Performance indicators after the crisis

As the secondary data were collected from 1998, which is after the financial crisis, Malaysia's economic recovery between the years 1999-2002 was among the strongest of the Asian crisis economies, led by buoyant world demand for electronic goods and supported by accommodating macroeconomic policies. Another important recovery indicator is consumer aggregate demand. Indicators of consumer demand came from

increased sales of consumer durables, such as vehicles and houses; and higher collection of sales tax, Mahani (2000). Malaysian monthly car sales more than doubled, from 5,724 units in February 1998 to 16,606 units in January 1999. Residential property prices in some areas have picked up as much as 20 per cent from their recent lows. More than RM3 billion (US\$790 Million) of properties were sold during the housing campaign in December 1998, Lin (1999). According to Jordan (2000), the low interest-rate environment has rekindled domestic demand, with car sales rising in January 2000 for the fourteenth consecutive month. Consumers are returning to finance companies and banks to finance the purchase of big-ticket items as interest rates have reached new lows. Car sales rose 19 per cent year-on-year in January 2000, to 21,906. Meanwhile, long-term direct investors have made significant strategic acquisitions in Malaysian companies: for example, in 1999, major corporations in the UK acquired more than RM4.2 billion (US\$1.1 billion) equity stakes in power, cement and telecommunications companies, Lin (1999). The external current account turned into large surpluses, allowing a build-up of international reserves. Malaysian international reserves in 1999 were US\$28 billion, an increase of US\$6 billion in a six-month period. Also, Malaysia recorded a massive current-account surplus of US\$9.2 billion in 1998, which is equivalent to 13 per cent of GDP, Malaysian Treasury Report (2003).

According to Khatri (2001) the corporate performance in Malaysia, which deteriorated notably prior to the currency crisis, recovered in 1999. He also found that some accounting measures of performance, such as financial ratios, indicate a relatively stable performance immediately after the crisis. He further reported that the corporate sector in Malaysia has benefited from the strong economic recovery and

low interest rates, and that accounting measures of corporate performance showed significant improvement in 1999.

The speed of recovery – certainly swifter than many predicted – was due to the high savings rate, relatively low public debt, docile labour force, relative political stability, and reasonable human resource base, Jomo (2001). It was also due to the declining rate of unemployment and the fact that inflation remained low. The strong growth and a gradual easing of capital controls helped improve investor confidence, Meesok (2001). Investors have put aside concerns about capital controls and longer-term structural problems; instead, they are focusing on Malaysia's growth rate, which is outpacing that of the other Asian countries. The recovery was also accompanied by reduced vulnerability of the financial system and corporate debt restructuring practice, Krysl and Moore (2001). According to one author, Anonymous (1999), the recovery was built on expansionary domestic policies, both fiscal and monetary, strong export performance, a revival of domestic investor and consumer confidence and some return of foreign capital, including portfolio investment. Malaysia has also achieved significant progress in terms of financial restructuring in the corporate sector, where the Corporate Debt Restructuring Committee (CDRC) has successfully completed the restructuring of 77 per cent of the total debt it accepted for restructuring by the end of May 2002. Standard & Poor's (the world's foremost provider of independent credit ratings, indices, risk evaluation, investment research data, and valuations) and Moody's (the leading provider of independent credit ratings, research and financial information to the capital markets) have upgraded Malaysia's investment grade rating outlook from "stable" to "positive" in early March and April 2002, respectively, on

account of the country's strong external balance of payments position as well as good progress in banking and corporate debt restructuring, Anonymous (2002).

The establishment of the National Economic Action Council and their ongoing efforts to revise the government capital control measures have undoubtedly begun to reverse foreign investors' sentiments, Jomo (2001, p.35). Foreigners and Malaysian investors were buying, partly in anticipation of the re-listing of the KLSE by Morgan Stanley Capital International (MSCI) index in May 2000, one of the indices used to track fund managers' performance. More than RM6.96 billion (US\$26.5 billion) flooded into Malaysia between January 5 and late February, according to Bank Negara, with most of that money going into stocks. Following the easing of controls and a strengthening of the domestic recovery 1999, Malaysia's outlook and ratings were upgraded, and the sovereign bond spread narrowed to a level comparable to those of Korea and Thailand, Tamirisa (2001).

The capital controls had a mixed effect on the equity market in 1998-2000. The introduction of a one-year holding period for portfolio investment and controls on international transactions in Malaysian Ringgit (RM), particularly on lending to non-residents, caused an influx of ringgit funds into domestic equities, while at the same time curtailing short selling and capital outflows, Tamirisa (2001). The new requirements on share trading, which were introduced in tandem with capital controls, temporarily hindered trading in American depository receipts for Malaysian companies. As a result, Malaysia's equity market rallied, outperforming other markets in the region during September 1998 – January 1999. Equity prices continued to rise in 1999, in line with the domestic and regional recovery. The market was largely

driven by local retail buying, in the face of controls on investment abroad by residents. The unification of the levy in the following September, along with the relaxation of controls on offers of credit and swap facilities to foreign stockbrokers, apparently had a positive effect on the market. The major boost came in early 2000 from the prospects for Malaysia to be reinstated in the Morgan Stanley Composite Indices. This effect was short-lived, however. Similar to other markets in the region, the Kuala Lumpur equity market turned in losses by end-2000, in correlation with U.S financial markets, particularly the NASDAQ, despite favourable domestic developments. Economic recovery and the improved market sentiment in other financial markets did not help to lift the futures market either. As a result, the average daily trading volume in the Kuala Lumpur Stock Exchange Composite Index Futures on the Kuala Lumpur Options and Financial Futures Exchange (KLOFFE) declined by 44 percent in 1999 and by a further 14 percent in 2000. Trading in three-month Kuala Lumpur Interbank Offered Rate futures contracts on the Commodity and Monetary Exchange of Malaysia (COMMEX) increased to a daily average of 180 contracts in 2000 from 101 contracts in 1998. This increase, however, was mainly due to improved liquidity in the underlying cash market and the decline in interest rates, which encouraged interest rate hedging. The reintroduction of the market-maker scheme in mid-August 1999 which had been discontinued in July 1998, also contributed to the market recovery. Trading was dominated by local financial institutions, and foreign participation declined to 1.2 percent in 1999 from 14 percent in 1998.

According to research conducted by Yoshino *et al.* (2003) on the effectiveness of capital controls and fixed exchange rates in improving economic welfare, analysis of

Malaysian data revealed that high exchange rates negatively affect Malaysian net exports and real GDP. They also found that by stabilizing the exchange rate and recovering monetary policy autonomy, capital controls and fixed exchange rates could lead to lower values of loss functions. This beneficial effect is stronger the more open the Malaysian economy.

The Financial Sector Masterplan (FSMP) and the Capital Market Masterplan (CMMP) provide blueprints to enhance the capacity of both the financial sector and the capital market to support domestic economic growth, as well as meet challenges of greater global competition. The FSMP, which was launched in March 2001, outlines the medium and long-term strategies for developing an effective, efficient and resilient financial sector. Phase 1 of the Plan focuses on enhancing domestic capacity and capability. The second phase concentrates on the transition towards a more competitive environment and finally towards greater international integration by 2007. The CMMP puts in place strategies to allocate and mobilize funds more efficiently to support the investment needs of the Malaysian economy, Anonymous (2002).

Furthermore, as Malaysian companies' involvement in globalization increased after the AFTA implementation in January 2004, international competition has intensified among the AFTA countries and globally; therefore, performance has become an important issue for Malaysian companies. Besides that, another two major forces being faced by Malaysian businesses are the rapid rate of technological change and increasing industrialization. The rate of technological change is likely to accelerate as further developments take place relating to the Multimedia Super Corridor (MSC).

However, it must be remembered that although the Malaysian economy has witnessed progressive development in the last few years, most Malaysian industries are still using traditional financial accounting and performance measurement methods that were developed for an environment of arm's-length transactions using primarily tangible assets such as buildings and equipment, Bontis *et al.* (2000). The knowledge-based business environment that Malaysia and most other countries in the region are currently developing requires a new model (nomenclature) that encompasses intangible assets. In this case, a new performance measurement model should receive increased attention.

2.8 Factors that Support the Economic and Corporate Performance

As this thesis is about the determinants of the corporate performance of Malaysian companies, it is advisable to look into the factors that support the economic and corporate sector which affects the performance of the companies. According to Bank Negara Report (2001), the fundamentals that allowed Malaysia to recover within a short period of time from the major economic contraction in 1998 included the following factors: Malaysia had diversified its economic structure over several decades to become less vulnerable to external shocks. The current account surplus remains robust, lending strength to the balance of payment. For the year 2001, the current account surplus was 6 percent of GNP. Inflationary pressure was contained in the region of 2 percent, thus allowing monetary policy to remain accommodative to reinforce the fiscal measures. Low levels of external debt further reduced vulnerabilities to external developments. A total of US\$4.2 billion was repaid in the year 2000 by both the private and public sectors. External debt declined to 50.5 percent of GNP as at end-2000, from 57.8 percent in 1999. The high savings rate not

only provides a large pool of domestic liquidity for capital formation, but also allows for pro-growth measures to raise consumption spending. The rate of savings in 2000 was 39.5 percent of GNP. The fiscal position is strong, with the outstanding debt of the government contained at 37 percent of GDP in 2000. The Malaysian banking sector has strengthened and become more resilient with enhanced asset quality, higher capitalization and improved profitability. Malaysia has a high-grade infrastructure that has been put in place during the high growth years without resulting in high external indebtedness. There is full employment, with the unemployment rate at 3.1 percent in 2000, and a high level of labour mobility. Lastly, overall, Malaysia has a high degree of policy flexibility for effective management of the impact of the external slowdown on the economy.

Besides that, among the main drivers behind Malaysia's economic prosperity are its high savings rate and high direct investment. Both these attributes are helped along by pro-economic government practices. A fairly open economy and free trade access to US and European markets have definitely played a role in propelling Asian economies along the road to success, Jomo (1998).

However, according to Jun (1999), Asian high economic growth was due to, first, the high rate of savings in the region, including Malaysia, which had savings rate of around 30-40 percent of GDP. In 1998, Malaysia's savings rate was recorded at 42.2 percent, Bank Negara Malaysia (2001). Secondly, during the period from 1990 to 1996, the region experienced an influx of direct investments totalling US\$306.7 billion. Furthermore, the inflow of short-term funds from overseas surged amid the progress of deregulation of the financial sectors and the establishment of stock

markets. During the period from 1990 to 1996, US\$330 billion in bank loans as well as US\$54 billion in portfolio investments flowed into the region.

In addition to this, it should be noted that the savings by the government have worked to supplement private savings in Malaysia. Malaysia's saving rate has long been stable at a high level, Jomo (1998) through such government complementation. The governmental savings are chiefly composed of the general budget surplus and the surplus from Non-Financial Public Enterprises. From the late 1970s to the early 1980s there took place a hike in the prices of primary products, and the policy that aimed to equip the country with chemical and heavy industries such as oil-well drilling led to an increased surplus; these factors resulted in greater governmental savings during the period. The increase of the governmental savings seen during the period from the late 1980s to the early 1990s is due to such measures as the privatisation of public businesses, restructuring for improvement of performance and setting up a supervisory organization: steps taken by the government in response to the reduction of the fiscal budget and the fall in prices of primary products.

The most notable point in Malaysia's effort to build a financial system is its aggressive encouragement of the growth of domestic banks. Since the central bank (which received an award for good management in 2003) was established in 1959, it has been recognized as essential for stable, well-balanced economic and social growth to establish a sound, strong domestic bank system, and also to put into shape a nationwide bank network and to nurture a habit for saving money among people in order to expand the basis for savings. A series of measures designed to let the domestic banks grow, such as (1) the founding of two large commercial banks financed by the

government, (2) favours given to those who opened branches in local areas, (3) the restriction of compensation in the regional market through regulation of new branches, and (4) strict regulation against foreign banks was implemented, and a banking system dominated by domestic commercial banks was established.

Thus, between 1970 and 1995, the deposits of domestic banks multiplied 48 times, and those of commercial banks grew 94 times. Domestic commercial banks have constantly occupied about 40 percent of the total assets of the banking sector. As of 1995, an oligopolistic market structure prevailed as the largest bank occupied 23 percent of the total balance, and the five top banks kept 48 percent of it. In addition, as of 1995, the main stock-holders of the top two banks were organizations that were under the strong influence of the government.

In Malaysia, however, while there are strict regulations against entry, interest rates on deposits were liberalized relatively early in the 1970s, so as to give incentives to depositors. The liberation was carried out at a time when banks were protected heavily by government policy and a supervisory system was yet to come. Competition for deposits thus took place and loose, irresponsible lending operations followed. As a result, quite a few banks fell into financial difficulties. The liberalization was temporarily brought to a standstill. In the late 1980s, control was tightened as healthier bank operations were sought, and then interest rates on deposits were set free again. Some consider that Malaysia is an example where the government interfered little with the banking and finance world, as the liberalization of interest rates on deposits had been promoted from early times, *The World Bank – The East Asian Miracles: Economic Growth and Public Policy* (1993).

Social security organizations centred on Employees' Provident Funds (EPF), Pilgrimage Funds (LUTH), National Investment Board (PNB) and others played a decisive role in mobilizing the long-term household savings for political banking. Changes occurred in the EPF's function of financial intermediary, in that as much as 90 percent of the EPF was invested in government securities, providing funds for public finance.

The introduction of unit trusts goes back to a relatively early date (1959), but it did not begin to take root until the 1980s. In the late 1970s when the PNB was launched, a state-owned investment trust company was founded, and funds were designed to aid people to acquire assets and equity capital. The aims of the establishment of the company were (1) to familiarize society with risk-taking involved in the possession of securities, and (2) to direct the savings thus collected toward equity holding.

The unit trusts, though they took the form of stock-investment trusts, were actually premium funds that could be bought back at fixed prices at any time, guaranteed high dividends and entitled their owners to tax benefits. Moreover, when a state business was privatised, the unit trusts enjoyed the privilege of being able to buy the company's stock at a special discount price. The unit trusts, thus, were designed to become an asset, because they were in fact a long-term, high interest bond with a government guarantee.

2.9 Summary and Conclusions

This chapter has offered a review of the Malaysian economic and corporate performance from 1960s until 2003. The National Economic Recovery Plan introduced by the government in 1998 contributed to the excellence performance in the economic and corporate sector. During this period Malaysia has proven to have a fairly strong legal and institutional frameworks and laws relating to corporate governance, and those governing creditor and shareholder protection are comparable to those of other developed countries, La Porta *et al.* (1998). In summary, the strong economic performance of Malaysia has been due to the country's high investment ratios, which have led to the accumulation of international reserves, the liberalization measures taken by the government in the shift from an agriculture-based to an industrialized economy and the privatisation policy, which has increased the wealth of the nation.

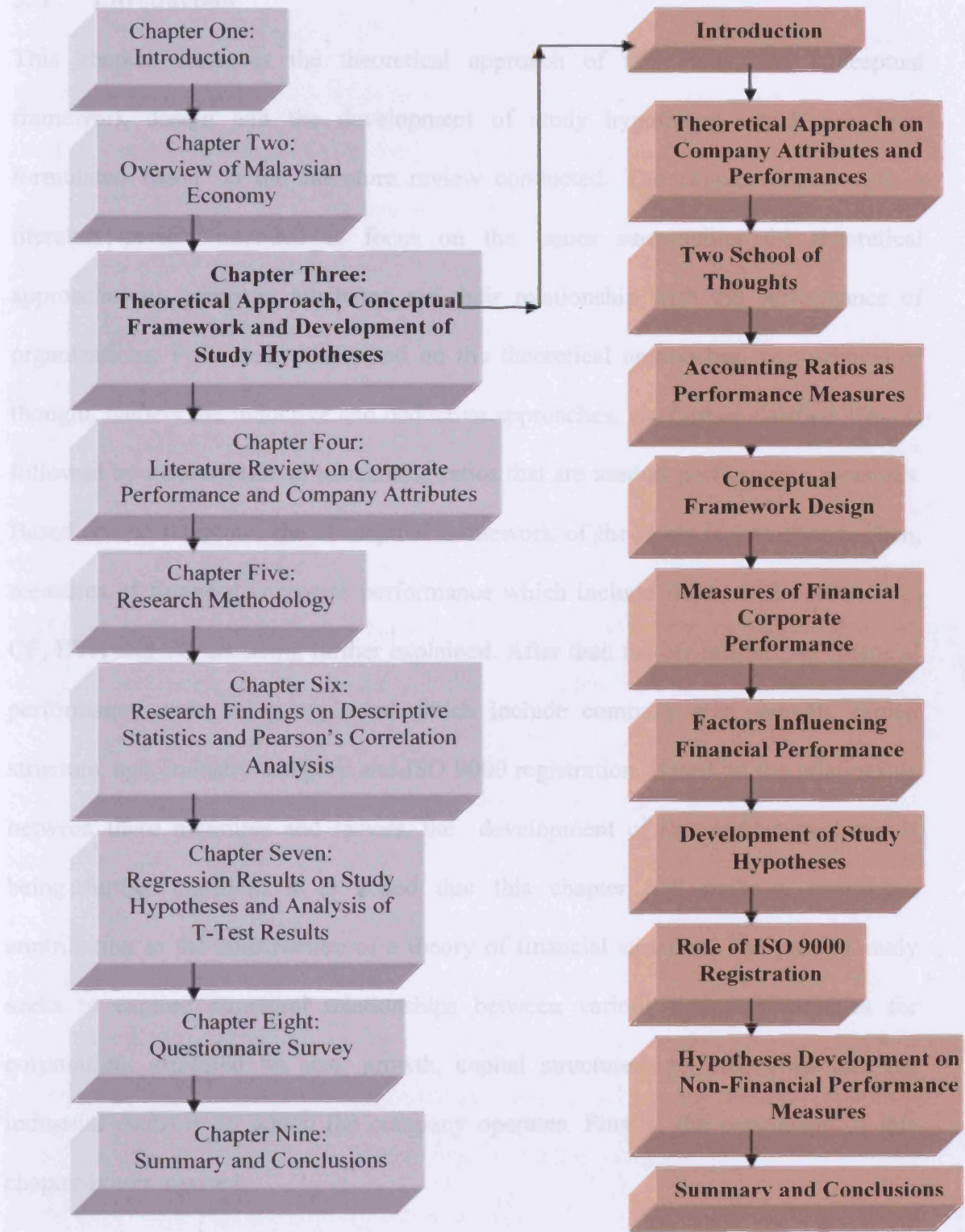
In response to the currency crisis, the selective capital controls, which have attracted considerable international attention, and quick response measures taken by the government by creating Danaharta, Danamodal and the Corporate Debt Restructuring Committee, provided temporary but much needed relief to the economy, which avoided the much deeper recession that was encountered by other countries affected by the currency crisis. This was also due to the fact that there was no massive build-up of overseas debt due to pre-crisis restrictions on foreign borrowings, and to stricter central bank regulation, which led to a good banking management award in 2003.

As a conclusion, the stability of the Malaysian economy over the period of high growth in the early 1990s and through the crisis period of 1997 to 1998 and the

turnaround period of 1999 until 2003 may be attributed to the country's high savings and investment ratio, low foreign debt, an outstanding government strategy, good bank management, and much more importantly, to the social and political stability of the country.

The following chapter presents the theoretical approach of the thesis regarding the performance measures used by researchers and based from these theoretical approaches, a conceptual framework design of the thesis are being presented.

The Thesis Structure



Chapter Three

Theoretical Approach, Conceptual Framework and Development of Study Hypotheses

3.1 Introduction

This chapter discusses the theoretical approach of this study, the conceptual framework design and the development of study hypotheses which has been formulated based on the literature review conducted. The chapter begins with a literature review intended to focus on the issues surrounding the theoretical approaches on company attributes and their relationship with the performance of organizations. Following this, based on the theoretical approaches, two schools of thought, namely the inductive and deductive approaches, are further clarified. This is followed by a description of accounting ratios that are used as performance measures. Based on the literature, the conceptual framework of the study is introduced. Then, measures of financial corporate performance which include ROA, ROE, ROS, WC, CF, EVA and TQ are being further explained. After that, factors influencing financial performance were being explained which include company size, growth, capital structure, age, industry category and ISO 9000 registration. Based on the relationship between these measures and factors, the development of the study hypotheses is being further clarified. It is hoped that this chapter will make a significant contribution to the construction of a theory of financial structure. The present study seeks to explore structural relationships between various financial variables for corporations stratified by size, growth, capital structure, age, ISO 9000 and the industrial category in which the company operates. Finally, the conclusion of this chapter is summarised.

3.2 Theoretical Approaches on Company Attributes and Performance

In order to establish the theoretical relationship between company attributes and performance measures, several researchers include Chandler (1962), Hofer and Schendel (1978), Kaplan (1983), Porter (1985), Shank (1989), Atkinson (1991), Ketchen, Thomas and Snow (1993) and Rangone (1997) have tried to link company attributes and performance measures. Atkinson (1991) proposed the use of management accounting as a strategic tool that focuses on the organization's key success factors. The idea is that the organization should: determine the key success factors that are critical to its success; communicate these factors to all members of an organization, and develop, communicate, and evaluate measures of performance on these key success factors to foster organizational success. The key success factors were called management imperatives (Atkinson, 1991). According to Shank (1989), a billion dollar a year industry has arisen in strategic analysis. Even the CPA firms are now heavily involved in this consulting segment. Clearly, strategic analysis is an important element of what is taught in business schools, what is written about in academic and management journals and what companies are concerned about.

In another study, Rangone (1997) pointed out the need to link management accounting and strategy more tightly, thus implying a more prominent role for accountants in the process of strategy assessment, control and revision. Strategic management accounting, strategic cost management and non-financial performance measurement are approaches that have been recently proposed as means of overcoming the limitations of traditional management accounting systems in dealing with strategic matters. Rangone further proposed a fuzzy linguistic framework to link a company's organizational effectiveness, in terms of successful strategic goals

accomplishment, key success factors and performance measures. Such a framework can support managers in their planning and control functions.

In achieving successful strategic goals, Porter's (1985) definition of competitive strategy is as follows: "Competitive strategy is the search for a favourable competitive position in an industry...(It) aims to establish a profitable and sustainable position against the forces that determine industry competition" (Porter, 1985, p.1). This is achieved through the creation of unique competitive advantages, and "...strategy is the route to competitive advantage" (Porter, 1985, p.25). Porter further distinguishes three viable generic strategies based on competitive advantage: differentiation of products from competitors' offerings through superior product quality; customer service or image; overall cost leadership in the industry; and focus on a particular buyer group, geographic market or product-market segment. Specific strategies may require organizations to develop distinctive competences, if they are to lead to competitive advantage, and hence superior performance. Deming (1986) implies that as the decision-makers of an organization focus on better management of such critical factors, improvements will occur in quality performance, which will ultimately result in improved financial performance for the organization.

Besides that, in measuring manufacturing performance, Kaplan (1983) suggests that accounting can play a critical role in determining successful manufacturing performance. Accounting researchers can attempt to develop non-financial measures of manufacturing performance, such as productivity, quality, and inventory costs. Measures of product leadership, manufacturing flexibility, and delivery performance could be developed for firms bringing new products to the marketplace. Expanded

performance measures are also necessary for capital budgeting procedures and to monitor production using the new technology of flexible manufacturing systems. A particular challenge is to deemphasize the current focus of senior managers on simple, aggregate, short-term financial measures and to develop indicators that are more consistent with long-term competitiveness and profitability.

As for measuring performance, in the strategic planning literature it is argued that performance may differ systematically among groups in an industry because of mobility barriers, market factors, and firm-specific asset profiles, McGee and Thomas, (1986).

The term 'strategic groups' was originally coined by Hunt (1972) in his doctoral dissertation on the exploration of the performance of the 'white goods' industry in the 1960s. Hunt observed that there were three sources of asymmetry between firms within the 'white goods' industry: the extent of vertical integration, degree of product diversification and differences in product differentiation. This asymmetry resulted in four strategic groups: (i) full-line national manufacturers' brand producers, (ii) part-line national manufacturers' brand producers, (iii) private brand producers and (iv) national retailers. His rationale for this grouping was that it 'minimised economic asymmetry within each group' (Hunt, 1972: 57). He argued that the problems facing the potential entrant differed depending on which group he intended to enter, and Hunt therefore attempted to isolate 'barriers to entry to each strategic group' in a descriptive vein.

Newman (1973) applied the same principles as Hunt in a statistical examination of 34 four-digit 'producer-goods' industries, all of which were related to 'chemical processes'. Porter (1973) also analysed statistically a sample of 38 three-digit 'consumer-goods' industries in his doctoral dissertation. Porter (1980: 129) provides the accepted definition of a strategic group in terms of the similarity of competitive behaviour.

While Hunt (1972) focused on strategic differences among competitors in their principal markets and delineated groups according to asymmetry (homogeneity) of operations within the same basic businesses, Newman (1978: 418) asserted that strategic groups can also be 'defined and identified by the relationship between the industry at hand and the activities carried out by its member firms outside that industry'. Newman argued that those firms sharing the same basic business can be placed in the same strategic group, while firms operating in the industry but having their principle business in a different industry form a different group. To a substantial degree, therefore, strategic groups 'turn out to be defined by their differing degrees of vertical integration with the market in question. Newman's further analysis showed 'that differing base industries and patterns of vertical integration sufficed to stratify rival sellers into subgroups', but, as Newman himself pointed out, it left 'open the question of what other operational factors may prove sufficient both theoretically and empirically for distinguishing them' (Newman, 1978: 425).

Porter (1973) proceeded by 'using the relative size of a firm in its industry as a proxy for its strategic group membership', dividing firms in each industry into two categories defined as industry leaders and followers. He argued that:

“The leader/follower dichotomy may be particularly apt for dichotomizing strategic groups in a sample restricted to consumer goods industries [because] while the configuration of strategic groups will vary from industry to industry, the leader group should encompass those strategic groups in the industry which are characterised by strategies potentially achieving economies of scale in production technology, vertical integration, captive distribution, in-house repair and service facilities, national advertising, and so on if these economies exist in the industry. The leader group should also encompass strategic groups with broad product lines and large sales forces. The follower group, on the other hand, is likely to encompass strategic groups composed of firms following specialist or narrow-line strategies, rational strategies, non-integrated strategies and so on. Thus the leader/follower distinction captures some of the variance among strategic groups (Porter 1979: 220-221).

With regards to Porter’s study in dividing firms into two categories, which are industry leaders and followers, this study also divide the sample firms into two categories which are ISO 9000 registered firms and non-ISO 9000 registered firms.

Hatten (1974) in his doctoral dissertation on the US brewing industry 1952-1971, paid great attention to the methodology for establishing intra-group homogeneity and variance between groups. He argued that the earlier researchers such as Hunt (1972), Newman (1973) and Porter (1973) had focused on groups, not on firms, and in spite of considerable attention to the assumption of homogeneity within an industry across firms, they had not tested for homogeneity on a firm-by-firm basis. Hatten therefore began with case studies of firms in the brewing industry, from which he concluded that brewers competed by allocating resources to two principal functional areas:

manufacturing and marketing. He therefore specified an eight-variable model, relating return on equity (performance) to three manufacturing variables (number, age and capital intensity of plants), three marketing variables (number of brands, price and receivables/sales) and two structural variables (eight-firm concentration ratio and firm size).

Ryans and Wittink (1985) used finance theory and the capital asset pricing model as their framework for group identification. They argued that if two or more firms are in the same strategic group, then their stock prices should tend to move together. They qualified this argument by stressing that it is more likely to hold for industries in which the participants are essentially one-industry firms and over a sufficiently long time period that particular internal and external industry differences do not have a disproportionate effect on security prices. They studied the airline industry and showed that the trunk airlines grouped together. Regional or intra-state airlines had no consistent overall clustering pattern but tended to group most frequently with another similar airline.

Primeaux (1985) hypothesized that investment behaviour (measured by net capital expenditures) may be an important variable by which the life cycle stage of an industry may be identified. He linked the life cycle and strategic group concepts and shows that strategic grouping, using a relative size measure, for a particular industry are related to the industry life cycle stage. Primeaux compared his strategic group method with Porter's (1973, 1979) approach in relation to the textile and petroleum industries. While Primeaux's results appeared to be superior for the petroleum industry, Porter's results were better for the textile industry. Primeaux concludes that

current research has not determined the most appropriate approach for determining strategic group membership and that future research must concentrate upon finding reliable and consistent approaches for strategic group identification.

Lahti (1983) used size of firm (as a measure of resources available and of product-market scope) as the major criterion of strategic group membership in a study of the Finnish knitwear industry. The key result in his analysis is that there are 'real' differences in the business definition, the functional strategies and economic performance of each size grouping and that these differences have meaningful strategic interpretations. For example, a small knitwear firm is generally constrained to stay in a given segment and to invest in production development.

Porter (1980:129) provides the accepted definition of a strategic group in terms of the similarity of competitive behaviour:

“A strategic group is the group of firms in an industry following the same or a similar strategy along the strategic dimensions... Usually, however, there is a small number of strategic groups which captures the essential strategic differences among firms in the industry”.

From a theoretical viewpoint, the main contributions to the explanation of intra-industry performance differences are found in the work of Caves and Porter (1977) and Porter (1979, 1980). They argue that profit rates may differ systematically among groups in an industry, and other explanations ranging from mobility barriers and market factors to firm-specific factors should be taken into account in order to explain such differences. Indeed, Porter (1979, 1980) concentrates more attention on firm than on group performance and emphasizes the role of firm-specific factors, including

asset profiles and execution ability in strategy implementation, to explain intra-industry performance differences. Porter further elaborated that two theoretical possibilities may therefore be advanced in researching intra-industry performance differences: first, that there may be performance differences across groups, but second, that the uniqueness of firm strategies directed to achieve distinctive sets of assets (capital, financial, human) may better predict within-industry performance differences.

A further limitation of previous analyses, with the exception of Oster (1982) and Dess and Davis (1984), is the exclusive reliance on single performance indicators to draw inferences about intra-industry performance differences. From a behavioural viewpoint at least, performance is clearly a multi-dimensional concept, which implies that multiple performance indicators need to be employed (Cool and Schendel 1987).

3.3 Two Schools of Thought

The multidimensional nature of competitive strategy suggests that the configurational approach is relevant to the study of strategic management. Indeed, configurations are represented by various strategy typologies (e.g. Miles and Snow, 1978; Porter, 1980), and taxonomies (e.g. Galbraith and Schendel, 1983; Miller and Friesen, 1978) have played a major role in the conceptual development of the field. Perhaps, more importantly, configurations need to be used in exploring the determinants of performance, a quest that many researchers feel is the cornerstone of the field of strategic management (Summer *et al*, 1990). Performance-related configurational studies are generally of two types: (1) inductive, often industry-specific studies that advocate the use configurations generated from empirical procedures as the basis for

performance comparisons (e.g. Hatten and Schendel, 1977) or (2) deductive studies that classify organizations into configurations and then test (or generate) theory-based predictions about their relative performance (e.g. Zajac and Shortell, 1989).

The configuration that is most frequently employed in the inductive approach is represented by a level of aggregation that lies between organizations and industries; it is referred to as 'strategic groups'. Proponents of the 'strategic groups' concept maintain that firms within an industry can be classified according to certain key characteristics, such as strategic orientation and action. Strategic groups are considered highly stable because they reflect decisions and behaviours that are long-term, costly, and difficult to change (McGee and Thomas, 1986). Firms are unable to move rapidly or easily from one strategic group to another because of mobility barriers such as switching costs or government policy (Caves and Porter, 1977). Because these barriers impede firms from entering other, perhaps more successful strategic groups, this will result in performance differences across groups (Porter, 1979). Studies have generally been successful in identifying empirically distinct configurations, but empirical tests have yet to clarify the relationship between strategic group membership and performance (Barney and Hoskisson, 1990; McGee and Thomas, 1986). This lack of evidence casts doubt on the importance of this type of configurational research to the field of strategic management (Thomas and Venkatraman, 1988), particularly when the field emphasizes understanding and predicting performance (Meyer, 1991).

The deductive approach to understanding the relationship between configurations and performance appears in the strategic management literature (e.g. McGee and Thomas,

1986; Thomas and Venkatraman, 1988). This type of research uses a particular theoretical perspective for both defining groups and predicting their relative performance. Given its theoretical foundation, the deductive approach may not only improve descriptions of industry structure but also provide explanations for and predictions about the configuration-performance relationship.

3.3.1 The Inductive Approach

The predominant approach in strategic management to define configurations of organizations and their relationship to performance has its conceptual roots in the industrial organization paradigm (Mason, 1939; Bain, 1956), according to which industry structure determines the behaviour of its member firms as a collective conduct to determine their performance. The major elements of industry structure are identified as being important to performance, especially in the early industrial organization literature, where entry barriers included the number of firms in an industry, and their size distribution, Bain (1956, 1968). Because structure determined conduct or strategy, which in turn determined performance, economists within this paradigm ignored conduct and looked directly to industry structure for explanations of performance, Porter (1981).

By the early 1970s, theorists had observed that the features of an industry's topography generated configurations, or groups, of organizations that might influence performance within the industry. For example, Hunt (1972) found that, given the economic conditions in the major home appliance industry, profits were unexpectedly low. This finding led him to argue that there were distinct sets of firms within this industry – strategic groups. They are different in terms of strategic and organizational

factors. These differences prevent various strategic groups from acting in concert to exploit the industry's oligopolistic conditions. Newman (1973) provided evidence not only that strategic groups can be identified, but also that their performance varies. In contrast, Porter (1973), who used firm size as a grouping criterion, found few significant differences in groups' performance.

Subsequent research increased the sophistication of both the types of variables and the decision algorithms used to define groups (Hatten and Schendel, 1977; Hatten, Schendel and Cooper, 1978). The initial studies of strategic groups used one or few variables, with size being a prominent measure, but later investigations offered more comprehensive sets of configurational attributes, including manufacturing, marketing, financial and industrial characteristics. Employing multiple variables to define groups required the use of statistical methods such as multiple regressions and cluster analysis and enabled the construction of potentially richer descriptions of configurations.

The difficulty in establishing a firm link between strategic groups and performance led some investigators to suggest that perhaps the concept of strategic groups should be abandoned (see, for example, Barney and Hoskisson, 1990). However, previous mixed results regarding the relationship between this form of configuration and performance may be due to a weakness in the inductive approach stemming from its emphasis on identifying statistical homogeneity between strategic groups and performance (Thomas and Venkatraman, 1988). Indeed, the *a posteriori* nature of the inductive studies suggests that they are not maximally robust tests of the configuration-performance relationship, leading researchers to call for a theory-based

model (McGee and Thomas, 1986) that would permit predictions of performance differences (Thomas and Venkatraman, 1988).

3.3.2 The Deductive Approach

Scholars taking the second configurational approach portray configurations as jointly produced by organizational and environmental attributes that are critical to competition regardless of industry. The origins of this approach can be traced to Weber's (1947) assertion that there are three general types of authority in society – traditional, rational-legal, and charismatic – and each has an appropriate administrative structure. Weber predicted that these configurations arise under certain conditions. Structural contingency theorists brought to the study of organizations the notion that a fit between structural characteristics and environment is required. For example, Burns and Stalker (1961) identified two types of organization structure, mechanistic and organic, each of which is expected to be more prominent and effective in a particular type of environment.

Besides that, Woodward (1958), Lawrence and Lorsch (1967) and Galbraith (1973) have taken similar configurational perspectives. Thus, a central theme of structural contingency theory is that the relative success of organizational types (or configurations) is a function of environmental conditions.

The importance of various factors that affect corporate performance has not been extensively researched. Only a few studies have ventured to measure the relative importance of organizational influences on performance (Lieberson and O'Connor, 1972; Weiner, 1978; Salancik and Pfeffer, 1977; Makhamreh, 1986). The present

study attempts to go beyond previous studies by including in the analysis more variables related to organizational and financial factors as determinants of corporate performance. A summary of the conceptual framework utilized in previous research is offered in Figure 3.1 on page 61.

In this study, the important literature in the fields most concerned with corporate performance is reviewed and examined. Because of their differing perspectives but overlapping and sometimes common explanatory variables, it is useful to examine these schools of thought and begin to integrate them into a single framework. To develop an integrative model of corporate performance, however, it is necessary to choose a common unit of analysis. For the integrative model of performance, company attributes such as size, capital structure, age, growth, industry and ISO have been chosen as units of analysis. There are several related reasons for this choice. Most importantly, there are strong theoretical links and empirical associations between all the company attributes, especially a recently a recently found factor – namely ISO 9000 - and corporate performance (Corbett *et al.*, 2002; Cebeci and Beskese, 2002; Heras *et al.* 2002; Jeng, 1998).

In the strategic management literature, Ketchen *et al.* (1993) highlighted two major approaches that are used to examine the relationship between organizational configurations and performance. The first, rooted in the concept of strategic groups, is inductive and focuses on *a posteriori* examinations of industry-specific configurations and their respective performance. The second, a deductive approach, focuses on theory-based predictions. Ketchen *et al.* further elaborated that deductively defined configurations explained performance better than the inductively defined

configurations, and the deductive approach allowed prediction of the performance differences among configurations. Based on Ketchen *et al.* (1993) and other related studies, this study produced two related tables, Table 3.1 (Different Measures of Performance) on Page 69 and Table 3.2 (Different Factors that Influence Corporate Performance) on Page 71 which provides a summary of previous studies on performance evaluation and performance measures. These studies have used measures related to sales, equity and investment, assets, margin and profit, market share and overall performance.

3.4 Accounting Ratios as Performance Measures

Researchers have investigated the predictive ability and behavioural impact of accounting information separately. For example, Beaver (1966) and Deakin (1972) examined the predictive ability of accounting information in the prediction of business failure, whereas Bruns (1966) and Hofstedt (1972) investigated the behavioural impact of accounting variation on decision-making. Given that the predictive power of the measurements (the accuracy of the signals) and the ability of the decision maker (DM) to use the information (the accuracy of the DM's response to the signals) jointly determine the quality of decisions, it would seem beneficial to use a methodology that examines both factors jointly¹. Failure to consider the accuracy of responses could result in judging as relevant information that cannot be utilized effectively by the DM because of his limitations as an information processor. Libby's (1975) study on the usefulness of accounting information is a function of the predictive ability of the information and the ability of users to interpret the data based

¹ The Committee on Theory Construction and Verification (1971) followed a similar orientation when they concluded that there are two broad areas of significance to accounting researchers: (a) the predictive power of accounting measures and (b) the effects of the measures on decision-maker behaviour.

on loan officers in the prediction of business failure. Previous studies by Beaver (1966), Altman (1968), Edmister (1972), and Deakin (1972) utilized both univariate and multivariate statistical techniques to assess the predictive ability of a large group of ratios. All of the above studies empirically support the contention of proponents and practitioners of ratio analysis (e.g. Foulke, 1968) that certain ratios are highly related to business failure. Feltham and Demski (1970, p.637) suggest that once the signal's ability to reflect *a priori* relevant events has been established, the next logical extension is to move from analysis of the signal to analysis of action induced by signals.

In another study, Abdel-Khalik (1972) has taken the next step – to see whether analysts can successfully use the ratios. In his study of loan officers' decision-making, Abdel-Khalik (1973) concluded that his results cast doubt upon the usefulness of financial ratios as predictors of failure in an *ex ante* prediction situation. These results are inconsistent with those of the studies cited previously. However, Libby's (1975) study found that a small, empirically derived set of accounting ratios allowed bankers ranging widely in background to make highly accurate and reliable predictions of business failure. His results suggest that future research testing the generality of the results regarding decision makers, environmental events and information sets might be profitable.

However, Beaver (1981) concluded that almost all studies show a significant positive relationship between accounting earnings changes and stock market price changes, and that prices behave as if accounting earnings data "...are a potentially important source of information, but only one of many sources" (p. 118). Assuming that the

stock market reflects knowledge of economic profits, accounting profits must do the same, at least to some degree, if investors are to consider them useful. Accounting profit data are used to evaluate numerous economic issues besides questions in industrial organizations. Many studies have used accounting profits to demonstrate the efficiency of large firms. Even many basic measurements in macroeconomics, such as GNP, are dependent on accounting profit data. The broad use of accounting profit data in the private sector suggests that Fisher and McGowen's (1983) general conclusions about the usefulness of the data must be wrong. They are certainly valuable as a simple market test – private firms spend vast resources collecting and analysing them.

A large number of commercial information services (Dun and Bradstreet, Moody's, Value Line, Standard and Poors, COMPUSTAT, etc.) supply data on accounting profit rates and/or comparative analyses across firms or industries. Given the amount spent in the private sector on analyses of accounting profit data, a substantial market failure is required to explain such an occurrence if the data are valueless, Long and Ravenscraft (1984).

Furthermore, Taffler (1983) in his study on the assessment of company solvency and performance highlighted a great deal of dissatisfaction over the content of published financial statements where this may be due to the manner in which the financial statements are used rather than their actual content. Financial statements can be considered to be multivariate documents, simultaneously measuring a variety of a firm's financial aspects, none of which taken alone can fully evaluate a firm's solvency or performance. Taffler produced a linear discriminant model which

analyzes accounting data in a holistic manner to assess the financial viability of a firm. The model provides two measures of a company's financial health, including a risk index which measures the degree of risk a company faces of experiencing financial problems, and a relative performance measure which allows cross-sectional and inter-temporal comparisons. The model has been found to be highly predictive and is especially useful for identifying potential financial problems.

3.5 Conceptual Framework Design

As performance is a difficult concept, in terms of both definition and measurement. It has been defined as the result of activity, and the appropriate measure selected to assess corporate performance is considered to depend on the type of organization to be evaluated, and the objectives to be achieved through that evaluation (Hunger and Wheelan, 1997). Researchers in the strategic management field have offered a variety of models for analysing corporate performance. However, little consensus has emerged on what constitutes a valid set of performance criteria (Cameron, 1981; Lewin and Minton, 1986). For instance, researchers have suggested that studies of corporate performance should include multiple criteria analysis (Cameron, 1986; Hitt, 1988). This multidimensional view of performance implies that different models or patterns of relationship between corporate performance and its determinants will emerge to demonstrate the various sets of relationships between the dependent and the independent variables in the estimated models (Ostroff and Schmidt, 1993).

However, Weiner and Mahoney (1981) indicated that numerous measures of corporate performance could be used as dependent variables. However, more important than a specific measure chosen is the use of multiple measures, because

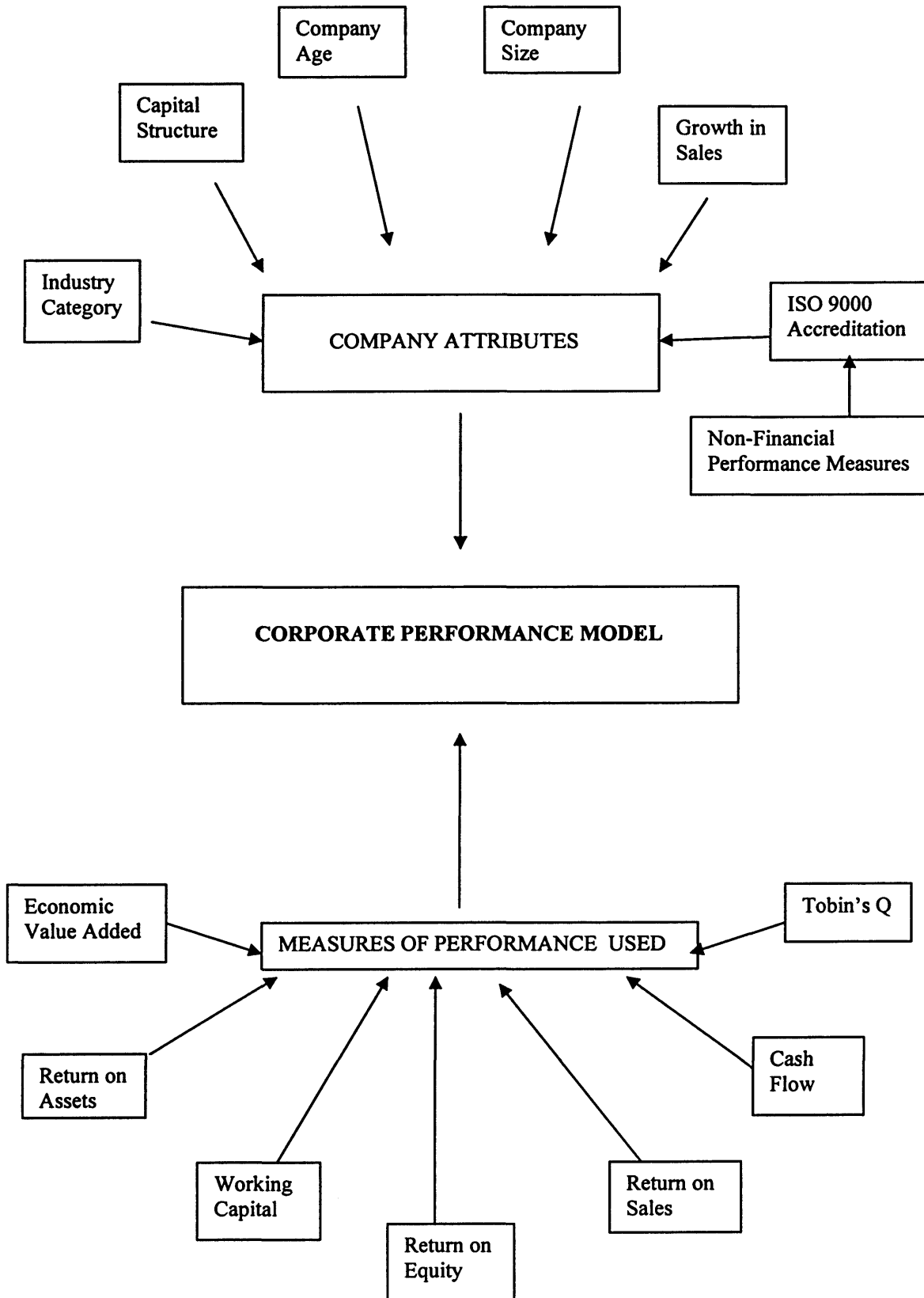
different criteria of performance are likely to be differentially affected by the various independent variables (Liebersson and O'Connor, 1972).

The overall research question addressed in the current study is stated as follows: Why do some firms perform better than their counterparts? To answer this question, this study used the company attributes such as the size of the company, the capital structure, the growth of the company, the age of the company, the category of the industry that the company is operating in and lastly the International Standard Organization (ISO) regulation to identify configurations from a sample of 162 firms over a four-year period (1998-2001). For this approach, configurations were derived on the basis of a comprehensive set of variables that, individually and collectively, have been used in prior studies of corporate performance. The deductive approach to configuration was based on a theoretical framework that incorporates common elements of the ecological and strategic choice perspectives (Zammuto, 1988). This study used this theoretical framework as in Figure 3.1 on page 61 in order to predict the relative performance of configurations within the sample of companies.

Different measures of financial corporate performance were being used in this study, which include ROA, ROE, ROS, WC, CF, EVA and TQ. Also, different factors influencing financial performance were being applied, which include company size, growth, capital structure, age, industry category and ISO 9000 registration.

In the light of the above discussion, this study explores a model for performance evaluation in Malaysian companies. The importance of this study stems from the fact that the Malaysian economy experienced a serious currency crisis in the middle of the last decade. The economy now seems to have settled down. A model that assists in

Figure 3.1: Conceptual Framework Diagram



estimating corporate performance in Malaysia is expected to benefit various Malaysian companies as well as policy makers in the country. In addition, it is expected that this study will contribute to the corporate performance evaluation literature in terms of the model used to estimate corporate performance and the factors that appear to predict such performance in a developing country such as Malaysia. It should be emphasised that a number of studies that investigate corporate performance have been undertaken in Malaysia (Idris *et al.*, 1996; Loo *et al.*, 2000; Muruges *et al.*, 2001). These studies, however, have adopted different approaches than that used in the current study.

In the present study, measures of profitability (ROA, ROE and ROS) and performance (Tobin's Q, EVA, WC and Cashflow) are used as dependent variables. Profitability is a preferred measure of relative performance because it assesses the efficiency with which plant, equipment, and current assets are transformed into profit. Profitability also permits a comparison to be made of performance efficiency across corporate bodies of vastly different sizes (Weiner and Mahoney, 1981). Organizational variables such as size, age and growth have been ascertained by researchers to have a significant impact on performance (Meyer, 1968; Gupta, 1969; Aldrich, 1972; Thompson, 1967). Corporate size reflects the resources available to the firm, and these resources directly affect its economic activities and its ability to utilize the environment effectively (Weiner and Mahoney, 1981). Rumelt (1984) and Luffman and Reed (1982) have suggested that single-business firms often seek to diversify in order to grow and spread their risk across markets. As firms become larger, they tend to increase their market share and enjoy economies of scale, thereby enhancing their efficiency and profit level (Bourgeois, 1980). The size of firms used in this study is measured by their total assets.

Early research efforts, both analytical and empirical, have shown that quantitative modelling of strategy could be a tool of value in helping top management to achieve the goals of the firm (Gershefski, 1969; Guth, 1971). Prior research has been limited to single equation models linking strategy and environment to only one performance goal, profitability. While there is some controversy about it, complex organizations set multiple, and sometimes conflicting goals, creating a need for models that can encompass more than a single performance goal. Moreover, the interactive effects of strategic variables governing the efficiency of daily operations suggests that single equation models of strategy cannot capture the complexity of the modern firm.

This research explores the use of a simultaneous equation model of corporate strategy as a means of overcoming the multiple performance goal problems, while capturing the complex patterns of the strategic and organizational variables that influence goal achievement. The difficulties of estimating the model, including the problems of sample heterogeneity so important to this type of work, are identified and discussed using data and results taken from the Malaysian companies.

While mathematical model building has been commonplace over the last quarter century, what about models at a macro-level, models that capture the total enterprise, as the top manager views the firm, models that can enter the boardroom and be used? Here, little work has been done, either conceptually or empirically. To be sure, the economist has been engaged with models that relate industry competitive (market) structure to conduct and in turn, to performance (Scherer, 1970). But these models have dealt primarily with variables that managers cannot manage, such as number of competitors or concentration ratios. Moreover, the economists' concern has been with

public policy issues. Corporate financial models have also been developed, but these models are concerned mainly with fund flows generated by decisions about variables external to the model. Similar limitations in scope and purpose exist for models built in other functional areas such as marketing.

Economists frequently base their reasoning on ratios between significant variables such as firm size and rate of return, (Baumol, 1956; Hensen and Wernerfelt, 1989), firm size and profitability (Hall and Weiss, 1967). On the other hand, researchers in corporate performance often construct key financial performance ratios from items such as Tobin's Q (Corbett *et al.*, 2002; King and Lennox, 2002; Bajaj *et al.*, 1998), Economic Value Added (EVA) (Perkins and Van Zyl, 1994; Pat, 1995; Griffith *et al.*, 2002; Cheng *et al.* 2003; Naser *et al.* 2004), Return on Assets, Return on Equity, Return on Sales, (Heras *et al.* 2002; Haversjo, 2000; Spinard *et al.*, 1996; Dehning and Stratopoulos, 2002; Morrissey, 1995), Working Capital (Richman, 1995; Burton, 1994; Bhimani, 1993) and Cash Flow (Perkins and Van Zyl, 1994; Muruges *et al.*, 2001).

3.6 Measures of financial corporate performance

As we all know, financial statement analysis is an analytical procedure that can assist the users of financial statements in evaluating the reasonableness of amounts shown in financial statements. Although financial statement analysis is based on historical financial data and measures past results, a primary objective of ratio analysis is to give an indication of the company's future performance (Brandt *et al.*, 1989). The categories of ratios are: (1) profitability, (2) liquidity, and (3) financial leverage or solvency. Profitability ratios include Return on Sales (ROS), Return on Assets (ROA),

and Return on Equity (ROE). Liquidity ratios are the Working Capital (WC) ratio, the current ratio, the quick ratio, the receivables turnover ratio, the inventory turnover ratio, and Cash Flow (CF). Besides these ratios, Economic Value Added (EVA) and Tobin's Q (TQ) ratios are used to measure the performance of companies. Some of these ratios have been used to measure performance in the current study.

3.6.1 Return on Assets (ROA)

Return on Assets (ROA) is a useful indicator of how profitable a company is relative to its total assets. It also gives an idea as to how well the company is able to use their assets to generate earnings. Calculated by dividing a company's annual earnings with its total assets. ROA is displayed as a percentage. Sometimes this is referred to as "return on investment". The ROA figure gives investors an idea as to how effectively the company is converting the money that they have invested into net income. The higher the ROA figure the better it is seen as the company is earning more money on less invested company.

Among the researchers that used ROA are, Corbett *et al.* (2002), found that after ISO 9000 certification, companies tended to report abnormal improvements in ROA and more importantly, these improvements were found to be lasting. Spinard *et al.* (1996), focused on the financial sector, examining the performance of a hundred and fifty banks that had the best five-year return on assets (ROA) in the industry. They found that the top performers were able to achieve their status primarily with strong margins. In Europe, the focus was on return on assets, return on investment, economic value added and lender security (Heras *et al.*, 2002; Haversjo, 2000; De With, 1996). Return on Investment is the most commonly used measure of the profitability of

corporate performance (Hunger and Wheelen, 1997; Douglas and Craig, 1983; Buzzell and Gale, 1987).

3.6.2 Return on Equity (ROE)

Return on Equity (ROE) is a measure of a company's profitability. It is calculated as a ratio of net income over the shareholder's equity. Essentially, ROE reveals how much profit a company generates with the money that the shareholders have invested in it. The ROE is useful for comparing the profitability of a company to that of other firms in the same industry. Return on Equity (ROE) was used because it measures the rewards of ownership and takes alternative financial structures and risk levels into account (Schendel and Patton, 1978). In this way, it offers a measure of both management performance and financial strategy.

3.6.3 Return on Sales (ROS)

Return on Sales (ROS) is a widely used ratio that detects operational efficiency. It is calculated as a ratio of net income (before interest and tax) over sales. ROS is a measure that is helpful to management, providing insight into how much profit is being produced per dollar of sales. ROS is also known as a firm's operating profit margin. It is the most commonly used profitability measure (Jacobson and Aaker, 1987; Kay and Davis's, 1990; Kearney, 2001; Naser *et al.*, 2004). Kay and Davis's (1990) used ROS on their study of the top European company performers found that Glaxo generated the highest return, followed by RTZ, LVMH, BT, Guinness, Kymmene and Philip Morris. Kearney (2001) also used ROS as a performance measure to assess the best performing manufacturing companies globally. Naser *et al.* (2004) used ROS as one of their company performance measures and they found that ROS determined the performance of Malaysian ISO 9000 registered companies.

3.6.6 Economic Value Added (EVA)

Economic Value Added (EVA) is a measure of a company's financial performance based on the residual wealth calculated by deducting cost of capital from its operating profit. The formula used for calculating EVA is the net operating profit after taxes less the cost of capital. EVA attempts to capture the true economic profit of a company. EVA measurement is one of the latest and most widely used measures to assess the financial wellbeing of business. EVA is a way of evaluating a company's real profitability and how effectively it is performing. Among the researchers that used EVA as their performance measures include, Perkins and Van Zyl (1994); Pat (1995); Stewart (2002); Griffith *et al.*(2002); Cheng *et al.*(2003); and Naser *et al.*(2004). Naser *et al.* (2004) employed EVA as one of their measures of company performance. They found that EVA determined the performance of Malaysian ISO 9000 registered companies.

3.6.7 Tobin's Q (TQ)

Tobin's Q (TQ) ratio is devised by James Tobin, who hypothesized that the combined market value of all the companies on the stock market should be about equal to their replacement costs. The TQ ratio is calculated as the market value of a firm's equity plus its debt, divided by the book value of its total assets. For example, a low Q (between 0 and 1) means that the cost to replace a firm's assets is greater than the value of its stock, which implies that the stock is undervalued. Conversely, a high Q (greater than 1) implies that a firm's stock is relatively more expensive than the replacement cost of its assets, which implies that the stock is overvalued. The TQ ratio is a measure of stock valuation, which is the driving factor behind investment decisions. Among the researchers that used TQ ratio as their performance measures

include, Corbett *et al.*, (2002); and King & Lenox (2002). Table 3.1 provides a summary of previous studies that uses different measures of performance, (Ketchen, Thomas and Snow, 1993).

Table 3.1 Different measures of Performance

Construct Variable – Return on Assets (ROA)	
Return on assets	Dess and Davis, 1984
Return on assets	Heras <i>et al.</i> , 2002
Total asset turnover	Frazier and Howell, 1983
Operating income on assets	Hatten and Hatten, 1985
Return on assets	Haversjo, 2000
Return on assets	Corbett <i>et al.</i> , 2002
ROA & world's best performing companies	Kearney, 2001
ROA & performance of top 150 banks	Spinard <i>et al.</i> , 1996
ROA & performance of major UK retail companies	Kay and Davis, 1990
ROA & IT performance	Dehning and Stratopoulous, 2002
ROA & Hospital industry	Morrissey, 1995
Construct Variable – Return on Equity (ROE)	
Return on equity	Porter, 1973
Return on net worth	Frazier and Howell, 1983
Return on investment	Lawless and Finch, 1989
Return on capital employed	Heras <i>et al.</i> , 2002
ROE and responsibility centers	De With, 1996
ROE and IT investments	Forbath, 1999
ROE and corporate performance	Eilon, 1992
ROE and corporate strategy	Schendel and Patton, 1978
ROE and UK Strategic groups	Lewis and Thomas, 1990
Construct Variable – Return on Sales (ROS)	
ROS and world's best manufacturing companies	Kearney, 2001
ROS and Europe's top performers	Kay and Davis, 1990
Construct Variable – Working Capital (WC)	
WC and leading manufacturers	Richman, 1995
WC and divisionalized companies	Burton, 1994
WC and UK manufacturing sector	Bhimani, 1993
WC and Comcast's case study	Vukhac and Teta, 1999
Construct Variable – Cash Flow (CF)	
Cash flow per share	Lawless and Finch, 1989
CF and Corporate Manager's Task	Perkins and Van Zyl, 1994
Cash flow & company performance	Murugesh <i>et al.</i> 2001
Construct Variable – Economic Value Added (EVA)	
Market share	Nath, 1988
Weighted market share	Fiegenbaum and Thomas, 1990
Weighted segment share	Cool and Schendel, 1987
EVA and financial well being	Pat, 1995
Economic Value Added	Perkins, 1994
EVA and US software development firms	Spinner, 1997
EVA and bank performance	Griffith <i>et al.</i> , 2002
EVA and critical success factors	Cheng <i>et al.</i> , 2003
Construct Variable – Tobin's Q (TQ)	
TQ and ISO 9000	Corbett <i>et al.</i> , 2002
TQ and waste prevention	King and Lenox, 2002
TQ and financial structure	Bajaj <i>et al.</i> , 1998

This table has been developed from Ketchen, Thomas and Snow, 1993

3.7 Factors influencing financial performance

Based on the theoretical approach and literature review conducted on the performance evaluation studies, this study developed its own factors that influenced the financial performance of companies which can answer the main research question as to why do some firms perform better than their counterparts. This study selected six company attributes which include company's size, growth, capital structure, age, the industrial category, and ISO 9000 registration.

If measurements for firms in diverse size groups are reduced to a common order of magnitude, these ratios may be of use in historical growth and international comparisons. For purposes of theory construction, however, the standard must be high, and stability, or plainly systematic variation, in ratios must be found in order to enhance their usefulness (Gupta 1969). This study is a modest contribution to the construction of a theory of corporate financial performance. It seeks to analyze the corporate financial performance with respect to six exogenous variables – size, capital structure, growth, age, ISO registration and industry.

Based on these attributes, this study developed its hypotheses based on the seven financial corporate performance variables (ROA, ROE, ROS, WC, CF, EVA and TQ) as its dependent variables and company's size, age, capital structure, growth, ISO 9000 registration and seven categories of industry as its independent variables.

Table 3.2 below shows previous studies that use the different factors that influence corporate performance which include size, growth, capital structure, age, ISO 9000 accreditation and industry category.

Table 3.2: Different Factors That Influence Corporate Performance

Construct Variable – Firm's Size	Representative Study
Firm size and Rate of Return	Baumol, 1956
Firm size and Profitability	Hall and Wess, 1967
Firm size and rate of return	Hensen and Wernerfelt, 1989
Firm size and strategy	Grinyer <i>et al.</i> , 1980
Firm size and Stock price performance	Coughlan and Schmidt, 1985
Firm size and strategic groups	Lewis and Thomas, 1990
Firm size and diversification strategy	Christensen & Montgomery, 1981
Firm size and profitability	Marcus, 1969
Firm size and financial structure	Gupta, 1969
Construct Variable – Sales Growth	
Growth and conglomerate firms	Weston and Mansinghka, 1971
Growth and managerial pay	Murphy, 1985
Growth and profitability	Lee <i>et al.</i> , 1990
Growth and strategic groups	Dess and Davies, 1986
Construct Variable – Firm's Capital Structure	
Debt Equity and Control type	Kania and McKean, 1978
Market value measurement of debt	Mulford, 1985
Debt Equity and profitability	Lee <i>et al.</i> , 1990
Debt Equity and ownership	Bajaj <i>et al.</i> , 1998
Debt Equity and inflation impact	Oguie <i>et al.</i> , 2001
Construct Variable – Firm's Age	
Age and Informativeness of F/S	Black <i>et al.</i> , 1997
Age and CEO compensation	Rupp and Smith, 2002
Age and entrepreneurship	Murphy <i>et al.</i> , 1996
Construct Variable – ISO 9000 Accreditation	
ISO and Productivity improvements	Corbett <i>et al.</i> , 2002
ISO and Export sales	Cebeci and Beskese, 2002
ISO and company performance	Jeng, 1998
ISO and financial performance	Lima <i>et al.</i> , 2000
Construct Variable – Industry Category	
Industry and profitability	Bain, 1956
Industry and Firm profits	Porter, 1979
Industry and firm performance	Hensen and Wernerfelt, 1989
Industry and business unit performance	Schmalensee, 1985
Industry and firm level performance	Scherer, 1980

This table has been developed from Ketchen, Thomas and Snow, 1993

3.8 Development of Study Hypotheses

The development of the study hypotheses was based on the hypothesis developed by Baumol (1956), where he developed that the rate of return which increases with the size of the firm and explicitly incorporated into his model of the firm's growth. Then, Hall and Weiss (1967) studied the relationship between firm size and profitability in the Fortune 500 Largest Industrial Corporations for the years 1956 to 1962. They

found that size does tend to result in high profits rates, as Baumol proposed. According to Baumol, the size-profits hypothesis was one of the bases for his contention that entrepreneurs forego current profits to maximize growth (Baumol, 1959, p. 33). Porter (1979) points to links between firms' profits and industry structure. Thus, firms in some strategic groups would be more profitable than others. In essence, higher profits would accrue in groups with the 'best combination of high mobility barriers, insulation from inter-group rivalry and substitute products, bargaining power with adjacent industries, the fewest other members and suitability to the firm's execution ability' (Porter, 1979: 219). Porter divided his firms into leaders and followers and demonstrated that firms in the leader groups were more profitable than those in the follower groups. Since the characteristics of the leader group firms were associated with size, there is purported to be a link between profitability and size. In this study, an attempt is made to test this linkage by dividing the sample companies into ISO and non-ISO registered and then testing whether performance varies between the two groups.

The origin of research dealing with the use of financial ratios for studying corporate structure starts from Chudson (1945). Chudson ran arrays of ratios by industry, size, and profitability, but he did not attempt to offer theoretical justifications or economic explanations for his findings. No further cross-section analysis of the financial structure of companies has been undertaken. Hence, gaps exist in the literature on the effect of differential growth rates, ISO, age, industrial variations, and size of enterprise on the financial profile, with the exception of the work of Gupta (1969). This study seeks to bridge this gap by exploring structural relationships between

various corporate performance variables for corporations stratified by size, capital structure, age, ISO registration, growth rate and industry.

3.8.1 Model 1 – ROA as the dependent variable.

Based on the works of Heras *et al.* (2002) and Corbett *et al.* (2002), among others, this thesis hypothesises that Return on Assets (ROA) is positively associated with ISO 9000, size, capital structure, age, growth, and the category of industry within which the company operates: industrial products, consumer products, construction, property, trading and services, plantation and other industries. There follows a discussion on each of the independent variables that are hypothesised to be positively associated with ROA.

ISO 9000 registration

In numerous performance studies, ISO has been persistently found to have a positive association with ROA (Heras *et al.* 2002, Corbett *et al.*2002, and Haversjo 2000). Heras *et al.* (2002) examined whether the ISO 9000 had led to improvements in the audited financial performance of 400 certified and 400 non-certified Basque firms over a period of five years. They concluded that the ISO 9000 registered companies were more profitable than the non-registered companies. Corbett *et al.* (2002) also found that after ISO 9000 registration, companies tended to report abnormal improvements in ROA, and more importantly, these improvements were found to be lasting. In a similar manner, Haversjo (2000) also used ROA to study the financial performance of 644 Danish ISO 9000 registered companies compared to a similar group of non-registered companies. In addition, he examined whether ISO 9000 registered companies were more profitable than non-registered companies. The

overall findings were that registered companies had better earnings than similar non-registered companies. Based on the foregoing discussion, this study hypothesises that ISO 9000 is positively associated with ROA.

Size of a company

Besides ISO 9000, size has persistently been found to have a positive association with the ROA or profitability of a company (Baumol 1956, Hall and Weiss 1967, Marcus 1969, Hensen and Wernerfelt 1989, Laitinen 2002). Baumol (1956) found that the rate of return of a firm increases with the firm's size. Hall and Weiss (1967), in their study of the Fortune 500 Largest Industrial Corporations, found that size did tend to result in high profit rates. Marcus (1969), in a study on ROA and the size of firms, found some evidence of a positive association between size and the profitability of firms. Hensen and Wernerfelt (1989) also used firm size and return on total assets as their measures of performance and found that size is negatively related to ROA. Furthermore, Laitinen (2002) used company size as one of the measures of success in investigating the possibilities of a uniform financial rating of technology companies in Europe from the perspective of a potential investor. A positive relationship is expected, in which larger companies are expected to report a higher level of performance than their smaller counterparts. This is because they are able to recruit specialist knowledge, benefit from scales economies, etc.

Based on the foregoing discussion, this study hypothesises that the size of a firm is positively associated with the ROA or profitability of the company. This study measures size by the total assets of a company, a measure used in a large number of

studies (e.g. Baumol 1959, Gupta 1969, Grinyer *et. al* 1980, Hensen and Wernerfelt 1989, Laitinen 2002, and Johnson and Soenen 2003).

Capital Structure of a company

This study hypothesises that there is a positive association between the capital structure of a company and its ROA or profitability. Based on the literature review, studies that use capital structure or leverage ratio as measures of performance include Mulford (1985), Kania and McKean (1978), Bajaj *et al.* (1998), and Ku Nor Izah (2003).

Mulford's (1985) study of the importance of a market value measurement of debt in leverage ratios found superior performance for a market-value-based debt-to-equity ratio. Bajaj *et al.* (1998) found that ownership, which is a signal of a firm's 'quality', is positively correlated with various measures of the debt-equity ratio. Companies with higher capital structures are expected to perform less well, owing to the risk of high debt levels faced by these firms. Suppliers and customers may be reluctant to work with companies that demonstrate high risk through a high capital structure. Based on these findings, this study hypothesises that the capital structure of a company is positively associated with corporate performance measures, namely return on assets (ROA).

On the measure used for capital structure, it is found that various measures of capital structure have been used by researchers, depending on their study objectives; for example, the ratio of book value of debt to book value of equity was used by Kania and McKean (1978), while Bajaj *et al.* (1998) used the ratio of the book value of total

liabilities to book value of total assets. In examining the association between capital structure and performance measure (ROA), this study measures capital structure in terms of ratio of debt to total assets, because some companies in Malaysia were insolvent and had negative equity as a result of the 1997 financial crisis, so using the debt to equity ratio to measure capital structure might be misleading (Ku Nor Izah 2003).

Age of company

The age of a company has also been hypothesised to be positively associated with the performance variable ROA or profitability. Companies that have been in business for long periods have proven their abilities and success, have a better market understanding and thus are likely to perform better than newcomers. Studies that have used age as one of their variables to measure performance include Carroll (1983), Meyer and Zucker (1989) and Kalleberg and Leicht (1991).

Carroll (1983) concluded that the most common finding of the major empirical studies of mortality is that the death rate of business organizations declines with increasing age; organizations are more likely to die in their first few years of operation. Young organizations and organizational forms suffer liabilities of newness involving both internal processes, such as coordinating and defining roles and developing trust and loyalty among employees, and external problems like acquiring resources and stabilizing supplier and customer relationships. In contrast, the liabilities of newness are not likely to matter as much once organizations are past a certain age. However, Meyer and Zucker (1989) did not expect an organization's age to necessarily be related to its success.

However, Kalleberg and Leicht (1991) found that older companies were less likely to go out of business compared to younger companies in their study of the determinants of small business survival and success. In light of these discussions, this study hypothesises that the age of a company is positively associated with ROA.

Growth of a company

This study hypothesises that there is a positive association between the growth of a company and its performance measures of profitability or ROA. Growth is generally associated with performance. Companies that have a higher growth in sales due to diversification and increased market share, and have a growth-oriented management and intense Research and Development, tend to perform better than their counterparts. Among studies that have used growth to measure company performance are Dess and Davies (1984), Grinyer *et al.* (1988) and Johnson & Soenen (2003).

Dess and Davies (1984) found that based on sales growth, there is a significant difference among the strategic groups in their study. However, Grinyer *et al.* (1988) found a positive association between profit margins and growth based on their study of economic performance of the U.K. Electrical Engineering Industry. Furthermore, Johnson & Soenen (2003) found that large, profitable firms with efficient working capital management outperformed the sample average firms on the three performance measures (the Sharpe ratio, Jensen's alpha and EVA). Based on the foregoing discussions, this study hypothesises that the growth of a company is positively associated with the corporate performance measure (ROA).

Industrial Category

The industrial category of a company has also been hypothesized to have an association with the ROA or profitability of the company. Among studies that have used industry structure or category as their variables in measuring company performance are Marcus (1969), Porter (1979), Schmalensee (1985), and Hensen and Wernerfelt (1989).

Marcus (1969) found that the relationship between firm size and profitability within an industry is erratic, with some industries exhibiting positive relations, some negative relations and others no apparent statistically significant relation at all. However, Porter (1979) suggested that links exist between a firm's profit and industry structure, and firms in some strategic groups would be more profitable than others. Besides that, Schmalensee (1985) found that differences between industries, as measured by average industry return on assets, account for almost all the explained variance in business unit performance. Nevertheless, Hensen and Wernerfelt (1989) also used industry variables as determinants of firm performance as well as firm size and accounting rate of return.

Based on the literature above, this study hypothesises that category of industry is associated with the profitability or ROA of a company. The selected categories of industry used in this study are industrial products, consumer products, construction, property, trading and services, plantation and other industries.

Hypotheses Testing on Model 1- ROA as the dependent variable

From the foregoing discussion, the hypotheses to be tested, stated in their null forms, are:

H1a: There is no association between ROA and ISO 9000 registration of a company

H1b: There is no association between ROA and the size of a company

H1c: There is no association between ROA and the capital structure of a company

H1d: There is no association between ROA and the growth of a company

H1e: There is no association between ROA and the age of a company

H1f: There is no association between ROA and industrial product companies

H1g: There is no association between ROA and consumer product companies

H1h: There is no association between ROA and construction companies

H1i: There is no association between ROA and property companies

H1j: There is no association between ROA and trading and services companies

H1k: There is no association between ROA and plantation companies

H1l: There is no association between ROA and companies in other industries

3.8.2 Model 2 – ROS as the dependent variable.

The company attributes as previously employed in Model 1 where ROA as the dependent variable, namely ISO 9000 registration, size, capital structure, growth, age, and industrial category are employed to test their associations with Return on Sales (ROS). Researchers that have utilized ROS as their performance measures include Gupta (1969), Bajaj *et al.* (1998), Brush and Chaganti (1999); Eriksson and Hansson (2003), and Naser *et al.* (2004).

ISO 9000 registration

In some performance studies, ISO 9000 has persistently been found to have a positive association with ROS (Eriksson and Hansson 2003, and Naser *et al.* 2004). Eriksson and Hansson (2003) used ROS as an indicator on measuring the impact of TQM on financial performance of Swedish companies. They found that the award recipients (Swedish Quality Award) outperformed their competitors for most of the years studied. Naser *et al.* (2004), in their study of the impact of ISO 9000, found that ROS did determined the performance of Malaysian companies. Based on the foregoing discussion, this study hypothesises that ISO 9000 registration is positively associated with ROS.

Size of a company

This size of a company has also been hypothesised to be positively associated with ROS. From the literature review, Baumol (1956) found that rate of return of a firm increases with the firm's size. However, Hall and Weiss' (1967) found that size did tend to result in high profit rates. Besides that, Gupta (1969) found that large-sized firms tended to have higher profit margin on sales than the small-sized firms. Based on these studies, this study expects firm size to be an important predictor of financial performance based on ROS.

Capital Structure of a company

This study hypothesised that there is a positive association between the capital structure of a company and its ROS. Bajaj *et al.*(1998) find that ownership, which is a signal of firm's 'quality', is positively correlated with performance measures and also positively correlated with various measures of debt-equity ratio. Based on this study,

it is hypothesised that the capital structure of a company is positively associated with ROS.

Age of a company

The age of a company has also been hypothesised to be positively associated with ROS. Kalleberg and Leicht (1991) study on small business survival and success found that older companies were less likely to go out of business. However, Brush and Chaganti (1999) study on factors influencing the performance of service and retail firms in central New Jersey, found that growth of firm was more rapid amongst the youngest firms. Based on these studies, it is hypothesised that the age of a company is positively associated with ROS.

Growth of a company

This study also hypothesises that there is a positive association between the growth of a company and its ROS. Johnson & Soenen (2003) used three performance measures, i.e. the Sharpe ratio, Jensen's alpha, and EVA on their study on indicators of successful companies, found that large, profitable firms outperformed the sample average firms on the three performance measures. Based on this, it is hypothesised that the growth of a company is positively associated with ROS.

Industrial Category

In some of the performance studies literature, industrial category has been found to have a relationship with ROS (Porter 1979, Hensen and Wernerfelt 1989). Porter (1979) suggested that links exist between a firm's profit and industry structure, and that firms in some strategic groups are likely to be more profitable than others.

Hensen and Wernerfelt (1989) used accounting rates of return and industry variables as their measures of performance in their study on determinants of firm performance. Based on this, it is hypothesised that industrial category is associated with ROS.

Hypotheses Testing on Model 2– ROS as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms, are:

H2a: There is no association between ROS and ISO 9000 registration of a company

H2b: There is no association between ROS and the size of a company

H2c: There is no association between ROS and the capital structure of a company

H2d: There is no association between ROS and the growth of a company

H2e: There is no association between ROS and the age of a company

H2f: There is no association between ROS and industrial product companies

H2g: There is no association between ROS and consumer product companies

H2h: There is no association between ROS and construction companies

H2i: There is no association between ROS and property companies

H2j: There is no association between ROS and trading and services companies

H2k: There is no association between ROS and plantation companies

H2l: There is no association between ROS and companies in other industries

3.8.3 Model 3 – EVA as the dependent variable.

Based on the works of, among others, Dess and Davies (1984), Bhandari (1988), Hensen and Wernerfelt (1989), Kalleberg and Leicht (1991), Perkins and Van Zyl (1994), Johnson and Soenen (2003) and Naser *et al.* (2004), this thesis hypothesises that EVA is associated with ISO 9000, size, capital structure, growth, age and

industrial category of a company, namely industrial products, consumer products, construction, property, trading and services, plantation and other industries. There follows a discussion on each of the company attributes that are hypothesised to be associated with EVA.

ISO 9000 registration

ISO 9000 has been found to have a relation with EVA (Naser *et al.* 2004). From the literature review, Naser *et al.* (2004) in their study on the impact of ISO 9000 on the performance of Malaysian companies found that EVA did determine the performance of Malaysian listed companies. Based on this, this study hypothesises that ISO 9000 registration is positively associated with EVA.

Size of a company

This study hypothesised that there is a relation between size of a company and its EVA. Johnson and Soenen (2003) used EVA and company size based on total assets, and found that large firms outperformed the sample average firms on EVA. Based on this, this study hypothesised that the size of a company based on total assets is positively associated with economic value added (EVA).

Capital Structure of a company

Besides ISO 9000 and size, capital structure has been found to have a relationship with EVA (Bhandari 1988, Johnson and Soenen 2003). Bhandari (1988) provides empirical evidence that the expected common stock returns are positively related to the ratio of debt to equity, controlling for the beta and firm size. Johnson and Soenen (2003) found a statistically significant positive relationship between capital structure

and economic value added. Based on these arguments, this study hypothesised that capital structure is positively associated with economic value added (EVA).

Age of a company

The age of a company has also been hypothesised to be positively associated with the performance variable EVA. Kalleberg and Leicht (1991) did find that older companies were less likely to go out of business compared to younger companies in their study on determinants of small business survival and success. Based on this, it is hypothesised that the age of a company is positively associated with EVA.

Growth of a company

This study hypothesises that there is a positive association between the growth of a company and its performance measure EVA. Growth is generally associated with performance. Dess and Davies (1984) found that based on sales growth, there is a significant difference among the strategic group under their study. Based on this, this study hypothesises that the growth of a company is positively associated with EVA.

Industrial Category

This study also hypothesises that there is an association between the industrial category of a company and its performance measure EVA. Studies that have used industrial category as one of their variables include Hensen and Wernerfelt (1989) and Lieber (1996). Hensen and Wernerfelt (1989) used industry variables as determinants of firm performance, as well as firm size and accounting rate of return. However, Lieber's (1996) study on the 200 largest US corporations, ranked by economic value added and market value added, found that the champion in the category of wealth

destroyed by an industry is the automobile business. Based on these findings, this study hypothesises that category of industry is associated with the EVA of a company. The selected categories of industry used in this study are industrial products, consumer products, construction, property, trading and services, plantation and other industries.

Hypotheses Testing on Model 3 – EVA as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms, are:

H3a: There is no association between EVA and ISO 9000 registration of a company

H3b: There is no association between EVA and the size of a company

H3c: There is no association between EVA and the capital structure of a company

H3d: There is no association between EVA and the growth of a company

H3e: There is no association between EVA and the age of a company

H3f: There is no association between EVA and industrial product companies

H3g: There is no association between EVA and consumer product companies

H3h: There is no association between EVA and construction companies

H3i: There is no association between EVA and property companies

H3j: There is no association between EVA and trading and services companies

H3k: There is no association between EVA and plantation companies

H3l: There is no association between EVA and companies from other industries

3.8.4 Model 4 – Cash Flow (CF) as the dependent variable.

Based on the work of Gupta (1969), Jobber and Hooley (1987), Loo *et al.* (2000), Murugesh *et al.* (2001), Laitinen (2002), Mehrotra *et al.* (2003) and Murty and Misra

(2004), this thesis hypothesises that CF is associated with ISO 9000, size, capital structure, growth, age and the seven industrial categories, which include industrial products, consumer products, construction, property, trading and services, plantation and other industries. Cash flow (CF) is the amount of the operating cash flow plus the interest expense.

ISO 9000 registration

This study hypothesised that ISO 9000 is positively associated with CF of the company. This is based on the study by Corbett *et al.* (2002) who undertook a valuable study to test whether ISO 9000 certification led to productivity improvements, market benefits, and improved financial performance. Based on this, it is hypothesised that ISO 9000 is positively associated with CF.

Size of company

From the literature review, size has been found to have a positive association with the CF of a company. Gupta's (1969) study on the effect of size and other company attributes on the financial structure of American manufacturing companies found that liquidity ratio rose with an increase in the size of the firm. Based on this, this study hypothesises that the size of a firm is positively associated with its CF.

Capital Structure of a company

The capital structure of a company has also been hypothesised to be positively associated with the company's cash flow (CF). Mehrotra *et al.* (2003) study on the financial leverage between parent and spin-off firms found that spin-off firms with more financial leverage have higher cash flow and return on assets, and lower

variability of industry operating income. Based on this, the study hypothesised that capital structure is positively associated with CF.

Age of a company

This study also hypothesised that the age of a company is positively associated with CF. Brush and Chaganti (1999) study on factors influencing the performance of service and retail firms found that the human and organizational resources are associated with more positive cash flow. Based on this, this thesis hypothesised that the age of a company is positively associated with CF.

Growth of a company

This study hypothesises that there is a positive association between the growth of a company and CF. Dess and Davies (1986) study on the determinants of strategic group membership and organizational performance of U. S firms, where annual sales growth are used as performance measure, found that there were significant different between the strategic group membership. Based on this finding, this study hypothesises that the growth of a company is positively associated with CF.

Industrial Category

This study also hypothesised that there is a relation between certain industrial categories and CF (Loo *et al.* 2000, Muruges *et al.* 2001). Loo *et al.* (2000) and Muruges *et al.* (2001) surveyed Malaysian companies and suggested that cash flow is a good performance measure for companies. Based on this, the study hypothesised that industrial category, which is based on industrial products, consumer products,

construction, property, trading and services, plantation and other industries, is associated with CF.

Hypotheses Testing on Model 4– CF as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms, are:

H4a: There is no association between CF and ISO 9000 registration of a company

H4b: There is no association between CF and the size of a company

H4c: There is no association between CF and the capital structure of a company

H4d: There is no association between CF and the growth of a company

H4e: There is no association between CF and the age of a company

H4f: There is no association between CF and industrial product companies

H4g: There is no association between CF and consumer product companies

H4h: There is no association between CF and construction companies

H4i: There is no association between CF and property companies

H4j: There is no association between CF and trading and services companies

H4k: There is no association between CF and plantation companies

H4l: There is no association between CF and companies in other industries

3.8.5 Model 5 – Working Capital (WC) as the dependent variable.

The attributes previously employed in Model 1 with ROA as the dependent variable, namely ISO 9000 registration, size, capital structure, growth, age, and industrial category, are employed in a further model to test their associations with Working Capital (WC). Researchers that have utilized WC as their performance measures include Gupta (1969), Bhimani (1993), Richman (1995), and Corbett *et al.* (2002).

ISO 9000 registration

This study hypothesised that there is a relationship between ISO 9000 and WC. This is based on the study conducted by Corbett *et al.* (2002) where they highlighted the fact that those firms who sought their first ISO 9000 certification did indeed experience significant abnormal improvements in financial performance. Based on this finding, this study hypothesises that there is a relationship between ISO 9000 and WC.

Size of company

From the literature review, size has been found to have a positive association with the WC of a company (Gupta, 1969). Gupta (1969) provided a comprehensive discussion as to why size is hypothesised to be positively associated with working capital. He argued that larger firms should have greater amounts of working capital. This is due to the fact that larger firms are better managed than smaller firms and have more skilled manpower. Based on the foregoing discussion, this study hypothesises that the size of a firm is positively associated with its WC.

Capital Structure of company

This study also hypothesises that there is a positive association between the capital structure of a company and its WC. Mulford's (1985) study on the importance of a market value measurement of debt in leverage ratios found superior performance for a market-value-based debt-to-equity ratio. Based on this, this study then hypothesises that the capital structure of a company will be positively associated with its WC.

Age of company

The age of a company has also been hypothesised to be positively associated with the performance variable WC. Studies that have used age as one of their variables to measure performance include Carroll (1983), Meyer and Zucker (1989), Kalleberg and Leicht (1991), and Brush and Chaganti (1999). Carroll (1983) concluded that the death rate of business organizations declines with increasing age where organizations are more likely to die in their first few years of operation. But Meyer and Zucker (1989) found that organization's age did not necessarily relate to its success.

However, Kalleberg and Leicht (1991) found that older companies were less likely to go out of business compared to younger companies in their study on the determinants of small business survival and success. Besides that, Brush and Chaganti (1999) found that younger firms experienced more rapid growth. Due to these discussions, this study hypothesises that the age of a company is positively associated with its WC.

Growth of a company

This study hypothesises that there is a positive association between the growth of a company and its WC. Growth is generally associated with performance. Dess and Davies (1984) found that based on sales growth, there is a significant difference among the strategic group under their study. Based on this, this study hypothesises that the growth of a company is positively associated with its WC.

Industrial category

The industrial category of a company has also been hypothesised to have an association with its Working Capital (WC) ratio. Among the studies that have used

industry structure or category as their variables in measuring company performance are Marcus (1969) and Porter (1979). Marcus (1969) found that the relationship between firm size and profitability within an industry is erratic. Whereas, Porter (1979) suggested that links exist between a firm's profit and industry structure, and firms in some strategic groups are likely to be more profitable than others. Based on these, this study hypothesises that category of industry is associated with the WC ratio of a company. The selected categories of industry used in this study are industrial products, consumer products, construction, property, trading and services, plantation and other industries.

Hypotheses Testing on Model 5 – WC as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms are:

- H5a: There is no association between WC and ISO 9000 registration of a company
- H5b: There is no association between WC and the size of a company
- H5c: There is no association between WC and the capital structure of a company
- H5d: There is no association between WC and the growth of a company
- H5e: There is no association between WC and the age of a company
- H5f: There is no association between WC and the industrial product company
- H5g: There is no association between WC and consumer product companies
- H5h: There is no association between WC and construction companies
- H5i: There is no association between WC and property companies
- H5j: There is no association between WC and trading and services companies
- H5k: There is no association between WC and plantation companies
- H5l: There is no association between WC and companies in other industries

3.8.6 Model 6 – ROE as the dependent variable.

The company attributes as previously employed in Model 1 where ROA as the dependent variable, namely ISO 9000 registration, size, capital structure, growth, age, and industrial category, are employed in a further model to test their associations with Return on Equity (ROE). Researchers that utilized ROE as their performance measures include De With (1996), Heras *et al.* (2002), Gupta (1969), Mulford (1985), Bajaj *et al.* (1998), Oguie *et al.* (2001), Johnson and Soenen (2003), Meyer and Zucker (1989), and Kalleberg and Leicht (1991).

ISO 9000 registration

This study hypothesised that ISO 9000 is positively associated with ROE (Heras *et al.* 2002). Heras *et al.* (2002) used ROCE and ROA as measures of performance to examine whether ISO 9000 has led to an improvement in the audited financial performance of the 800 Basque firms studied. They concluded that the ISO 9000 certified companies in their sample were more profitable than the non-certified companies.

Size of company

From the literature review, size has been found to have a positive association with the ROE or profitability of a company (Gupta, 1969). Gupta (1969) provided a comprehensive discussion as to why size is hypothesised to be positively associated with profitability. He argued that larger firms should have greater profit. This is due to larger firms being better managed than smaller firms and having better skills in manpower. Based on this finding, this study hypothesises that the size of a firm is positively associated with its ROE.

Capital Structure of a company

This study also hypothesises that there is a positive association between the capital structure of a company and its ROE. Based on the literature review, one of the studies that use capital structure as one of the variables to measure performance is Bajaj *et al.* (1998). Bajaj *et al.* (1998) found that ownership, which is a signal of firm's 'quality', is positively correlated with various measures of debt-equity ratio. Based on this, this study then hypothesises that the capital structure of a company will be positively associated with ROE.

Age of company

The age of a company has also been hypothesised to be positively associated with the performance variable ROE or profitability. Studies that have used age as one of their variables to measure performance include Meyer and Zucker (1989), and Kalleberg and Leicht (1991).

Meyer and Zucker (1989) found that an organization's age did not necessarily relate to its success. However, Kalleberg and Leicht (1991) did find that older companies were less likely to go out of business compared to younger companies in their study on the determinants of small business survival and success. Due to these discussions, this study hypothesises that the age of a company is positively associated with ROE.

Growth of company

The growth of a company is hypothesised as having a positive association with ROE. This is based on research findings by Johnson and Soenen (2003), who carried out a study on the indicators of successful companies on 478 firms for the period 1982 –

1998 from the Compustat annual industrial and full coverage files. One of the measures used is sustainable growth rate (SG), which is the earnings retention rate multiplied by the return on equity ($SG = r * ROE$). The higher the sustainable growth, the more financial flexibility the company has to expand through organic growth or acquisitions. Based on this, it is hypothesised that the growth of a company (based on sales growth) is positively associated with corporate performance (ROE).

Industry Category

The industrial category of a company has also been hypothesised to have an association with the ROE or profitability of company. Porter (1979) suggested that links exist between a firm's profit and industry structure, and firms in some strategic groups would be more profitable than others. Besides that, Hensen and Wernerfelt (1989) also used industry variables as determinants of firm performance alongside firm size and accounting rate of return. Based on the literature above, this study hypothesises that category of industry is associated with the profitability or ROE of a company. The selected categories of industry used in this study are industrial products, consumer products, construction, property, trading and services, plantation and other industries.

Hypotheses Testing on Model 6– ROE as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms, are:

H6a: There is no association between ROE and ISO 9000 registration of a company

H6b: There is no association between ROE and the size of a company

H6c: There is no association between ROE and the capital structure of a company

- H6d: There is no association between ROE and the growth of a company
- H6e: There is no association between ROE and the age of a company
- H6f: There is no association between ROE and industrial product companies
- H6g: There is no association between ROE and consumer product companies
- H6h: There is no association between ROE and construction companies
- H6i: There is no association between ROE and property companies
- H6j: There is no association between ROE and trading and services companies
- H6k: There is no association between ROE and plantation companies
- H6l: There is no association between ROE and companies in other industries

3.8.7 Model 7 – TQ as the dependent variable.

The attributes as previously employed in Model 1 with ROA as the dependent variable, namely ISO 9000 registration, size, capital structure, growth, age, and industrial category, are employed to test their associations with Tobin's Q (TQ) ratio. Researchers that have utilized TQ as their performance measures include McGahan (1999), Perotti and Gelfer (2001), King and Lenox (2001) and Corbett *et al.*(2002), Zuobao and Oscar (2003), and Palia and Porter (2004).

ISO 9000 registration

This thesis hypothesised that there is a relation between ISO 9000 and TQ. This is based on the work of McGahan (1999), King and Lenox (2001) and Corbett *et al.* (2002). Tobin's Q (TQ) is the market value of a firm's equity plus its debt, divided by the book value of its total assets. In McGahan's (1999) study on the performance of US public firms between 1981 and 1994, which decomposed the performance of the firms into year, industry, corporate focus and firm effects, Tobin's Q was used to



measure the performance of the firms. The results show that firm effects were more important to performance than industry effects. Meanwhile, Corbett *et al.* (2002) reported a positive association between Tobin's Q as a corporate performance measure and ISO 9000 certification. Furthermore, King and Lenox (2001) used Tobin's Q as financial performance measure in their study, and found that the future Tobin's Q of companies under their study had a moderate significant positive relationship with waste prevention. Based on these discussions, this study hypothesised that ISO 9000 is related to TQ.

Size of company

Besides ISO 9000, size has been found to have a positive association with TQ. Zuobao and Oscar (2003) used Tobin's Q as their proxy of performance and found that firm performance is not an important determinant of state ownership, but that firm size and its strategic industry status are the main determinants of the state's equity ownership in China's newly privatised firms. Based on this, the study hypothesises that the size of a company is positively associated with TQ.

Capital Structure of company

The capital structure of a company has also been hypothesised to be positively associated with Tobin's Q (TQ). Palia and Porter (2004) used TQ as their proxy for bank charter value, and found that capital levels are consistently a significant positive factor in determining bank charter value. Based on this, the study hypothesises that TQ is positively associated with the capital structure of a company.

Age of company

The age of a company has also been hypothesised to be positively associated with performance variable TQ. Studies that have used age as one of their variables to measure performance include Kalleberg and Leicht (1991), and Brush and Chaganti (1999). Kalleberg and Leicht (1991) found that older companies were less likely to go out of business compared to younger companies in their study on determinants of small business survival and success. Besides that, Brush and Chaganti (1999) found that younger firms do experience a more rapid growth. Due to these discussions, this study hypothesises that the age of a company is positively associated with TQ.

Growth of company

This study hypothesises that there is a positive association between the growth of a company and its performance measure TQ. Growth is generally associated with performance. Dess and Davies (1984) found that based on sales growth, there is a significant difference among the strategic groups under their study. Based on this, this study hypothesises that the growth of a company is positively associated with TQ.

Industrial category

This study also hypothesises that industry category is associated with TQ. This hypothesis is based on the study of Perotti and Gelfer (2001), who used Tobin's Q as their proxy for the quality of investment between industry group firms and bank-led group firms. They found that industry group firms are not different from the independent firms, and there is a negative correlation in bank-led group firms with respect to the quality of investment. Besides that, Zuobao and Oscar (2003) also used Tobin's Q as their proxy of performance, and found that strategic industry status was

the main determinant of the state's equity ownership in China's newly privatised firms. Based on these studies, it is hypothesised that industry category is associated with TQ ratio of a company. Among the selected industry used in this study are industrial products, consumer products, construction, property, trading and services, plantation and other industries.

Hypotheses Testing on Model 7– TQ as the dependent variable.

From the foregoing discussion, the hypotheses to be tested, stated in their null forms are:

H7a: There is no association between TQ and ISO 9000 registration of a company

H7b: There is no association between TQ and the size of a company

H7c: There is no association between TQ and the capital structure of a company

H7d: There is no association between TQ and the growth of a company

H7e: There is no association between TQ and the age of a company

H7f: There is no association between TQ and industrial product companies

H7g: There is no association between TQ and consumer product companies

H7h: There is no association between TQ and construction companies

H7i: There is no association between TQ and property companies

H7j: There is no association between TQ and trading and services companies

H7k: There is no association between TQ and plantation companies

H7l: There is no association between TQ and companies in other industries

3.9 Role of ISO 9000 Registration

As ISO 9000 registration is an important factor that could differentiate the performance of companies, this chapter will further elaborate on the introduction of ISO 9000, the reasons for seeking quality certification, the benefits of certification and the disadvantages of certification.

As an introduction, in 1946 the International Organizations for Standardization (ISO) was founded in Geneva, Switzerland. The ISO comprises national standards institutes from 97 countries. ISO 9000 is a common set of standards for the manufacturing, trade and communications industries. It provides a documented process control program intended to enhance quality, and offers a resource to those who need it (i.e. Chief Executive Officers). At its least, the ISO 9000 registration process highlights deficiencies in quality control, resulting in improvement. ISO 9000 is made up of five subdivisions, which are: (1) 9000: Description of the standard series; (2) 9001: “Complete” companies that research, design, build, ship, install and service products; (3) 9002: Companies that produce and install products; (4) 9003: Warehousing and distribution companies; (5) 9004: Serves mainly as a guideline document.

All standards include a set of models and guidelines for quality assurance and quality management (Zuckerman, 1994, p.13). The registration process assesses the quality system, not the product lines, sites or divisions. Also, ISO 9000 does not assess how the business is run, or how the quality process is implemented. ISO registration can take several months to two years, depending on the organisation’s goals and size. Recently, ISO has introduced a new 14000 series. ISO 14001 is an addition to the ISO

9000 series. Its nature is very similar to the ISO 9000 series, although environmental issues are found to be predominant.

ISO 9000 standards have been introduced internationally over almost two decades. Since their inception, the pursuit of ISO 9000 certification has gained much momentum. Between 1993 and 1996, more than 6500 ISO certificates were issued to US companies and another 1400 in Canada (Hill, 1996). Despite the ISO 9000 standards rapidly gaining such widespread acceptance, it has been observed that doubts are often raised as to whether there is a solid link between ISO certification and improved corporate performance. This is highlighted by the lack of comprehensive surveys to examine the effects of the standards on the organizational factors and corporate performance of companies.

In recent years, Malaysia has also experienced a tremendous surge in ISO 9000 applications. From its launch in 1987 by the Standards and Industrial Research Institute Limited of Malaysia (SIRIM), the number of approvals had catapulted to 942 by the end of 1996. ISO 9000 accreditation in Malaysia commenced in January 1993, with 122 companies being registered by the end of that year. By December 1997 (just after the financial crisis), there were 1610 ISO 9000 registered companies and by December 2001, a total of 3195 companies had been registered in Malaysia (see ISO Survey, 2002).

Thus, it appears timely for a survey to be conducted on such companies to facilitate an investigation into the effectiveness of ISO 9000 as a driving force in the quest for quality and performance. Moreover, a comparison between the findings in the

Malaysian survey and those conducted in developed countries may reveal differences in the approach to quality and performance, which will then hopefully provide insightful ideas for Malaysian companies and their counterparts in developing countries.

A survey of the existing literature reveals that there are only a handful of empirical studies in this area of research. Closer to Malaysia, apart from a study by Phillip (1996) and Chua *et al.*, (2003), the former Singapore Institute of Standards and Industrial Research (SISIR) has included in its annual reports information on perceived benefits enjoyed by ISO certification in Singapore. In Malaysia, a survey conducted by Idris and Idris (1996) mainly focused on the reasons for applying for certification and the benefits and problems associated with the implementation of an ISO quality system. They found that improved product quality after achieving ISO 9000 certification was reported by the companies surveyed. These companies also admitted that adherence to the standard had made them more focused on customer needs. Consistent with this, both the Australian and US surveys revealed that customers perceived a higher quality of products from the companies achieving ISO 9000 status, and it appears that ISO 9000 has also enabled these companies to improve their market share through greater access not only to domestic markets but also, more importantly, to overseas markets. Idris and Idris (1996) carried out a survey on 247 Malaysian manufacturing companies. The findings highlighted the benefits and difficulties associated with the adoption of ISO 9000 and total quality management, the quality activities most frequently used and the future trend of quality improvement activities.

The surveys also found that the reason for pursuing ISO 9000 certification was pressure from customers. Among the organizational benefits suggested were better documentation, greater quality awareness, enhanced communications and efficiency. Tan and Sia (2001) conducted a survey on a sample of a hundred Malaysian companies that had gained ISO 9000 certification, and found that most companies agreed that gaining certification did improve the quality process as well as the product quality. They also found that, in Malaysia, the reasons for seeking certification for these companies were management-driven as opposed to demand from customers as found in research conducted in developed countries.

At the time of the research, there was a strong indication of an upward trend in the number of service companies seeking certification. This was spurred on by a growing belief that ISO 9000 certification can improve quality in services in Malaysia. Notable among the leading service organizations taking an interest in seeking certification is the Malaysian government, which is directing its own public services departments and agencies to gain ISO 9000 certification.

3.9.1 Reasons for Seeking Quality Certification

Recently, Goodman (1998) stated that it is worthwhile to invest time and expense to be ISO 9000 certified. Raynor and Porter (1991) have found that the primary push for certification in the UK was the perception of the customer. In this case, only ten per cent of the respondents cited improvement in quality as a reason. However, Wong (1998) has identified some major reasons for certification as customer requirements, good management practice, competitors who are certified and instructions from

headquarters. In sum, the most common reason found among the studies done so far is that it is good management practice to have a quality system in place.

Many specific reasons have been advanced in the literature for why companies seek ISO 9000 (Brecka, 1994; Brown and van der Wiele, 1995). According to the literature, the main reasons are condensed into six main themes:

1. Requirement of major customer(s). The immediate and pressing demands of a current major customer or customers.
2. Desire not to be locked out of future tendering processes or markets. This reason has less to do with the immediate demands of a current customer than with the realization that customers may adopt such a requirement in the future (or are currently contemplating it), or the company in the future may wish to enter into markets where ISO 9000 requirements are already prevalent (e.g. export markets, sales to government)
3. Realization that it is progressively becoming a requirement of doing business. The realization that ISO 9000 has assumed the status of a 'fashion' (Kean Report, 1995), and that the company will progressively find itself in a situation where survival becomes more difficult unless it is seen to have embraced the fad. In effect, certification has become a 'license to operate' (Lloyd's, 1994).
4. Useful marketing or public relations tool. The belief that customers will be impressed by the fact that a company has achieved ISO 9000, and will be more likely to channel business in its direction.
5. Desire to improve the company's internal processes. The realization that deficiencies currently exist in the company's internal processes and that better

quality products can be supplied to customers through improvements in the discipline, co-ordination and standardization of operational procedures.

6. Desire to enhance the overall competitive performance of the company. The desire to improve the competitive edge of the company in comparison with its rivals, by lowering costs, increasing productivity, enhancing customer focus and, in general, constantly striving to improve the manner in which it conducts its operations.

3.9.2 Benefits of Certification

Likewise, the two most common benefits of certification reported in the literature are the increase in productivity and access to overseas markets. Indeed, certification provides access to markets such as Japan, Europe and the US because the standards are now widely accepted. Most companies have experienced an increase in their overall sales after certification (Kantner, 1997). Supporting this, Calingo *et al.* (1995) found that ISO 9000 yielded better quality systems, customer satisfaction, competitive advantage and reduction of quality problems. Further, Haversjo (2000) also reported that ISO 9000 certified companies have better earnings (rates of return) than similar non-certified companies, largely due to increased sales. As for country specific studies, Casadesus and Gimenez (2000) have reported that 65 per cent of the certified companies in Spain have experienced high levels of internal (human resources management, operations managements), external (external customer satisfaction, less complaints, repeat purchases), and financial benefits (e.g. market shares, sales per employee, return on sales and return on assets). This is consistent with Kaye (2000) who also reported benefits such as better documentation, greater quality awareness of employees, better internal communication, and an increase in operational efficiency.

Some attempts have been made in the literature to statistically relate ISO 9000 certification to the achievement of various benefits and outcomes. For example, Terziovski *et al.* (1997) attempted to test the relationship between ISO 9000 certification and customer satisfaction in Australian and New Zealand manufacturing organizations. For the purpose of this study, the focus will be a small set of internal benefits to a company, which are both easily understood and readily measured or perceived by the company. The main focus of ISO 9000 is to produce good processes and systems which result in consistent and reliable products and services, in order to satisfy the requirements of customers. A host of benefits could potentially flow from this; it is however, expected, at a minimum, that a company would experience greater consistency in its operational practices and procedures, less waste and rework, enhanced customer satisfaction, a consequent reduction in operational costs, and an expansion of business.

As such, one could say that ISO certification is a necessary condition for good product quality. ISO certification is said to give certain benefits for organizations that can be divided into internal and external benefits.

Internal benefits are related to the internal functioning of organizations. These benefits are related to the process and structure of the organization. They include, for example, increase in productivity, improvement in efficiency, reduction in costs and waste, better management control, clearly-defined organizational task structure and responsibilities, improved co-ordination structure, support in decision making, and increase in personnel motivation.

External benefits are benefits concerning the organization in relation to its environment. Examples of external benefits are: competitive advantage, increase in sales and market share, possibility for entering new markets, maintaining customer relations, finding new customers, increased customer satisfaction, increase in company reliability and reputation which can result in better possibilities for establishing partnerships, co-makerships and mergers.

However, Jones and Arndt (1996) in their Australian study on the impact of time and reasons for seeking ISO 9000 certification on perceptions of benefits received, concentrated on five internal benefits: (1) greater standardization of operational procedures; (2) fewer mistakes and less defective work; (3) fewer customer complaints; (4) more business (i.e. more orders); (5) lower operating costs. They found no support that the benefits of certification increase with time.

3.9.3 Disadvantages of Certification

Besides all the benefits that can be gained by getting an ISO certificate, there are also some disadvantages which result from ISO certification. Some disadvantages which can be often found in the literature are: extra costs for achieving ISO certification, increase in paper workload, no attention to development or personnel, little attention to the support functions in an organization. Furthermore, ISO certification may discourage creative and critical thinking in an organization, because employees are forced to work according to well-described procedures and rules. Critics tend to say that ISO certification brings about a lot of extra costs, and seems not to result in benefits. They think that gaining an ISO certificate is a “hollow achievement” (Jones *et al.*, 1997). For an extensive overview of all the benefits, as well as some

disadvantages, this study refers, for example, to the work of Carlsson and Carlsson (1996), Tsiotras and Gotzamani (1996), Buttle (1996) and Jones *et al.*, (1997).

A common misconception is that ISO will mandate higher levels of product quality (Motwani *et al.*, 1996). ISO certification gives no guarantee that the quality of products or services provided by an organization is better than the quality of those from other organizations. Thus, ISO certified organizations do not automatically have a good product quality. In fact, it is possible that the products or services of a registered organization are of poorer quality, but that this quality is more consistent. However, such an organization can still have an ISO certificate just because the products or services are produced in accordance with the procedures (Meegan and Taylor, 1997). ISO is aimed at production systems, and in this way it ensures that the production process meets the standards or the criteria (Motwani *et al.*, 1996). Therefore, it is more appropriate to say that ISO is aimed at the assurance of consistent quality rather than a higher quality of the products or services of an organization (Tsiotras and Gotzamani, 1996).

ISO 9000 registration is not a panacea for organizational success. Those companies whose objective is merely to 'obtain the certificate' tend to resist fundamental re-examinations of the manner in which they conduct their business, and instead tend to treat ISO 9000 registration as an add-on to their normal business operations. Taylor (1995) has suggested that the lack of benefits from ISO 9000 may be attributable to the level of commitment of senior executives to its implementation. Gore (1994) alludes to the existence of many suppliers who put great effort into gaining ISO 9000

and subsequent follow-up audits, but in between do not actually operate at the level at which they have been certified. Cooper (1995) observes that a system that has been designed primarily to meet a conformance standard, rather than a performance standard, will never minimize costs. Companies that pursue such an approach often emerge from the process with the view that product quality is no better than before, but is now achieved at even greater cost. For them, ISO 9000 becomes a hollow achievement. As a result, according to Kruithof and Ryall (1994), the exercise tends to 'cost' rather than 'benefit' the organization, leading to the adoption of jaundiced opinions about the appropriateness of ISO 9000, and the perception that it engenders few beneficial outcomes.

Nevertheless, the view has been expressed that companies are capable of mellowing with age, and after some period of working with ISO 9000 are better able to appreciate its potential advantages. Osman (1994) argues that ISO 9000 should be viewed as a long-term investment. From an internal viewpoint it takes time for organizations to fully reap the benefits of the process and to make the system work to their best advantage. Accordingly, as successes accumulate, more strident attempts are made to integrate ISO 9000 into the culture of the company, adopting more positive attitudes towards the exercise, and in consequence perceiving more beneficial outcomes for the organization. Evidence that the benefits of ISO 9000 increase over time was provided in a 1993 study commissioned by Lloyds Register Quality Assurance and published in Brecka (1994).

3.10 Hypothesis Development on the Non-Financial Performance Measures

The development of the hypothesis concerning the non-financial factors on ISO 9000 registered companies and non-ISO 9000 registered companies was based on Ritter (1993), Powell (1995), Curkovic and Handfield (1996), Carr *et al.* (1997), Jeng (1998), and Quazi and Padibjo (1998). The work of Ritter (1993) and Curkovic and Handfield (1996) are drawn from the 1992 Baldrige Award Criteria, which are based upon a total of 1000 points, including: 1. Leadership (90 points); 2. Information and analysis (75 points); 3. Strategic quality planning (55 points); 4. Human resource development and management (140 points); 5. Management of process quality (140 points); 6. Business results (250 points); and 7. Customer focus and satisfaction (250 points).

Powell (1995) further developed 15 hypotheses based on the performance of TQM firms. TQM is an integrated management philosophy and set of practices that emphasizes, among other things, continuous improvement, meeting customers' requirements, reducing rework, long-range thinking, increased employee involvement and teamwork, process redesign, competitive benchmarking, team-based problem solving, constant measurement of results and closer relationships with suppliers, Ross (1993). Its adherents claim that managers can implement TQM in any organization – manufacturing, service, non-profit, or government – and that it generates improved products and services, reduced costs, more satisfied customers and employees, and improved bottom line financial performance, Walton (1986). Moreover, Business Week (1993) examined the stock performance of 10 Baldrige winners, reporting that if a person had invested equal amounts in each Baldrige winner when their awards

were announced, the stocks would have appreciated by a cumulative 89.2 percent since 1988, compared to 33.1 percent for Standard and Poor's 500.

Powell's (1995) study did not encounter research comparing survival rates between TQM and non-TQM firms. Also, in 1983 the Union of Japanese Scientist and Engineers published a study of Japanese companies that had won the Deming Prize between 1961 and 1980. The study concluded that these firms had maintained above-average long-range performance, as measured by earnings, productivity, growth rates, liquidity and worker safety. However, the study did not include firms that had not won the Deming Prize, it did not report on the progress of non-TQM firms over the same period, and it did not control for industry factors that might have produced the observed performance differences.

In 1989, the Gallup Organization surveyed 600 senior executives on behalf of the American Society for Quality Control. The study reported that 54 percent of respondents were at least 'pleased' with their quality efforts, and half of these claimed significant performance impacts. The study focused on large firms and did not control for industry factors.

In 1991, the U.S. Government General Accounting Office (GAO), responding to a request from the U.S. Congress, produced a study of the 20 highest-scoring applicants for the 1988 and 1989 Baldrige Awards (U.S. GAO, 1991). The GAO reported that these firms had achieved better employee relations, improved product quality, lower costs, and improved customer satisfaction. According to the study, however, the methodology did not constitute 'a statistically rigorous analysis of the companies'

performance under quality management' (1991: 3); indeed, the study did not control for industry factors, did not include firms that did not apply for the Baldrige award, and did not report on the progress of non-TQM firms over the same period.

In 1992, the Arthur D. Little Corporation produced an in-house report based on a survey of 500 large U.S. firms (Arthur D. Little Corporation, 1992). Ninety-three percent of respondents claimed to have some form of TQM, with 35 percent reporting that their TQM efforts had had 'significant performance impacts,' and 62 percent expecting significant impacts over the next 3 years. Although the methodology was not released publicly, it appears that the study did not include small firms, and did not investigate the performance of non-TQM firms over the same period, Powell (1995).

The most widely cited TQM research project to date was the International Quality Study (American Quality Foundation, 1991), a joint project conducted by Ernst & Young (the accounting and consulting firm) and the American Quality Foundation (the research arm of ASQC, the American Society for Quality Control). This project, which studied the TQM efforts of over 500 automotive, computer, banking, and health care organizations in the U.S., Canada, Germany and Japan, had several shortcomings: it had no theoretical grounding, the research sponsors had vested interests in disseminating TQM (their stated aim was 'to develop an empirical basis for quality improvement worldwide'), it apparently excluded small and medium-sized organizations, and it is not clear whether the study tracked the performance of a control sample of non-TQM firms.

The hypothesis developed in this study is also based on the work of Carr *et al.* (1997); in their study on the differences in strategy, quality management practices and performance reporting systems between ISO accredited and non-ISO accredited companies, they found a significant difference in the business strategies pursued by the two groups, with ISO accredited companies regarding quality as more important than cost efficiencies. However, they found no significant difference in the quality management practices of ISO accredited and non-ISO accredited companies, except in the areas of process improvement and quality measurement. They also found little evidence of differences in reporting systems between ISO accredited and non-ISO accredited companies.

Besides that, Terziovski *et al.* (1997), in their study on the strength of the relationship between ISO 9000 certification and organizational performance in the presence and absence of a total quality management (TQM) environment in Australia and New Zealand, found that ISO certification was not shown to have a significantly positive effect on organizational performance in the presence or absence of a TQM environment.

As Johnson and Kaplan (1987, p.259) stated, ‘short-term financial measures will have to be replaced by a variety of non-financial indicators that provide better targets and predictors for the firm’s long-term profitability goals’.

Nonetheless, by conducting a questionnaire survey and secondary data analysis on both ISO 9000 registered and non-ISO 9000 registered companies, this study hopes to produce a more rigorous set of comparisons between the two groups of companies.

As to the effect on these non-financial performance measures that are used in the questionnaire studies which may manifest into improved financial performance of the companies, looking at one of the leadership factor, where management provides adequate resources for quality improvement, this will improved financial performance of the company where the resources were used efficiently and productively which will result in minimum wastage and therefore will reduce cost for the company. As for information and analysis, where a valid and real time computer based data system can provide adequate information for customers and suppliers which will reduce waiting and storage cost and will subsequently improved financial performance. Looking at the strategic quality planning, where short and long term quality planning that was established by the company will maximized the usage of resources and reduced wastage. As for human resource development and management that have been practiced by the company will produce efficient and productive employees, which will reduce cost and wastage to the company. Looking at management of process quality, where complete process performance evaluation criteria were established which will increase the performance and efficiency of the employees and subsequently improved financial performance. As for customer focus and satisfaction, customers are satisfied with the company's product as their complaints are being dealt with quickly and this will subsequently increased the company's sales and goodwill. Referring to business results, as the number of customers increased due to product satisfaction and this will increase the sales of the company.

Therefore, due to the above discussion which leads to the generation of the following hypotheses for this study, stated in their null forms:

H8a: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of leadership management.

H8b: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of managing information and analysis.

H8c: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of strategic quality planning.

H8d: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of human resource development and management.

H8e: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of management of process quality.

H8f: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of customer focus and satisfaction.

H8g: There is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of business outcomes.

3.11 ISO 9000 and Financial Performance

While many studies have reported better business performance arising from certification, few actually measure financial performance (Corbett *et al.*, 2002; Heras *et al.*, 2002). Corbett *et al.* (2002) gave a comprehensive summary of research on ISO 9000 certification and business and financial performances, showing that there is a clear evidence of benefit from certification. However, Terziovski *et al.* (1997)

reported that certified companies had not experienced reduced costs or lower waste, improved quality or increase in market share. More recently, Aarts and Vos (2001) have studied this issue by examining listed companies in New Zealand for the impact of certification on stock price. Furthermore, Quazi and Padibjo (1998) who reported that certified companies experienced improved quality and increased sales and market share. Likewise, Haversjo (2000) has reported that certified companies had better earnings (rate of return) than similar non-certified companies, coming largely from an increase in sales. The inconsistencies of these findings could be due to the effects of firm size. Population differences (studies on companies of different countries) and methodological errors (e.g. perceived benefits; Haversjo, 2000) can also explain the inconsistency.

Although ISO 9000 contains no more than principles and criteria for a management system and has a strong internal focus, if it is practiced well it is expected to make a significant improvement to a company's performance, Dunstan (1993).

Research relating to the impact of ISO 9000 certification on financial performance is limited and slowly emerging. For instance, Corbett *et al.* (2002) undertook a valuable study by employing event study methodology to test whether ISO 9000 certification led to productivity improvements, market benefits, and improved financial performance. The authors tracked the financial performance of all publicly traded ISO 9000 certified firms in several industrial sectors in the US. They highlighted the fact that those firms who sought their first ISO 9000 certification did indeed experience significant abnormal improvements in financial performance, though the extent to which these were driven by productivity or market effects varied across sectors. In

addition, Corbett *et al.* (2002) reported that publicly traded firms in three U.S. sectors did experience improvements in Return on Assets, productivity and sales, depending on the industry. They concluded that careful design and implementation of consistent and documented quality management systems contribute significantly to superior financial performance. In the context of emerging economies, a limited number of studies have been undertaken to examine companies' performance and the effects of ISO 9000 registration. In Turkey, Cebeci and Beskese (2002) examined the characteristics of 250 companies relating to the implementation of total quality management and ISO 9000. Jeng (1998) focused on the performance of companies that implemented the ISO 9000 in Taiwan. The study found that managers did not overwhelmingly believe that ISO 9000 was an effective strategy for improving performance.

3.12 Summary and Conclusion

As a summary, this chapter discussed on the theoretical approaches of the study, the conceptual framework design of the study and the development of the study hypotheses. The theoretical approach of this study is based on the empirical studies which link organizational configurations or attributes and performance arose in the early 1970s through the work of the strategic group researchers such as Hunt (1972), Porter (1973), Newman (1973) and Hofer and Schendel (1978). Based on the theoretical approach and conceptual framework design, this study suggests that researchers can perhaps best explain the performance implications of organizational configurations by employing deductive approaches to define configurations and predict performance. Such efforts promise not only to help determine the relative

importance of configurations or attributes to the field of strategic management, but also to enhance knowledge of the strategy-performance link that is central to the field.

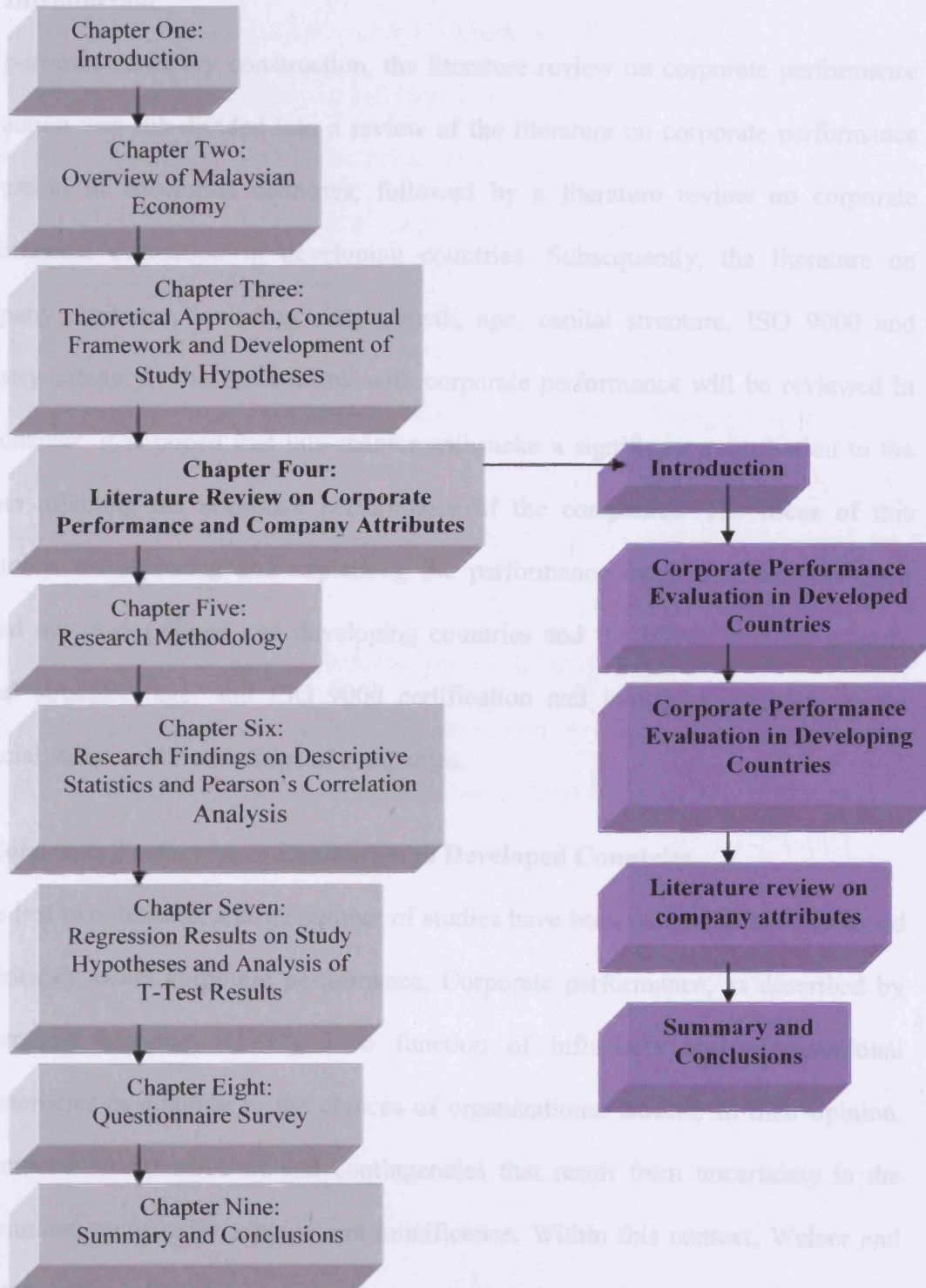
The present study examines whether performance differences exist by using multiple indicators of performance, such as ROA, ROE, ROS, WC, CF, EVA and TQ ratio, when groups are formed using the more commonly accepted grouping techniques, namely, first, using the relative size of a firm as a proxy for group membership (Baumol, 1956; Hall and Weiss, 1967; Gupta, 1969; Grinyer *et al.*, 1980; Coughlan and Schmidt, 1985, Hensen and Wernerfelt, 1989; Lewis and Thomas, 1990) and second, growth of firm's sales (Weston and Mansinghka, 1971; and Dess and Davies, 1984). The third factor is capital structure, as used by Kania and Mckean (1978), Mulford (1985), Bajaj *et al.* (1998) and Oguie *et al.* (2001). The fourth factor, which is firm's age after incorporation, has been used by Rupp and Smith (2002). Another factor that is commonly used is industrial category, which has been used by Bain (1956), Porter (1979) and Schmalensee (1985). Lastly, another important factor that has recently been used by researchers is the ISO 9000 (Corbett *et al.*, 2002; Cebeci and Beskese, 2002; Lima *et al.*, 2000; Jeng, 1998). The study also seeks to reveal the pattern, if any, in the variation of such corporate attributes as maximization of wealth, leverage, liquidity, and profitability between companies operating at different sizes, ages, growth levels, capital structure, ISO 9000 accredited firms and within different industries in developed and developing countries.

The study attempts to offer theoretical justifications and economic explanations for the findings. Due to these factors, the study hypotheses were developed based on the

literature review conducted and the outcome of the study hypotheses will be further explained in Chapter 7 and Chapter 8 of this study.

In the context of accounting and performance, the following chapter focuses on the literature review on performance evaluation that are being carried out in developed and developing countries; and the literature review on the company attributes.

The Thesis Structure



Chapter Four

Literature Review on Corporate Performance and Company Attributes

4.1 Introduction

For purposes of theory construction, the literature review on corporate performance evaluation was sub-divided into a review of the literature on corporate performance evaluation in developed countries, followed by a literature review on corporate performance evaluation in developing countries. Subsequently, the literature on company attributes, including size, growth, age, capital structure, ISO 9000 and industry category, that have a link with corporate performance will be reviewed in this chapter. It is hoped that this chapter will make a significant contribution to the factors affecting the corporate performance of the companies. The focus of this chapter is on exploring and explaining the performance evaluation that has been carried out in developed and developing countries and the effects of size, growth, capital structure, age, and ISO 9000 certification and industrial category on the financial structural relationships of companies.

4.2 Corporate Performance Evaluation in Developed Countries

In the last two decades, a large number of studies have been undertaken in developed countries to assess corporate performance. Corporate performance, as described by Weiner and Mahoney (1981), is a function of influences and organizational characteristics in addition to the choices of organizational leaders. In their opinion, corporations face constraints and contingencies that result from uncertainty in the environment, complexity, change and munificence. Within this context, Weiner and Mahoney believes that business leaders are expected to make strategic choices that

coordinate organizations' activities in the face of external and internal challenges to ensure success.

In the literature, however, a number of measures have been used to proxy corporate performance. For example, Lieberman & O'Connor (1972) in their study of leadership and organizational performance in 167 large U.S. corporations over twenty years used profit level, profitability and stock prices as their proxy for performance variables. According to them, the leadership effect is viewed as a product of an organization's environmental constraints and its leadership variance. They compared the impact of leadership changes with yearly, industry and company influences. They found that industry and company influences account for far more of the variance in two performance variables than does leadership, but not for profit margins after lag effects are considered. Other researchers, such as Pugh *et al.* (1963) used organizational size, ownership and control, charter, and technology as proxy for their performance variables. Haas *et al.* (1963), in their analysis of thirty U.S. organizations of various types, used organizational characteristics such as total size, age, number of operating sites, diversification of activities performed, and type of organizational function as their proxy for performance variables.

The subject of corporate performance has received significant attention from scholars in various areas of business and strategic management. It has also been the primary concern of business practitioners (managers and entrepreneurs) in all types of organizations because the outcome of corporate performance can be detrimental to an organization's health, profitability and ultimately, its survival. High performance organizations are success stories because of their effectiveness and efficiency in

managing their operations, and their positive economic contributions to the well-being of the country and the individual, whereas low performance organizations are not, owing to their lack of such essential attributes, Makhamreh (2000).

It is evident from the literature review that researchers have paid considerable attention to the measurement of corporate performance. For example, De With (1996) investigated the use of Return on Investment (ROI) and Residual Income (RI) to measure and evaluate the performance of 115 Dutch companies listed on the Amsterdam Stock Exchange. He found that even though RI is generally recognized as theoretically superior to ROI, the former is used by just 15.3 per cent of the companies. Spinner (1997), in his search for a new tool to measure company performance, compared Activity-Based Costing (ABC) and Economic Value Added (EVA) and found that EVA is much better than ABC. Heras *et al.* (2002) used profitability ratio (the ratio of net profit before interest and tax on total assets) to measure the audited financial performance of 400 ISO-9000 registered companies with another 400 non-registered companies over the period of five years. Their findings provide objective proof of an association between ISO 9000 certification and superior financial performance. Sirgy (2002) in his conceptual development study on measuring corporate performance (based on long-term survival and growth) used relationship quality among internal stakeholders, external stakeholders and distal stakeholders. Different methods, however, have been employed in the literature to measure corporate performance. Researchers in the U.S. have tended to focus on a balance scorecard particularly since Kaplan and Norton (1992) introduced the idea of links between balance scorecard and performance measures which include financial perspectives (cash flow for survival; quarterly sales growth and operating income for

success; and increased market share and ROE for prosperity), customer perspectives, internal business perspectives and innovation and learning perspectives. Sim and Koh (2001) used balance scorecard in their strategic performance measurement study on 83 electronics companies located within the USA, and found that manufacturing plants that have strategically linked their corporate goals or objectives to their performance measurement systems, via the balance scorecard, performed better than those that do not.

Besides the balance scorecard, return on assets and Tobin's Q were used in the US by Corbett *et al.* (2002), who analysed the financial performance data of ISO 9000-certified companies in three US business sectors over a ten year period (1988 – 1997) against that of control groups of non-certified firms in the same sector which had a comparable business performance. They found that ISO 9000 certification does appear to lead to improved financial performance, measured by Return on Assets (ROA).

UK researchers have employed instruments such as working capital: Bhimani (1993), in his survey of performance measures used in UK manufacturing companies, found that working capital and financial return were widely used performance measures among both Small and Medium-sized Enterprises (SMEs) and large organisation. In addition, Burton (1994), in his research on alternative measures of financial performance used in a divisionalized company, found that among the principal measures used were operating cashflow, controllable profit, return on capital and residual income. Kay and Davis (1990), in their analysis of top corporate performers

in Europe, used Return on Sales (ROS), Return on Assets (ROA) and Value Added per unit of pay.

Besides that, study by Munday, Peel and Taylor (2003) on the performance of the foreign-owned sector of UK manufacturing companies, the variables used are age (given by the current year minus the subsidiary incorporation date) and size of the firm (based on number of employees), as well as year, industry and country effects. Besides that, they used several profitability and tax variables such as return on capital employed before tax (ROCBT), profit margin before tax (PMBT) and tax as a proportion of turnover (TAXTURN). Data from 2,813 manufacturing companies with up to five years (1994-98) were collected, with 57.1 per cent being under domestic ownership and 26.4 per cent, 4.8 per cent, 6.9 per cent and 4.7 per cent being owned by US, French, German and Japanese parents respectively. Among the findings are the consistently poor relative reported profit performance of foreign manufacturing subsidiaries operating in the UK, and evidence that there are significant differences in average reported performance between subsidiaries from different national sources even after controlling for a series of industry, size, home-performance and age effects.

However, Zaman and Unsal (2000) compared the performance of American, European and Japanese automobile companies in the 1990s using sales, net income and financial ratios such as the cost of goods sold to sales, net income margin, return on assets, capital expenditure to sales, asset turnover, inventory turnover, foreign return on assets, foreign income margin and foreign sales to total sales. Among their findings are that Japanese automobile companies maintain stable economic performance; even though their average profit ratios are not much different than those

from other countries, they seem to suffer less volatility. As for the US, although its economy enjoyed remarkable growth during the study period, the performance of US automobile companies has not been as spectacular as the wider economy when the average net income margin and return on assets are examined.

In Europe, the focus is generally on return on investment and return on assets. Return on Investment (ROI) was used by De With (1996) to measure and evaluate the performance of 115 Dutch companies listed on the Amsterdam Stock Exchange. Rate of return was used by Haversjo (2000) in his study on the financial consequences of ISO 9000 registration for Danish companies, and he found that in the year prior to ISO registration, the company's rate of return was 20 per cent higher than that of the non-ISO registered companies. Two years after registration, the rate of return of ISO registration companies increased to 35 per cent. Heras *et al.*, (2002) in their study on ISO 9000 in Basque firms and its link to improved audited financial performance, used return on assets. Similarly, research in New Zealand focuses on cash flow and economic value added, Perkins and Van Zyl (1994).

On the other hand, a number of studies have been undertaken in developed countries that have attempted to determine the motivations behind firms' desire to seek ISO 9000 certification. The evidence seem to point to the view that ISO 9000 is adopted to improve quality, corporate image, gain market advantage, enhance internal procedures and increase customer satisfaction as well as obtain other managerial benefits. Examples of these studies include Carlsson and Carlsson's (1996) study on the experiences of implementing ISO 9000 in Swedish industry, which found that implementing ISO 9000 brings about positive changes in management. Brown *et al.*,

(1998), in their study of the experiences of Australian small enterprises with ISO 9000, found that the most important benefits mentioned by the respondents cover not only improvements in the quality of products and services, but also improvements in quality awareness and improved management control.

However, Anderson *et al.* (1999) study on why North American manufacturing firms seek ISO 9000 certification found that contrary to the view held by many critics of the ISO 9000 quality assurance standards, certification is not sought primarily in response to regulatory requirements. They found strong evidence to support proponents' claims that managers are obtaining ISO 9000 certification as a credible public signal of effective quality management practices. They also found that firms that sell in industries regulated by the European Community and for which ISO 9000 can serve as one means of compliance are more likely to obtain certification. No evidence was found of regulatory requirements being imposed on U.S. government suppliers; however, selling to industrial customers does make a firm likely to seek certification.

In contrast, research undertaken in the UK by Vanguard Consulting (1994) concerning the benefits of ISO 9000 revealed that only 15 per cent of their respondents believed that they experienced the benefits that were claimed by the British Standards Institute. The study also highlighted that the companies who reported success with ISO 9000 had introduced it for broader reasons, but in the main, companies were somewhat critical about standards in general and the expertise which was available to them to implement such standards. In relation to the attitudes of companies in the Netherlands, Singels *et al.* (2001) reported that ISO certification in itself does not lead to an improvement in the performance of organizations. The

authors conclude that most organizations pursue certifications as a result of external pressures, which often results in hollow achievements. Only when an organization is internally motivated to improve its organizational processes will certification result in an improvement of its performance.

Research relating to the impact of ISO 9000 certification on financial performance is limited but is slowly emerging. For instance, Corbett *et al.* (2002) undertook a valuable study by employing event study methodology to test whether ISO 9000 certification leads to productivity improvements, market benefits and improved financial performance. The authors tracked the financial performance of all publicly traded ISO 9000 certified firms in several industrial sectors in the US. They found that those firms that sought their first ISO 9000 certification did indeed experience significant abnormal improvements in financial performance, though the extent to which these improvements were driven by productivity or market effects varied across sectors. In addition, Corbett *et al.* (2002) reported that publicly traded firms in three US sectors did experience improvements in Return on Assets and, depending on the industry, also in productivity and sales. They concluded that careful design and implementation of consistent and documented quality management systems could contribute significantly to superior financial performance.

Nevertheless, Terziovski *et al.* (1997) found that higher reported business performance is positively associated with a broader set of motivations for seeking ISO 9000 certification. Anderson *et al.* (1999) found that US firms with higher exports to Europe are more likely to seek ISO 9000 certification. Adams (1999) found that ISO 9000 certification in New Zealand increases with firm size, Tobin's Q and market

segmentation. Naveh and Marcus (2004), using a detailed survey of ISO 9000 in the US, found that 'going beyond' the requirements of the standard increases its value to the firm.

King and Lennox (2001) and Russo (2001) found some evidence that ISO 9000 and ISO 14000 certification respectively improve firms' environmental performance, suggesting that both standards do have an impact on production practices. Nicolau and Sellers (2002) carried out an event study on Spanish firms, which revealed a positive stock price effect on the day of certification itself. However, Singels *et al.* (2001) found no link between ISO 9000 and performance in Dutch firms.

However, Lee and Palmer (1999) performed an empirical examination of ISO 9000 registered companies in New Zealand, classifying their respondents into company size based on number of employees, type of ISO 9000, location of market, ownership and duration of ISO 9000 implementation. 300 respondents to the survey were selected using simple random sampling from 432 companies that were identified as having had ISO 9000 accreditation for at least one year. 121 responses were received, with a response rate of 40.3 per cent. Among the findings, large companies appeared more likely to use ISO 9000 as a precursor to TQM, whereas small companies are satisfied with ISO 9000 accreditation. This was due to lack of resources such as manpower, financial resources and time that cause small companies not to advance to further quality programmes after obtaining the ISO 9000 certificate. Another key finding of this study was that large firms are more knowledgeable than small firms about the need to adopt a TQM culture. This may be due to the greater propensity of large firms to have specialist staff to deal with the more complex operating system. As for the

challenges in maintaining ISO 9000 standards, the survey found that ISO 9000-registered companies had difficulties in relating ISO 9000 principles to their work, as the paperwork involved does not reflect what people actually do. Also, the survey findings showed that the perceived performance of companies improved significantly after implementing ISO 9000 quality programmes for both small and large companies. This implies that ISO 9000 has provided companies with tools for developing the planning process, which may be the most important initial step in the management of a company's quality performance. ISO 9000 implementation is perceived to bring about enhanced management leadership, improved training and communication, better customer focus and better relationships with suppliers.

Beattie and Sohal (1999) carried out a questionnaire survey study on the benefits of implementing ISO 9000 among Australian organizations. The initial 1991 survey was repeated in 1993, from which 313 replies were received with a response rate of 32 per cent. Among the findings of the study on the benefits of ISO 9000 were that it gives confidence that the supplier can consistently meet the customer's requirements. Governments regard ISO 9000 certification as a means of increasing the efficiency of industry, which will eventually allow businesses to gain overseas markets and improve the balance of trade. Also, the study found that the more enlightened firms used ISO 9000 as an opportunity to improve their internal operations.

Hendricks and Singhal (1997) carried out a study on the implementation of effective TQM in terms of improving the operating performance of 463 quality award companies based on Compustat's Annual Industrial File. They used six indicators of financial performance to illuminate the impact of TQM. These were: change in

operating income, change in sales, change in return on assets, change in return on sales, change in total assets and change in number of employees. They found reasonably strong evidence that firms that have won quality awards do better on sales growth than the control firms. Hendricks and Singhal (2001) carried out a further study on firm characteristics and financial performance, using firm size, the degree of capital intensity, the degree of diversification, the timing of TQM implementation, and the maturity of the program. They used operating income before depreciation as their primary measure of performance. They found, amongst other things, that smaller firms do significantly better than larger firms and firms that have won awards from independent bodies do significantly better than just supplier award winners.

However, Eriksson and Hansson (2003), in their study on the impact of TQM on financial performance of Swedish quality award recipient companies, used percentage change in sales, Return on Assets (ROA), Return on Sales (ROS), percentage change in total assets and percentage change in number of employees as their performance measures. They found that the award recipients as a group outperform their competitors in most of the indicators, especially change in number of employees, return on sales and return on assets.

Caloghirou *et al.* (2004) did a survey study on 280 Greek manufacturing firms to examine the impact of industry- and firm-specific factors on the profitability of the firms. Industry effects were represented using industry concentration, product differentiation, and stage of life cycle. Firm factors include assets and dynamic capabilities. Assets were related to marketing, production, technology and finance, whereas dynamic capabilities were related to the managerial processes of

coordination/integration, learning, and the capacity to change. The performance measures used were profit margin, return on assets and net profits. They found strong evidence that firm factors exert a much stronger impact than industry, in both SMEs and large enterprises.

McGahan (1999) performed a study on the performance of US public firms between 1981 and 1994. The study decomposed the firms into year, industry, corporate focus and firm effects. The performance was measured by Tobin's Q, accounting profitability (ratio of earnings before interest and taxes to assets), and the return on the replacement value of assets. Among the findings were that across all measures of performance, industry effects were important, stable, and predictable. A corporate-focus effect, which arises from relatedness in diversification, had either no influence or a very small influence on corporate performance. Year effects had a small but significant impact on corporate performance. Overall, firm effects were about twice as important as industry effects to performance, but were less stable and less predictable.

Wernerfelt and Montgomery (1988) studied Tobin's Q among 247 American manufacturers in 1976, and confirmed the importance of industry. They also found that the effect of corporate focus – which captured relatedness in diversification – was small but significant.

4.3 Corporate Performance Evaluation in Developing Countries

It was mentioned earlier that very few studies exist that focus on the impact of ISO 9000-certification and company performance. In a Malaysian setting, this is the first study that specifically attempts to examine the financial impact on Malaysian firms

that adopt ISO 9000. Besides, ISO 9000, other company attributes that were used by other researchers were being applied in this study which include company size, capital structure, age, growth and industrial category. Nevertheless, studies relating to intellectual capital and business performance in Malaysian industries have revealed that the development of structural capital has a positive relationship with business performance regardless of type of industry in Malaysia, Bontis *et al.* (2000).

The performance of the Malaysian Islamic Bank has been the focus of studies by authors such as Ariff (1989) and Sum (1995). However, these studies have failed to use statistical techniques to determine performance. They have also failed to undertake inter-bank comparisons with conventional banks.

However, Idris *et al.* (1996) carried out the first survey ever conducted for Malaysian companies regarding ISO 9000 and TQM implementation. The respondents were broken down by size, years of experience in ISO 9000 and type of industry. Among the findings of the survey on the reasons given for getting certified standards are: 1. to improve performance; 2. ISO 9000 as being part of TQM; 3. customers' demand for ISO 9000; and 4. ISO 9000 being accepted as good practice in the industry.

In contrast, specifically relating to the performance of the Malaysian Islamic Bank (BIMB), Samad and Hassan (1998) found BIMB to be relatively more liquid and less risky compared to a group of eight conventional banks in Malaysia. On the measure of profitability performance of these banks, they used Return on Assets (ROA) and Return of Equity (ROE). The higher ratio of ROA and ROE indicates higher ability and is therefore an indicator of better performance.

In the same manner, Loo *et al.* (2000) studied the innovativeness in the use of performance measures in Malaysia and found that cash flow and profit related measures (such as profit after tax and profit margin) were frequently used by organizations as performance measures. Murugesh *et al.* (2001) explored the use of performance measures of the Malaysian industries and found cash flow to be used as a major accounting measure.

In the context of emerging economies, only a limited number of studies have been undertaken on company performance and the effects of ISO 9000. In Turkey, Cebeci and Beskese (2002) examined the characteristics of 250 companies relating to the implementation of total quality management and ISO 9000. The study focused little on financial information by limiting itself to total sales in relation to exports. The main thrust of the study was connected to TQM issues such as the total number of employees involved in quality circles (QCs), the period of the QC meetings and the annual training hours per employee.

On the other hand, Sankaran (2002) focused on financial performance by examining ten major pharmaceutical companies (five Indian and five multi-national corporations), using return on investment and other financial performance measures such as liquidity, profitability and solvency. The study pointed to a number of factors that may contribute to the performance of MNCs: (1) their net and gross margins were high due to the increase in sales and overall control of costs, (2) their debtors and stock turnover were less than the industry average because of the strong brand equity and distribution network, and (3), their debt content was either very low or zero, making them highly solvent. However, despite the fact that Sankaran (2002) has

provided useful evidence on the financial performance of Indian companies, he does not focus on issues related to ISO 9000.

However, Jeng (1998) focussed on the performance of companies who had implemented the ISO 9000 in Taiwan. The author employed discriminant analysis and cross sectional survey methodology to determine whether implementation efforts towards quality had improved total company performance. The six major performance dimensions included were leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, and customer focus and satisfaction. The study found that managers did not overwhelmingly believe that ISO 9000 was an effective strategy for improving performance. Approximately thirty per cent of managers did not regard the procedure of ISO 9000 as the best way, or as a necessary approach for improving organizational performance. The belief of these managers was that companies should not use a short-term approach like adopting ISO 9000, and they preferred using long-term strategies such as TQM principles to improve quality and total organizational performance.

In addition, Lee's (1998) survey of certified firms in Hong Kong on the development of ISO 9000 certification found that the main reason for small and medium firms in the service sector to become ISO 9000 certified was to satisfy their customers' requirements. He also found that the majority of construction firms were under customer pressure when seeking ISO 9000 certification. Besides that, he also found that the benefits gained by the ISO 9000 certified firms included achieving better team spirit, having fewer staff conflicts, reducing wastage, increasing efficiency,

improving sales through attracting new customers, and getting less customer complaints.

Nevertheless, Lima *et al.* (2000) also attempted to link ISO 9000 and financial performance in a sample of Brazilian companies. The authors used five separate financial indicators to proxy performance: operating income to total assets, net income to total assets, sales to total assets, operating income to sales and net income to sales. They found that only sales to total assets gave a strong result in terms of a superior performance by certified firms.

Furthermore, Quazi and Padibjo (1997) carried out a questionnaire study on thirty-nine Small and Medium-sized Enterprises (SMEs) in Singapore that were on their journey toward quality management through ISO 9000 certification. They found that ISO 9000 certification had provided significant benefits for these SMEs and these enterprises were slowly progressing toward becoming TQM organizations. The government initiatives had played a key role in helping the local industry progress towards “quality class” companies. They also found that some companies genuinely used ISO 9000 certification as a stepping stone toward TQM and did not merely view ISO 9000 certification as a marketing tool, as reported worldwide.

In addition, Chua *et al.* (2002) examined the issues of ISO 9000 certification and its perceived benefits for Singapore companies. The results from their survey of 146 firms suggested that while ISO 9000 certification led to better overall financial performance, non-listed certified firms experienced better documentation procedures,

higher perceived quality of products or services, and more effective communication among employees than the listed certified firms.

Leung *et al.* (1999) carried out a survey of some 500 ISO 9000 certified companies in Hong Kong on the costs and benefits of obtaining ISO 9000 certification. They found that more than 65 per cent believed that ISO 9001 certification was worthwhile, and more than 76 per cent believed that the cost of certification was inexpensive. Their results indicated that companies that sought certification because of their customers' requests seemed to gain less benefit from ISO 9000 certification. They also found that concern about the high costs of certification was much less after initial certification. In addition, they discovered that contrary to many people's expectations, some factors did not have any bearing on whether the benefits of certification outweigh the costs.

Furthermore, Ali (1994), in his descriptive study of the Malaysian experience in implementing International Quality System Standards, found that some very significant developments had occurred: (1) these standards have taken the movement for quality in Malaysian industry to a higher stage; (2) there is a developing pool of quality consultants and trainers in Malaysia; (3) there is a more rapid increase in the number of companies seeking and obtaining ISO 9000 registration; (4) the Malaysian Accreditation Council has been established, which will further promote the development of third-party ISO 9000 registration activities.

In a further study, Tan and Sia (2001) carried out a survey on a sample of 100 Malaysian companies that had gained ISO 9000 certification. The survey mainly focused on whether achieving ISO 9000 status was perceived as having contributed to

the implementation of total quality management in these companies. They found that, like their counterparts in the developed countries, most companies surveyed agreed that gaining ISO 9000 certification did improve the quality process as well as product quality. They also found a major difference in the reasons for seeking registration; for these Malaysian companies; the decision was management-driven, as opposed to being a response to demand from customers as found with their counterparts in developed countries.

In addition, Naser *et al.* (2004) carried out a study on the impact of ISO 9000 registration on performance of Malaysian companies using four measures of company performance, Return on Sales (ROS), Lender Security (LS), Cash Flow (CF) and Economic Value Added (EVA). They found that ROS and EVA determined the performance of the Malaysian listed companies. They also found that the ISO 9000 accredited companies outperformed the non-accredited ISO 9000 companies during the period of their study.

In addition, Mokhtar *et al.*(2005) undertook a study on the relationship between company financial performance and ISO 9000 registration of Malaysian companies using Return on Assets (ROA), Return on Equity (ROE), Economic Value Added (EVA), Return on Sales (ROS), Working Capital (WC), Lender Security (LS), Tobin's Q ratio (TQ) and industry category. They examined the annual reports of 162 companies (81 ISO 9000 accredited companies and 81 non-ISO 9000 accredited companies) were collected and a performance evaluation model was estimated. They found that factors such as ISO 9000 registration, ROA, EVA and industry category determine the corporate performance of Malaysian companies.

Nevertheless, Huarng *et al.* (1999) ran a survey on the benefits from ISO in Taiwan and found that adoption of ISO brings registered Taiwanese enterprises significant assistance in terms of quality improvement, international competitiveness, cost reduction and increased sales. The survey questionnaire was mailed to 1004 companies listed in the directory of Bureau of Commodity Inspection and Quarantine in Taiwan at the end of July 1996. A response rate of 37.45 percent was achieved, whereby 376 questionnaires were returned by respondents. It was found, amongst other things, that obtaining the ISO 9000 certificate may lead to higher customer satisfaction, which may then lead to improvement in sales, and having an international motivation behind the drive for ISO 9000 can contribute positively to international performance. Therefore, this finding strongly suggests that ISO 9000 can be a powerful tool for firms to achieve international competitiveness, and this study also found that international motivation contributes positively to sales performance.

4.4 Literature review on Company Attributes

In order to answer the main research question as to why do some firms perform better than their counterparts, this study selected six internal and external factors based on the literature search that have been made in the earlier chapter. The six company attributes selected include company's size, growth, capital structure, age, the industrial category which the company operates, and ISO 9000 registration.

4.4.1 Company Size

The hypothesis that corporate performance increases with the size of the firm was developed by Baumol (1956), who found that the rate of return of a firm increases with the firm's size. Hall and Weiss' (1967) study on the relationship between firm

size and profitability on the Fortune 500 Largest Industrial Corporations for the years 1956 to 1962 found that size did tend to result in high profits rates, as Baumol proposed. The size-profits hypothesis was one of the bases for Baumol's contention that entrepreneurs forego current profits to maximize growth, Baumol (1959, p. 33).

In addition, Christensen and Montgomery's (1981) study used size, sales growth, earnings growth, EPS growth, PER, ROCE, ROE, equity/capital ratio and risk premium ratio as their corporate economic performance measures in measuring the diversification strategy and market structure of a sample of a hundred and twenty-eight Fortune 500 firms. The study results indicate that performance differences could be demonstrated for some of the categories, but across the range of categories, the hypothesis of performance differences was rejected. Also, the study found that categories associated with distinctly high or distinctly low economic performance were also associated with significant differences in a series of market structure variables.

As many studies used company size based on total assets, this present study also used total assets as a basis to determine company's size. Total assets being used because it is an easy and a straight forward measure of company's size compare to number of employees, as the information in getting the right number of employees for a certain company is quite difficult to get especially for Malaysia, which is considered as a developing country.

Besides that, Marcus' (1969) study on profitability (ratio of net profits before tax plus interest payment to total assets) and the size of firms found that size of firm influences

profitability in some, but not in all, manufacturing industries; in seventy-four of a hundred and eighteen industries. His basic data source was the Internal Revenue Service Statistics of Income Source Book on manufacturing industries over a period of three years, 1959 – 1962.

Also, Gupta (1969) carried out a study on the effect of size, growth and industry on the financial structure of a hundred and seventy-three American manufacturing companies for the year 1961 – 1962. Firm size was based on total assets, firm growth rate was based on annual average compounded growth rate in sales, while concentration ratio and technology rates were used as causal factors, and were measured against financial variables which include return on net worth, fixed asset turnover, total debts/total assets, current ratio and total asset turnover. Among the findings, activity ratios and leverage ratios were found to decrease with an increase in the size of the firm, but to increase with the growth of the firm. Liquidity ratio rose with an increase in the size of the firm but fell with the growth rates. The larger-sized firms tended to have higher profit margin on sales than the smaller-sized firms.

Nevertheless, Laitinen (2002) carried out a study on financial ratings of European Technology companies. The data from European companies was sampled from the AMADEUS (Analyse Major Database from European Sources). The final sample included 5,998 companies from seventeen European countries and 372 companies from the US, taken from COMPUSTAT (Standard & Poor's Compustat Services, Inc.) database, that included financial, statistical and market information. Six measures of performance (indices) were used to form the data, including traditional (accrual-based) cash flow, operational (cash-based) cash flow, profit after taxes,

three-year cumulative profit for the period, growth in shareholder equity and financial performance index. Nine financial variables were calculated on the basis of financial statement information from 1993 – 1996. The variables applied were size based on total assets, fixed assets to total assets ratio (technology), return on investment ratio, return on assets ratio, return on equity ratio, cash flow to equity ratio, cash flow to assets ratio, quick ratio and equity to assets ratio. It was found that the most significant explanatory variables in predicting three-year success by logistic analysis were return on investment ratio, size, and cash flow to equity ratio.

4.4.2 Company's Growth

The most commonly used alternative profitability measure is the growth rate. The growth rate used in this study is based on growth in sales. Among studies that used company's growth as a proxy for performance measures include Dess and Davies (1986), Lee *et al.* (1990) and Johnson and Soenen (2003).

Dess and Davies (1986) carried out a study on the determinants of strategic group membership and organizational performance of U. S. firms. Annual sales growth and return on total assets were used as performance measures, and were measured against cluster of strategic group membership. Among the findings, based on sales growth, the overall F-ratio indicated that the groups were significantly different from one another. Based on return on total assets, the highest average annual return was achieved by cluster one, which emphasised overall low cost.

Nevertheless, Lee *et al.* (1990) study focused on profitability and sales growth in industrialized versus newly industrializing countries. The profitability and growth of

four hundred firms in the U.S., Japan, the Republic of Korea and Taiwan were measured using four common measures of profitability (return on equity, return on assets, return on investment and return on sales) and one measure of growth (growth rate of sales). They found that U.S. firms led others in profitability but were followed by South Korean and Taiwanese firms in terms of sales growth.

Furthermore, Johnson and Soenen (2003) carried out a study on the indicators of successful companies using Compustat data for 478 companies covering the period 1982-1998, which investigated factors that discriminate between financially successful and less successful companies. Financial success was measured using three different methods, i.e., the Sharpe ratio, Jensen's alpha, and EVA. They examined ten possible indicators for selecting financially successful companies, which included book-to-market ratio, size based on total assets, sustainable growth rate based on earnings retention rate (r) and the return on equity ($SG = r * ROE$). Profitability based on return on assets (ROA), capital structure based on the ratio of long-term debt to total assets, liquidity based on cash and marketable securities as a fraction of total assets, cash conversion cycle based on working capital management, earnings volatility based on the standard deviation of annual differences in earnings before interest and tax over a five-year period divided by the five-year average in total assets. Research and development expenditure and advertising expenditure were also used as indicators. A binary logit model was applied to quantify the relationship between the individual firm characteristics and the probability that a particular measure of success would be greater or lower than the average for all firms considered. It was found that especially large, profitable firms with efficient working capital management (i.e., relative short cash conversion cycles) and a certain degree of uniqueness (measured

by advertising spending relative to sales) outperformed the sample average on the three performance measures.

4.4.3 Company's Capital Structure

Another variable that will be used in the present study is capital structure. Based on the literature review, studies that used capital structure as one of the variables to measure performance include Mulford (1985), Bajaj *et al.* (1998), Oguie *et al.* (2001) and Allayannis *et al.* (2003). Various measures of capital structure have been adopted in the literature, depending on the objective of the analysis. Capital structure could be measured in terms of book value for example, the ratio of book value of debt to book value of equity used by Kania and McKean (1978) and Bajaj *et al.* (1998), the ratio of the book value of total liabilities to book value of total assets. This study uses capital structure ratio as the ratio of debt total assets. This is due to the 1997 Malaysian financial crisis as being explained in Chapter 2 of the thesis, where some companies were found to be insolvent and are having a negative amount of equity. Therefore, by measuring capital structure as debt to equity ratio might be misleading, Ku Nor Izah (2003).

Capital structure or leverage ratio was used by Kania and Mckean (1978) in their empirical study on the effects of control type on firm performance. Four measures of performance were considered: 1. Return on equity, 2. Operating net income to total assets minus cash, 3. Net sales to total assets, and 4. Net income to net sales. Besides that, time, debt to equity ratio and firm size (based on total assets) are additional factors that were used to covariate the performance measures. Their samples are from 1800 largest firms in U.S and the sample industries were defined at the 4-digit SIC

level. Among the industries selected were meat packers, breweries, textiles, textile-apparel, specialty chemicals, miscellaneous metal work, machine tools, electronic components, auto parts, retail department stores and retail food chain. They found that there is a significant difference between owner-manager control in the meat packing industry for measures 1 and 4, in textile apparel for ratio 2, and in the retail department store industry for ratio 3. Besides that, they found no significant correlation across industries between market share held by the firms and owner-manager control performance.

However, Mulford (1985) study on the importance of a market value measurement of debt in leverage ratios used three debt-to-equity ratios: 1. the book value ratios (book value debt over book value equity); 2. book value debt to market value equity; and 3. market value ratios (market value debt over market value equity) as their measures of financial leverage of firm. He used the book value measures for a sample of 100 firms, which were drawn from the annual COMPUSTAT industrial file for the years 1979 and 1980. He found that financial leverage ratios computed using market-value-based measures of debt consistently exhibited a greater association with market beta than did their book-value-based counterparts.

In another study that used the debt to equity ratio, Bajaj *et al.*'s (1998) study on the relationship between ownership, financing decisions and firm performance used performance measures such as Tobin's Q ratio, and elements of financial structure such as the debt-structure, i.e. the debt-equity ratio. Bajaj *et al.* (1998) find that ownership, which is a signal of firm's 'quality', is positively correlated with Tobin's Q and also positively correlated with various measures of the debt-equity ratio.

In addition, Oguie *et al.* (2001) conducted a study on the impact of inflation and other factors on the growth of business firms operating in South Africa. A data set of South African firms' financial statements over the period 1983 –1996 was assembled to permit a detailed examination of the impact of inflation on firms' financial performance. Employing both direct and indirect measures of inflation, they concluded that inflation affects growth in a negative manner; a firm's debt to equity, sales to assets, and profitability ratios are all positively associated with growth and adversely affected by high inflation; a firm's working capital to sales ratio is negatively related to growth and is positively affected by high inflation; and there is a real, measurable impact of the financial instabilities associated with apartheid on firm growth.

4.4.4 Company's Age

Another important variable that will be used in the study is the firm's age since incorporation. Studies that have used firm age as one of their variables include, Khan and Rocha (1982), Carroll (1983), Kalleberg and Leicht (1991), Brush and Chaganti (1999) and Rupp and Smith (2002).

Khan and Rocha (1982) analysed recurring problems generally experienced by small business. It reviews performance studies made of fifty-two companies sponsored by the Small Business Administration over the period 1977 to 1981 to determine whether some broad operational patterns can be observed. Among the determinants of performance used in this study were type of ownership, annual sales, total assets and company age. The problem areas identified were marketing, accounting, inventory control, and cash flow management. Of the firms studied, those most vulnerable to

operational deficiencies were retailing sole proprietorship and are under five years of age. An important finding was that the salient dilemma of these enterprises was lack of information about the target market. Ignorance of the target market can lead to slow inventory turnover, the existence of which may be obscured by deficient accounting. A severe cash shortage generated by these circumstances may not be detected on a timely basis, again due to deficient accounting. A financial crisis may result in bankruptcy.

However, Kalleberg and Leicht (1991) did a study on determinants of small business survival and success used organizational age, gender differences, industrial differences, organizational size and personal attributes as determinants of small business success. Their analyses were based on data collected annually over a three-year period (1985 to 1987) from an initial group of 411 companies in the computer sales and software, food and drink, and health industries in South Central Indiana. They found that businesses headed by women were not more likely to go out of business, than those owned by men; nor were they less successful. They also found there were no overall differences among industries in terms of the probability of business survival, older companies were less likely to go out of business and a company's size was positively related to its earnings growth for both men's and women's businesses.

Besides that, Brush and Chaganti (1999) used age, size (based on number of employees), and industry on their research on factors influencing the performance of 195 service and retail firms operating in central New Jersey, using a structured questionnaire. The dependent variable performance was measured in two ways: net

cash flow and log of growth in employees over 3 years. Their analyses showed that although growth was more rapid among the youngest firms, there were no distinctive resource-based correlates to growth in either age group. They also found that the human and organizational resources are associated with more positive cash flow, whereas industry and market factors are related to growth.

In addition, Rupp and Smith's (2002) study of the dispersion of CEO compensation in the metals industry found fairly strong support for the relationship between executive bonuses and firm performance as measured by ROE. Among other variables used to measure the executive bonus variation were the age of the firm, diversity of the firm and the percentage of insiders on the board of directors. The study found no support for the relationship between base compensation and the various firm and executive related factors. However, when total cash compensation was considered, the age of the firm became significant.

4.4.5 Industry Category

Industry category or classification is another attributes variable that will be used in this study. The industry category that is being used by this study include industrial product, consumer product, construction, trading and services, plantation and other industries. Among studies that utilises industry category as one of the attributes to measure performance are Bain (1956), Marcus (1969), Shepherd (1972), Demsetz (1973), Mancke (1974), Kania and McKean (1978), Porter (1979), Scherer (1980), Khan and Rocha (1982), Schmalensee (1985), and Hensen and Wernerfelt (1989).

Porter (1979) suggested that links exist between a firm's profits and industry structure, and thus that firms in some strategic groups would be more profitable than others. For example, General Motors has persistently outperformed Ford, Chrysler, and American Motors. IBM outperforms other computer manufacturers. Crown Cork and Seal persistently outperforms National Can, American Can and Continental Can. Demsetz (1973) has, for example, found that the profits of smaller firms are not higher in concentrated industries than they are in unconcentrated industries, though the profits of larger firms are. Shepherd (1972) argued that market power is firm-specific and dependent on the firm's own market share, implying that profit rates increase systematically with size within an industry. Yet Marcus (1969) found that the relationship between firm size and profitability within an industry is erratic, with some industries exhibiting positive relations, some negative relations and others no apparent statistically significant relation at all. However, Mancke (1974) argues that firms that are lucky in their drawings from probability distributions surrounding competitive moves such as new product introductions will be more profitable. These lucky firms will be able to fund faster growth, and thus will outdistance their competitors and concentrate the industry. Thus the leading firms in concentrated industries will be more profitable because they are lucky and not because they possess market power.

Nevertheless, Hensen and Wernerfelt's (1989) study on the determinants of firm performance used accounting rates of return as their measure of performance. Besides that, they used industry variables and firm size. The inclusion of industry variables has a long tradition, most often associated with Bain (1956), and is concerned with identifying properties of industries contributing to above-average profitability. A

study by Schmalensee (1985) revealed that differences between industries, as measured by average industry return on assets, account for almost all the explained variance in business unit performance. While there is a range of specific models, major determinants of firm-level profitability include: (1) characteristics of the industry in which the firm competes; (2) the firm's position relative to its competitors; and (3) the quality and quantity of the firm's resources.

4.4.6 ISO 9000 Certification

As ISO 9000 certification will be used as one of the company attributes in this study, other studies that utilises ISO 9000 certification to measure performance are Naveh and Marcus (2004), Cebeci and Beskese (2002), Corbett *et al.* (2002), Aarts and Vos (2001), Haversjo (2000), Carr *et al.* (1997) and Terviovski *et al.* (1997).

Naveh and Marcus (2004) study on ISO 9000 and performance improvement. Their study draws on four sources to show how ISO 9000 can lead to performance improvement which include a case study of a telecom company and a survey of 1,150 North American Companies. They find that the extent to which ISO 9000 is associated with performance improvement depends on the level of its assimilation, and the degree to which an organization goes beyond the minimal requirements of the standard.

However, Cebeci and Beskese (2002) study on the evaluation of quality performance which include ISO 9000 of the companies in Turkey, where a cross-sectoral and cross-regional questionnaire survey was conducted to collect the primary data, where it covered approximately 250 companies and produced 91 usable responses with 36

response rate. They found that quality and export sales can drive each other to the higher levels, where a company has higher quality products, it will be much easier to increase the export sales. On the other hand, increasing the export rate will force the company to pay much attention to its quality level.

Besides that, Corbett *et al.* (2002) employed an event study methodology on U.S. firms, to test whether ISO 9000 registration leads to productivity improvements, market benefits, and improved financial performance. They tracked the financial performance of all publicly traded ISO 9000 registered firms in several industrial sectors in the USA. They found that firms sought their first ISO 9000 certification did indeed lead to significant abnormal improvements in financial performance, though the extent to which these are driven by productivity or market effects varied across sectors. They also reported that publicly traded firms in three US sectors did experience improvements in Return on Assets and, depending on the industry, also in productivity and sales. They concluded that careful design and implementation of consistent and documented quality management systems contribute significantly to superior financial performance.

Nevertheless, Aarts and Vos (2001) have studied the issue of the relationship between ISO 9000 and financial performance by examining New Zealand listed companies for the impact of certification on stock price. This study addresses the question of whether the shareholders of New Zealand firms benefit from the process of gaining ISO registration. Three major questions with regard to ISO registration within the New Zealand business context are raised: 1. how New Zealand public firms' stock prices react to the announcement of ISO registration, 2. whether ISO registered firms

perform any differently to the New Zealand market on average, and 3. whether the choice of certifying authority - organization that awards ISO registration - has an influence on the subsequent performance of the ISO registered firms' performance. This study is conducted from a financial perspective. The initial sample consisted of all New Zealand ISO registered firms recorded on the April 2000 JAS-ANZ Register. There are 2,466 9000-series registrations and 58 14000-series registrations provided a total initial sample of 2,524 ISO registrations. However, for the purpose of this study firms need to be both ISO registered and public. Therefore, the initial sample was reduced to 131 registrations from 47 firms currently trading on the New Zealand Stock Exchange (NZSE); stock price data was obtained through Datastream. Results of the study show that the New Zealand market has no reaction to ISO registration announcements, supporting the existence of semi-strong market efficiency. ISO registered firms are found to perform below average when compared to the New Zealand capital market, and the choice of certifying authority does hold influence on subsequent firm performance.

Whereas, Haversjo (2000) study on the profitability of ISO 9000 registered Danish companies comparing to the profitability of companies not holding any quality system registration, a group of 644 companies with similar distribution of size not holding a quality system registration was taken. In order to make comparisons between the two populations the median figures of each population is compared for the same fiscal year. He found that, in general, the ISO population companies seem to have a significantly higher rate of return than the control population both before and after registration. This could be due to the fact that the financial motive for the companies' choice of ISO registration is a desire to differentiate their products in order to

maintain a competitive advantage. He also found that the ISO population seems to achieve a positive effect from their quality management systems in the first two years after registration. He found that positive correlation between ISO-9000 registration and rate of return is confirmed.

Carr *et al.* (1997) study investigates whether ISO accredited companies differ from non-ISO accredited companies in business strategy and in their implementation of quality management practices of New Zealand companies. They also investigate differences between ISO accredited and non-ISO accredited companies in their reporting of quality in physical and financial terms and traditional performance measures. Based on the mail questionnaire sent to a sample of ISO and non-ISO accredited New Zealand manufacturing companies, the results showed a significant difference in the business strategy pursued by the two groups, with ISO accredited companies regarding quality as more important than cost efficiencies. However, there was no significant difference in the quality management practices of ISO accredited and non-ISO accredited companies, except in the areas of process improvement and quality measurement. There was also little evidence of differences in performance reporting systems between ISO accredited and non-ISO accredited companies.

However, Terviovski *et al.* (1997) study on a large random sample of Australia and New Zealand manufacturing companies where the purpose of the study is to test the strength of the relationship between ISO 9000 certification and organizational performance in the presence and absence of a total quality management environment. They find that ISO 9000 certification is not shown to have a significantly positive

effect on organizational performance in the presence or absence of a TQM environment. This supports that view that on average, ISO 9000 certification has little or no explanatory power of organizational performance.

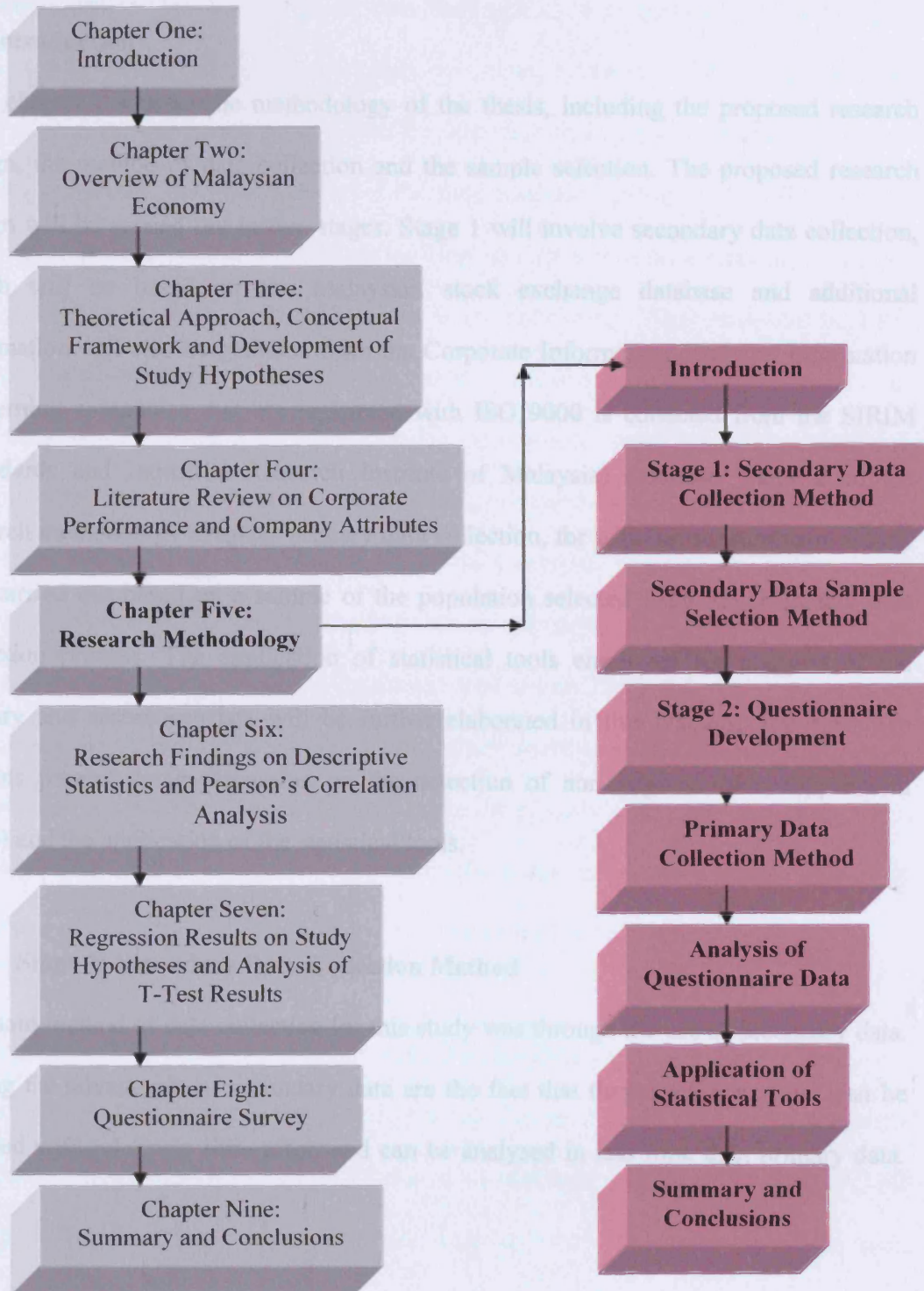
4.5 Summary and Conclusions

Specifically, this chapter is designed to determine whether there are patterns in performance evaluation literature in developed and developing countries which are related to the financial ratios that systematically relate to features characteristics of corporate performance. The study also seeks to reveal the pattern, if any, in the variation of such corporate attributes as maximization of wealth, leverage, liquidity, and profitability between companies operating at different sizes, ages, growth levels, capital structure, ISO 9000 accredited firms and within different industries in developed and developing countries. The study attempts to offer theoretical justifications and economic explanations for the findings. It is hoped that by analysing the effects of factors influencing financial performance and measures of financial corporate performance used by developed and developing countries, this study will provide additional insights into the private sector part of the Malaysian economy. Thus, while the study is important for its own sake, it is also significant in the effect that its insights may have on investment planning policy at the corporate and the government levels.

As Chapter 3 discuss on the theoretical approach, the conceptual framework design and the study hypotheses, Chapter 4 is on the literature review of performance evaluation in developed and developing countries; and the literature review on company attributes, the next chapter will discuss on the methodology of the research

which include how the primary and secondary data collection method are being carried out, the method of sample selection and the statistical analysis employed by this study.

The Thesis Structure



Chapter Five

Data Collection and Sample Selection

5.1 Introduction

This chapter discusses the methodology of the thesis, including the proposed research design, the method of data collection and the sample selection. The proposed research design will be carried out in two stages. Stage 1 will involve secondary data collection, which will be based on the Malaysian stock exchange database and additional information will also be gathered from the Corporate Information database. Information concerning companies that are registered with ISO 9000 is collected from the SIRIM (Standards and Industrial Research Institute of Malaysia) database. Stage 2 of the research methodology involves primary data collection, for which a questionnaire survey was carried out based on a sample of the population selected from the secondary data collection process. The application of statistical tools employed for analysis of the primary and secondary data will be further elaborated in this chapter. The final two sections present some discussion on the detection of non-response bias, Oppenheim (1966) and the application of the statistical tools.

5.2 Stage 1: Secondary Data Collection Method

The main method of data collection for this study was through the use of secondary data. Among the advantages of secondary data are the fact that they are inexpensive, can be obtained with relatively little effort and can be analysed in less time than primary data.

Large sample size enables the research to conduct statistical analyses which in turn enable him to draw meaningful conclusions.

Secondary data are often longitudinal, providing a basis for comparison and allowing the researcher to look for trends and changes over time. However, when using secondary data, researchers must bear in mind that the data were collected for another purpose and that the researcher has no control over the data collection process. This may result in problems with data accuracy. Although the large sample size is an advantage, it can also be a problem, as vast quantities of data can be overwhelming. Many statistical tests will be significant with large samples, but the results are less meaningful. For example, with large samples, low Pearson correlation coefficients, which represent weak relationships, are still statistically significant. As a result of this phenomenon, it is important to interpret the results with caution. Even so, secondary data analysis can be a rich resource for answering research questions. In certain situations, the use of secondary data is useful as an exploratory technique in that the results can lead to new ideas or models. This process can help the researcher to define a research problem more clearly. Analysis of secondary data can also be a useful first step in designing the primary data collection process and can help researchers to avoid some of the pitfalls noted earlier. Data from a secondary analysis can serve as a useful benchmark when compared to primary data.

The first step in the data collection process for the present study was to identify the sampling frame for the companies. The source used to verify ISO 9000 registration was the Standards and Industrial Research Institute of Malaysia (SIRIM). In 1991, the ISO 9000 standards were adopted as Malaysian Standards MS ISO 9000. The latter then

became the basis of certification of quality systems in Malaysia, Lee (1993, p.2). Promotion of the ISO 9000 standards to the Malaysian industry is currently carried out by government bodies such as SIRIM and the Malaysian National Productivity Corporation (NPC) through talks, short courses, workshops and consultancy services. A pamphlet entitled *Seven Steps Towards ISO 9000 Certification* has also been published by the NPC. Assessment and certification to ISO 9000 in Malaysia is carried out by SIRIM, as it is the only local ISO 9000 certification body in Malaysia, and by foreign certification bodies such as Lloyd's Register of Shipping, Bureau Veritas Quality International, etc. Companies certified by SIRIM are listed in the SIRIM Directory of Certified Products and Companies; to date, there are over 1500 such companies.

The SIRIM database (<http://www.malaysiancertified.com.my>) provides a listing of all ISO 9000 registered companies in Malaysia. For each registered site, it provides information on the standard to which the company is registered, approval date, registration number, accreditation scheme, scope of registration (products and services), and the address, phone and fax number of the site. To control for potential differences between industries, the sample for this study was drawn from this site.

The list of potential companies and all associated financial data were acquired from the Bursa Malaysia (previously called Kuala Lumpur Stock Exchange) database (<http://bursamalaysia.com>), thus ensuring that all the data were comparable. The Bursa Malaysia database is considered to be a very useful source of archival financial data for studying business and corporate strategies as well as for conducting industry analysis for

Malaysia. Data for the years 1998-2001 were used in this study. This time frame was chosen in order to exclude the period before 1997, the year of economic crisis in Malaysia, as explained in chapter two, which presents an overview of the Malaysian economy.

Most of the data were extracted from the companies' financial statements, including balance sheets, income statements and cash flow statements (<http://www.klse-ris.com.my>), as most of the variables used in the study were related to the financial statements, which were used to measure the performance of the companies. As for Tobin's Q variables, which require the market value of the firm's equity and the total number of employees, we used the Corporate Information database, where information on more than 20,000 companies worldwide is listed (<http://www.corporateinformation.com/>). Under the company profiles, it was possible to access information concerning the principal activity of the company, the industry in which the company is classified, the number of employees, the market capitalization, etc. In addition, this database also has price analysis data, and shows the closing share price of the company.

5.3 Secondary Data Sample Selection Method

As at the end of 2002, this study identified a random sample consisted of 162 companies listed on the Bursa Malaysia database, which had a population of 736 companies listed in 1998. (<http://www.klse.com.my/website/listing/listingstats.htm>). The sample collected accounts for 22 per cent of the population. Two samples were extracted from the database

(<http://www.klse-ris.com.my>); one sample was comprised of 81 ISO 9000 certified companies selected from the SIRIM database (<http://www.malaysiancertified.com.my>), and the second sample consisted of a comparable group of 81 companies that were not registered to ISO 9000. Because it was expected that ISO registration would have a small to medium effect on the dependent variables, the resulting sample size of 162 companies was considered acceptable. The choice of these companies was based on their listing status. All companies registered on the ISO 9000 and listed on the KLSE formed the primary sample of this study. The non-accredited ISO 9000 companies were chosen randomly from the best performing companies in terms of turnover listed on the KLSE. By the end of 1998, there were 1,707 ISO accredited companies on the Malaysian Standard (SIRIM) database, also available at the ISO 9000 Ninth Cycle Survey (http://www.eos.org.eg/web_en/pdf/survey9.pdf), but most of them were not listed on the Kuala Lumpur Stock Exchange.

5.4 Stage 2: Questionnaire Development

The construction and validation of the questionnaire is primarily based on the studies conducted by Ahmadi and Helms (1995), Jeng (1998), and Quazi and Padibjo (1998). Ahmadi and Helms (1995) developed their questionnaire by drawing upon the key elements and measurement indicators utilized by the U.S. General Accounting Office (1991). Jeng (1998) further validated the questionnaire using multiple reviews with academic professors and pre-tests with industry practitioners. The questionnaire was further modified slightly to encompass the criteria exhibited in Malcolm Baldrige National Quality Award (Mears, 1995; Oakland, 1989; Rao *et al*, 1996), and exhaustive

discussions with many consultants in different consulting companies were involved in its development, Jeng (1998).

In addition to validating the questionnaire, Jeng (1998) also evaluated the reliability of the questionnaire through Cronbach's Alpha measure, used by Anderson (1984). The questionnaire was further validated based on the work of Quazi and Padibjo (1998). Quazi and Padibjo (1998) designed their questionnaire based on the Malcolm Baldrige/Singapore Quality Award Criteria.

The resulting questionnaire consist of two parts: Part I seeks respondents' background information, and Part II includes seven major dimensions, which include leadership; information and analysis; strategic quality planning; human resource development and management; management of process quality; customer focus and satisfaction; and comparative business outcome. The background information can be used statistically to test the differences between ISO 9000 registered companies and non-ISO 9000 registered companies associated respectively with industry type, total capital, total employees, and lead-time to attain ISO 9000 approval. The final set of questionnaires is provided in the appendix.

The questionnaire respondents are required to give their views regarding the performance evaluation of their companies using a nine-point Likert scale (ranging from "good" to "poor"). A nine-point Likert scale was adopted in most of the perception questions for

several reasons. First, the range of answers permitted to respondents is argued to provide a reliable measure of attitude, Oppenheim (1966).

In Section G of Part II, where comparative business outcome was examined, respondents were also required to evaluate the performance of their companies on a nine-point Likert scale (ranging from “significant” to “not significant”).

Part II contains questions that attempt to obtain respondents’ views about the performance of their businesses, encompassing eight dimensions and forty-four key elements. Under section A of the questionnaire, questions about leadership were asked. In this section, respondents were required to give their opinions on five statements related to performance, based on a nine-point Likert scale.

5.5 Primary Data Collection Method

Based on the random sample of 162 companies selected from the secondary data collection method, the questionnaires were mailed to the 162 companies throughout Malaysia. Pre-addressed, self addressed postage paid envelopes and personally signed cover letters (see Appendix 1) were included with the survey. One month after the initial mailing, a second mailing was conducted. After lag of one month, follow-up letters were sent, and follow-up phone calls, facsimile, and electronic mails were directed to known companies that had not responded to the previous mailing.

For the second part of the study, questionnaires were sent by mail to the 162 companies identified. The mailings of questionnaires to all the prospective respondents took place between 7th and 10th July 2004. Due to poor responses, 38 sets of questionnaires sent to the companies were received. Of the 162 questionnaires distributed to the companies, 33 (20 per cent) were answered. However, due to five incomplete responses and unwillingness to participate in the survey, only 33 of them were usable. Because CEOs and Managing Directors are busy people and are generally unwilling to participate in survey studies (see, for example, PriceWaterhouseCoopers 2002; Ku Nor Izah 2003), the low response rates (between 10 and 20 percent) were in line with the expectation of this study. PriceWaterhouseCoopers (2002) reported that the average response rate for postal surveys in Malaysia is around 16 percent. A low response rate could also be observed in Epstein and Pava (1993) in a mailed questionnaire survey of shareholders in the United States, to which only 10.4 percent of the shareholders responded.

The distribution of the sample selection and respondents to the questionnaire with respect to the companies is shown in Table 5.1 on page 162. Table 5.1 shows the response rates for the Bursa Malaysia Industry sectors identified which include fifty-four industrial product companies, thirty-one trading and services companies, eighteen construction companies, eighteen property companies, fifteen consumer product companies, nine plantation companies, eight finance companies, five hotel companies and four mining companies. The highest response rate was from companies in the trading and services industry (32 percent). The next highest response was from companies in the industrial product, construction and property industries, which represent 22 percent each. The

lowest response was from the consumer product industry sector (20 percent). The sample is assumed to be representative of the population.

Table 5.1. Distribution of sample selection and questionnaire respondents

Bursa Malaysia Industry Sectors	Number of Companies Identified	Sent	Usable	Percentage
Industrial Products	54	54	12	22
Trading/Service	31	31	10	32
Construction	18	18	4	22
Property	18	18	4	22
Consumer Products	15	15	3	20
Plantation	9	9	0	0
Finance	8	8	0	0
Hotel	5	5	0	0
Mining	4	4	0	0
Total	162	162	33	20

5.6 Analysis of Questionnaire Data

In analysing the questionnaire data, it is important that appropriate statistical tools are used, and before the data are analysed, a test should be conducted to detect the possibility of a non-response bias, Oppenheim (1966). According to Oppenheim (1966), a low response rate might give rise to a problem of non-response bias that might in turn cause the data to be unreliable or invalid. Accordingly, in order to establish the reliability and validity of the data, an effort was made to test the possible presence of non-response bias. Oppenheim (1966, p. 34) suggested that one practical way to detect non-response bias is to compare the answers to the questionnaire given by early respondents with those of late respondents. He stated "...it has been found that respondents who send in the

questionnaire very late are roughly similar to non-respondents” (p. 34). In this study, the last six questionnaires received from respondents were categorised as late. Their responses to all the 43 Likert-scale questions were compared to those of the first twenty-seven questionnaires received. To observe whether their perceptions were different, a *t-test* was run for the equality of means for each of the questions. An analysis of the test results revealed that the mean scores of 40 out of 43 of the questions (93 percent) were found not to be significantly different. This suggests that non-response bias is not incorporated in the research results. The findings suggest that non-respondents would generally have had the same opinions as those who responded. Thus, the questionnaire data are considered representative of the population of respondents, and generalisations can be made.

5.7 Application of Statistical Tools

In the first part of the study, parametric tests were adopted because the sample size is large, with 162 companies. Parametric statistics are more powerful, however they do have more ‘strings attached’, that is they make assumptions about the data that are more stringent, Pallant (2001, p.98). It fulfils parametric assumptions such as normality, equal variances and independence. Parametric tests have also been used by other researchers. Parametric analysis was thus conducted on the secondary data obtained. Descriptive analysis was carried out, including means, frequency data and percentages. To assess the existence of linear relationship, Pearson correlations were utilized. In addition, linear regression analysis was also carried out on the secondary data. The purpose of these analyses was to identify the relationship between the dependent variables, which include

the financial performance variables (ROA, ROE, ROS, WC, CF, EVA and TQ), and the independent variables, which are classified into company attributes (size, age, ISO 9000, capital structure, growth and the seven categories of industry selected).

The major statistical techniques used in the first part of the study were as follows:

1. Descriptive statistics are used to describe patterns and general trends in a data set. Descriptive statistics will provide with summary statistics such as mean, median, standard deviation, Pallant (2001, p 52). In most cases, descriptive statistics are used to examine or explore one variable at a time. Descriptive statistics represent one of the bridges between measurement and understanding. With a data set and array of research questions, descriptive statistics are used to describe and make inferences about the results. They describe the data, find reliable differences or relationships, and estimate population values for the reliable findings. Using descriptive statistics, the data are reduced down to one or two descriptive summaries, such as the mean and standard deviation or correlation, or visualised through various graphical procedures such as histograms, frequency distribution and scatterplots, Pallant (2001). In this study, descriptive statistics are used to explain the frequency of the samples selected for ISO and non-ISO registered companies. In addition, descriptive statistics are also used to explain the mean, standard deviation, skewness and kurtosis statistics of the eight corporate performances measures used, namely ROA, ROE, ROS, TQ, WC, CF, and EVA,

and the five company attributes, namely company's age, size, growth, capital structure and the seven categories of industry which the company operates.

2. Correlation analysis is used to describe the strength and direction of the linear relationship between two variables, Pallant (2001, p 115). The correlation between two variables reflects the degree to which the variables are related. The most common measure of correlation is the Pearson Product Moment Correlation. When computed in a sample, it is designated by the letter "r" and is sometimes called "Pearson's r". Pearson's Correlation reflects the degree of correlation between two variables. It ranges from +1 to -1. A correlation of +1 means that there is a perfect positive linear relationship between the two variables, Pallant (2001). In this study, Pearson Correlations are used to describe the relationship between the eight corporate performance measures used, namely ROA, ROE, ROS, WC, CF, EVA and TQ, as presented in Table 6.3 on page 156. Pearson Correlations are also used to describe the relationship between the eight corporate performance measures and the five company attributes, namely company's size, age, ISO 9000, growth and capital structure, as presented in Table 6.4 on page 157. Additionally, Pearson Correlations are also used to describe the relationship between the eight corporate performance variables and the five company attributes with the seven categories of industry within which the companies operate, which include industrial products, consumer products, construction, property, trading and services, plantation and other industries, as presented in Table 6.5 on page 175.

3. Regression is used to test the strength and significance of relationships between variables, Tabachnick and Fidell (1996). It is a technique that may be used to develop an explanatory model (which explains the variation in the dependent variable), to develop a predictive model (given specific values for the independent variables, it allows identification of the best estimate of the dependent variable) or to isolate the influence and significance of one variable on another variable by controlling for all the other independent variables. It is based on the assumption that there is some common, underlying relationship between the variables that can be isolated and measured by controlling for all the other variables, Pallant (2001). In this study, eight linear regression models were created in order to test the strength and significance of the relationship between the eight dependent variables, which are the corporate performance measures described above, and the six independent variables, which are the company attributes.
4. T-Test Analysis – an independent-samples t-test is used to compare the means of two groups of cases, Kinnear and Gray (2000); in this case, ISO 9000 registered companies and non-ISO 9000 registered companies. The two-sample t-test was used to compare the mean of the eight corporate performance measures, namely ROA, ROE, ROS, WC, CF, EVA and TQ. Besides that, it was also used to compare the means of five company attributes, namely the company's age, size, growth, capital structure and the category of industry in which the company operates.

In the second part of the study, non-parametric tests were adopted for data analysis. This is because the scales used to measure the variables were nominal and ordinal in nature. Also, non-parametric tests do not rely on the normality assumption. The selection of non-parametric tests was also necessary due to the small sample size of 33 companies. Non-parametric tests do not carry specific assumptions about population distributions and variance, Kinnear and Gray (2000).

The main statistical techniques used in the second part of the study were:

1. Non-parametric Mann-Whitney test, which is the alternative to the independent samples t-test, Kinnear and Gray (2000), and is used in measuring the consensus in perceptions of the respondents in cases where ordinal scales are used to measure the perceptions. According to Ott *et al.* (1983), a Mann-Whitney test utilizes the ranks of measurements to test the hypothesis that the two populations are identical. In this study, the Mann-Whitney test was used to test the seven non-financial performance measures hypotheses with regard to the ISO 9000 and non-ISO 9000 registered companies.
2. Non-parametric Kruskal-Wallis test, which is used in measuring the consensus in perceptions between the respondents. The test uses the rank of measurement to test the hypothesis that two or more samples are drawn from an identical population, Pallant (2001). In this study, the Kruskal-Wallis test was used to measure the means of the total numbers of employees for ISO 9000 registered

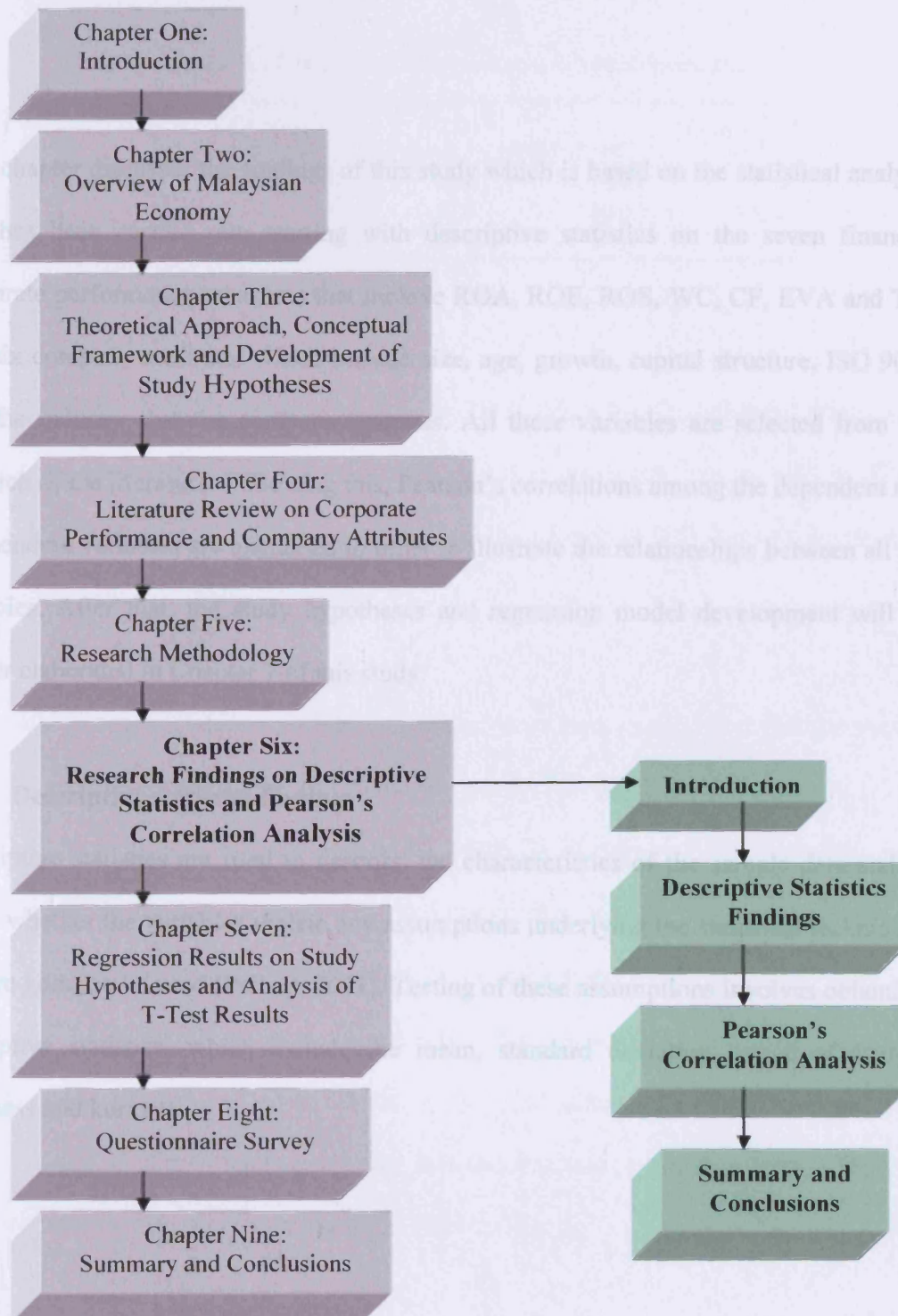
companies and non-ISO 9000 registered companies, as presented in Table 8.5 on page 269. Furthermore, the Kruskal-Wallis test was also used to measure the mean lead-time to attain ISO 9000 approval for ISO 9000 registered companies in relation to the seven non-financial performance factors, as in Table 8.6 on page 269.

5.8 Summary and Conclusion

In summary, this study has used both the secondary and primary data collection methods based on the selected corporate performance measures and company attributes, because this strategy allowed the researcher to collect a large enough sample to enable the conclusions to be drawn from the study. After reaching some conclusions from the secondary data, primary data collection was carried out in order to confirm the findings of the secondary data based on the non-financial performance measures used. Furthermore, the use of longitudinal secondary data provides a basis for comparison between industries and even countries, which may include the AFTA countries, for future research and comparative studies, and also allows us to look for trends and changes over time. Data for the years 1998-2001 were used in this study; this time frame does not include the period of economic crisis in Malaysia, which adds to its suitability for comparative studies in the future, as most of the AFTA countries also experienced the economic crisis during the period from 1996 to 1997. The sample of 162 companies selected accounts for 22 per cent of the population. The researcher considered this sample size to be acceptable, because ISO registration was expected to have a small to medium effect on the dependent variables being used in the study.

As the methodology of the research is being explained in Chapter 5, the next chapter, Chapter 6, 7 and 8 will discuss on the analysis and findings of the study. Chapter 6 and 7 will discuss on the analysis of secondary data whereas Chapter 8 will discuss on the analysis of primary data.

The Thesis Structure



Chapter Six

Research Findings on Descriptive Statistics and Pearson's Correlation Analysis

6.1 Introduction

This chapter discusses the findings of this study which is based on the statistical analysis that has been carried out, starting with descriptive statistics on the seven financial corporate performance measures that include ROA, ROE, ROS, WC, CF, EVA and TQ, and six company attributes which include size, age, growth, capital structure, ISO 9000 and the industry that the company operates. All these variables are selected from the research of the literature. Following this, Pearson's correlations among the dependent and independent variables are explained in order to illustrate the relationships between all the variables. After that, the study hypotheses and regression model development will be further elaborated in Chapter 7 of this study.

6.2 Descriptive statistics findings

Descriptive statistics are used to describe the characteristics of the sample data and to check whether the variables violate any assumptions underlying the statistical techniques that are going to be used (Pallant, 2001). Testing of these assumptions involves obtaining descriptive statistics, which include the mean, standard deviation, range of scores, skewness and kurtosis.

As one of the variables used in this study is a categorical variable, that is, ISO 9000 registered companies (1) and non-ISO 9000 registered companies (0), frequency statistics are used.

Table 6.1
Frequency Statistics for ISO 9000 and non-ISO 9000 companies

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	0	81	50.0	50.0	50.0
	1	81	50.0	50.0	100.0
	Total	162	100.0	100.0	

0 - Non-ISO 9000 registered companies
 1 - ISO 9000 registered companies

Table 6.1 shows the frequency statistics for ISO and non-ISO registered companies. Looking at the table, there are 81 companies that are registered as ISO 9000 (1) companies and another 81 companies that are not registered as ISO 9000 (0) companies, giving a total sample of 162 companies.

As for continuous variables, descriptive statistics have been used to describe the sample data. The descriptive statistics of the variables used in this study are given in table 6.2 on page 172. Looking at the variable AGE, which is the age of the company since incorporation, the number of companies used in the study sample is 162, and the range of ages is from 4 to 94 years, with a mean of 28.44 and a standard deviation of 17.94. The skewness statistic for age shows a positive value of 1.484, which indicates that the scores for age are clustered to the left at the low values. The kurtosis statistic for age shows a positive value of 2.913, which indicates that the distribution is somewhat peaked or clustered in the centre, with long thin tails (Pallant, 2001).

Looking at the variable ROA, which is the return on assets; the range of ROA scores is between -.8066 and .2841, with a mean of -0.043 and a standard deviation of .172037. The skewness statistic of ROA shows a value of -1.790, which is a negative value; negative skewness indicates that the clustering of scores is at the high end, that is, the right-hand side of the graph (Pallant, 2001). The kurtosis statistic for ROA shows a positive value of 4.302, which indicates that the distribution of scores is rather peaked in the centre, with long thin tails.

Table 6.2
Descriptive statistics of all the variables used in this study

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
	Stat.	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
AGE	162	4	94	28.44	17.94	1.484	2.913
ROA	162	-.8066	.2841	-4.3E-02	.172037	-1.790	4.302
ROE	162	-4.2546	1.0504	6.01146E-02	.438531	-5.900	58.227
ROS	162	-5.2151	1.4650	-.275690	.864654	-2.805	10.154
TQ	162	-6.4118	15.7031	.769926	1.666406	5.808	52.655
WC	162	.0031	5.9339	1.295752	1.134535	1.956	4.629
CF	162	-202916500	1670025000	60903627	208465969	5.536	35.335
EVA	162	-893347000	820425000	-26633459	183837622	-.740	8.783
SIZE	162	4358075	38670900000	1401574715	4028687121	6.504	50.855
GROWTH	162	-.52	11.90	.1557	1.1059	8.291	82.071
CAPSTRUC	162	.0803	17.4579	1.032736	1.743826	6.737	55.423
INDPRODT	162	.00	1.00	0.3333	0.47287	0.714	-1.509
CONSPROD	162	.00	1.00	0.0926	0.29076	2.837	6.126
CONSTRUC	162	.00	1.00	0.1111	0.31524	2.498	4.293
PROPERTY	162	.00	1.00	0.1111	0.31524	2.498	4.293
TRDGSERV	162	.00	1.00	0.1852	0.38965	1.636	0.685
PLANTATN	162	.00	1.00	0.0556	0.22977	3.917	13.509
OTHERS	162	.00	1.00	0.0988	0.29927	2.715	5.438

Also, looking at the variable ROE, which is the return on equity; the range of ROE scores is between -4.2546 and 1.0504, with a mean of 0.0601 and a standard deviation of 0.438531. This shows that there is a high variation in the companies' mean ROE scores.

The skewness statistic for ROE shows a value of -5.900, which indicates that the clustering of scores is at the high end of the distribution. The kurtosis statistic for ROE shows a positive value of 58.227, which indicates that the distribution of scores is rather somewhat peaked at the centre. As for ROS, which is the return on sales, the range of ROS scores is between -5.2151 and 1.4650, with a mean of -0.27569 and a standard deviation of 0.864654. The skewness statistic for ROS reveals a value of -2.805, which indicates that the scores are clustered at the high end of the distribution. The kurtosis statistic for ROS shows a positive value of 10.154, which indicates that the distribution of scores is rather peaked at the centre.

Looking at the variable TQ, which is the Tobin's Q, the range of TQ scores is between -6.4118 and 15.7031, with a mean of 0.769926 and a standard deviation of 1.6664. The skewness statistic for TQ indicates a positive value of 5.808, which means that the scores are clustered to the left, at the low values. The kurtosis statistic for TQ shows a positive value of 52.655, which indicates that the distribution of scores is rather peaked at the centre. As for WC, which is the working capital ratio, the range of WC scores is between 0.0031 and 5.9339, with a mean of 1.2957 and a standard deviation of 1.1345. The skewness statistic for WC reveals a positive value of 1.956, which indicates that the clustering of the scores is to the left, at the low values. The kurtosis statistic for WC shows a positive value of 4.629, which indicates that the distribution of scores is rather peaked at the centre.

As for CF, which is the cash flow, the range of scores is between -202,916,500 and 1,670,025,000, with a mean of 60,903,627 and a standard deviation of 208,465,969. The skewness statistics for CF shows a positive value of 5.536, which shows that the scores are clustered to the left, at the low values. The kurtosis statistic for CF reveals a positive value of 35.335, which again shows that the distribution of scores is rather peaked at the centre. Looking at EVA, which is the economic value added (Net profit after tax less cost of capital), the range of EVA scores is between -893,347,000 and 820,425,000, with a mean of -26,633,459 and a standard deviation of 183,837,622. The skewness statistic of EVA shows a negative value of -0.740, which indicates that the clustering of scores is at the high end. The kurtosis statistic for EVA shows a positive value of 8.783, which indicates that the distribution of scores is rather clustered at the centre.

As for SIZE, this is the size of the company based on total assets. The range of SIZE scores is between 4,358,075 and 38,670,900,000, with a mean of 1,401,574,715 and a standard deviation of 4,028,687,121. The skewness statistics for SIZE shows a positive value of 6.504, which indicates that the scores are clustered to the left, at the low values. The kurtosis statistic for SIZE shows a positive value of 50.855, which shows that the distribution of scores is clustered in the centre.

Looking at GROWTH, which is the growth of the company based on sales growth, the range of GROWTH scores is between -0.52 and 11.90, with a mean of 0.1557 and a standard deviation of 1.1059. The skewness statistic of GROWTH reveals a positive value of 8.291, which indicates that the scores are clustered to the left, at the low values.

The kurtosis statistic for GROWTH reveals a positive value of 82.071, which means that the distribution of scores is clustered at the centre.

As for CAPSTRUC, this is the ratio of total debt to total assets; the range of CAPSTRUC scores is between 0.0803 and 17.4579, with a mean of 1.0327 and a standard deviation of 1.7438. The skewness statistic for CAPSTRUC shows a positive value of 6.737, which indicates that the scores are clustered to the left, at the low values. The kurtosis statistic for CAPSTRUC reveals a positive value of 55.423, which indicates that the distribution of scores is clustered at the centre.

As for Category of Industry, which includes Industrial Products (INDPRODT), Consumer Products (CONSPROD), Construction (CONSTRUC), Property (PROPERTY), Trading and Services (TRDGSERV), Plantation (PLANTATN) and Other industries (OTHERS), the skewness statistics for all industries reveal positive values, which shows the scores for all industries are clustered to the left, at the low values. The kurtosis statistics for all industries except for industrial products shows positive values, which indicates that the distribution of the scores for all the industries except for industrial products are clustered in the centre. As for industrial product industry, the kurtosis statistic shows a negative value of -1.509, which indicates that the distribution of scores is relatively flat (Pallant, 2001).

6.3 Pearson's Correlation Analysis on all the variables

Pearson's correlation analysis is used to describe the strength and direction of the linear relationship between two variables (Pallant, 2001). Pearson's product-moment correlation coefficient is used in this study, as it is designed for interval level (continuous) variables and can also be used to examine the relationship between one continuous variable, such as the scores of the performance measures, and one dichotomous variable, such as ISO 9000 registered companies and non-ISO 9000 registered companies.

According to Pallant (2001), Pearson correlation coefficients can only take on values from -1 to +1. The sign at the front indicates whether there is a positive correlation (as one variable increases, so too does the other) or a negative correlation (as one variable increases, the other decreases). The size of the absolute value provides an indication of the strength of the relationship. A perfect correlation of 1 or -1 indicates that the value of one variable can be determined exactly by knowing the value of the other variable. On the other hand, a correlation of 0 indicates no relationship between the two variables.

Correlation among the variables used in this study may provide interpretations of the regression and of a possible multicollinearity problem. Hence, various tests have been performed to assess the severity of the multicollinearity problem. Simple correlations among the variables that are reported in Table 6.3 on page 181 (Pearson Correlation Coefficient of the Corporate Performance Variables Used), Table 6.4 on page 182 (Pearson Correlation of Corporate Performance variables with size, capital structure, age, growth and ISO 9000) and Table 6.5 on page 199 (Pearson Correlation of Corporate

Performance variables and other company attributes with Category of Industry) are quite low. The largest reported value (0.743) is between CF and the SIZE variable as in Table 6.4 on page 157. In this respect, Kennedy (1985) suggests that correlation values below 0.80 do not pose a potential multicollinearity problem.

Table 6.3 on page 181 summarises the Pearson Correlation results between the seven financial corporate performance variables used in this study. Looking at the correlation between ROA, that is return on assets, and ROE, return on equity, it is found that there is a weak negative correlation ($r = -.058$, $n = 162$). This shows that companies with a high return on assets are experiencing a low return on equity. This is due to the fact that most of the companies under investigation have a negative equity due to the 1997 financial crisis, as explained in Chapter Two of this study.

As for the relationship between ROA and WC, that is the working capital ratio, which is the ratio of current assets to current liabilities, this study found a moderate positive correlation ($r = .507$, $n = 162$, $p < 0.01$). This means that companies with high ROA have a high working capital ratio. This shows that companies that utilize their asset management are also good at their working capital management. Looking at the relationship between ROA and ROS, which is the return on sales ratio, it is found that there is a strong positive correlation between the two variables ($r = .703$, $n = 162$, $p < 0.01$). This means that companies with high return on assets also have a high return on sales. This shows that companies that make full use of their assets are also fully utilizing their sales.

Looking at the relationship between ROA and CF, which is the operating cash flow, it is found that there is a weak positive correlation between the two variables ($r = .158$, $n = 162$, $p < 0.05$). This means that companies with high return on assets also have a high operating cash flow. As for the relationship between ROA and EVA, which is the net profit after tax less cost of capital, this study found that there is a medium positive correlation between the two variables ($r = .314$, $n = 162$, $p < 0.01$). This shows that companies with high return on assets are also experiencing high economic value added. Referring to the relationship between ROA and TQ, which is the ratio of market value of equity plus long-term liabilities to total assets, it is found that there is a weak negative correlation between the two variables ($r = - .164$, $n = 162$, $p < 0.05$). This reveals that companies that have a high return on assets have a low market value of equity and long-term liabilities.

As for the relationship between ROE and WC, this study found that there is a weak positive correlation ($r = .018$, $n = 162$). This shows that companies that experience a high return on equity are also experiencing a high working capital ratio. Looking at the relationship between ROE and ROS, it is found that there is a weak negative correlation ($r = -.095$, $n = 162$). This is due to the fact that most of the companies under investigation are experiencing negative equity due to the 1997 financial crisis, as explained in Chapter Two of this study. Referring to the relationship between ROE and CF, this study found a weak positive correlation ($r = .018$, $n = 162$). As for the relationship between ROE and EVA, this study found a weak positive correlation ($r = .098$, $n = 162$). Furthermore, as

for the relationship between ROE and TQ, this study found a weak positive correlation ($r = .082$, $n = 162$).

Looking at the relationship between WC and ROS, this study found a moderate positive correlation between the two variables ($r = .380$, $n = 162$, $p = 0.01$). This means that companies with high working capital ratio have a high return on sales. This shows that companies that are performing well in terms of working capital management are also good at their sales management. As for the relationship between WC and TQ, which is the ratio of market value of equity plus long-term liabilities to total assets, this study found a weak negative correlation ($r = -.028$, $n = 162$). This means that companies with high working capital ratio have a lower market value of equity and long-term liabilities. Looking at the relationship between WC and CF, which is the operating cash flow, this study found a weak positive correlation between the two variables ($r = .105$, $n = 162$). This reveals that companies with high working capital ratio have higher cash flow compared to companies with low working capital ratio. As for the relationship between WC and EVA, a weak positive correlation was found between these variables ($r = .241$, $n = 162$, $p = 0.01$). This means that companies with high working capital ratios are experiencing high economic value added.

As for the relationship between ROS and CF, a weak positive correlation was found between these variables ($r = .121$, $n = 162$). This means that companies which have a high return in sales are experiencing a high cash flow. Looking at the relationship between ROS and EVA, this study found a weak positive correlation between the two

variables ($r = .265$, $n = 162$, $p = 0.01$). This reveals that companies that have a high return on sales also have high economic value added. But looking at the relationship between ROS and TQ, it was found that there is a weak negative correlation ($r = -.092$, $n = 162$). This means that companies with high return on sales are experiencing a low TQ, which is the market value of equity plus the long-term liabilities, due to the negative equity situation faced from the financial crisis.

As for the relationship between CF and EVA, this study found a weak positive correlation between cash flow and economic value added, which is the net profit after tax less cost of capital ($r = .208$, $n = 162$, $p = 0.01$). This means that companies with high cash flow have high net profit after tax. Referring to the relationship between CF and TQ, it is found that there is a weak negative correlation between cash flow and TQ, which is the ratio of market value of equity plus long-term liabilities over total assets ($r = -.003$, $n = 162$). This shows that companies with high cash flow are experiencing a low market value of equity plus long-term liabilities over total assets ratio.

Looking at the correlation between EVA and TQ, this study found that there is a weak positive correlation between EVA, which is the net profit after tax less cost of capital, and TQ ($r = .060$, $n = 162$). This reveals that companies with high net profit after tax have high market value of equity.

Table 6.3
Pearson Correlation Coefficients of the
Corporate Performance Variables Used

		ROA	ROE	WC	ROS	LS	CF	EVA	TQ
ROA	Pearson Correlation	1.00	-.058	.507**	.703**	.141	.158*	.314**	-.164*
	Sig. (2-tailed)		.464	.000	.000	.073	.045	.000	.037
ROE	Pearson Correlation		1.000	.018	-.095	-.259**	.018	.098	.082
	Sig. (2-tailed)			.824	.229	.001	.818	.213	.300
WC	Pearson Correlation			1.000	.380**	-.082	.105	.241**	-.028
	Sig. (2-tailed)				.000	.302	.183	.002	.719
ROS	Pearson Correlation				1.000	.120	.121	.265**	-.092
	Sig. (2-tailed)					.127	.126	.001	.243
	Sig. (2-tailed)						.003	.002	.027
CF	Pearson Correlation						1.00	.208**	-.003
	Sig. (2-tailed)							.008	.968
EVA	Pearson Correlation							1.000	.060
	Sig. (2-tailed)								.447
TQ	Pearson Correlation								1.000
	Sig. (2-tailed)								

**Correlation is significant at the 0.01 level (2-tailed)

*. Correlation is significant at the 0.05 level (2-tailed)

As a conclusion to the correlations between all the corporate performance variables, this study found that companies that have a high return on assets are good at utilizing their asset management and are also efficient in their working capital management. They also fully utilize their sales. These companies have a high operating cash flow and are experiencing high market value of equity.

Table 6.4 on page 182 summaries the relationships of the seven financial corporate performance variables, ROA, ROE, WC, ROS, CF, EVA and TQ with respect to company size, capital structure, company's age, growth rate and ISO 9000.

Table 6.4

Pearson's Correlations of Corporate Performance variables with Size, Capital Structure, Age, Growth and ISO 9000

Corporate Performance Measures	Size	Capital Structure	Age	Growth	ISO 9000
ROA	.122	-.730**	-.030	.134	.471**
Sig.	.123	.000	.709	.090	.000
ROE	-.019	.083	.074	.009	.056
Sig.	.814	.293	.351	.912	.480
WC	-.049	-.343**	-.061	.080	.323**
Sig.	.538	.000	.441	.311	.000
ROS	.115	-.384**	-.128	.022	.443**
Sig.	.145	.000	.105	.777	.000
CF	.743**	-.071	-.046	.057	.121
Sig.	.000	.366	.565	.468	.126
EVA	.169*	-.177*	-.024	.071	.382**
Sig.	.031	.024	.763	.371	.000
TQ	.005	.161*	.085	.020	.015
Sig.	.951	.041	.284	.797	.850
Size					
Sig.					
Capital Structure	-.062				
Sig.	.434				
Age	-.008	-.078			
Sig.	.923	.323			
Growth	-.016	-.075	-.135		
Sig.	.842	.342	.087		
ISO 9000	.157*	-.232**	-.164*	.136	
Sig.	.046	.003	.037	.084	

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Note: Industry category is not included but being explained in Table 6.5 on page 199.

6.4 Pearson Correlations of Company's Size with Corporate Performance Measures and Other Company Attributes

In order to determine whether there is a relationship between company size and corporate performance measures, looking at the Correlation Table 6.4 (page 182), this study found that there is a weak, positive correlation between company size (based on total assets), and ROA ($r = .122$, $n = 162$); this means that bigger companies experience a higher return on assets compared to smaller companies. This finding is in line with that of Baumol (1959), Hall and Weiss (1967) and Gupta (1969), who observed that size does tend to result in high profit rates. Larger firms tend to have a higher ROA compared to smaller firms. The higher ROA for the larger firms may be the result of a better utilization of assets. They may be influenced further by greater volatility of assets (Gupta 1969).

Looking at the correlation table 6.4 on page 182, between size of company and ROE, which is return on equity, a weak, negative correlation was found between size of company and ROE ($r = -.019$, $n = 162$). This means that larger companies experience a lower return on equity. This may be due to the fact that larger companies have negative equity as a result of the 1997 financial crisis that was faced by most of the companies, as explained in Chapter Two of this study. Also, looking at the WC, which is the ratio of current assets to current liabilities, a weak, negative correlation was found between size of company and WC ($r = -.049$, $n = 162$). This means that large companies have a lower WC than small companies. In order to properly manage their working capital, a company

should have a WC close to or slightly less than one. This shows that smaller companies tend to be better at working capital management compared to larger companies. Archer and Faerber (1966) have indicated that smaller corporations face a strong constraint in terms of the availability of investment funds or cash flows, as outside capital markets are comparatively inaccessible to them, such that they tend to economize on the use of available resources.

Referring to ROS, which is return on sales, this study found a weak, positive correlation between ROS and size of company ($r = .115$, $n = 162$). This shows that bigger companies have a higher return on sales than smaller companies. This is due to the fact that bigger companies experience larger sales than smaller companies. Due to larger sales, bigger companies have a higher return on these sales than smaller companies. This finding is in line with those of Baumol (1959), Hall and Weiss (1967) and Gupta (1969), who observed that size does tend to result in high profit rates. Larger firms tend to have a higher ROS compared to smaller firms. The higher ROS for the larger firms may be the result of a better utilization of sales. They may be influenced further by greater volatility of sales (Gupta 1969). As far as profitability of operations is concerned, smaller corporations invariably tend to show a lower ROS or sales margin than larger corporations. This phenomenon may be attributed to the diseconomies of scale associated with the operation of small corporations, or to the fact that they have to undersell in the market to compete with the well-known products of large corporations (Gupta 1969). Looking at CF, which is operating cash flow plus interest, a strong positive correlation

was found between size of company and CF ($r = .743$, $n = 162$, $p < 0.01$). This shows that large companies have a higher cash flow than smaller companies.

As for EVA, which is the net profit after tax less cost of capital employed, this study found a weak positive correlation between size of company and EVA ($r = .169$, $n = 162$, $p < 0.05$). This means that larger companies have a higher net profit after tax than smaller companies. Looking at TQ, which is the ratio of market value of equity plus the long-term liabilities over the total assets, a weak positive correlation was found between size of company and TQ ($r = .005$, $n = 162$). This shows that large companies have a higher TQ than small companies. This is due to the size of company, which is based on total assets: large companies have greater total assets than smaller companies.

Referring to the capital structure of the company, which is the ratio of total debt over total assets, this study found a weak negative correlation between size of company and capital structure ($r = -.062$, $n = 162$). This means that small companies have a higher ratio of total debt over total assets than large companies.

Looking at the age of the company, a weak negative correlation was found between the age and size of the company ($r = -.008$, $n = 162$). This means that smaller companies are younger than larger companies in this sample. This is due to the fact that larger companies have generally been in business longer than small companies, which are just starting up.

Looking at the growth of the company, which is based on the growth of sales, this study found a weak negative correlation between growth and size of the company ($r = -.016$, $n = 162$). This reveals that small companies experienced a higher growth in sales than larger companies.

As for ISO 9000, a positive correlation was found between ISO 9000 and size of company ($r = .157$, $n = 162$, $p < 0.05$). This means that in this sample, more of the larger companies are ISO 9000 registered compared to smaller companies.

To summarise the correlations between size of company with all the performance measures and other company attributes, as in Table 6.4 on page 157, based on Cohen (1988), this study found a strong correlation between firm's size and CF (.743), and a weak correlation between firm's size and ROE (.019); firm's size and TQ (.010) and firm's size and WC (.049).

To conclude with regard to the correlation between company size and all the corporate performance variables and other company attributes, this study has found that large companies are experiencing high return on assets, return on sales, economic value added, cash flow and Tobin's Q. Small companies have a high working capital ratio, which shows that they are better managed than large companies in terms of their working capital management. Small companies have a high debt to total assets structure capital, and they are younger. Small companies are experiencing a higher growth in sales compare to

large companies. Also, looking at ISO 9000 registration, this study found that most of the ISO registered companies are large in size.

6.5 Pearson's Correlation of Company's Capital Structure with Corporate Performance Measures and Other Company Attributes

Refer to table 6.4 on page 182 for a summary of Pearson Correlations between company's capital structure, which is the ratio of total debt over total assets with all the corporate performance measures and other company attributes.

First, looking at the correlation between company's capital structure and ROA, it is a strong negative correlation is found between capital structure and ROA ($r = -.730$, $n = 162$, $p < 0.01$). This means that companies which have a high debt to total assets structure experience a low return on assets. Also, looking at the Return on Sales (ROS) ratio, a weak negative correlation is found between ROS and capital structure ($r = -.384$, $n = 162$, $p < 0.01$). This shows that companies with high debt to total assets structure also experience a low return on sales. This may be due to the net profit being used to pay off the interest on the debt. However, looking at the correlation between ROE and capital structure, this study found that there is a weak positive correlation between ROE and capital structure ($r = .083$, $n = 162$). This shows that most of the companies under this study sample have negative equity due to the 1997 financial crisis, as explained in Chapter Two of this thesis.

Referring to the correlation between capital structure and Working Capital (WC) ratio, it is found that there is a moderate negative correlation between capital structure and WC ($r = -.343$, $n = 162$, $p < 0.01$). This means that high debt to total assets structure companies experience a low working capital ratio, which shows that their working capital management is not as effective as low debt to total assets structure companies, which experience a high working capital ratio. As for cash flow (CF), this study found a weak negative correlation between capital structure and CF ($r = -.071$, $n = 162$). This means that companies with high debt to total assets structure experience a low cash flow compared to those with low debt to total assets structure.

Looking at the correlation between capital structure and EVA, which is the net profit after tax less cost of capital employed, a weak negative correlation is found between capital structure and EVA ($r = -.177$, $n = 162$, $p < 0.05$). This shows that high debt to total assets structure companies experience a low net profit after tax, high debt companies have higher costs of capital (in monetary terms) and therefore a lower EVA.

As for the correlation between capital structure and TQ ratio, which is the ratio of market value of equity plus long-term liabilities to total assets, this study found a weak positive correlation between TQ and capital structure ($r = .161$, $n = 162$, $p < 0.05$). This means that high debt to total assets structure companies experience a high TQ, which may be a result of high debt levels which serves to increase both ratios.

Looking at the correlation between size of a company and its capital structure, it is found that there is a weak negative correlation between size of company and capital structure

($r = -.062$, $n = 162$). This shows that high debt to total assets structure companies are small in size compared to low debt to total assets structure companies, which are larger in size. Also, referring to the correlation between age of a company and capital structure, this study found that a weak negative correlation between age and capital structure ($r = -.078$, $n = 162$). This reveals that high debt to total assets structure companies are younger compared to low debt to total assets structure companies, which are older companies.

As for growth of a company, which is based on sales growth, a weak negative correlation was found between growth and capital structure ($r = -.075$, $n = 162$). This shows that high debt to total assets structure companies experience a low growth in sales compared to low debt to total assets structure companies, which experience a high growth in sales. Looking at the correlation between ISO 9000 and capital structure, this study found a negative correlation between ISO 9000 and capital structure ($r = -.232$, $n = 162$, $p < 0.01$). This means that in this study sample, the ISO 9000 registered companies are low in their debt to total assets structure compared to companies that are non-ISO 9000 registered, which are high in their debt to total assets structure.

To summarise the correlations between company's capital structure with all the corporate performance variables and other company attributes, this study found that high debt to total assets structure companies have a low return on assets, return on sales, working capital ratio, cash flow and economic value added. Also, it is found that companies with high debt to total assets structure are small in size and young in age. However, low debt

to total assets structure companies experienced a higher growth in their sales. As for ISO 9000 registration, most of the registered companies in this study are found to be low in their debt to total assets structure.

6.6. Pearson Correlation of Company's Age with Corporate Performance Measures and Other Company Attributes

See table 6.4 on page 182 for a summary of the relationships between company's age and corporate performance measures and other company attributes. Looking at the correlation between company's age and ROA, this study found a weak negative correlation between company's age and ROA ($r = -.030$, $n = 162$). This means that younger companies experience a higher ROA than older companies. This also shows that younger companies are better managed in terms of asset utilization than older companies.

However, looking at the ROE, it is found that there is a weak positive correlation between ROE and the age of the company ($r = .074$, $n = 162$). This shows that older companies experience a higher ROE than younger companies. As explained earlier, most of the companies under this study have negative equity due to the financial crisis as being explained in Chapter Two of this study, and it is found that due to the negative equity, ROE is found to be positively correlated with age not because older companies experience a higher ROE but because of the negative equity experienced by the companies in this sample. Referring to the WC, which is the ratio of current assets to current liabilities; this study found a weak negative correlation between age of the company and its WC ($r = -.061$, $n = 162$). This shows that younger companies experience a higher working capital ratio compared to older companies. This means that

younger companies are better managed than older companies in terms of working capital management.

As for ROS, which is return on sales, it a weak negative correlation was found between ROS and the age of the company ($r = -.128$, $n = 162$). This means that younger companies tend to have a higher return on sales than older companies. This may be due to younger companies having higher sales or being better managed in terms of return on sales. Looking at the correlation between age of the company with CF, which is the operating cash flow plus interest, a weak negative correlation was found between CF and the age of the company ($r = -.046$, $n = 162$). This means that younger companies have more cash flow than older companies.

Referring to the correlation between age of company and EVA, which is the net profit after tax less cost of capital employed a weak negative correlation was found between age and EVA ($r = -.024$, $n = 162$). This means that younger companies experience a higher net profit after tax than older companies.

As for the correlation between company's age and TQ, which is the ratio of market value of equity plus long-term liabilities to total assets, this study found that a weak positive correlation between age and TQ ($r = .085$, $n = 162$). This reveals that older companies tend to have a higher market value of equity than younger companies. This shows that older companies are more reputable than younger companies. Also, looking at the correlation between company's age and the size of the company, a weak negative

correlation was found between the age and the size of the company ($r = -.008$, $n = 162$). This means that younger companies in this study sample are smaller in size than the older companies. This is due to the fact that younger companies are new in business and have to start small compared to older companies, which are already established and are bigger in size.

Looking at the correlation between the age of the company and its capital structure, which is based on total debt to total assets, this study found a weak negative correlation between the age of the company and its capital structure ($r = -.078$, $n = 162$). This shows that younger companies have a high debt to total assets structure compare to older companies, which have a low debt to total assets structure.

As for the correlation between the age of the company and the growth of the company, which is based on sales growth, a weak negative correlation was found between age and growth of the company ($r = -.135$, $n = 162$). This means that younger companies experience a better growth in sales than older companies. Also, looking at the correlation between ISO 9000 and the age of the company, this study found that ISO 9000 is negatively correlated with the age of the company ($r = -.164$, $n = 162$, $p < 0.05$). This reveals that in this study sample, ISO 9000 registered companies are younger than non-ISO 9000 registered companies.

In conclusion to the correlations between company's age and all the corporate performance measures and other company attributes, this study found that younger

companies experience a higher return on assets, return on sales, cash flow and economic value added compare to older companies. Also, young companies are found to have a better working capital management than older companies. Besides that, young companies are smaller in size, as they have just started their business, compared to older companies, which are larger, and are already well established in business. In addition, it is found that younger companies experience a better growth in sales compared to older companies.

Looking at older companies, this study found that they tend to have high long-term liabilities and have a higher market value of equity. This is due to the fact that having been in business for longer, they are well established and have easy access to long-term loans and credits. As for the correlation between company's age and ISO 9000 registration, this study found that younger firms were more likely to have the ISO 9000 registration.

6.7 Pearson's Correlation of Company's Growth with Corporate Performance Measures and Other Company Attributes

Table 6.4 on page 182 shows the Pearson correlation between company's growth, which is based on sales growth, with all the financial corporate performance measures together with other company attributes. As for the relationship between company's growth and all the corporate performance measures, this study found that there is a positive correlation between company's growth and all the corporate performance variables (ROA: .134; ROE: .009; WC: .080; ROS: .022; CF: .057; EVA: .071; TQ: .020). This may means that an increase in firm's growth will also increase all the performance variables and vice-versa. According to Cohen (1988), the strongest strength of correlation is between firm's

growth and ROA (.134). The coefficient of determination between these two variables is only 1.8 per cent.

The finding of this study is in line with Gupta (1969), where growth also tends to have a positive correlation, but not significant with lender security. According to Gupta (1969), this means that companies' growth may be attributed to their greater desire for financial structure flexibility plus the fact that debt can be acquired and liquidated more easily, which magnifies the return on equity investment and carries distinct income tax advantages as compared to equity funds. Growth corporations tend, however, to have a large amount of debt and large amount of working capital and cash flow. This can be concluded by looking at the positive relationship between working capital and cash flow to growth factors (Gupta 1969). Also, when a firm's growth is correlated with its profitability, this study found a positive relationship between growth and ROA, ROE and ROS. This may mean that growth companies experienced a high profitability, where the company benefits from greater scale economies from fixed assets / costs.

This study also found a positive relationship between ISO registration and ROA, ROE and ROS, but they are not significant. Hence, ISO registered companies experiencing growth are more likely to achieve better profitability compared to companies without ISO registration. This may be because companies with ISO have no barriers to entry and have better sales and profit figures. Looking at the correlation between company growth and size, size of company is negatively correlated with growth ($r = -.016$, $n = 162$). This may mean that small companies experience higher growth than large-sized companies.

As for the correlation between growth and capital structure, this study found that capital structure, which is based on total debt to total assets, is negatively correlated with company growth, which is based on growth in sales ($r = -.075$, $n = 162$), but the correlation is not significant. This means that companies with low capital structure that are low in debt experience a high growth in sales compared to companies with high capital structure, which are high in debt. Looking at the age of the company, age is found to be negatively correlated with growth of the company ($r = -.135$, $n = 162$). This may show that younger companies experience a higher growth in sales compared to older companies.

Referring to ISO 9000 registration, this study found that company growth is positively correlated with ISO 9000 ($r = .136$, $n = 162$), but the correlation is not significant. This may mean that companies that are registered with ISO 9000 experience a higher growth than companies that are not registered with ISO 9000.

In conclusion to the correlations between company's growth and all the corporate performance measures and other company attributes, this study found that all the corporate performance measures, which include return on assets, return on equity, return on sales, working capital, cash flow, economic value added and Tobin's Q, are positively correlated with growth, but they are not significant. The findings of this study are in line with Gupta (1969) who found that growth corporations tend to have large amounts of debt, working capital and cash flow because they have greater desire for financial structure flexibility.

Referring to the correlation between growth and size, this study found that small companies experience a higher growth in sales compare to large companies. Also, companies that have a low debt to total assets capital structure are found to have a higher growth in sales. It is also found that younger companies experience a higher growth. Looking at the correlation between ISO 9000 and growth, ISO 9000 registered companies experience growth and better profitability compare to non-ISO registered companies. This is because companies with ISO 9000 registration have no barriers to entry into other countries and are experiencing better sales and profit figure.

6.8 Pearson's Correlation of Company's ISO 9000 registration with Corporate Performance Measures and Other Company Attributes

In order to determine the relationship between ISO 9000 and corporate performance measures, with reference to Pearson's Correlation Table 6.4 on page 182, this study found a positive correlation between ISO 9000 and all the corporate performance variables. This means that companies with ISO 9000 registration experienced high corporate performance ratios in all the variables compared to companies that are not registered with ISO 9000. According to Cohen (1988) there is a medium strength of correlation between ISO and ROA (.471); ISO and ROS (.443); ISO and EVA (.382) and ISO and WC (.323). The coefficient of determination between ISO and ROA is 22.18 per cent, which is considered acceptable.

Also, looking at the size of the company, based on total assets, it is found that are ISO 9000 registration is positively correlated with size. This means that the size of ISO 9000

registered companies is bigger than that of non-ISO 9000 registered companies. As for the age of the companies, it is found that ISO 9000 registration is negatively correlated with age. This means that companies with ISO 9000 registration are younger than companies that are not registered with ISO 9000. Looking at the growth of the company, which is based on sales growth, it is found that ISO 9000 registration is positively correlated with growth. This shows that ISO 9000 registered companies' growth is better than that of their counterparts that are not ISO 9000 registered. Looking at the capital structure of the companies, which is total debts to total assets, ISO 9000 is negatively correlated with capital structure. This means that ISO 9000 registered companies are better managed in terms of total debt to total assets, as the total debts of ISO 9000 registered companies is less than the total debts of non-ISO 9000 registered companies.

6.9 Pearson's Correlation of Company's Industry Category with Corporate Performance Measures and Other Company Attributes

The development of a multi-factor performance measure which reconciles diverse financial performance measures is important to policy makers in terms of knowing how far a particular industry or company can be expected to increase its multiple output and decrease its input levels by simply improving its efficiency, without absorbing or wasting further resources, Hensen and Wernerfelt (1989). As this study samples consist of companies from different types of industry, it was thus important to see whether industry impacts on corporate performance and company attributes. Table 6.5 on page 199 shows the Pearson's correlation of the eight corporate performance variables, namely ROA, ROE, WC, ROS, CF, EVA and TQ, plus five company attributes, which are Size, Age, ISO 9000, Growth and Capital Structure with the category of industry, classified into

Industrial Product, Consumer Product, Construction, Property, Trading and Services, Plantation and Others.

With regard to the relationship between category of industry category and corporate performance measures, looking at the correlations in table 6.5, this study found that there is a weak positive correlation between ROA (Return on Assets) and companies related to industries concerned with industrial products ($r = .046$), consumer products ($r = .102$) and plantation ($r = .125$). This means that companies related to industries concerned with industrial products, consumer products and plantation have a better return on assets and are better in their asset utilization than companies related to industries concerned with construction ($r = -.008$), property ($r = -.003$), trading and services ($r = -.038$), and other industries ($r = -.230$, $p = 0.01$), which are found to have a weak negative correlation with ROA.

Looking at ROE, which is the return on equity ratio, a weak positive correlating was found with companies related to consumer products ($r = .112$), construction ($r = .058$) and other industries ($r = .121$) In contrast, companies that are related to industrial product ($r = -.109$), property ($r = -.056$), trading and services ($r = -.033$), and plantation ($r = -.024$) are found to have a weak negative correlation with ROE. This shows that companies related to consumer products, construction and other industries have a better return on equity ratio compared to companies related to industrial product, property, trading and services, and plantation.

Table 6.5

Pearson's Correlation of Corporate Performance variables and other company attributes with Category of Industry

CORPORATE PERFORMANCE MEASURES	INDUSTRIAL PRODUCT	CONSUMER PRODUCT	CONSTRUCTION	PROPERTY	TRADING & SERVICES	PLANTATION	OTHERS
ROA	.046	.102	-.008	-.003	-.038	.125	-.230**
Sig.	.560	.197	.924	.971	.629	.114	.003
ROE	-.109	.112	.058	-.056	-.033	-.024	.121
Sig.	.168	.156	.460	.480	.679	.760	.126
WC	.076	.129	.031	-.062	-.083	.023	-.157*
Sig.	.337	.101	.697	.436	.296	.776	.056
ROS	.125	-.014	.049	-.097	.045	.099	-.291**
Sig.	.113	.861	.533	.218	.567	.209	.000
CF	-.133	-.052	.017	-.085	.203**	-.045	-.054
Sig.	.092	.513	.834	.283	.010	.571	.496
EVA	-.035	.056	.025	-.045	-.019	.096	-.080
Sig.	.655	.476	.750	.571	.815	.226	.312
TQ	.027	.024	-.040	-.062	-.046	-.004	.102
Sig.	.730	.760	.614	.431	.564	.958	.198
Size	-.112	-.079	.078	-.072	.229**	-.027	-.057
Sig.	.158	.317	.323	.365	.003	.736	.470
Age	-.116	-.045	-.165*	.150	-.051	.090	.232**
Sig.	.143	.571	.036	.056	.520	.253	.003
ISO 9000	.157*	.106	.118	-.039	-.064	-.027	-.331**
Sig.	.046	.177	.135	.620	.422	.734	.000
Growth	-.028	-.036	.001	.009	.077	-.067	.019
Sig.	.722	.648	.988	.907	.330	.400	.807
Capital Structure	-.031	-.070	.023	-.070	.093	-.096	.138
Sig.	.695	.377	.772	.379	.238	.222	.080

* Correlation is significant at the 0.05 level (2-tailed)

** Correlation is significant at the 0.01 level (2-tailed)

Referring to WC, which is the ratio of current liabilities to current assets, this study found a weak positive correlation between companies related to industrial product ($r = .076$), consumer products ($r = .129$), construction ($r = .031$) and plantation ($r = .023$) with WC. As for companies related to property ($r = -.062$), trading and services ($r = -.083$), and other industries ($r = -.157$, $p = 0.05$), this study found a weak negative correlation with

WC. This indicates that companies in different industries exhibited and worked to different working capital ratios.

However, looking at ROS, it is found that companies related to industrial products ($r = .125$), construction ($r = .049$), trading and services ($r = .045$), and plantation ($r = .099$) have a weak positive correlation with ROS. This shows that companies related to industrial products, construction, trading and services, and plantation experience an increase in sales compared to companies related to consumer products ($r = -.014$), property ($r = -.097$) and other industries ($r = -.291$, $p = 0.01$), which are found to have a weak negative correlation with ROS. Referring to CF, it is found that companies related to construction ($r = .112$) and trading and services ($r = .112$) have a weak positive correlation with CF. This means that companies in industries related to construction and trading and services have greater cash flows compared to companies related to industrial products, consumer products, property, plantation and other industries. This is because companies related to industrial products ($r = -.133$), consumer products ($r = -.052$), property ($r = -.085$), plantation ($r = -.045$) and other industries ($r = -.054$) are found to have a weak negative correlation with CF.

Besides that, as for EVA, which is a measure used to evaluate a company's real profitability and how effectively it performs; this study found that EVA have a weak positive correlation with companies related to consumer products ($r = .056$), construction ($r = .025$) and plantation ($r = .096$). This shows that companies related to consumer products, construction and plantation perform better than companies that are related to

industrial products ($r = -.035$), property ($r = -.045$), trading and services ($r = -.019$) and other industries ($r = -.080$), which are found to have a weak negative correlation with EVA. Referring to TQ, which is the market value of a firm's equity plus its debt, divided by the book value of its total assets, it is found to have a weak positive correlation with companies that are related to industrial products ($r = .027$), consumer products ($r = .024$) and other industries ($r = .102$). This reveals that the value of companies that are related to industrial products and consumer products are better than their counterparts that are related to construction ($r = -.040$), property ($r = -.062$), trading and services ($r = -.046$), and plantation ($r = -.004$), which are found to have a weak negative correlation with TQ.

Moreover, as for the correlation between size of company based on total assets with category of industry, it is found that companies related to construction ($r = .078$), and trading and services ($r = .229$, $p = 0.01$) have a positive correlation with size. Therefore, it is found that companies related to construction, trading and services are bigger than companies that are related to industrial products ($r = -.112$), consumer products ($r = -.079$), property ($r = -.072$), plantation ($r = -.027$) and other industries ($r = -.057$), which are found to have a negative correlation with size of company. Looking at the age of the company, this study found that companies related to property ($r = .150$), plantation ($r = .090$) and other industries ($r = .232$, $p = 0.01$) have a positive correlation with the age of the company, whereas companies that are related to industrial products ($r = -.116$), consumer products ($r = -.045$), construction ($r = -.165$, $p = 0.05$) and trading and services ($r = -.051$) were found to have a negative correlation with the age of the company. It is therefore concluded that the sample companies in this study that are related to industrial

products, consumer products, construction and trading and services are younger than companies that are related to property, plantation and other industries.

Referring to ISO 9000 registration, it is found that companies that are related to industrial products ($r = .157$), consumer products ($r = .106$) and construction ($r = .118$) have positive correlations with ISO 9000 registration. This means that there are more companies in the industrial products, consumer products and construction industry that are ISO 9000 registered compared to companies in property ($r = -.039$), trading and services ($r = -.064$), plantation ($r = -.027$) and other industries ($r = -.331$, $p = 0.01$), which are found to have a negative correlation with ISO 9000 status. Looking at the growth of the company, based on sales growth, it is found that companies that are related to construction ($r = .001$), property ($r = .009$), trading and services ($r = .077$), and other industries ($r = .019$) are positively correlated with growth. This shows that construction, property, trading and services, and other industries companies experienced a higher growth in sales compared to their counterparts in industries related to industrial products ($r = -.028$), consumer products ($r = -.036$) and plantation ($r = -.067$), which are found to have a negative correlation with growth in sales. As for capital structure, which is the total debt to total assets, it is found that companies related to construction ($r = .023$), trading and services ($r = .093$), and other industries ($r = .138$) are positively correlated with capital structure. This may mean that companies in different industries have their own ways in calculating the capital structure ratio.

6.10 Summary and Conclusions

As an overall summary and conclusion of the descriptive statistics and Pearson correlation on all the corporate performance variables and company attributes, this study found that large companies are better in their asset utilization, efficient in their sales, have a better economic value added cash flow and Tobin's Q. Small companies are efficient in their working capital management but have a high debt to total assets capital structure. Small companies are younger and experience a higher growth in sales. Most of the ISO 9000 registered companies are large in size. As for the capital structure, low debt to total assets structure companies are better in their asset utilization, efficient in their sales and working capital management. These companies have high cash flow and have a better economic value. They are young companies and are small in size. Most of these companies are ISO 9000 registered. As young companies are better in their working capital management, old companies are found to have higher long-term liabilities and are experiencing a higher market value of equity. Also, ISO 9000 registered companies are found to be younger than non-ISO 9000 registered companies. Besides that, ISO 9000 registered companies experience a higher growth in sales and have a better profitability than non-ISO 9000 registered companies.

Looking at the correlation between industrial category with all the corporate performance variables and other company attributes, this study found that companies that are related to industrial products, consumer products and plantation are better in their assets utilization compared to companies that are related to construction, property, trading and services and other industries. In terms of working capital management, it is found that companies

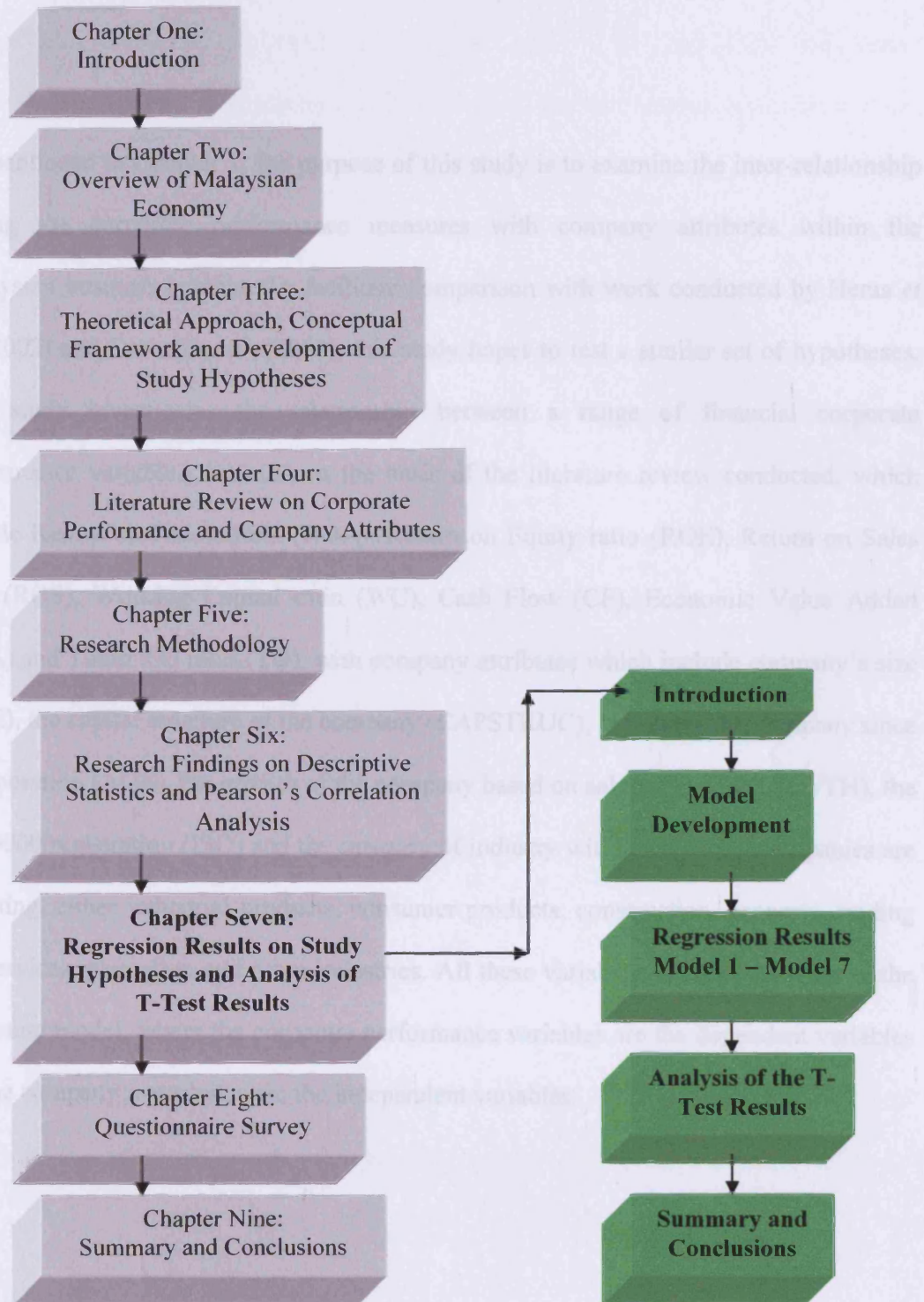
related to industrial products, consumer products, construction and plantation are better managed than their counterparts in industries related to property, trading and services, and other industries. As for sales utilization, companies that are related to industrial products, construction, trading and services, and plantation are found to be better in utilizing their sales compared to companies that are related to consumer products, property and other industries.

Furthermore, construction and trading and services companies are found to have a better cash flow management than their counterparts in industries related to industrial products, consumer products, property, plantation and other industries. In terms of real profitability and performance, companies related to consumer products, construction and plantation are found to be better in their performance than companies related to industrial products, property, trading and services and other industries. As for TQ ratio, companies related to industrial products, consumer products and other industries are found to have a better market value compared to those related to construction, property, trading and services, and plantation. In terms of company's size, construction and trading and services companies are found to be bigger in size than companies that are related to industrial products, consumer products, property, plantation and other industries. Besides that, companies that are related to property, plantation and other industries are found to be older than companies that are related to industrial products, consumer products, construction, and trading and services.

However, it is found that companies in construction, property, trading and services, and other industries experience higher growth in sales compared to those that are related to industrial products, consumer products and plantation. In terms of capital structure, companies that are related to construction, trading and services and other industries are found to have a high debt to total assets capital structure compared to companies that are related to industrial products, consumer products, property and plantation. As for ISO 9000 registration, it is found that more companies that are related to industrial products, consumer products and construction are registered with ISO 9000 compared to companies that are related to property, trading and services, plantation and other industries.

As Chapter 6 described on the descriptive statistics and the Pearson's correlation of all the variables used in this study, Chapter 7 will further elaborate on the study's hypotheses and regression model used to illustrate the relationship between all the dependent and independent variables used in this study.

The Thesis Structure



Chapter Seven
Regression Results on Study Hypotheses
and Analysis of T-Test Results

7.1 Introduction

As mentioned in Chapter 1, the purpose of this study is to examine the inter-relationship among the corporate performance measures with company attributes within the Malaysian business context. To facilitate comparison with work conducted by Heras *et al.* (2002) and Corbett *et al.* (2002), this study hopes to test a similar set of hypotheses. This study investigates the relationship between a range of financial corporate performance variables, selected on the basis of the literature review conducted, which include Return on Assets ratio (ROA), Return on Equity ratio (ROE), Return on Sales ratio (ROS), Working Capital ratio (WC), Cash Flow (CF), Economic Value Added (EVA) and Tobin's Q ratio (TQ), with company attributes which include company's size (SIZE), the capital structure of the company (CAPSTRUC), the age of the company since incorporation (AGE), the growth of the company based on sales growth (GROWTH), the ISO 9000 registration (ISO) and the category of industry within which the companies are operating, either industrial products, consumer products, construction, property, trading and services, plantation and other industries. All these variables will be employed in the regression model, where the corporate performance variables are the dependent variables and the company's attributes are the independent variables.

7.2 Model Development

A linear regression analysis has been performed to explore the relationship between eight continuous dependent variables, which are classified into the financial corporate performance measures (ROA, ROE, ROS, WC, EVA, CF and TQ), and twelve independent variables or predictors, which are classified into company attributes (size, age, ISO 9000, capital structure, growth and seven category of industry). As the multiple regression model is created based on the Pearson correlation analysis, which is explained in Chapter 6 of this study, it allows a more sophisticated exploration of the interrelationships among the corporate performance measures and the selected company attributes, which can be used to predict the performance of the company. According to Pallant (2001), multiple regression can be used to test whether adding an additional variable contributes to the predictive ability of the model. Furthermore, Hensen and Wernerfelt (1989) used regression analysis in their study on the relative importance of economic and organizational factors in determining firm performance.

Referring to Chapter 3, on the study's hypotheses created, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

7.2.1 Regression Model 1- ROA as the dependent variable

$$ROA = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \epsilon$$

Where:

ROA	=	Return on Assets
ISO	=	ISO 9000 Registration
CAPSTRUC	=	Capital structure measured by ratio of debt to total assets
SIZE	=	Size of a company measured by the total assets
GROWTH	=	Growth of a company measured by the average growth in sales
AGE	=	Age of a company since incorporation
INDPRO	=	Industrial product company
CONPRO	=	Consumer product company
CONSTR	=	Construction company
PROPTY	=	Property company
TRASER	=	Trading and Services company
PLANT	=	Plantation company
OTHERS	=	Company from other industries
β_0 and β_i	=	Constant/parameters to be estimated, $i = 1$ to 12, and
ε	=	Disturbance term

Analysis of Regression Results on Model 1 – ROA as the dependent variable

A linear regression analysis has been performed to estimate the coefficients and the direction of relationships between the dependent and the independent variables in each of the seven regression models specified in the study. Table 7.1 on page 215 reports the linear regression results for Model 1 where ROA is the dependent variable and was regressed against twelve independent variables, which were company attributes, that is,

company's age, ISO 9000 registration, company's size, company's growth, company's capital structure and the category of industry that the companies are operating in, which include industrial products, consumer products, construction, property, trading and services, plantation and other industries.

On the assumptions of multiple regression, one of the issue which is at stake is generalisability. That is, with small samples we may obtain a result that does not generalise (cannot be repeated) with other samples. If the results do not generalise to other samples, then they are of little scientific value, Pallant (2001, p.136). In order to resolve this issue, Tabachnick and Fidell (1996, p.132) give a formula for calculating sample size requirements, taking into account the number of independent variables that we wish to use: $N > 50 + 8m$ (where m = number of independent variables). For this study, the number of independent variables is 12. So, the required sample size for this study is: $50 + (8 \times 12) = 146$ samples. Therefore, the sample size of 162 for this study is considered more than enough in order to overcome the issue of generalisability.

Multicollinearity, which is another assumptions of multiple regression, which refers to the relationship among the independent variables where multicollinearity exists when the independent variables are highly correlated ($r = .9$ and above), Pallant (2001, 136). As, correlation among the variables used in this study may provide interpretations of the regression and of a possible multicollinearity problem. Hence, various tests have been performed to assess the severity of the multicollinearity problem. Referring to correlation analysis as in Chapter 6, the correlation among the variables shows a low correlation

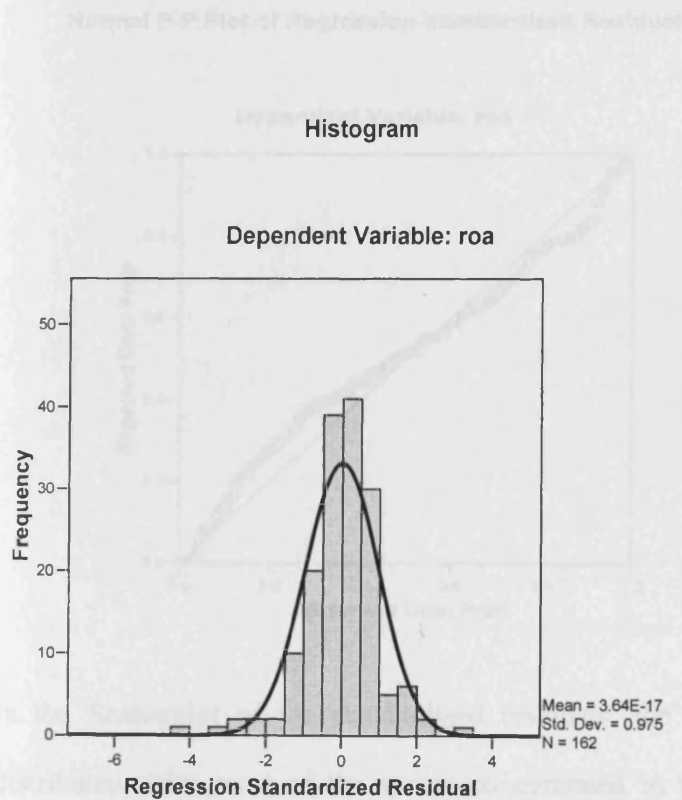
among the variables. The largest reported value (0.743) is between CF and the SIZE variable as in Table 6.4 on page 182 (Pearson Correlation of Corporate Performance variables with size, capital structure, age, growth and ISO 9000). In this respect, Kennedy (1985) suggests that correlation values below 0.80 do not pose a potential multicollinearity problem. While the correlation matrix can be used to detect potential multicollinearity problems between two explanatory variables, the absence of high correlations does not always mean that there is no multicollinearity. To deal with this problem, a diagnostic procedure that utilises the Variance Inflation Factor (VIF) was also undertaken. VIFs for all variables, reported in Table 7.1 on page 215 (Regression analysis results on Model 1: ROA) are below 8.993. According to Silver (1997) multicollinearity is viewed as a serious problem only when the VIF exceeds 10. Hence, the explanatory variables used in this study do not seem to pose a serious multicollinearity problem and this allows for standard interpretation of the regression coefficients.

On the normality, linearity and heteroscedasticity assumptions on the multiple regression analysis, these assumptions can be checked from the residuals scatterplots which are generated as part of the multiple regression procedure. Residuals are the differences between the obtained and predicted dependent variable scores, Pallant (2001, p. 137).

According to Pallant (2001), in order to check for normality, the residuals should be normally distributed about the predicted dependent variable scores. Looking at figure 7.1, on page 211, Histogram for dependent variable: ROA, the residuals are normally distributed. As for linearity, the residuals should have a straight-line relationship with predicted dependent variable scores. As for homoscedasticity, the variance of the residuals about predicted dependent variable scores should be the same for all predicted scores.

Figure 7.2 Normal Probability Plot of Regression Standardized Residual

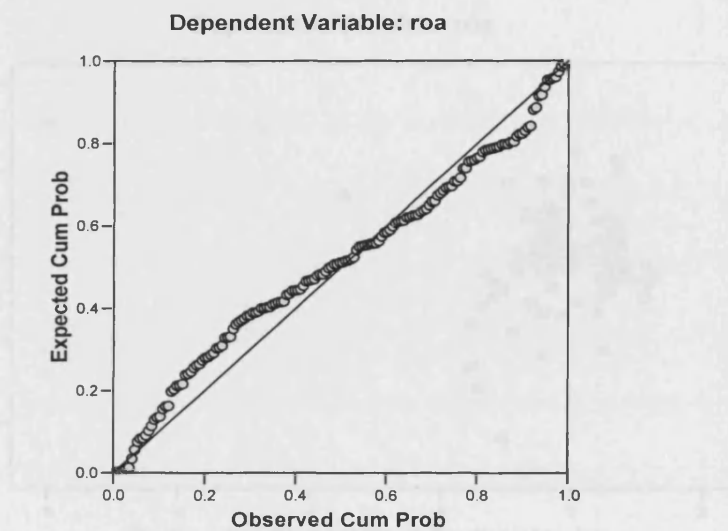
Figure 7.1 Histogram for Dependent variable: ROA



Looking at the Normal Probability Plot, the score points lied in a reasonably straight diagonal line from bottom left to top right. This would suggest no major deviations from normality, Pallant (2001, p.144). Looking at Figure 7.2 on page 212, normal probability plot of regression standardized residual shows that the score points lied in a reasonably straight diagonal line from bottom left to top right. Therefore, there is no major deviations from normality.

Figure 7.2 Normal Probability Plot of Regression Standardized Residual

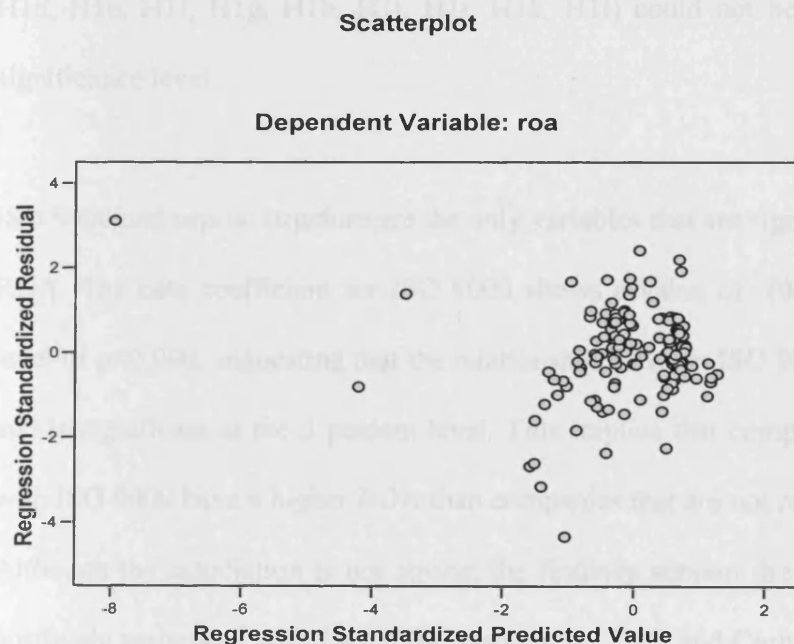
Normal P-P Plot of Regression Standardized Residual



In the Scatterplot of the standardised residuals, the residuals are roughly rectangularly distributed, with most of the scores concentrated in the centre (along the 0 point). Deviations from the centralised rectangle suggest some violation of the homoscedasticity assumptions, Pallant (2001, p.144). As for heteroscedasticity, which may occur when some variables are skewed and others are not. Therefore, checking that the data are

normally distributed, this should cut down on the problem of heteroscedasticity. Also, in regression applications, a lack of homogeneity can be detected by examination of residuals and heteroscedasticity is indicated when the residuals are not evenly scattered around the line, Draper and Smith (1998). Looking at Figure 7.2 on page 212 (Normal Probability Plot) and Figure 7.3 on page 213 (Scatterplot for dependent variable: ROA), heteroscedasticity is not a major problem.

Figure 7.3 Scatterplot for Dependent Variable: ROA



In order to determine the fitness of the model, referring to Table 7.1 on page 215 for the regression results, the significance value of the model (Significant F) is at $p < 0.000$, which is less than 0.05, and it can thus be concluded that the model could fit the data. In this model, the R-square (R^2) value shows that 64.3 per cent of the variation in ROA was

explained by all the company attributes, which include age, ISO 9000, size, growth, capital structure and the category of industry that the company operates in. The adjusted R^2 value of 0.614 and the F value of 22.371 show that the model describes 61.4 percent of the variance in ROA and is significant at the 5 per cent level. There is not sufficient evidence to support the hypotheses that ROA is directly related to the company's age, company's size, company's growth, and the category of industry that the companies are operating in, namely industrial products, consumer products, construction, property, trading and services, plantation and other industries. Thus, the null hypotheses (H1b, H1d, H1e, H1f, H1g, H1h, H1i, H1j, H1k, H1l) could not be rejected at a 5 percent significance level.

ISO 9000 and capital structure are the only variables that are significantly associated with ROA. The beta coefficient for ISO 9000 shows a value of (0.302) and a significance level of $p < 0.000$, suggesting that the relationship between ISO 9000 and ROA is positive and is significant at the 5 percent level. This implies that companies that are registered with ISO 9000 have a higher ROA than companies that are not registered with ISO 9000. Although the association is not strong, the findings support the hypothesis that ROA is positively associated with ISO 9000 (Heras *et al.* 2002 and Corbett *et al.* 2002). The null hypotheses (H1a) and (H1c) that there is no association between ROA and ISO 9000 is rejected at a 5 percent significance level. However, as for capital structure, the beta coefficient shows a value of (0.646) and a significance level of $p < 0.000$, which means that the relationship between capital structure and ROA is negatively related and is significant at the 5 percent level. This indicates that companies with low capital structure

have a higher ROA than companies with high capital structure. The F statistic is the ratio of the mean square for regression to the residual mean square. In this model, the value of F is 22.371 and is considered highly significant (Kinnear and Gray, 2000)

Table 7.1
Regression Analysis Results on
Model 1 (ROA as dependent variable)

Independent Variables	Beta Coefficient	T-Ratio	Significant Level	VIF
AGE	-0.024	-0.450	0.653	1.172
ISO 9000	0.302	5.437	0.000*	1.289
SIZE	0.028	0.544	0.587	1.127
GROWTH	0.045	0.898	0.370	1.070
CAPITAL STRUCTURE	-0.646	-12.491	0.000*	1.116
INDUSTRIAL PRODUCT	-0.128	-0.603	0.547	8.911
CONSUMER PRODUCT	-0.046	-0.335	0.738	7.823
CONSTRUCTION	-0.107	-0.732	0.465	8.993
PROPERTY	-0.104	-0.710	0.479	8.980
TRADING & SERVICES	-0.070	-0.398	0.691	3.119
PLANTATION	0.016	0.144	0.886	5.234
OTHER INDUSTRIES	-0.104	-0.736	0.463	8.337
CONSTANT	0.078	0.217	0.828	
R ²	0.643			
Adjusted R ²	0.614			
F	22.371			
Significant F	0.000*			

*Significant at 5 percent level

7.2.2 Regression Model 2 – ROS as the dependent variable.

Based on the study's hypotheses created in Chapter 3, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 2

$$ROS = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \varepsilon$$

Analysis of Regression Results on Model 2 – ROS as the dependent variable

Table 7.2 on page 217 reports the linear regression results for Model 2 where Return on Sales (ROS) is the dependent variable and was regressed against twelve independent variables which includes company's age, ISO 9000 registration, company's size, company's growth, company's capital structure and the seven categories of industry within which the companies are operating, namely is industrial products, consumer products, construction, property, trading and services, plantation and other industries.

In order to determine the fitness of the model, referring to Table 7.2 on page 217 for the regression results, the significant value of the model (Significant F) shows that $p < 0.000$, which is less than 0.05, so it can be concluded that the model does fit the data. Examination of the R-square (R^2) value shows that 33.4 per cent of the variation in ROS was explained by all the company attributes, which include age, ISO 9000, size, growth, capital structure and the seven categories of industry within which the companies operate.

As the R^2 is low, there is no problem of multicollinearity (Gupta 2000). The adjusted R^2 value of 0.281 and the F value of 6.238 show that the model describes 28.1 percent of the variance in ROS and is significant at the 5 per cent level. There is not enough evidence to support the hypotheses that ROS is directly related to the company's age, company's size, company's growth, and the category of industry that the companies are operating in, namely industrial products, consumer products, construction, property, trading and services, plantation and other industries. Thus, the null hypotheses (H2b, H2d, H2e, H2f, H2g, H2h, H2i, H2j, H2k, H2l) could not be rejected at a 5 percent significance level.

Table 7.2
Regression Analysis Results on
Model 2 (ROS as dependent variable)

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	-0.068	-0.945	0.346	1.172
ISO	0.335	4.417	0.000*	1.289
SIZE	0.009	0.132	0.896	1.127
GROWTH	-0.055	-0.792	0.430	1.070
CAPITAL STRUCTURE	-0.307	-4.354	0.000*	1.116
INDUSTRIAL PRODUCT	-0.158	-0.543	0.588	8.911
CONSUMER PRODUCT	-0.188	-1.004	0.317	7.823
CONSTRUCTION	-0.125	-0.624	0.534	8.993
PROPERTY	-0.213	-1.064	0.289	8.980
TRADING & SERVICES	-0.083	-0.345	0.731	3.119
PLANTATION	-0.017	-0.114	0.909	5.234
OTHER INDUSTRIES	-0.231	-1.198	0.233	8.337
CONSTANT	0.537	0.084	0.933	
R^2	0.334			
Adjusted R^2	0.281			
F	6.238			
Significant F	0.000*			

* Significant at 5 percent level

Looking at the regression table, it is found that ISO 9000 and capital structure are the only variables that are significantly associated with ROS. The beta coefficient (0.335) and significance level ($p < 0.000$) suggest that the relationship between ISO 9000 and ROS is positive and is significant at the 5 percent level. This implies that companies that are registered with ISO 9000 have a higher ROS than companies that are not registered with ISO 9000. However, as for capital structure (ratio of debt to total assets), the beta coefficient shows a value of (-0.307) and significance level of $p < 0.000$, which means that the relationship between capital structure and ROS is negatively related and is significant at the 5 percent level. This indicates that companies with low debt to total assets ratios have a higher ROS than companies with high debt to total assets ratios. Although the association is not strong, the findings support the hypothesis that there is a relationship between ROS and ISO 9000 (positive association) and between ROS and capital structure (negative association). The null hypotheses (H2a and H2c) that there is no relationship between ROS and ISO 9000 are rejected at a 5 percent significance level. The beta coefficient also shows that ISO 9000 makes a stronger statistically significant contribution than capital structure in contributing to the prediction of the dependent variable (ROS).

7.2.3 Regression Model 3 – EVA as the dependent variable.

Based on the study's hypotheses created in Chapter 3, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 3

$$EVA = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \varepsilon$$

Analysis of Regression Results on Model 3 – EVA as the dependent variable

Table 7.3 on page 220 reports the linear regression results for Model 3 where Economic Value Added (EVA) is the dependent variable and was regressed against twelve independent variables, namely company's age, ISO 9000, company's size, company's growth, company's capital structure and the industrial category of the company.

In order to determine the fitness of the model, referring to Table 7.3 on page 220 for the regression results, it can be seen that the significance value of the model (Significant F) is $p < 0.001$, which is less than 0.05, and it can be concluded that the model could fit the data. Examination of the R-square (R^2) value shows that 20.2 per cent of the variation in EVA was explained by all the company attributes, which include age, ISO 9000, size, growth, capital structure and the category of industry within which the company operates. The adjusted R^2 value of 0.138 and the F value of 3.147 shows that the model describes 13.8 percent of the variance in EVA and is significant at the 5 per cent level. There is not sufficient evidence to support the hypotheses that EVA is directly related to the companies' age, size, growth, capital structure or the category of industry that the companies are operating in.. Thus, the null hypotheses (H3b, H3c, H3d, H3e, H3f, H3g, H3h, H3i, H3j, H3k, H3l) could not be rejected at a 5 percent significance level.

Looking at table 7.3 on page 220, the only variable that is significantly associated with EVA is ISO 9000. The beta coefficient (0.376) and significance level ($p < 0.000$) suggest that the relationship between ISO 9000 and EVA is positive and is significant at the 5 percent level. This implies that companies that are registered with ISO 9000 have a higher EVA than companies that are not registered with ISO 9000. Although the association is not strong, the findings support the hypothesis that EVA is positively associated with ISO 9000. The null hypothesis (H1a) that there is no association between EVA and ISO 9000 is rejected at a 5 percent significance level.

Table 7.3
Regression Analysis Results on
Model 3 (EVA as dependent variable)

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	0.007	0.090	0.928	1.172
ISO	0.376	4.520	0.000*	1.289
SIZE	0.100	1.282	0.202	1.127
GROWTH	0.022	0.293	0.770	1.070
CAPITAL STRUCTURE	-0.074	-0.955	0.341	1.116
INDUSTRIAL PRODUCT	-0.608	-1.912	0.058	8.911
CONSUMER PRODUCT	-0.321	-1.569	0.119	7.823
CONSTRUCTION	-0.390	-1.775	0.078	8.993
PROPERTY	-0.394	-1.798	0.074	8.980
TRADING & SERVICES	-0.465	-1.754	0.082	3.119
PLANTATION	-0.172	-1.027	0.306	5.234
OTHER INDUSTRIES	-0.297	-1.407	0.162	8.337
CONSTANT	1.18E+08	0.946	0.346	
R ²	0.202			
Adjusted R ²	0.138			
F	3.147			
Significant F	0.001*			

*Significant at 5 percent level

7.2.4 Regression Model 4 – Cash Flow (CF) as the dependent variable.

Based on the study's hypotheses created in Chapter 3 of this study, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 4

$$CF = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \varepsilon$$

Analysis of Regression Results on Model 4 – CF as the dependent variable

Table 7.4 on page 223 reports the linear regression results for Model 4 where Cash Flow (CF) is the dependent variable and was regressed against twelve independent variables, namely company's age, ISO 9000 registration, company's size, company's growth, company's capital structure and the seven industrial categories.

In order to determine the fitness of the model, referring to Table 7.4 on page 223 for the regression results, the significance value of the model (F) is at $p < 0.000$, which is less than 0.05, and it can therefore be concluded that the model fits the data. The R-square (R^2) value shows that 69.9 per cent of the variation in CF was explained by all the company attributes, which include age, ISO 9000, size, growth, capital structure and the category of industry within which the company operates. The adjusted R^2 value of 0.675 and the F value of 28.902 shows that the model describes 67.5 percent of the variance in CF and it is significant at the 5 per cent level. There is not sufficient evidence to support

the hypotheses that CF is directly related to the company's age, ISO 9000, company's growth or capital structure. Thus, the null hypotheses (H4a, H4c, H4d, H4e) could not be rejected at a 5 percent significance level.

Company's size and all categories of industry are the only variables that are significantly associated with CF. The beta coefficient for size shows a value of 0.706 and the significance level ($p < 0.000$) suggest that the relationship between company's size and CF is positive and is significant at the 5 percent level. This implies that large companies (based on total assets) have a higher CF than companies that are smaller in size, Gupta (1969).

Looking at the category of industry in which the companies operate, this study shows that the beta coefficient (-1.607) and significance level ($p < 0.000$) for industrial product companies is negatively related to CF and that this relationship is significant at the 5 percent level. This shows that industrial product companies have a negative CF. As for the beta coefficient for consumer products (-0.961), construction (-1.086), property (1.071), trading and services (-1.263), plantation (-0.780) and other industries (-0.995), all show significance levels of $p < 0.000$. This implies that all these industries have a negative CF. Although the association is not strong, the findings support the hypothesis that CF is positively associated with size of company and there is an association with industrial products, consumer products, construction, property, trading and services, plantation and other industries for Malaysian companies (Loo *et al.* 2000 and Murugesh *et al.* 2001).

Therefore, looking at the regression table results, the null hypothesis (H4b, H4f, H4g, H4h, H4i, H4j, H4k, H4l) that there is no association between CF and all the categories of industry under this study is rejected at a 5 percent significance level. This also means that the industrial product industry makes the strongest statistically significant contribution to explaining the dependent variable (CF).

Table 7.4
Regression Analysis Results on
Model 4 (Cash Flow as dependent variable)

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	-0.042	-0.874	0.384	1.172
ISO	0.002	0.036	0.971	1.289
SIZE	0.706	14.812	0.000*	1.127
GROWTH	0.057	1.237	0.218	1.070
CAPITAL STRUCTURE	-0.013	-0.283	0.778	1.116
INDUSTRIAL PRODUCT	-1.607	-8.227	0.000*	8.911
CONSUMER PRODUCT	-0.961	-7.654	0.000*	7.823
CONSTRUCTION	-1.086	-8.063	0.000*	8.993
PROPERTY	-1.071	-7.961	0.000*	8.980
TRADING & SERVICES	-1.263	-7.763	0.000*	3.119
PLANTATION	-0.780	-7.597	0.000*	5.234
OTHER INDUSTRIES	-0.995	-7.670	0.000*	8.337
CONSTANT	87006317	8.214	0.000*	
R ²	0.699			
Adjusted R ²	0.675			
F	28.902			
Significant F	0.000*			

* Significant at 5 percent level

7.2.5 Regression Model 5 – Working Capital (WC) as the dependent variable.

Based on the study's hypotheses created in Chapter 3, a linear regression was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 5

$$WC = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \epsilon$$

Analysis of Regression Results on Model 5 – WC as the dependent variable

Table 7.5 on page 226 reports the linear regression results for Model 5 where Working Capital (WC) is the dependent variable and was regressed against twelve company attributes, which includes company's age, ISO 9000 registration, company's size, company's growth, company's capital structure and the industrial category in which the company operates.

In order to determine the fitness of the model, referring to Table 7.5 on page 226 for the regression results, the significance value of the model (Significant F) is $p < 0.000$ which is less than 0.05, and it can be concluded that the model fits the data. The R-square (R^2) value reveals that 21.2 per cent of the variation in WC was explained by all the company attributes, which include age, ISO 9000, size, growth, capital structure and the category of industry in which the company operates. The adjusted R^2 value of 0.149 and the F value of 3.34 show that the model describes 14.9 percent of the variance in WC and is

significant at the 5 per cent level. There is not sufficient evidence to support the hypotheses that WC is directly related to the company's age, company's size, company's growth, and the category of industry that the companies are operating in (industrial products, consumer products, construction, property, trading and services, plantation and other industries). Thus, the null hypothesis (H6b, H6d, H6e, H6f, H6g, H6h, H6i, H6j, H6k, H6l) could not be rejected at a 5 percent significance level.

Looking at the regression table, it is found that ISO 9000 and capital structure are the only variables that are significantly associated with WC. The beta coefficient (0.241) and significance level ($p < 0.004$) suggest that the relationship between ISO 9000 and WC is positive and is significant at the 5 percent level. This implies that companies that are registered with ISO 9000 have a higher WC than companies that are not registered with ISO 9000. However, as for capital structure, the beta coefficient (-0.281) and significant level ($p < 0.000$) show that the relationship between capital structure and WC is negatively related and is significant at the 5 percent level. This indicates that companies with low debt to total assets ratio have a higher WC than companies with high debt to total assets ratio. Although the association is not strong, the findings support the hypothesis that WC is positively associated with ISO 9000, but negatively associated with capital structure. The null hypotheses (H6a and H6c) that there is no association between WC and ISO 9000 and capital structure are thus rejected at a 5 percent significance level. Referring to the beta coefficient value, capital structure makes the strongest statistically significant unique contribution to explaining the dependent variable (WC). The beta value for ISO

9000 is only 0.241, indicating that it made less statistically significant contribution to explaining the dependent variable (WC).

Table 7.5
Regression Analysis Results on
Model 5 (WC as the dependent variable)

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	-0.018	-0.223	0.824	1.172
ISO	0.241	2.923	0.004*	1.289
SIZE	-0.108	-1.393	0.166	1.127
GROWTH	0.028	0.366	0.715	1.070
CAPITAL STRUCTURE	-0.281	-3.663	0.000*	1.116
INDUSTRIAL PRODUCT	-0.348	-1.100	0.273	8.911
CONSUMER PRODUCT	-0.152	-0.746	0.457	7.823
CONSTRUCTION	-0.226	-1.038	0.301	8.993
PROPERTY	-0.308	-1.411	0.160	8.980
TRADING & SERVICES	-0.311	-1.182	0.239	3.119
PLANTATION	-0.172	-1.034	0.303	5.234
OTHER INDUSTRIES	-0.264	-1.256	0.211	8.337
CONSTANT	0.767	2.793	0.006	
R ²	0.212			
Adjusted R ²	0.149			
F	3.340			
Significant F	0.000*			

* Significant at 5 percent level

7.2.6 Regression Model 6 – ROE as the dependent variable.

Based on the study's hypotheses created as in Chapter 3 of the study, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 6

$$ROE = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \varepsilon$$

Analysis of Regression Results on Model 6 – ROE as the dependent variable

Table 7.6 on page 228 reports the linear regression results for Model 6, where ROE is the dependent variable and was regressed against twelve independent variables, made up of company attributes, that is, company's age, ISO 9000 registration, company's size, company's growth, company's capital structure and the industrial category of the company.

In order to determine the fitness of the model, referring to Table 7.6 on page 228 for the regression results, the significance value of the model (Significant F) is $p < 0.611$, which is more than 0.05, and it can be concluded that the model does not fit the data. There is not sufficient evidence to support the hypotheses that ROE is directly related to the company's age, ISO 9000, company's size, company's growth, capital structure and the category of industry in which the companies are operating. Thus, the null hypotheses (H7a, H7b, H7c, H7d, H7e, H7f, H7g, H7h, H7i, H7j, H7k, H7l) could not be rejected at a 5 percent significance level.

Table 7.6
Regression Analysis Results on
Model 6 (ROE as the dependent variable)

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	0.090	1.046	0.297	1.172
ISO	0.128	1.417	0.159	1.289
SIZE	-0.031	-0.364	0.717	1.127
GROWTH	0.011	0.128	0.898	1.070
CAPITAL STRUCTURE	0.103	1.228	0.222	1.116
INDUSTRIAL PRODUCT	-0.114	-0.331	0.741	8.911
CONSUMER PRODUCT	0.076	0.342	0.733	7.823
CONSTRUCTION	0.028	0.119	0.906	8.993
PROPERTY	-0.076	-0.322	0.748	8.980
TRADING & SERVICES	-0.048	-0.168	0.867	3.119
PLANTATION	-0.035	-0.194	0.847	5.234
OTHER INDUSTRIES	-0.091	0.398	0.691	8.337
CONSTANT	-0.048	-0.148	0.882	
R ²	0.063			
Adjusted R ²	-0.012			
F	0.838			
Significant F	0.611			

7.2.7 Regression Model 7 – Tobin's Q as the dependent variable.

Based on the study's hypotheses created as in Chapter 3, a linear regression test was conducted in order to test the hypotheses. The general structural equation that was employed to explain the above association is:

Regression Model 7

$$TQ = \beta_0 + \beta_1 ISO + \beta_2 CAPSTRUC + \beta_3 SIZE + \beta_4 GROWTH + \beta_5 AGE + \beta_6 INDPRO + \beta_7 CONPRO + \beta_8 CONSTR + \beta_9 PROPTY + \beta_{10} TRASER + \beta_{11} PLANT + \beta_{12} OTHERS + \epsilon$$

Analysis of Regression Results on Model 7 – TQ as the dependent variable

Table 7.7 on page 229 reports the linear regression results for Model 7 where TQ is the dependent variable and was regressed against twelve independent variables, namely, company’s age, ISO 9000 registration, company’s size, company’s growth, company’s capital structure and the seven industry categories.

**Table 7.7
Regression Analysis Results on
Model 7 (TQ as the dependent variable)**

Independent Variables	Coefficient	T-Ratio	Significant Level	VIF
AGE	0.106	1.228	0.222	1.172
ISO	0.081	0.900	0.370	1.289
SIZE	0.025	0.290	0.772	1.127
GROWTH	0.044	0.531	0.596	1.070
CAPITAL STRUCTURE	0.189	2.253	0.026*	1.116
INDUSTRIAL PRODUCT	-0.025	-0.071	0.944	8.911
CONSUMER PRODUCT	0.003	0.015	0.988	7.823
CONSTRUCTION	-0.067	-0.280	0.780	8.993
PROPERTY	-0.086	-0.362	0.718	8.980
TRADING & SERVICES	-0.091	-0.315	0.754	3.119
PLANTATION	-0.014	-0.077	0.939	5.234
OTHER INDUSTRIES	0.040	0.173	0.863	8.337
CONSTANT	0.317	0.257	0.797	
R ²	0.057			
Adjusted R ²	-0.019			
F	0.755			
Significant F	0.696			

* Significant at 5 percent level

In order to determine the fitness of the model, referring to Table 7.7 on page 229 for the regression results, the significant value of the model (Significant F) is $p < 0.696$, which is more than 0.05, so it can be concluded that the model does not fit the data. There is not sufficient evidence to support the hypotheses that TQ is directly related to the company's age, ISO 9000 certification, size, growth, capital structure or category of industry in which the companies are operating. Thus, the null hypotheses (H8a, H8b, H8c, H8d, H8e, H8f, H8g, H8h, H8i, H8j, H8k, H8l) could not be rejected at a 5 percent significance level.

7.3 Summary of the Analysis of the Regression results

Linear regression analysis was used to estimate the coefficients and the direction of relationships between the dependent and the independent variables in each of the eight models specified in the study. This section will summarise the findings of the regression analysis in this study. In regression model 1, ISO 9000 and capital structure were found to be related with ROA. ISO 9000 was found to be positively associated with ROA (Haversjo 2000, Heras *et al.* 2002, Corbett *et al.* 2002), whereas capital structure was found to be negatively associated with ROA. This indicates that companies that are registered with ISO 9000 are better than companies that are not registered with ISO 9000 in terms of ROA. As for the negative association between capital structure and ROA, this means that low debt to total assets ratio companies are better than high debt to total assets companies in terms of ROA.

In regression model 2, where ROS was the dependent variable, ISO 9000 was found to have a positive relation with ROS but capital structure was found to have a negative relation with ROS. This shows that companies that are registered with ISO 9000 are better than companies that are not registered with ISO 9000 in terms of ROS. As for the negative relation between capital structure and ROS, this shows that low debt to total assets ratio companies are better than high debt to total assets ratio companies in terms of ROS.

In regression model 3, where EVA was the dependent variable, ISO 9000 was the only variable among the twelve company attributes that was found to have a positive relation with EVA. This indicates that in terms of EVA, companies that are registered with ISO 9000 are found to be better than companies that are not registered with ISO 9000.

Referring to regression model 4, where CF is the dependent variable, company size and all the categories of industries in which the companies operate (industrial products, consumer products, construction, property, trading and services, plantation and other industries) were found to be related to CF. Company size (based on total assets) was found to have a positive association with CF (Archer and Faerber 1966), which means that bigger companies have more cash flow than smaller companies. Regarding the negative association that was found between all the categories of industry examined in this study with CF, this shows that companies in industrial products, consumer products, construction, property, trading and services, plantation and other industries have negative

cash flow, and that cash flow can be the determinant of Malaysian company performance (Loo *et al.* 2000 and Muruges *et al.* 2001).

As for regression model 5, where WC was the dependent variable, ISO 9000 and capital structure were found to have significant relationships with WC. ISO 9000 was found to have a positive relationship with WC, which means that companies that are registered with ISO 9000 are better than companies that are not registered with ISO 9000 in terms of WC. Capital structure was found to have a negative relationship with WC; this means that companies having low debt to total assets ratios have a high working capital ratio compared to companies that have high debt to total asset ratios.

As for regression model 6, where ROE was the dependent variable, not much evidence was found for a relationship between company attributes and ROE and the model was found to be insignificant. The same was found with regression model 7, where TQ was the dependent variable: no company attributes were found to have a relation with TQ and the model was found to be insignificant.

What attracts attention is that the estimation of Models 1, 2, 3 and 5 showed ISO 9000 registration to be one of the factors that determine corporate performance in the sampled Malaysian companies. Due to this factor, a T-Test was conducted on the sample and the results are presented below.

7.4 Analysis of T-Test Results on ISO 9000 and non-ISO 9000 registered companies

In order to compare the mean scores of two different groups, i.e. ISO 9000 registered companies and non-ISO 9000 registered companies, an independent samples t-test was used. This t-test can be used to answer the research question, 'is there a significant difference in the mean values of the performance variables (ROA, ROE, ROS, WC, CF, EVA and TQ) and company attributes (size, capital structure, age, growth and industrial category for ISO 9000 registered and non-ISO 9000 registered companies?'

To identify variations in the performance and company attributes between ISO 9000 registered and non-registered firms, an independent-samples t-test was performed and the results are reported in Table 7.8 on page 237.

Looking at table 7.8, this study found a significant difference in ROA between ISO 9000 registered companies ($\underline{M} = +0.0382$, $\underline{SD} = 0.1117$), and non-ISO 9000 registered companies ($\underline{M} = -0.1234$, $\underline{SD} = 0.1840$; $\underline{t} = -6.757$, $\underline{p} = 0.000$) at the 5 percent level. This shows that ISO 9000 registered companies perform better than non-ISO 9000 registered companies in terms of ROA. Referring to ROS, this study also found a significant difference in ROS between ISO 9000 registered companies ($\underline{M} = +0.1059$, $\underline{SD} = 0.2856$) and non-ISO 9000 registered companies ($\underline{M} = -0.6573$, $\underline{SD} = 1.062$; $\underline{t} = -6.246$, $\underline{p} = 0.000$), which is significant at the 5 percent level. This shows that ISO 9000 registered companies are performing better than non-ISO 9000 registered companies in terms of ROS.

As for working capital (WC), this study found that there is a significant difference in WC between ISO 9000 registered companies ($\underline{M} = 1.6606$, $\underline{SD} = 1.0348$) and non-ISO 9000 registered companies ($\underline{M} = 0.9309$, $\underline{SD} = 1.1180$; $\underline{t} = -4.311$, $\underline{p} = 0.000$), which is significant at 5 the percent level. This shows that ISO 9000 registered companies are performing better than non-ISO 9000 registered companies in terms of WC. Looking at EVA, this study found a significant difference in EVA for ISO 9000 registered companies ($\underline{M} = 43466019$, $\underline{SD} = 171310631$) and non-ISO 9000 registered companies ($\underline{M} = 96732938$, $\underline{SD} = -169460736$; $\underline{t} = -5.236$, $\underline{p} = 0.000$), significant at 5 the percent level. This shows that ISO 9000 registered companies are performing better than non-ISO 9000 registered companies in terms of EVA.

Referring to the age of the company, this study found that there is a significant difference the age for ISO 9000 registered companies ($\underline{M} = 25.51$, $\underline{SD} = 12.29$) and non-ISO 9000 registered companies ($\underline{M} = 31.38$, $\underline{SD} = 21.89$; $\underline{t} = 2.106$, $\underline{p} = 0.037$), significant at the 5 percent level. This shows that ISO 9000 registered companies are younger than non-ISO 9000 registered companies. Referring to the Pearson correlation analysis in Chapter 6, this study found that ISO 9000 is negatively correlated with the age of the company. This means that younger companies are more likely to have ISO 9000 registration compared to older companies. Looking at the size of the company (based on total assets), this study found that there is a significant difference between the size of the ISO 9000 registered companies ($\underline{M} = 2033283805$, $\underline{SD} = 5404430628$) and non-ISO 9000 registered companies ($\underline{M} = 7698656$, $\underline{SD} = 1627132223$; $\underline{t} = -2.015$, $\underline{p} = 0.046$), which significant at the 5 percent level. This shows that ISO 9000 registered companies are larger than non-

ISO 9000 registered companies. This confirms the findings of Pearson correlation analysis in Chapter 6, where ISO 9000 was found to be positively correlated with size of company, again indicating that ISO 9000 registered companies are larger compared to non-ISO 9000 registered companies.

As for the capital structure (based on the ratio of debt to total assets), this study found a significant difference in capital structure between ISO 9000 registered companies ($\underline{M} = 0.6302$, $\underline{SD} = 1.1842$) and non-ISO 9000 registered companies ($\underline{M} = 1.4352$, $\underline{SD} = 2.0951$; $\underline{t} = 3.011$, $\underline{p} = 0.003$), significant at the 5 percent level. This shows that ISO 9000 registered companies' capital structure is less than that of non-ISO 9000 registered companies. This confirms the findings of the Pearson correlation analysis in Chapter 6, which found that ISO 9000 registration is negatively correlated with capital structure. This reveals that non-ISO 9000 registered companies are high in their debt to total assets ratio.

Looking at the industrial category, this study found that there is a significant difference in the industrial product category, in that more companies under the industrial product category are found to be registered with ISO 9000 ($\underline{M} = 0.4074$, $\underline{SD} = 0.4944$) compared to non-ISO 9000 registered companies ($\underline{M} = 0.2593$, $\underline{SD} = 0.4410$; $\underline{t} = -2.013$, $\underline{p} = 0.046$), and significant at 5 the percent level. Also, referring to other industries category, this study found a significant difference in the 'other industries' category, as there were no ISO 9000 registered companies classified under 'other industries'

(\underline{M} = 0.0000, \underline{SD} = 0.0000) compared to non-ISO 9000 registered companies (\underline{M} = 0.1975, \underline{SD} = 0.4006; t = 4.438, p = 0.000) significant at the 5 percent level.

As well as the above findings, which show significant differences between ISO 9000 registered and non-ISO 9000 registered companies, Table 7.8 on page 237 also shows the mean difference in terms of other performance variables and company attributes. Looking at the mean difference in terms of ROE, ISO registered companies show a positive mean of 0.084563, whereas non-ISO registered companies show a positive mean of 0.035667, which is much less than that of ISO companies. This shows that ISO companies are performing better than non-ISO companies in terms of ROE. Also, looking at CF, ISO companies show a mean of 85979138, whereas non-ISO companies show a mean of 35828117. This shows that ISO companies are performing better than non-ISO companies in terms of CF.

As for the growth of the company, ISO companies show a mean of 0.3059, whereas non-ISO companies show a mean of 0.0055. This shows that ISO companies have better growth in sales than non-ISO companies. Referring to the Pearson correlation analysis, it is found that company growth is positively correlated with ISO 9000. This reveals that companies that are registered with ISO 9000 experience a higher growth than companies that are not registered with ISO 9000.

Table 7.8
T-Test Results on the ISO 9000 and Non-ISO 9000 Registered Companies

	ISO	Mean	Std. Deviation	t-test	Sig. (2-tailed)
ROA	0	-.123418	.183998	-6.757	0.000*
	1	3.81941E-02	.111741		
ROE	0	3.56667E-02	.605418	-0.708	0.48
	1	8.45625E-02	.138854		
ROS	0	-.657358	1.062078	-6.246	0.000*
	1	.105979	.285667		
WC	0	.930886	1.118001	-4.311	0.000*
	1	1.660619	1.034853		
LS	0	.352672	.899258	-0.332	0.740
	1	.397469	.815927		
CF	0	35828117.1951	107230429.0253	-1.537	0.126
	1	85979138.1698	273290504.7727		
EVA	0	96732938.6346	-169460736.7929	-5.236	0.000*
	1	43466019.1864	171310631.5362		
Tobin's Q	0	-.234401	2.171219	-0.189	0.850
	1	.551679	1.174936		
Age	0	31.38	21.89	2.106	0.037*
	1	25.51	12.29		
Size	0	7698656.30	1627132223.00	-2.015	0.046*
	1	2033283804.94	5404430627.88		
Growth	0	0.0055	0.7063	-1.739	0.084
	1	0.3059	1.3845		
Capital Structure	0	1.4352	2.09508	3.011	0.003*
	1	0.63019	1.1842		
Industrial Product	0	.2593	.44096	-2.013	0.046*
	1	.4074	.49441		
Consumer Product	0	.0617	.24216	-1.355	0.177
	1	.1235	.33101		
Construction	0	.0741	.26352	-1.501	0.135
	1	.1481	.35746		
Property	0	.1235	.33101	0.497	0.620
	1	.0988	.30021		
Trading & Services	0	.2099	.40976	0.806	0.422
	1	.1605	.36935		
Plantation	0	.0617	.24216	0.341	0.734
	1	.0494	.21802		
Other Industries	0	.1975	.40062	4.438	0.000*
	1	.0000	.00000		

Indicator for ISO : 0 – Non ISO Companies; 1 – ISO Companies

* 10% significance

** 5% significance

*** 1% significance

7.5 Summary and Conclusions

This study surveys a sample of 162 public listed companies on the Kuala Lumpur Stock Exchange for the period between 1998 and 2001. The study utilises eight different measures of company performance, ROA, ROE, WC, ROS, CF, TQ and EVA, to examine the relation with company's attributes, namely ISO 9000 registration, size, capital structure, age and industrial category (industrial products, consumer products, construction, property, trading and services, plantation and other industries). The major conclusion to be drawn from the analysis is that companies' performance in Malaysia is determined by variables internal to the companies rather than external variables. Among the company attributes used, ISO 9000 is found to be the major factor that determines corporate success. On establishing the relationship between ISO registration and company financial performance, represented by a number of variables (ROA, ROE, WC, ROS, CF, EVA, and Tobin's Q), ROA, EVA, ROS and WC appeared to have a significant positive association with ISO 9000 registration.

Besides ISO 9000, company's capital structure (based on the ratio of debt to total assets) was found to be another factor that determines corporate success. This is based on the relationship established between capital structure and company financial performance variables, and it is found that capital structure has a significant negative association with ROA, ROS and WC.

Another factor that was found to determine Malaysian corporate success was company size, based on total assets. This finding is based on the relationship established between

company's size and the financial performance measures, as this study found that CF is significantly positively associated with company size.

Category of industry is also found to determine Malaysian corporate success. This finding is based on the relationship between category of industry and performance measures: CF does in fact determine the performance of Malaysian companies (Loo *et al.* 2001 and Muruges *et al.* 2001)

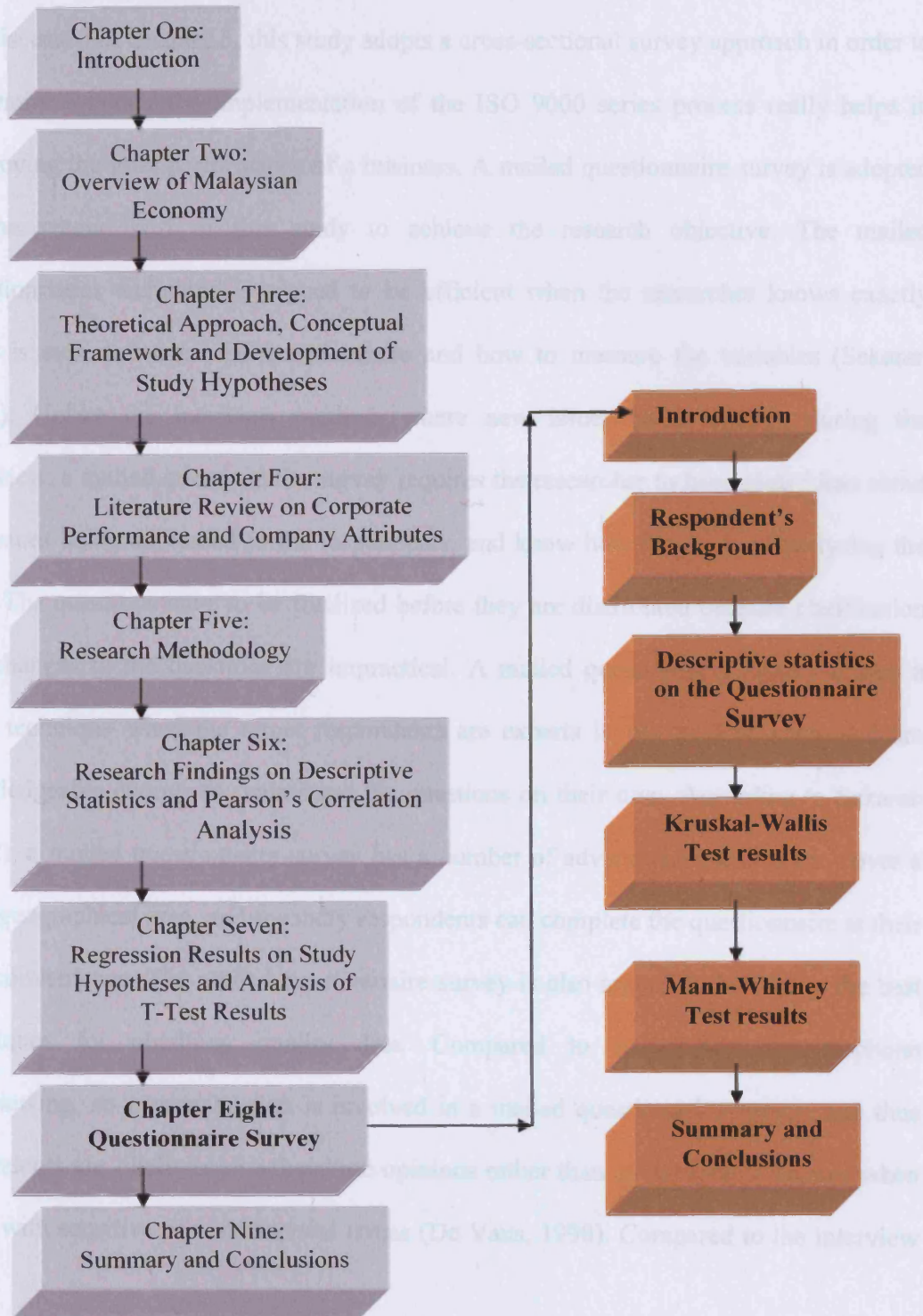
In the context of the financial effects of ISO 9000 registration, this study has found an association between ISO 9000 certification and the performance of companies in Malaysia. The above analyses revealed that ISO registered Malaysian companies outperformed their non-ISO registered counterparts during the period of this study. Thus, this study lends support to some of the findings reported in Haversjo (2000), Heras *et al.* (2002), and Corbett *et al.* (2002) regarding ISO 9000 registration and its impact on company performance.

Furthermore, this study shows that ISO registered firms perform better than non-ISO registered firms in terms of ROA, ROE, WC, ROS, CF, EVA and TQ. ISO registered firms are younger than non-ISO registered firms, and they also tend to be larger. The growth of ISO firms is better than that of non-ISO registered firms, and their capital structure of ISO firms is less than that of non-registered firms.

Overall, in the context of the financial effects and other company attributes associated with ISO 9000 registration, this study has found a significant association between ISO 9000 registration and the performance of the companies surveyed in this study. The analysis revealed that ISO 9000 registered Malaysian companies outperformed the unaccredited ones during the period of study. Thus, the study lends support to some of the findings reported in Haversjo (2000), Heras *et al.* (2002) and Corbett *et al.* (2002) regarding the link between ISO 9000 registration and company performance and other company attributes.

As ISO 9000 registered Malaysian companies were found to outperformed non-ISO 9000 registered companies on the corporate financial performance measures, the next chapter will discuss the outcome of the questionnaire analysis on the non-financial performance measures of ISO 9000 and non-ISO 9000 registered Malaysian companies.

The Thesis Structure



Chapter Eight

Questionnaire Survey

8.1 Introduction

As discussed in Chapter 5, this study adopts a cross-sectional survey approach in order to determine whether the implementation of the ISO 9000 series process really helps in improving the total performance of a business. A mailed questionnaire survey is adopted in the second part of this study to achieve the research objective. The mailed questionnaires technique is argued to be efficient when the researcher knows exactly what is expected from the questionnaire and how to measure the variables (Sekaran 1992). Unlike the interview method, where new issues could emerge during the interview, a mailed questionnaire survey requires the researcher to have clear ideas about the issues being addressed to the respondents, and know how to go about analysing the data. The questions have to be finalized before they are distributed because clarification and changes to the questions are impractical. A mailed questionnaire survey is also a good technique when the target respondents are experts in the field of study and are knowledgeable enough to understand the questions on their own. According to Sekaran (1992), a mailed questionnaire survey has a number of advantages. First, it can cover a wide geographical area, and secondly respondents can complete the questionnaire at their own convenience. The mailed questionnaire survey is also argued to be among the best techniques for obtaining quality data. Compared to face-to-face or telephone interviewing, no personalisation is involved in a mailed questionnaire survey, and thus respondents are likely to give their true opinions rather than an acceptable answer when faced with sensitive or controversial issues (De Vaus, 1990). Compared to the interview

technique, a mailed questionnaire is less costly and less time consuming. For the same cost and time, the mailed questionnaire is expected to capture more respondents than does the interview method.

However, the mailed questionnaire survey could suffer from a low response rate, which would give rise to a problem of non-response bias. A non-response bias occurs when only a proportion of a sample responds to the questionnaire and the responses are not representative of the sample (Wass and Wells, 1994). To overcome the problem of low response rate, the following methods, some of which have been suggested in the literature (see for example, Oppenheim 1992, pp. 104-106) are undertaken:

- (i) A simple but attractive questionnaire in letter form was provided,, with cover letters printed on letterhead paper,
- (ii) Self-addressed, stamped return envelopes were enclosed,
- (iii) Cover letters stressed the importance of the responses and giving assurance of confidentiality,
- (iv) Respondents were offered the chance to receive a summary of the findings, and
- (v) Follow-up letters were sent.

Generally, the survey conducted in this study sought to identify the respondents' perceptions towards (i) leadership, (ii) information and analysis, (iii) strategic quality planning, (iv) human resource development and management, (v) management of process quality, (vi) customer focus and satisfaction, (vii) comparative business outcomes. The

study sought to answer the question of whether the implementation of the ISO 9000 series process was really helpful in improving the total performance of businesses.

8.2 Respondents' Background

Based on the secondary data collected previously, the respondents are drawn from a sample of 162 companies, which had previously been identified as either ISO or non-ISO registered. Before the findings of the survey are reported, it is important that background information about respondents is presented. This is to provide an overall impression of the population of the companies in Malaysia. In this regard, respondents were asked about the industry type, total capital, total employees and the lead-time to attain ISO 9000 approval. As reported in the Chapter 5, 33 usable questionnaires were gathered from the company managers.

8.2.1 Descriptive statistics on the Questionnaire Survey

In order to describe the characteristics of the questionnaire sample data and to check whether the variables violate any assumptions underlying the statistical techniques used, a descriptive statistics test should be conducted, Pallant (2001). Looking at Table 8.1 on page 244, which shows the descriptive statistics on the questionnaire survey, concerning the variable total capital, the information from 33 respondents, the range of total capital is from 2 (total capital RM1million to RM10million) and 4 (total capital is above RM100 million), with a mean of 3.64 and standard deviation of 0.549. On total employees, it is between 2 (100 to 500 employees) and 4 (above 1,001 employees). On the distribution of scores, looking at the skewness value, positive skewness values indicate that the scores are clustered to the left at the low values and negative skewness values indicate a

clustering of scores at the high end. Positive kurtosis values indicate that the distribution is rather peaked where the scores are clustered in the centre, with long thin tails. As for kurtosis values below 0 indicate a distribution that is relatively flat, Pallant (2001).

Table 8.1: Descriptive statistics on questionnaire survey

	Descriptive Statistics								
	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
totalcap	33	2	4	3.64	.549	-1.188	.409	.519	.798
totalemp	33	2	4	3.06	.827	-.117	.409	-1.529	.798
leadtime	33	0	4	1.15	1.176	.871	.409	-.561	.798
leader1	33	5	8	7.00	.901	-.545	.409	-.448	.798
leader2	33	5	8	6.52	.870	-.049	.409	-.538	.798
leader3	33	5	8	6.61	.899	-.201	.409	-.584	.798
leader4	33	4	8	6.52	.939	-.528	.409	.415	.798
leader5	33	4	8	6.42	1.001	-.376	.409	-.241	.798
info1	33	4	9	6.33	1.137	.373	.409	-.160	.798
info2	33	4	9	6.30	1.075	.468	.409	.374	.798
info3	33	5	8	6.45	.794	.158	.409	-.247	.798
info4	33	5	8	6.58	.614	-.306	.409	-.041	.798
info5	33	5	7	6.48	.619	-.783	.409	-.287	.798
sqp1	33	4	8	6.82	1.044	-.840	.409	.376	.798
sqp2	33	3	8	6.52	1.064	-1.201	.409	2.418	.798
sqp3	33	3	8	6.18	1.131	-.518	.409	.900	.798
sqp4	33	5	8	6.42	.751	-.432	.409	-.371	.798
hrdm1	33	3	8	6.52	1.176	-1.266	.409	1.899	.798
hrdm2	33	4	8	6.55	1.175	-.731	.409	.059	.798
hrdm3	33	4	8	6.67	1.216	-.748	.409	-.389	.798
hrdm4	33	3	8	5.97	1.104	-.234	.409	.704	.798
hrdm5	33	5	8	6.36	.895	.021	.409	-.693	.798
hrdm6	33	4	8	6.15	1.004	-.124	.409	.070	.798
hrdm7	33	5	8	6.21	.927	.299	.409	-.681	.798
hrdm8	33	5	9	6.70	.847	.317	.409	.801	.798
hrdm9	33	5	8	6.45	.971	.245	.409	-.849	.798
hrdm10	33	4	8	6.21	.820	-.423	.409	.622	.798
mopq1	33	4	8	6.33	1.051	-.389	.409	-.053	.798
mopq2	33	3	8	6.33	1.021	-1.300	.409	2.874	.798
mopq3	33	4	8	6.12	.927	-.503	.409	.135	.798
mopq4	33	5	8	6.30	.770	.280	.409	-.018	.798
mopq5	33	4	8	6.27	.944	-.119	.409	-.016	.798
mopq6	33	4	8	6.24	.902	-.517	.409	-.246	.798
cfs1	33	5	8	6.70	.918	-.368	.409	-.518	.798
cfs2	33	5	8	6.70	.918	-.110	.409	-.769	.798
cfs3	33	5	8	6.33	.854	-.404	.409	-.955	.798
cfs4	33	5	8	6.00	.791	.404	.409	-.215	.798
cfs5	33	3	8	5.73	1.153	-.597	.409	.446	.798
cfs6	33	5	8	6.45	.971	-.191	.409	-.941	.798
cfs7	33	3	8	6.30	1.159	-.769	.409	.830	.798
cfs8	33	4	8	6.03	.951	.169	.409	-.345	.798
cfs9	33	5	8	6.27	.876	.012	.409	-.766	.798
boc1	33	3	8	6.33	1.534	-.714	.409	-.448	.798
boc2	33	5	8	6.39	.864	-.270	.409	-.715	.798
boc3	33	4	8	6.33	.990	-.740	.409	.253	.798
boc4	33	4	8	6.03	.918	-.578	.409	.756	.798
Valid N (listwise)	33								

Referring to Table 8.2 on page 246, which shows the descriptive statistics on the questionnaire survey of Non-ISO 9000 registered companies with only 13 respondents, the range of total capital is from 3 (total capital RM10million to RM100million) and 4 (total capital is above RM100 million), with a mean of 3.5385 and standard deviation of 0.518. On total employees, it is between 2 (100 to 500 employees) and 4 (above 1,001 employees). Looking at Table 8.3 on page 247, which shows the descriptive statistics on the questionnaire survey of ISO 9000 registered companies with only 20 respondents, the range of total capital is from 2 (total capital RM1million to RM10million) and 4 (total capital is above RM100 million), with a mean of 3.64 and standard deviation of 0.549. On total employees, it is between 2 (100 to 500 employees) and 4 (above 1,001 employees).

8.2.2 Type of industry

Table 8.4 on page 248 reveals the industry type of the respondents of the questionnaire. A total of 20 ISO 9000 registered companies (60.6 %) and 13 non-ISO 9000 registered companies (39.4 %) participated in the questionnaire survey. Out of the 20 ISO 9000 registered companies, 7 companies each (21.2 %) are from the industrial products and trading and services industries. Three companies (9.1 %) are from the construction industry, 2 companies (6.1 %) are from the property industry and 1 company (3.0 %) is from the consumer product industry. Of the 13 non-ISO 9000 registered companies (39.4 %) that participated in the survey, 5 companies (15.1 %) are from the industrial product industry and 3 companies (9.1 %) are from the trading and services industry. In addition, 2 companies each (6.1 %) are in the consumer products and property industries, and 1 company (3.0 %) is from the construction industry.

Table 8.2: Descriptive statistics on questionnaire survey of Non-ISO 9000 Registered Companies

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
totalcap	13	3.00	4.00	3.5385	.51887	-.175	.616	-2.364	1.191
totalemp	13	2.00	4.00	3.2308	.72501	-.395	.616	-.755	1.191
leadtime	13	.00	.00	.0000	.00000
i1	13	5.00	8.00	6.9231	.95407	-.507	.616	-.394	1.191
i2	13	5.00	8.00	6.3077	.85485	.241	.616	-.048	1.191
i3	13	5.00	8.00	6.2308	1.01274	.030	.616	-1.209	1.191
i4	13	5.00	8.00	6.5385	.87706	.301	.616	-.336	1.191
i5	13	5.00	8.00	6.2308	.92681	.211	.616	-.546	1.191
i1	13	4.00	9.00	6.3077	1.43670	.357	.616	-.478	1.191
i2	13	5.00	9.00	6.3846	1.19293	.844	.616	.509	1.191
i3	13	5.00	8.00	6.5385	1.05003	.136	.616	-1.041	1.191
i4	13	5.00	7.00	6.3846	.65044	-.572	.616	-.332	1.191
i5	13	5.00	7.00	6.2308	.59914	-.065	.616	.051	1.191
s1	13	4.00	8.00	6.5385	1.19829	-.622	.616	.174	1.191
s2	13	3.00	8.00	6.0000	1.29099	-.824	.616	1.235	1.191
s3	13	3.00	7.00	5.8462	1.06819	-1.586	.616	3.694	1.191
s4	13	5.00	8.00	6.3846	.86972	-.032	.616	-.316	1.191
h1	13	4.00	7.00	6.1538	.89872	-1.156	.616	1.538	1.191
h2	13	4.00	7.00	6.0769	.95407	-.854	.616	.221	1.191
h3	13	5.00	8.00	6.2308	1.16575	.221	.616	-1.503	1.191
h4	13	5.00	7.00	5.7692	.83205	.498	.616	-1.339	1.191
h5	13	5.00	8.00	6.0000	1.00000	.591	.616	-.618	1.191
h6	13	5.00	8.00	5.9231	.86232	1.085	.616	1.772	1.191
h7	13	5.00	8.00	6.0769	1.03775	.354	.616	-1.156	1.191
h8	13	5.00	9.00	6.5385	1.19829	.752	.616	-.073	1.191
h9	13	5.00	8.00	6.4615	.96742	.127	.616	-.638	1.191
h10	13	5.00	8.00	6.1538	.80064	.845	.616	1.506	1.191
m1	13	5.00	8.00	6.2308	.92681	.211	.616	-.546	1.191
m2	13	5.00	8.00	6.3077	.85485	.241	.616	-.048	1.191
m3	13	5.00	7.00	6.0000	.81650	.000	.616	-1.445	1.191
m4	13	5.00	8.00	6.2308	.83205	.528	.616	.519	1.191
m5	13	4.00	8.00	5.8462	1.14354	.348	.616	-.620	1.191
m6	13	5.00	8.00	6.0000	1.00000	.591	.616	-.618	1.191
c1	13	5.00	8.00	6.5385	1.12660	-.112	.616	-1.280	1.191
c2	13	5.00	8.00	6.5385	.96742	-.127	.616	-.638	1.191
c3	13	5.00	8.00	6.1538	1.06819	.132	.616	-1.487	1.191
c4	13	5.00	7.00	5.9231	.75955	.136	.616	-1.053	1.191
c5	13	3.00	8.00	5.5385	1.19829	.065	.616	1.656	1.191
c6	13	5.00	8.00	6.2308	1.09193	.373	.616	-1.034	1.191
c7	13	5.00	8.00	6.4615	.77625	.150	.616	.196	1.191
c8	13	5.00	7.00	5.9231	.75955	.136	.616	-1.053	1.191
c9	13	5.00	7.00	5.9231	.64051	.053	.616	.061	1.191
b1	13	3.00	7.00	5.3077	1.54837	-.290	.616	-1.552	1.191
b2	13	5.00	8.00	6.3846	1.04391	.101	.616	-.989	1.191
b3	13	4.00	8.00	6.3077	1.18213	-.349	.616	-.286	1.191
b4	13	4.00	8.00	6.0000	1.15470	-.384	.616	.106	1.191
Valid N (listwise)	13								

Table 8.3: Descriptive statistics on questionnaire survey of ISO 9000 Registered companies

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std.	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Std. Error
totalcap	20	2.00	4.00	3.7000	.57124	-1.845	.512	2.861	.992
totalemp	20	2.00	4.00	2.9500	.88704	.104	.512	-1.786	.992
leadtime	20	1.00	4.00	1.9000	.91191	.676	.512	-.347	.992
l1	20	5.00	8.00	7.0500	.88704	-.607	.512	-.246	.992
l2	20	5.00	8.00	6.6500	.87509	-.250	.512	-.337	.992
l3	20	6.00	8.00	6.8500	.74516	.257	.512	-1.043	.992
l4	20	4.00	8.00	6.5000	1.00000	-.877	.512	.813	.992
l5	20	4.00	8.00	6.5500	1.05006	-.752	.512	.496	.992
i1	20	5.00	8.00	6.3500	.93330	.487	.512	-.391	.992
i2	20	4.00	8.00	6.2500	1.01955	.103	.512	.448	.992
i3	20	5.00	7.00	6.4000	.59824	-.393	.512	-.570	.992
i4	20	6.00	8.00	6.7000	.57124	.038	.512	-.395	.992
i5	20	5.00	7.00	6.6500	.58714	-1.521	.512	1.636	.992
s1	20	5.00	8.00	7.0000	.91766	-.908	.512	.536	.992
s2	20	5.00	8.00	6.8500	.74516	-.591	.512	.925	.992
s3	20	4.00	8.00	6.4000	1.14248	-.198	.512	-.497	.992
s4	20	5.00	7.00	6.4500	.68633	-.887	.512	-.240	.992
h1	20	3.00	8.00	6.7500	1.29269	-1.756	.512	3.398	.992
h2	20	4.00	8.00	6.8500	1.22582	-1.209	.512	1.141	.992
h3	20	4.00	8.00	6.9500	1.19097	-1.556	.512	2.263	.992
h4	20	3.00	8.00	6.1000	1.25237	-.564	.512	1.036	.992
h5	20	5.00	8.00	6.6000	.75394	.033	.512	-.073	.992
h6	20	4.00	8.00	6.3000	1.08094	-.672	.512	.550	.992
h7	20	5.00	8.00	6.3000	.86450	.424	.512	-.105	.992
h8	20	6.00	8.00	6.8000	.52315	-.294	.512	.457	.992
h9	20	5.00	8.00	6.4500	.99868	.328	.512	-.846	.992
h10	20	4.00	7.00	6.2500	.85070	-1.104	.512	1.067	.992
m1	20	4.00	8.00	6.4000	1.14248	-.668	.512	.317	.992
m2	20	3.00	8.00	6.3500	1.13671	-1.737	.512	3.632	.992
m3	20	4.00	8.00	6.2000	1.00525	-.788	.512	.868	.992
m4	20	5.00	8.00	6.3500	.74516	.151	.512	.082	.992
m5	20	6.00	8.00	6.5500	.68633	.887	.512	-.240	.992
m6	20	4.00	7.00	6.4000	.82078	-1.548	.512	2.609	.992
c1	20	5.00	8.00	6.8000	.76777	-.403	.512	.366	.992
c2	20	5.00	8.00	6.8000	.89443	-.059	.512	-.859	.992
c3	20	5.00	7.00	6.4500	.68633	-.887	.512	-.240	.992
c4	20	5.00	8.00	6.0500	.82558	.525	.512	.161	.992
c5	20	3.00	7.00	5.8500	1.13671	-1.110	.512	.829	.992
c6	20	5.00	8.00	6.6000	.88258	-.592	.512	-.188	.992
c7	20	3.00	8.00	6.2000	1.36111	-.679	.512	.059	.992
c8	20	4.00	8.00	6.1000	1.07115	.069	.512	-.460	.992
c9	20	5.00	8.00	6.5000	.94591	-.415	.512	-.719	.992
b1	20	5.00	8.00	7.0000	1.12390	-.741	.512	-.823	.992
b2	20	5.00	7.00	6.4000	.75394	-.851	.512	-.609	.992
b3	20	4.00	7.00	6.3500	.87509	-1.321	.512	1.289	.992
b4	20	4.00	7.00	6.0500	.75915	-.888	.512	1.717	.992
Valid N (listwise)	20								

Table 8.4
Analysis showing the type of industry of the respondent companies

Type of Industry	Number of Companies		Percentage	
	ISO	Non-ISO	ISO	Non-ISO
Construction	3	1	9.1	3.0
Industrial Products	7	5	21.2	15.1
Consumer Products	1	2	3.0	6.1
Trading and Services	7	3	21.2	9.1
Property	2	2	6.1	6.1
Total	20	13	60.6	39.4

8.2.3 Total Capital

Table 8.5 on page 248 exhibits the analysis of the participating companies according to their total capital. Out of the 20 ISO 9000 registered companies (60.6 %), 15 companies (45.5 %) have a total capital of above RM100 million, 4 companies (12.1 %) have a total capital of between RM10 million and RM100 million, and only 1 company (3.0 %) has a total capital of between RM1 million and RM10 million.

Table 8.5
Analysis showing the total capital of participating companies

Total Capital	Number of companies		Percentage	
	ISO	Non-ISO	ISO	Non-ISO
Below RM1 million	0	0	0	0
Between RM1 million and RM10 million	1	0	3.0	0
Between RM10 million and RM100 million	4	6	12.1	18.2
Above RM100 million	15	7	45.5	21.2
Total	20	13	60.6	39.4

As for the 13 non-ISO 9000 registered companies (39.4 %), 7 companies (21.2 %) have a total capital of more than RM100 million and 6 companies (18.2 %) have a total capital of between RM10 million and RM100 million. There are no companies, whether ISO 9000 registered or non-ISO 9000 registered, which have a total capital of below RM1 million.

Table 8.6 on page 249 shows the results of a Kruskal-Wallis test on the total capital of ISO 9000 registered and non-ISO 9000 registered companies. The mean rank of the total capital of ISO 9000 registered companies is higher than the mean rank of the total capital of non-ISO 9000 registered companies. This shows that the total capital of the ISO 9000 registered companies is greater than the total capital of non-ISO 9000 registered companies. This result suggests that a company's total capital could be a factor in ISO accreditation.

Table 8.6
Kruskal-Wallis Test Results on the Total Capital of ISO 9000 registered
and non-ISO 9000 registered companies

Factor	ISO 9000	Number of companies	Mean Rank
Total Capital	Registered	20	18.23
	Non-Registered	13	15.12

8.2.4 Size of Company

For the purpose of this study, the number of employees is used as a measure of size. Table 8.7 on page 250 presents a summary of the total number of employees that are employed by the companies participating in this study. Table 8.7 reveals that out of the 20 ISO 9000 registered companies, 8 companies (24.2 %) participating in this research employ between 101 and 500 employees, 5 companies (15.2 %) employ between 501 and 1,000 employees, and 7 companies (21.2 %) employ more than 1,001 employees. Looking at the 13 non-ISO 9000 registered companies, 2 companies (6.0 %) employ between 101 and 500 employees, 6 companies (18.2 %) employ between 501 and 1,000 employees, and 5 companies (15.2 %) employ more than 1,001 employees. There are no companies, whether ISO 9000 registered or non-ISO 9000 registered, which employ below than 100 employees.

Table 8.7
Analysis showing the size of participating companies
by total number of employees

Number of Employees	Number of companies		Percentage	
	ISO 9000	Non-ISO 9000	ISO 9000	Non-ISO 9000
Below 100	0	0	0	0
101 - 500	8	2	24.2	6.0
501 – 1000	5	6	15.2	18.2
Above 1001	7	5	21.2	15.2
Total	20	13	60.6	39.4

Table 8.8 below reveals the results of a Kruskal-Wallis test on the total number of employees of ISO 9000 registered and non-ISO 9000 registered companies. The mean rank of non-ISO registered companies is higher than the mean rank of ISO 9000 registered companies. This shows that ISO 9000 registered companies are smaller than non-ISO 9000 registered companies. This result suggests that company size, based on number of employees, could be a factor in ISO accreditation (Carr *et al.* 1997).

Table 8.8
Kruskal-Wallis Test Results on the Total Employee of ISO 9000
and non-ISO 9000 registered companies

Factor	ISO 9000	Number of companies	Mean Rank
Total Employees	Registered	20	15.83
	Non-Registered	13	18.81

8.2.5 Lead-time to attain ISO 9000 approval

It is worth noting that the lead-time to attain ISO 9000 approval represents an important indicator of the ability to evaluate the impact of ISO 9000 on performance. In this context, the later a company gets its ISO 9000, the more experience it has and the greater value it has to this study. It can be seen in table 8.9 on page 251, that out of the 20 ISO 9000 registered companies, 8 companies' (40.0 %) lead time to attain ISO 9000 approval was less than 1 year, while the lead-time for 7 companies (35.0 %) was between 1 and 2

years, 4 companies' (20.0 %) lead-time was between 2 and 3 years and 1 company (5.0 %) had a lead time of more than 3 years.

Table 8.9
Analysis showing the lead time to get ISO 9000 approval for ISO 9000 companies

Lead time	Number of companies	Percentage
Below 1 year	8	40.0
1 to 2 years	7	35.0
2 to 3 years	4	20.0
Above 3 years	1	5.0
Total	20	100

8.2.6 Kruskal-Wallis Tests Results on the lead time to attain ISO 9000 approval

In order to measure the consensus in the perceptions among the respondents, a Kruskal-Wallis tests is being used. In this study, the Kruskal-Wallis tests was used to measure the mean on the lead time for companies to attain ISO 9000 approval.

Tables 8.10 on page 252 to 8.16 on page 258 reveal the results of Kruskal-Wallis tests on the lead-time to attain ISO 9000 approval for the 20 ISO 9000 registered companies. These tables present the results of Kruskal-Wallis tests of the difference in the lead time of ISO 9000 registered companies in relation to all of the seven main factors, which include leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction, and comparative business outcome.

Looking at table 8.10 on page 252, the Kruskal-Wallis test result on the lead-time to get ISO 9000 approval in relation to leadership shows that the mean ranks for the five leadership factors are higher for companies with lead-times of more than 3 years compared to those with lead-times of less than one year.

Table 8.10
Kruskal-Wallis Test Results on the Lead-time to get ISO 9000 Approval of ISO 9000
registered companies in relation to leadership factors

	Lead time	Number of Companies	Mean Rank	Sig.
1.Senior managers deliver the quality goals of the organization and supervise the implementation of quality policy	< 1 year	8	7.88	
	1-2 years	7	11.86	
	2-3 years	4	11.75	
	> 3 years	1	17.00	
2.Management at all levels visibly provides commitment and actions to the vital goal of quality excellence	< 1 year	8	8.06	
	1-2 years	7	11.50	
	2-3 years	4	13.00	
	> 3 years	1	13.00	
3.Management provides adequate resources for quality improvement.	< 1 year	8	7.00	0.08**
	1-2 years	7	11.79	
	2-3 years	4	13.25	
	> 3 years	1	18.50	
4.Senior executives care for the society and living environment of the country, stressing ethics and moral values	< 1 year	8	9.63	
	1-2 years	7	10.43	
	2-3 years	4	11.63	
	> 3 years	1	13.50	
5.Performance evaluating systems for leadership are effectively established	< 1 year	8	8.31	
	1-2 years	7	10.36	
	2-3 years	4	14.50	
	> 3 years	1	13.00	

** Significant at 10 percent level

For factor 3 (Management provides adequate resources for quality improvement) the mean rank shows a marginal significant difference ($p = 0.08$) between companies with lead-times of more than 3 years and those with lead-times of less than 1 year. This result suggests that the later a company attains its ISO 9000 approval, the better the leadership management of the company. Therefore, lead time to attain ISO 9000 approval, in relation to leadership factors, could be a factor in ISO 9000 registration.

Referring to table 8.11 on page 253, which shows the Kruskal-Wallis test result on the lead-time to attain ISO 9000 approval in relation to the information and analysis factor shows that the mean ranks for three out of the five information and analysis factors (Factor 1, 3 and 5) are higher for companies with lead-times of more than 3 years

compared to those with lead-times of less than one year. Factors 2 and 4 reveal that the mean rank for companies with lead-times of less than 1 year are greater than those with lead-times of more than 3 years, but these findings are found to be not statistically significant. This result suggests that the later a company gets its ISO 9000 approval, the better the information and analysis management of the company.

Table 8.11
Kruskal-Wallis Test Results on the Lead-time to attain ISO 9000 Approval of ISO 9000 registered companies in relation to information and analysis factors

	Lead time	Number of Companies	Mean Rank	Sig.
1.Valid and real-time computer-based data system can provide adequate information for customers and suppliers	< 1 year	8	8.56	
	1-2 years	7	10.14	
	2-3 years	4	13.75	
	> 3 years	1	15.50	
2.Valid and real-time computer-based data system can provide adequate information for internal operations, organizational effectiveness, and financial status	< 1 year	8	9.44	
	1-2 years	7	9.86	
	2-3 years	4	14.13	
	> 3 years	1	9.00	
3.Benchmarking proceeds routinely to improve the total quality level of the firm	< 1 year	8	7.69	
	1-2 years	7	11.14	
	2-3 years	4	13.63	
	> 3 years	1	16.00	
4.Adequate data are collected and analysed for quality improvement	< 1 year	8	9.94	
	1-2 years	7	11.71	
	2-3 years	4	11.13	
	> 3 years	1	4.00	
5.Quality information and analysis system is evaluated and improved routinely	< 1 year	8	8.38	
	1-2 years	7	10.79	
	2-3 years	4	13.50	
	> 3 years	1	13.50	

Looking at table 8.12 on page 254, the results of the Kruskal-Wallis test on the lead-time to attain ISO 9000 approval, in relation to strategic quality planning factors, shows that the mean ranks for the four strategic quality planning factors are higher for companies that have a lead time of more than 3 years compared to companies with a lead time of less than one year. For factor 3 (Our employees fully understand the context of our strategic

quality plan) the mean rank shows a marginal significant difference ($p = 0.097$) between companies with lead-times of more than 3 years and those with lead-times of less than 1 year. This result suggests that the later a company attains its ISO 9000 approval, the better the strategic quality planning of the company.

Table 8.12
Kruskal-Wallis Test Results on the Lead-time to get ISO 9000 Approval of ISO 9000 registered companies in relation to strategic quality planning

	Lead time	Number of Companies	Mean Rank	Sig.
1. A short-term effective quality plan (1-2 years) is implemented	< 1 year	8	8.75	
	1-2 years	7	12.07	
	2-3 years	4	11.50	
	> 3 years	1	9.50	
2. A long-term quality plan (3-5 years) is implemented in light of customer-driven satisfaction	< 1 year	8	7.13	
	1-2 years	7	12.57	
	2-3 years	4	13.38	
	> 3 years	1	11.50	
3. Our employees fully understand the context of our strategic quality plan	< 1 year	8	7.38	0.097**
	1-2 years	7	10.50	
	2-3 years	4	15.88	
	> 3 years	1	14.00	
4. Our organisation evaluates the quality plan and improves operational practices frequently	< 1 year	8	8.81	
	1-2 years	7	10.50	
	2-3 years	4	10.75	
	> 3 years	1	10.50	

** Significant at 10 percent level

Referring to table 8.13 on page 255, the results of the Kruskal-Wallis tests on the lead-time to attain ISO 9000 approval in relation to human resource development and management factors show that the mean ranks for the ten human resource development and management factors are higher for companies that have lead-times of more than 3 years compared to companies with lead-times of less than one year. As for factor 6 (Organisation encourages employees to provide advice for quality improvement) the mean rankings show a significant difference ($p = 0.023$) at 5 percent level between companies with lead-times of more than 3 years and those with lead-times of less than 1

year. This result suggests that the later a company attains its ISO 9000 approval, the better the human resource development and management of the company.

Table 8.13
Kruskal-Wallis Test Results on the Lead-time to attain ISO 9000 approval of ISO 9000 companies in relation to human resource development and management factor

	Lead time	Number of Companies	Mean Rank	Sig.
1. Organisation has a complete training program for quality recognition, teamwork and problem solving	< 1 year	8	10.38	
	1-2 years	7	10.50	
	2-3 years	4	10.75	
	> 3 years	1	10.50	
2. Organisation provides effective operational skill training for employees	< 1 year	8	8.63	
	1-2 years	7	10.79	
	2-3 years	4	12.13	
	> 3 years	1	17.00	
3. Training programs are available for all levels of employees	< 1 year	8	8.69	
	1-2 years	7	10.21	
	2-3 years	4	15.00	
	> 3 years	1	9.00	
4. Employees are enthusiastic about the improvement of processes or services	< 1 year	8	9.69	
	1-2 years	7	8.93	
	2-3 years	4	12.75	
	> 3 years	1	19.00	
5. Employees are enthusiastic about the improvement of customer satisfaction	< 1 year	8	11.50	
	1-2 years	7	7.29	
	2-3 years	4	13.25	
	> 3 years	1	14.00	
6. Organisation encourages employees to provide advice for quality improvement	< 1 year	8	9.56	0.023*
	1-2 years	7	7.07	
	2-3 years	4	16.13	
	> 3 years	1	19.50	
7. Every employee realizes and recognizes the quality improvement policy	< 1 year	8	9.19	
	1-2 years	7	10.21	
	2-3 years	4	12.25	
	> 3 years	1	16.00	
8. Organisation is willing to improve and maintain a good working environment, with respect to employees' welfare and growth	< 1 year	8	8.94	
	1-2 years	7	9.79	
	2-3 years	4	14.38	
	> 3 years	1	12.50	
9. Organisation executes an efficient evaluation process for selecting, recruiting, training and other personnel policies	< 1 year	8	9.38	
	1-2 years	7	9.07	
	2-3 years	4	13.25	
	> 3 years	1	18.50	
10. Organisation digs out the pitfalls from its working environment and improves them	< 1 year	8	8.81	
	1-2 years	7	9.71	
	2-3 years	4	13.88	
	> 3 years	1	16.00	

* Significant at 5 percent level

Looking at table 8.14 on page 256, the results of the Kruskal-Wallis tests on the lead time to attain ISO 9000 approval in relation to the management of process quality factor show that the mean rank for the six management of process quality factors are higher for companies having lead-times of more than 3 years compared to companies having lead-times of less than one year. As for factor 2 and factor 3, the mean ranks show a marginal significant difference ($p = 0.094$ and $p = 0.057$ respectively), between companies with lead-times of more than 3 years and those with lead-times of less than 1 year. This result suggests that the later a company attains ISO 9000 approval, the better the management of process quality of the company.

Table 8.14
Kruskal-Wallis Test Results on the Lead-time to get ISO 9000 Approval of ISO 9000 registered companies in relation to management of process quality factors

	Lead time	Number of Companies	Mean Rank	Sig.
1. The manufacturing process is qualified and management power of each level is authorized	< 1 year	8	9.56	
	1-2 years	7	9.64	
	2-3 years	4	13.00	
	> 3 years	1	14.00	
2. Complete process performance evaluating criteria are established	< 1 year	8	9.63	0.094**
	1-2 years	7	7.86	
	2-3 years	4	15.88	
	> 3 years	1	14.50	
3. An effective improvement approach is well organized for low performance processes	< 1 year	8	7.19	0.057**
	1-2 years	7	10.93	
	2-3 years	4	14.00	
	> 3 years	1	20.00	
4. The experience of every executed project can be accumulated and transformed so as to avoid committing the same errors	< 1 year	8	11.50	
	1-2 years	7	9.07	
	2-3 years	4	9.63	
	> 3 years	1	16.00	
5. Quality requirements can be suitably translated to suppliers and subcontractors	< 1 year	8	9.38	
	1-2 years	7	11.79	
	2-3 years	4	8.25	
	> 3 years	1	19.50	
6. Process improvement performance can be effectively evaluated	< 1 year	8	9.88	
	1-2 years	7	9.29	
	2-3 years	4	12.75	
	> 3 years	1	15.00	

** Significant at 10 percent level

Looking at table 8.15 on page 257, the results of the Kruskal-Wallis tests on the lead time to attain ISO 9000 approval in relation to customer focus and satisfaction factors show that the mean ranks for the nine customer focus and satisfaction factors are higher for companies having lead-times of more than 3 years compared to companies having lead-times of less than one year.

Table 8.15
Kruskal-Wallis Test Results on the Lead-time to attain ISO 9000 Approval of ISO 9000 registered companies in relation to customer focus and satisfaction factors

	Lead time	Number of Companies	Mean Rank	Sig.
1. Customers' requirements can be effectively translated to the department of manufacturing	< 1 year	8	8.00	
	1-2 years	7	12.86	
	2-3 years	4	9.25	
	> 3 years	1	19.00	
2. Customers' requirements are managed through a standard procedure	< 1 year	8	9.50	
	1-2 years	7	11.71	
	2-3 years	4	10.00	
	> 3 years	1	12.00	
3. A plan for evaluating the customer's satisfaction is well organized	< 1 year	8	8.25	
	1-2 years	7	11.79	
	2-3 years	4	11.63	
	> 3 years	1	15.00	
4. Customer interviews are implemented through an appropriate timetable	< 1 year	8	6.75	0.015*
	1-2 years	7	10.43	
	2-3 years	4	15.75	
	> 3 years	1	20.00	
5. Quality information is shared with customers without reservation	< 1 year	8	10.25	
	1-2 years	7	10.07	
	2-3 years	4	10.00	
	> 3 years	1	17.50	
6. Customers' questions are replied to in as detailed a manner as possible.	< 1 year	8	8.81	
	1-2 years	7	11.29	
	2-3 years	4	11.88	
	> 3 years	1	13.00	
7. Customers' complaints are reflected exhaustively	< 1 year	8	10.38	
	1-2 years	7	10.71	
	2-3 years	4	8.25	
	> 3 years	1	19.00	
8. Reporting customers' complaints in real time is a common recognition for all employees	< 1 year	8	9.63	
	1-2 years	7	9.64	
	2-3 years	4	11.50	
	> 3 years	1	19.50	
9. First line customer service employees are well trained with specific courses (such as listening, communicating, complaint treatment)	< 1 year	8	9.75	
	1-2 years	7	11.21	
	2-3 years	4	10.00	
	> 3 years	1	13.50	

* Significant at 5 percent level

For factor 4 (Customer interview is implemented through an appropriate timetable) the mean rank shows a significant difference ($p = 0.015$) at 5 percent level between companies with lead-times of more than 3 years and those with lead-times of less than 1 year. This result suggests that the later a company gets its ISO 9000 approval, the better the customer focus and satisfaction management of the company.

Referring to table 8.16 on page 258, which shows the Kruskal-Wallis test results on the lead-time to attain ISO 9000 approval in relation to the comparative business outcome factor between ISO 9000 registered companies and non-ISO 9000 registered companies show that the mean ranks for the four comparative business outcome factors are higher for companies having lead-times of more than 3 years compared to companies having lead-times of less than one year. This result shows no statistical significant on the business outcome.

Table 8.16
Kruskal-Wallis Test Results on the Lead-time to attain ISO 9000 Approval of ISO 9000 registered companies in relation to business outcome comparative factor

	Lead time	Number of Companies	Mean Rank	Sig.
1. After receiving ISO 9000 approval (Without ISO 9000), is your organisation's performance significantly improved?	< 1 year	8	10.63	
	1-2 years	7	10.43	
	2-3 years	4	9.00	
	> 3 years	1	16.00	
2. The profitability of my business has increased in the past years, primarily due to our quality consciousness	< 1 year	8	9.13	
	1-2 years	7	11.93	
	2-3 years	4	9.63	
	> 3 years	1	15.00	
3. Owing to our quality improvement efforts, the sales from the business have increased	< 1 year	8	9.19	
	1-2 years	7	10.57	
	2-3 years	4	11.88	
	> 3 years	1	15.00	
4. The number of customers in our business has increased, primarily because our product/service quality has improved	< 1 year	8	9.69	
	1-2 years	7	10.71	
	2-3 years	4	9.88	
	> 3 years	1	18.00	

8.2.7 Summary of the Kruskal-Wallis Tests Results

In summary, the above Kruskal Wallis tests indicate that the total capital of the ISO 9000 registered companies is greater than the total capital of non-ISO 9000 registered companies, although this difference is found to be not statistically significant. This result suggests that a company's total capital could be a factor in ISO accreditation. Looking at the size factor, based on number of employees, this study finds that there is a difference in size between ISO 9000 registered companies and non-ISO 9000 registered companies, in that non-ISO 9000 registered companies are found to be larger than ISO 9000 registered companies. This result suggests that company size, based on number of employees, could be a further factor in ISO accreditation (Carr *et al.* 1997). As for the Kruskal-Wallis test results on the lead time to get ISO 9000 approval for the ISO 9000 registered companies, this study finds that there is no statistical significant difference between companies having more than 3 years' lead-time and companies having a lead time of less than a year on six out of the seven factors. The results generally favour companies that have a lead-time of more than 3 years, indicating that these companies are better managed than those that have a one- year lead-time.

8.3 Mann-Whitney Test on the Hypothesis Development

To test for differences between ISO 9000 registered companies and non-ISO 9000 registered companies on the seven non-financial measures used in this study as per hypothesis developed (leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and comparative business outcome) a series of Mann-Whitney U

tests was conducted. This test is the non-parametric alternative to the t-test for independent samples. Instead of comparing the means of the two groups, as in the case of the t-test, the Mann-Whitney U Test actually compares medians, converting the scores on continuous variables to ranks across the two comparative groups. It then evaluates whether the ranks for the two groups differ significantly (Pallant 2001).

8.3.1 Leadership factor

The first group of questions considered the various aspects of leadership. The classification of leadership into five factors was designed to test whether there is a difference in leadership between ISO and non-ISO accredited companies. Table 8.17 below shows that the mean scores for the five leadership five factors for the ISO 9000 companies are higher than those of the non ISO 9000 registered companies, but they are not significant. The only statistic result which indicates a marginally significant ($P < 0.10$) is for factor 3 (Management provides adequate resources for quality improvement).

Table 8.17
Mann-Whitney Test Results on Leadership factors for ISO 9000
and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1.Senior managers deliver quality goals of the organization and supervise the implementation of quality policy	16.27	17.48	
2.Management of all levels visibly provides commitment and actions to the vital goal of quality excellence	14.73	18.48	
3.Management provides adequate resources for quality improvement	13.62	19.20	0.086*
4.Senior executives care for the society and living environment of the country, with stressing ethics and moral	16.62	17.25	
5.Performance evaluating systems for leadership is effectively established	14.85	18.40	

* Significant at 10 percent level

Therefore, the null hypothesis (H8a) that there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of leadership management could not be rejected at 5 percent significant level.

8.3.2 Information and analysis factor

The second group of questions considered the various aspects of information and analysis. The information and analysis factors were classified into five items, which were designed to test whether there is a difference in information and analysis between ISO and non-ISO accredited companies. Table 8.18 below shows the mean scores of the five information and analysis factors for ISO 9000 accredited and non-ISO 9000 accredited companies.

Table 8.18
Mann-Whitney Test Results on the information and analysis factors for
ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1.A valid and real-time computer-based data system can provide adequate information for customers and suppliers	16.50	17.33	
2.A valid and real-time computer-based data system can provide adequate information for internal operations, organisational effectiveness, and financial status	17.27	16.83	
3.Benchmarking proceeds routinely to improve the total quality level of the firm	17.58	16.63	
4.Adequate data are collected and analysed for quality improvement	14.62	18.55	
5.Our quality information and analysis system is evaluated and improved routinely	13.19	19.48	0.039**

** Significant at 5 percent level

It can be seen that ISO 9000 accredited companies have higher mean scores for factors 1, 4 and 5, with factor 5 (Quality information and analysis system is evaluated and improved routinely) showing a significant difference ($P < 0.05$) at 5 percent level between ISO and non-ISO accredited companies. Therefore, there is support to reject the

null hypothesis (H8b), that there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of managing information and analysis, at 5 percent significant level.

8.3.3 Strategic Quality Planning factor

The third group of questions considered the various aspects of strategic quality planning, which were classified into four factors in order to test whether there is a difference in strategic quality planning between ISO 9000 and non-ISO 9000 accredited companies. Table 8.19 below, shows the mean scores of the four strategic quality planning factors for the ISO 9000 companies and non-ISO 9000 accredited companies.

Table 8.19
Mann-Whitney Test Results on the strategic quality planning factors for ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1. A short-term effective quality plan (1-2 years) is implemented	14.69	18.50	
2. A long-term quality plan (3-5 years) is implemented in the light of customer-driven satisfaction	12.85	19.70	0.033**
3. Our employees fully understand the context of the strategic quality plan	14.54	18.60	
4. Our organisation evaluates the quality plan and improves operational practices frequently	16.38	17.40	

** Significant at 5 percent level

It is found that ISO 9000 accredited companies have higher mean scores than non-ISO 9000 accredited companies for all four of the strategic quality planning factors. The t-statistic for factor 2 (A long-term quality plan (3-5 years) is implemented in the light of customer-driven satisfaction) indicates a significant difference ($p < 0.033$) between ISO and non-ISO accredited companies at the 5 percent level. Therefore, there is support to reject the null hypothesis (H8c) that there is no difference between ISO 9000 registered

companies and non-ISO 9000 registered companies in terms of strategic quality planning, at 5 percent significant level.

8.3.4 Human resource development and management factor

The fourth group of questions considered the various aspects of human resource development and management. The classification of human resource development and management into ten factors was designed to test whether there is a difference in human resource development and management between ISO 9000 and non-ISO 9000 accredited companies. Table 8.20 on page 264 presents the mean scores for the ten human resource development and management factors for ISO 9000 accredited and non-ISO 9000 accredited companies. It is found that the means scores for nine of these factors are higher for ISO-registered companies than for non-ISO registered companies. Only for factor 9 is the mean score for non-ISO 9000 registered companies higher than for ISO 9000 registered companies, but this difference is not significant. The t-statistic indicates a significant difference ($p < 0.03$) for factor 1 (Organisation has a complete training program on quality recognition, team work and problem solving) and a further significant difference ($p < 0.027$) for factor 2 (Organisation provides the effective operational skill training for employees) between ISO and non-ISO registered companies at the 5 percent level. Also, looking at factor 3 (Training programs are available to all levels of employees) and factor 5 (Employees are enthusiastic about the improvement of customer satisfaction), there are marginally significant differences between ISO 9000 registered companies and non-ISO 9000 registered companies ($p < 0.07$ and $p < 0.062$ respectively). Therefore, there is support to reject the null hypothesis (H8d) that there is no difference

between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of human resource development and management factors, at 5 percent significant level.

Table 8.20
Mann-Whitney Test Results on the human resource development and management factors for ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1. Organisation has a complete training program for quality recognition, team work and problem solving	12.73	19.77	0.030**
2. Organisation provides effective operational skill training for employees	12.58	19.88	0.027**
3. Training programs are available to all levels of employees	13.38	19.35	0.070*
4. Employees are enthusiastic about the improvement of processes or services	14.73	18.48	
5. Employees are enthusiastic about the improvement of customer satisfaction	13.31	19.40	0.062*
6. Organisation encourages employees to provide advice for quality improvement	14.12	18.88	
7. Every employee realizes and recognizes the quality improvement policy	15.65	17.88	
8. Organisation is willing to improve and maintain a good working environment, with respect to employees' welfare and growth	14.54	18.60	
9. Organisation executes an efficient evaluation process for selecting, recruiting, training and other personnel policies	17.19	16.88	
10. Organisation digs out the pitfalls from its working environment and improves them	15.54	17.95	

* Significant at 10 percent level

**Significant at 5 percent level

8.3.5 Management of process quality factor

The fifth group of questions considered the various aspects of management of process quality. The management of process quality was classified into six factors, in order to test whether there is a difference in the management of process quality between ISO 9000 and non-ISO 9000 registered companies. Table 8.21 on page 265 shows the mean scores for the six management of process quality factors for ISO 9000 registered and non-ISO 9000 registered companies. It is found that the mean scores for ISO 9000 registered companies

are higher than those for non-ISO 9000 registered companies for all six factors. The t-statistic indicates a significant difference ($P < 0.047$) between ISO 9000 and non-ISO 9000 registered companies for factor 5 (Quality requirements can be suitably translated to suppliers and subcontractors) at the 5 percent level. Therefore, there is support to reject the null hypothesis (H8e) that there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of management of process quality, at 5 percent significant level.

Table 8.21
Mann-Whitney Test Results on the management of process quality factors for
ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1. Manufacturing process is qualified and management power of each level is authorized	15.65	17.88	
2. Complete process performance evaluating criteria are established	15.65	17.88	
3. An effective improvement approach for low performance processes is well organized	15.42	18.02	
4. The experience of every executed project can be accumulated and transformed so as to avoid committing the same errors	16.00	17.65	
5. Quality requirements can be suitably translated to suppliers and subcontractors	13.08	19.55	0.047**
6. Process improvement performance can be effectively evaluated	14.15	18.85	

** Significant at 5 percent level

8.3.6 Customer focus and satisfaction

The sixth group of questions considered the various aspects of customer focus and satisfaction, which were classified into nine factors in order to test whether there is a difference in customer focus and satisfaction between ISO and non-ISO accredited companies. Table 8.22 on page 266 presents the mean scores of the nine factors of customer focus and satisfaction for ISO 9000 and non-ISO 9000 registered companies. Looking at the mean scores, it is evident that ISO 9000 registered companies score higher

than non-ISO 9000 registered companies for all factors except for factor 7 (Customers' complaints are reflected exhaustively), for which the mean for non-ISO 9000 registered companies is higher than the mean for ISO 9000 registered companies, but this difference is not significant. The t-statistic indicates a marginally significant ($P < 0.051$) difference between ISO and non-ISO accredited companies for factor 9 (First line customer service employees are well trained with specific courses) at 10 percent level. Therefore, there is not enough support to reject hypothesis (H8f) that there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of customer focus and satisfaction, at 5 percent significant level.

Table 8.22
Mann-Whitney Test Results on the customer focus and satisfaction factors for ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1. Customers' requirements can be effectively translated to the department of manufacturing	15.73	17.83	
2. Customers' requirements are managed through a standard procedure	15.58	17.93	
3. A plan for evaluating customers' satisfaction is well organized	15.35	18.08	
4. Customer interviews are implemented through an appropriate timetable	16.31	17.45	
5. Quality information is shared with customers without reservation	14.65	18.52	
6. Customers' questions are replied to in as much detail as possible	14.81	18.43	
7. Customers' complaints are reflected exhaustively	17.62	16.60	
8. Reporting customers' complaints in real time is a common recognition for all employees	16.04	17.63	
9. First line customer service employees are well trained with specific courses.	13.15	19.50	0.051*

* Significant at 10 percent level

8.3.7 Business Outcome factor

The last group of questions considered the various aspects of business outcome. The classification of business outcome into four factors was designed to test whether there is a difference in business outcome between ISO and non-ISO accredited companies. Table 8.23 below presents the mean scores for the four business outcome factors for ISO 9000 registered and non-ISO 9000 registered companies. This study finds that ISO 9000 registered companies have higher mean scores than non-ISO 9000 registered companies for all four business outcome factors. The t-statistic indicates a significant difference ($P < 0.002$) between ISO 9000 and non-ISO 9000 registered companies for factor 1 (Is your organisation's performance significantly improved: after receiving ISO 9000 for ISO 9000 registered companies: and, without ISO 9000 for non ISO 9000 registered companies?) at the 5 percent level. Therefore, there is support to reject hypothesis (H8g) that there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of business outcome factors, at 5 percent significant level.

Table 8.23
Mann-Whitney Test Results on the business outcome factors for
ISO 9000 and Non-ISO 9000 Registered Companies

	Mean for Non-ISO	Mean for ISO	Rank
1. After receiving ISO 9000 approval (Without ISO 9000), is your organisation's performance significantly improved?	10.77	21.05	0.002**
2. The profitability of my business has increased in the past years primarily due to our quality consciousness	16.73	17.18	
3. Owing to our quality improvement efforts, the sales from the business have increased	16.73	17.18	
4. The number of customers in our business has increased, primarily because our product/service quality has improved	16.96	17.02	

** Significant at 5 percent level

8.4 Summary and Conclusions

The objectives of this chapter were to compare a range of the non-financial factors, which include leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and comparative business outcome, between ISO 9000 registered companies and non-ISO 9000 registered companies.

Consistent with the findings in Chapter 7, this study finds that companies that are registered with ISO 9000 perform better than companies that are not registered with ISO 9000 in five out of seven non-financial factors surveyed. The five non-financial factors were; managing information and analysis, strategic quality planning, human resource development and management, management of process quality and business outcome. As for leadership and customer focus and satisfaction, there is no difference between ISO 9000 registered companies and non-ISO 9000 registered companies. As for the strategic quality planning factors, this study finds that there is a difference between companies that are registered with ISO 9000 and those that are not registered with ISO 9000. This finding is consistent with Carr *et al.* (1997), who found that companies pursuing a quality strategy were more likely to have ISO registration.

One of the limitations of this study is the relatively small sample size employed. The samples of all firms ($n = 33$) and all ISO firms ($n = 20$) were quite sufficient for the non-parametric statistical methods employed in this study, and the sample statistics strongly supported the integrity of the sample, which conformed both with anecdotal evidence and

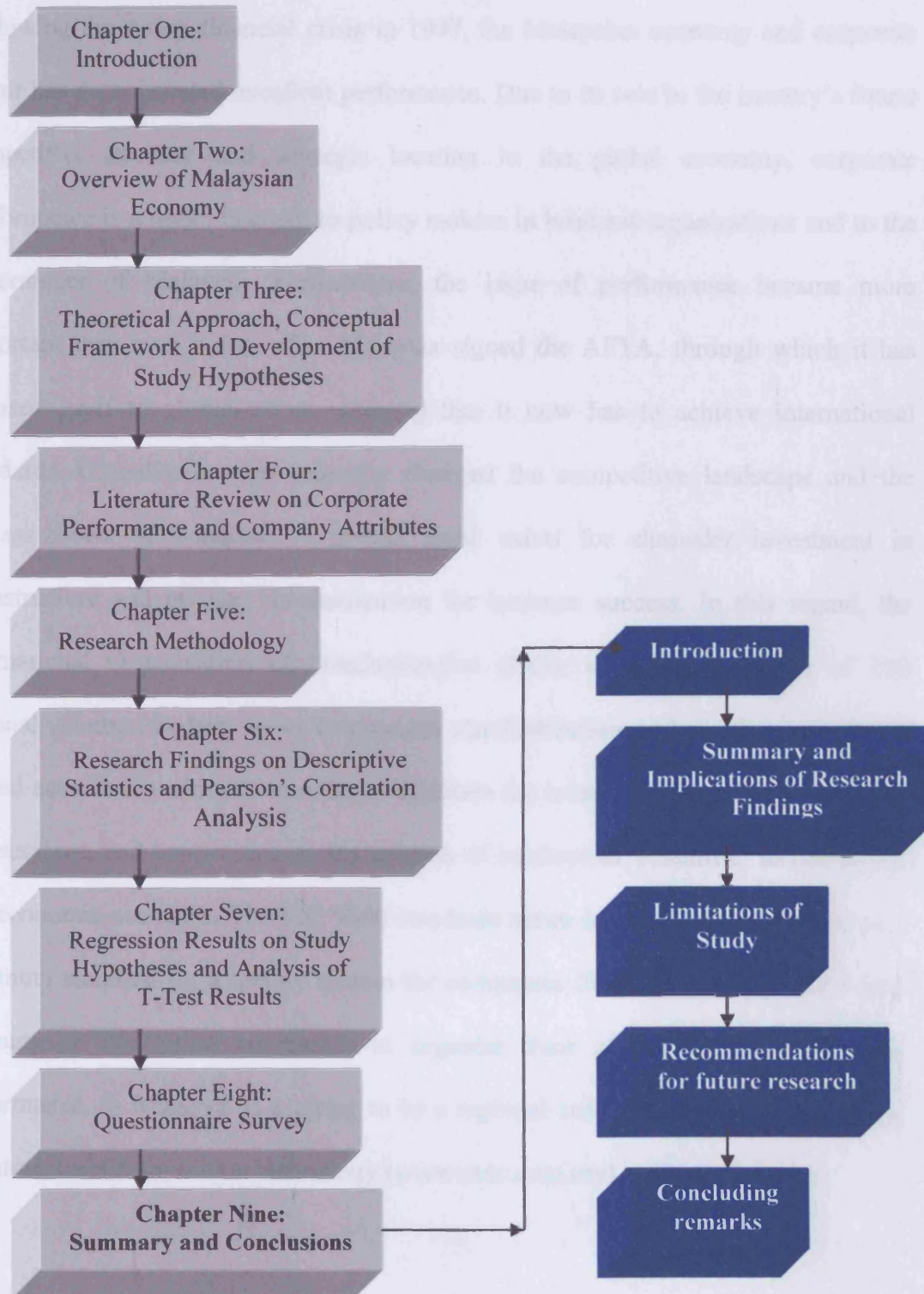
with findings from other studies (Powell, 1995; Carr *et al.*, 1997; Quazi and Padibjo 1998; Jeng, 1998).

However, the sub-samples for the category of industry for ISO 9000 and non-ISO 9000 registered companies were not large (Refer to Table 8.4 on page 247), and the findings from the associated hypothesis tests should be generalized with caution. This study acknowledges the potential external validity problems in the sub-samples, and urges other researchers to test their findings using larger samples and alternative methodologies.

Overall, the results suggest that companies that are registered with ISO 9000 perform better than companies that are not registered with ISO 9000, and these findings are consistent with Carr *et al.* (1997) and Quazi and Padibjo (1998), where ISO 9000 certification has provided significant benefits for Malaysian companies.

As Chapter 6, 7 and 8 discuss on the findings of the study, the next chapter, which is the final chapter of the study will discuss on the summary and conclusions of the thesis, the limitations of the study, recommendations for future research, and the concluding remarks.

The Thesis Structure



Chapter Nine

Summary and Conclusions

9.1 Introduction

Following the Asian financial crisis in 1997, the Malaysian economy and corporate sector has demonstrated excellent performance. Due to its role in the country's future competitive position and strategic location in the global economy, corporate performance is a major concern to policy makers in business organizations and to the government of Malaysia. Furthermore, the issue of performance became more important than ever before after Malaysia signed the AFTA, through which it has exposed itself to globalization, meaning that it now has to achieve international standards. Globalisation has radically changed the competitive landscape and the process flows of business. A greater need exists for shrewder investment in infrastructure and process standardization for business success. In this regard, the International Organization of Standardization (ISO), a global federation of 130 national standard bodies, seeks to promote standardization and the development of related activities worldwide in order to facilitate the international exchange of goods and services, and cooperation in the spheres of intellectual, scientific, technological and economic activities. The ISO 9000 standards series is now widely accepted as a minimum standard for a quality system for companies (Marquardt, 1992). This puts pressure on Malaysian companies to organize their affairs and improve their performance, as Malaysia is aspiring to be a regional centre of attraction for foreign investment and information technology (www.mdc.com.my).

Since corporate performance is a new research area in Malaysia and there is a lack of literature regarding corporate performance in the country, this study fills the gap by examining the corporate performance and linking it with international standards that would be suitable for globalization and especially for the creation of AFTA Plus in 2008.

In order to achieve the objectives of the study which are; (1) to analyse company attributes and corporate performance measures used by previous studies, (2) to identify which factors: size, capital structure, age, growth, industry category and ISO 9000 registration, that determines the corporate performance of Malaysian companies through statistical analysis of secondary data, and (3) to discover the impact of ISO 9000 registration on the financial and non-financial performance which include leadership, information and analysis, strategic quality planning, human resource development and management, management of process quality, customer focus and satisfaction and comparative business outcome of Malaysian companies through questionnaire survey, this study creates a conceptual framework of corporate performance variables and company attributes, and also investigates managers' perceptions of the importance of international standards, with specific reference to ISO 9000. The results of this study are based on an analysis of the secondary data from 162 companies listed in Bursa Malaysia and a questionnaire survey on ISO 9000 and non-ISO 9000 registered companies with 33 responses.

This thesis consists of nine chapters. Chapter 1 introduced the thesis by presenting the background, objectives and scope of the study, as well as outlining the contents of each of the remaining chapters. Chapter 2 gave an overview of the economic

background and corporate performance in Malaysia. Chapter 3 discussed the theoretical perspectives, conceptual framework and the development of study hypotheses that was created based on the literature research. In Chapter 4, a review of the literature on performance in developed and developing countries; and literature review on company attributes was presented. Chapter 5 discussed the research methods used based on the primary and secondary data research methods, which used parametric and non-parametric research approaches. Chapter 6 presented the research findings, with further elaboration on descriptive statistics and Pearson Correlations between corporate performance measures and company attributes. Chapter 7 presented the results of the study hypotheses, based on the regression model, together with the T-Tests results of the study. Chapter 8 presented the questionnaire survey results of the study hypotheses in relation to non-financial measures. This chapter concludes the thesis by summarizing the findings, discussing the limitations of the study and outlining some recommendations for future research. The chapter ends with some concluding remarks.

9.2 Summary of Findings

This section summarises the major findings of the study. The findings will be discussed under the following headings:

- Summary of the Pearson Correlation results from the secondary data
- Summary of the study hypothesis on the corporate performance measures, model development and regression results from the secondary data
- Summary of the T-Test results on ISO 9000 and non-ISO 9000 registered companies

- Summary of the study hypothesis on the non-financial performance measures and questionnaire survey results
- Summary of all the thesis results

9.2.1 Summary of the Pearson's Correlation results

This study has attempted to integrate the characteristics of company attributes, which include size of company (based on total assets), capital structure (ratio of total debt to total assets), age since incorporation, growth (based on sales growth), industry category and ISO 9000 registration with the selected corporate performance measures, which include ROA, ROE, ROS, WC, CF, EVA and TQ. Firstly, looking at the Pearson Correlation between size of company and the corporate performance measures and other company attributes, this study found that large companies are higher in their asset utilization (ROA), more efficient in their sales (ROS), and have a higher economic value added (EVA), cash flow management (CF) and Tobin's Q. In contrast, small companies are more efficient in their working capital (WC) management and they are younger and experience a higher growth in sales. In relation to ISO 9000 registration, most of the ISO 9000 registered companies in this sample study are large in size.

Secondly, looking at the Pearson Correlation between capital structure and the seven financial corporate performance measures and the other five company attributes, this study has found that companies with a capital structure characterised by low debt to total assets are higher in their asset utilization (ROA) and more efficient in their sales (ROS) and working capital management (WC). These companies are higher in their cash flow management (CF), and have a higher economic value added (EVA). They

are younger companies and are small in size. While these younger companies are better in their working capital management, old companies are found to have higher long-term liabilities and are experiencing a higher market value of equity. These findings are consistent with those of Miller (1961), Archer and Faerber (1966) and Gupta (1969), which indicated that smaller corporations face a strong constraint on the availability of investment funds; outside capital markets being comparatively inaccessible to them, they tend to economize on the use of available resources. Also, this study has found that ISO 9000 registered companies are younger than non-ISO 9000 registered companies. Besides that, ISO 9000 registered companies experience a higher growth in sales and have a higher profitability than non-ISO 9000 registered companies.

Thirdly, looking at the Pearson correlation between industrial category with all the corporate performance variables and other company attributes, this study found a significant correlation between industrial product companies and ISO 9000 registration, which indicates that most of the industrial product companies are registered with ISO 9000. Industrial product companies are smaller in size, younger, and have a negative growth in sales, and a low debt to total assets capital structure. As for the Pearson correlation with the corporate performance measures, industrial product companies are found to be higher in their asset management (ROA), working capital (WC), sales utilization (ROS) and their Tobin's Q (TQ).

Looking at the consumer product companies, this study has found that these companies have higher asset management (ROA), higher return on equity (ROE), are higher in their working capital management (WC), higher in their economic value

added (EVA) and higher in terms of Tobin's Q (TQ). They are smaller in size, younger, have a negative growth in sales and have a low debt to total assets capital structure.

As for construction companies, it is found that there is a significant correlation with the age of the company, which indicates that most of the construction companies in this study sample are young companies. Construction companies are found to have a higher return on equity (ROE), working capital management (WC), and to be higher in their sales utilization (ROS) and working capital management (WC). These companies are bigger in size, have a positive growth in sales and have a higher debt to total assets capital structure. Most of these companies are ISO 9000 registered.

Referring to property companies, this study finds that they are older companies with a positive growth in sales. As for trading and services companies, significant correlations are found with cash flow (CF) and size of the company. These indicate that property companies are good in their cash flow management and they are larger in size. They are also found to be higher in their sales utilization (ROS). They are young companies and are not registered with ISO 9000. They have a positive growth in sales and have a high debt to total assets capital structure.

Turning our attention to the plantation companies, this study finds that these companies have better asset management (ROA), working capital management (WC) and sales utilization (ROS), and greater economic value added (EVA). These companies are found to be smaller in size and are old companies. They are not ISO

9000 registered, and they have a negative growth in sales and a low debt to total assets capital structure.

As for companies from other industries, significant negative correlations were found with ROA, WC and ROS, which indicates that these companies are less efficient in their asset management, working capital management and sales utilization. Significant positive correlations were found to exist with age, and significant negative correlations with ISO 9000. These indicate that these companies are old companies and are not registered with ISO 9000. However, these companies have a positive growth in sales and a higher debt to total assets capital structure.

9.2.2 Summary of the Study Hypothesis, Model Development and Regression results

This section presents a summary of the study hypothesis, model development and regression analysis, which was used to estimate the coefficients and the direction of relationships between the seven dependent variables (ROA, ROE, ROS, WC, CF, EVA and TQ) and the independent variables (Size, Capital Structure, Age, Growth, ISO 9000 and Industrial Category) in each of the seven models specified in the study. In regression model 1, where ROA was the dependent variable and was regressed against the twelve independent variables, this study found that ISO 9000 and capital structure were significant predictors of ROA. ISO 9000 was found to have a positive association with ROA (Haversjo 2000, Heras *et al.* 2002, Corbett *et al.* 2002), and capital structure was negatively associated with ROA. This indicates that companies that are registered with ISO 9000 are better at asset management than companies that are not registered with ISO 9000. As for the negative association between capital

structure and ROA, this means that companies whose capital structure is characterised by low debt to total assets are better in their asset management than those with high debt to total assets capital structure. This may be due to ROA was calculated on net income and high debt which may be due to high interest cost and therefore the company incurs a lower ROA.

In regression model 2, where ROS was the dependent variable, it was found that ISO 9000 and capital structure were significant predictors of ROS. ISO 9000 was positively associated with ROS, but capital structure was negatively associated with ROS. This shows that companies that are registered with ISO 9000 are better in their sales utilization than companies that are not registered with ISO 9000. As for the negative relation between capital structure and ROS, this shows that low debt to total assets capital structure companies are better in their sales utilization than high debt to total assets capital structure companies. As ROS was also based on net income, high debt incurs high interest cost and therefore the company gets a lower net income.

In regression model 3, where EVA was the dependent variable, ISO 9000 was the only significant predictor of EVA among the independent variables. ISO 9000 was found to have a positive relation with EVA. This indicates that companies that are registered with ISO 9000 are found to have a higher economic value added than companies that are not registered with ISO 9000.

Referring to regression model 4, where CF was the dependent variable, company size (based on total assets) and all the categories of industries in which the companies operate (industrial products, consumer products, construction, property, trading and

services, plantation and other industries) were found to be significant predictors of CF. Company size was found to have a positive association with CF (Archer and Faerber 1966), which means that bigger companies are better in their cash flow management than smaller companies. Regarding the negative association that was found between all the categories of industry examined in this study with CF, this shows that cash flows can be a determinant of Malaysian company performance (Loo *et al.* 2000 and Muruges *et al.* 2001). As for the negative association between CF and industry, this may be due to the 1997 financial crisis where most of the companies are having trouble with their cash flow management.

As for regression model 5, where WC was the dependent variable, ISO 9000 and capital structure were found to be significant predictors of WC. ISO 9000 was found to have a positive relationship with WC, which means that companies that are registered with ISO 9000 are better in their working capital management than companies that are not registered with ISO 9000. As for the negative relationship between WC and capital structure, this means that companies that have a low debt to total assets capital structure are better in their working capital management than companies that have a high debt to total asset capital structure. This negative relationship may be due to companies that have high debt, also having high current liabilities to bear.

As for regression models 6 and 7, where ROE and TQ were the dependent variables respectively, no significant predictors were found and both models were found to be statistically insignificant.

The major conclusion to be drawn from the regression analysis is that companies' performance in Malaysia is determined by internal rather than external variables. ISO 9000 is found to be the major factor that determines corporate success. This study attempted to establish the relationship between ISO 9000 registration and company financial performance which are represented by a number of variables (ROA, ROE, WC, ROS, CF, EVA and TQ). ROA, ROS, EVA and WC appeared to be significantly associated with ISO 9000 registration. Thus, this study lends support to some of the findings reported in Haversjo (2000), Heras *et al.* (2002), and Corbett *et al.* (2002) regarding the link between ISO 9000 registration and its impact on company performance.

Besides ISO 9000, company's capital structure (based on the ratio of debt to total assets) was found to be another factor that determines corporate success. This is based on the relationship established between capital structure and company financial performance variables, and it is found that capital structure has a significant negative association with ROA, ROS and WC.

Another factor that was found to determine Malaysian corporate success was company size, based on total assets. This finding is based on the relationship established between company's size and the financial performance measures, as this study found CF to be significantly positively associated with company size.

Lastly, category of industry was also found to determine Malaysian corporate success. This finding is based on the relationship between category of industry and

performance measures, where cash flow management (CF) does in fact determine the performance of Malaysian companies (Loo *et al.* 2001 and Muruges *et al.* 2001).

Based on these results, the implication for investors is that it is better to invest in companies that are registered with ISO 9000 which are large in their size, based on total assets. For companies, as ISO 9000 brings good performance, it is advisable for companies that are not yet registered with ISO 9000, they should have made an effort to get ISO 9000 registration. As for companies which already registered with ISO 9000 they should continue their progress by targeting for TQM registration. As for policy makers, they should stress the importance of ISO 9000 registration to companies, and if possible, the government should give incentives to companies that have not yet registered with ISO 9000 by giving subsidies or reduction of cost of certification in order for them to get the ISO 9000 registration.

9.2.3 Summary of the T-Test results on ISO 9000 and Non-ISO 9000 Registered Companies

As a summary of the T-Test results on the corporate performance differences and company attributes between ISO 9000 registered and non-ISO 9000 registered companies, this study finds that there is a significant difference between ISO 9000 registered companies and non-ISO 9000 registered companies in terms of ROA, ROS, WC, EVA, age of the company, size of the company, capital structure and industrial product category of industry in which the companies operate. In terms of corporate performance measures, this study shows that ISO 9000 registered companies outperformed non-ISO 9000 registered companies in terms of ROA, ROE, ROS, WC, CF, and TQ. The only corporate performance measure in which non-ISO 9000

registered companies outperformed ISO 9000 registered companies was EVA. In terms of age, ISO 9000 registered companies are found to be younger than non-ISO 9000 registered companies. As for size (based on total assets), ISO 9000 registered companies are found to be larger than non-ISO 9000 registered companies. The growth (based on sales growth) of ISO 9000 companies is higher than that of non-ISO 9000 registered companies. In terms of capital structure (ratio of debt to total assets) ISO 9000 registered companies are found to have a lower capital structure than non-ISO 9000 registered companies.

As an overall conclusion, the T-Tests results indicate that ISO 9000 registered companies in Malaysia are found to be better off than non-ISO 9000 registered companies in terms of all the corporate performance measures used in this study with the exception of EVA. ISO 9000 registered companies are younger, larger, and have a higher growth and a lower capital structure than non-ISO 9000 registered companies. The analysis revealed that ISO 9000 registered Malaysian companies outperformed the unregistered ones during the period of study.

9.2.4 Summary of the study hypotheses and questionnaire survey results

As for the summary of the study hypothesis and questionnaire survey results, this study finds that the total capital of the ISO 9000 registered companies is greater than the total capital of non-ISO 9000 registered companies. In terms of size (based on number of employees) this study finds that there is a significant difference between ISO 9000 registered companies and non-ISO 9000 registered companies. ISO 9000 registered companies are found to be smaller than non-ISO 9000 registered companies. This study also finds that there is a significant difference in companies

with lead-times of more than 3 years and less than 1 year to attain ISO 9000 approval for the ISO 9000 registered companies. This indicates that the longer the lead-time to attain ISO 9000 approval, the better the management of the company. The Kruskal-Wallis test results suggest that company's total capital, size, based on number of employees (Carr *et al.* 1997), and the lead-time to attain ISO 9000 approval for the ISO 9000 registered companies could be further factors in ISO accreditation.

As for the summary of the findings from the Mann-Whitney test results on the non-financial performance measures between ISO 9000 registered and non-ISO 9000 registered companies, this study finds that there is a difference between ISO 9000 registered companies and non-ISO 9000 registered companies in managing information and analysis, strategic quality planning, human resource development and management, management of process quality and business outcome but as for leadership and customer focus and satisfaction, there is no difference being found. As ISO 9000 registered companies are found to be better than non-ISO 9000 registered companies in strategic quality planning factors, and these findings are consistent with Carr *et al.* (1997), who found that companies searching for a quality strategy were more likely to have ISO 9000 accreditation.

Overall, the results suggest that companies that are registered with ISO 9000 performed better than companies that are not registered with ISO 9000, and these findings are consistent with Powell (1995), Carr *et al.* (1997), Quazi and Padibjo (1998) and Jeng (1998). As a whole, these findings indicate that ISO 9000 certification has provided significant benefits for Malaysian companies.

9.2.5 Summary of all the study results

As for the summary of all the thesis results, referring to the conclusion from Chapter 3 on the theoretical approach, conceptual framework and study hypotheses, this study shows that the use of deductive approaches to define company attributes and performance measures can help to determine the relative importance of various company attributes and performance measures of Malaysian public listed companies. Looking at the conceptual framework design, this study has produced seven financial corporate performance models based on the financial performance measures (ROA, ROE, ROS, WC, CF, EVA and TQ) and twelve company attributes (Size, Capital Structure, Growth, Age, ISO 9000 and six category of industry). Out of these seven models, five models are found significant. Based on these five corporate performance models, this study finds that the significant predictors of corporate performance for Malaysian companies are ISO 9000, Capital Structure, Size and Industry Category. Therefore, this study finds that the performance of listed companies in Malaysia is determined by internal factors such as ISO 9000 certification, capital structure of the company, size of the company (based on total assets), and the category of industry in which the company operates.

Turning our attention to the hypothesis tested in this study, based on which the seven regression models in which the financial performance measures were the dependent variables were created in Chapter 7, and the seven hypotheses were tested based on the non-financial performance measures in Chapter 8, all these hypotheses received some empirical support. The results of the hypotheses based on the financial performance measures were consistent with the evidence from the literature that ISO 9000 certification has a positive impact on company performance in terms of ROA

(Heras *et al.* 2002, Corbett *et al.* 2002), ROS (Eriksson and Hansson 2003), EVA (Naser *et al.* 2004) CF (Gupta 1969) and TQ (Corbett *et al.* 2002). The results of the hypothesis tests based on the non-financial performance measures were again found to be consistent with the evidence from the literature that ISO 9000 standards have a positive impact on organizational performances (Bradley 1994, Powell, 1995, Carr *et al.* 1997, Quazi and Padibjo 1998, Sohail and Hoong, 2003). The findings of this study are, however, in contrast to the findings of Rahman (2000), who assessed the impact of quality management factors on organizational performance for SMEs in Western Australia, in which no significant differences between the impact of TQM practices on organizational performances for firms with and without ISO 9000 certification were reported.

As ISO 9000 is found to be a significant predictor of corporate performance in Malaysia, this study shows that from the perspective of financial performance, significant associations were found between ISO 9000 certification and financial performance variables, ROA, ROS, EVA and WC. Referring to Chapter 8 on the questionnaire survey of non-financial performance perspectives, significant associations were found between ISO 9000 and the information and analysis, strategic quality planning, human resource development and management, management of process quality and business outcome factors. Looking at the T-Test analysis result in Chapter 7, when comparing ISO 9000 certified and non-ISO 9000 certified companies, this study found that listed firms that are certified outperformed those that were not certified in terms of ROA, ROE, ROS, WC, CF and TQ. Thus, this study finds that ISO 9000 accreditation has led to better financial and non-financial performance in listed companies in Malaysia. Investors and shareholders may want to

take note of this. Certified firms that impose the strict regimes of certification upon themselves also tend to end up with healthier balance sheets and profit and loss statements (Chua *et al.*, 2003).

From the results presented above, it can be observed that the performance and attributes of the ISO 9000 certified companies are superior. To check the statistical validity of the difference in performance, this study used T-Tests to measure differences in means with a significance level set at 0.05. The tests found statistically significant differences for the performance measures ROA, ROS, WC and EVA. As for the company attributes, statistically significant differences were found in the age of the company, in that ISO 9000 certified companies were younger than the non-certified ones. Company size (based on total assets) was also found to be statistically significant, with certified companies being larger than non-certified ones. As the certified companies in this study were larger, a possible alternative explanation is that the cost of accreditation is easier to bear for larger firms than smaller ones, since they are likely to have more internal quality expertise and therefore less reliance on expensive consultants. The ISO 9000 Survey (Irwin Professional and Dunn and Bradstreet Information Services, 1996) in the USA found that the average costs associated with certification were US\$409,000 for large firms (sales above US\$11 million) and US\$71,000 for smaller firms.

Also, on the results of the Kruskal-Wallis test on the lead time to attain ISO 9000 approval of registered companies in relation to the organizational factors strongly suggest that after deciding to seek their first ISO 9000 certification, companies have made changes that, directly or indirectly, led to relative improvements in performance

measures. Are these improvements a direct causal effect of deciding to seek ISO 9000? Certainly, it is possible that the decision to seek ISO 9000 is positively associated with other 'good management' practices, and that it is these latter practices that improve performance measures rather than the ISO 9000 implementation and certification itself (Corbett *et al.*, 2002).

Clearly, the benefits of ISO 9000 certification are multi-faceted and vital for the globalised future of Malaysian companies. The data and results presented in this thesis have shown that ISO 9000 certification allows a company to experience better internal processes through clearer working instructions or procedures, a better bottom line through greater performance and hopefully a stronger export orientation through expansion into international markets after the implementation of the AFTA Agreement. All these factors sharpen the competitive edge of the firm (Powell, 1995).

Besides ISO 9000, a company's capital structure, size - whether it is based on total assets or number of employees - and the category of industry determine the corporate success of Malaysian companies.

9.3 Limitations of Study

This study has several limitations that should be highlighted in order to warrant a fair interpretation of the results. Some of the limitations have been discussed in earlier chapters. One of the limitations in using secondary data is that researchers must bear in mind that the data were collected for another purpose and that the researcher has no control over the data collection process. This may result in problems with data accuracy. Although the large sample size is an advantage, it can also be a problem, as

vast quantities of data can be overwhelming. Many statistical tests will be significant with large samples, but their results are less meaningful. For example, with large samples, low Pearson correlation coefficients, which represent weak relationships, are still statistically significant. As a result of this phenomenon, it is important to interpret the results with caution.

The questionnaire survey received a very low response from managers, although several measures were taken to induce a high response, including sending out follow-up letters. It has been argued that a low response rate might result in a non-response bias. Nevertheless, comparison between the early and late responses (the latter being proxies for non-respondents) gave no indication the non-response bias is a problem in the questionnaire survey.

Due to cost and time constraints, the attitudinal survey was limited to the use of a mailed questionnaire survey technique. Therefore, unlike an interview method, in-depth and rich information could not be gathered from the mailed questionnaire survey. However, as this study concerns the attitudinal survey on the implementation of ISO 9000 in Malaysia, and in line with the objective of this study, a mailed questionnaire survey could cover a wide spectrum of issues concerning the implementation of international standards in Malaysia.

This study results should, however, be treated with a degree of caution, since improved financial and non-financial performance could be attributed to many reasons rather than ISO 9000 certification alone. Nevertheless, the findings of this study and that of similar researchers do support the view that the careful design and

implementation of consistent and documented quality management systems contributes to superior financial and non-financial performance.

Some cautionary points must be taken into consideration before interpreting particular results. The distribution of sizes of companies within the current sample must be borne in mind, and the high level of homogeneity in the sample must also be considered. These characteristics of the sample, which add to its interest by making it different from most others used, mean that the results obtained may be strongly sample-specific. The fact that many of the findings are consistent with theory or otherwise plausible gives greater confidence, but should not obscure this possibility. As a precautionary step, the direction of causality between the measure of performance and the 'independent variable' is assumed in the regression model, and this assumption may be wrong. A strongly significant coefficient may reflect a consequence rather than a cause of the level of performance.

Secondly, the characteristics of the samples used need to be analysed in greater detail; for example, certification is concentrated in greater relative proportion in certain industrial sectors and in the production of certain types of goods. Thus, it is possible that the higher profitability of the certified companies may be the result of certified firms being in industrial sectors that enjoy greater levels of profitability (Heras *et al.*, 2002).

Thirdly, there is the important issue of cause-and-effect relationships. Even if, as in this study, it can be statistically proven that the certified companies have a greater average level of performance and profitability than the non-certified companies, it

cannot be concluded that the ISO 9000 certification leads to higher profitability and performance. The implementation of any type of tool, system, or program related to quality tends to pay off in the long run, rather than the short run. Indeed, evidence of this has been found in a study of Danish companies where the certified companies' profitability was higher than the industry average both before and after registration (Haversjo, 2000). To avoid this problem, it would be necessary to analyse a longer time-series of performance that includes the initial date of ISO 9000 accreditation. This would allow this study to confirm that certification was a factor that led to higher profitability. This study concludes that, despite these limitations, its findings provide objective proof of an association between ISO 9000 certification and superior financial performance.

Another limitation of this study is that a longitudinal design – with pre- and post- ISO 9000 performance measures – would be required to support a causal inference. Further study is necessary to identify companies that are moving beyond ISO 9000 certification to achieve full TQM status. A longitudinal study will be required to draw a more substantive conclusion (Quazi and Padibjo, 1998).

Another limitation is the relatively small sample size employed in the study. The population of the questionnaire survey is only the 162 companies that are listed on the Bursa Malaysia, with a low response rate of 20 percent. The samples of all firms ($n = 33$) and all ISO firms ($n = 20$) were quite sufficient for the non-parametric statistical methods employed in this study, and the sample statistics strongly supported the integrity of the sample, which conformed both with anecdotal evidence and with

findings from other studies (Powell, 1995, Carr *et al.*, 1997, Quazi and Padibjo 1998 and Jeng 1998).

However, the sub-samples of the category of industry were not large enough, in that the ISO 9000 registered companies in the industrial product industry were represented by only seven companies, with the corresponding figures being seven trading and service companies, three construction companies, two property companies and one consumer product company. As for non-ISO 9000 registered companies, there were only five companies in the industrial product industry, three trading and service companies, one construction company, two property companies and two consumer product companies. Thus, these sub-samples were not large, and the findings from the associated hypothesis tests should be generalized with caution. This study acknowledges the potential external validity problems in the sub-samples, and urges other researchers to test their findings using larger samples and alternative methodologies.

However, despite the fact that the limitations exist, this study has found that statistically significant superior financial and non-financial performance has been achieved by the certified companies in the period of study. Thus, this study provides support for the findings of the Lloyds Register of Quality Assurance Ltd (1996), Haversjo (2000), Heras *et al.* (2002), and Corbett *et al.* (2002) regarding the link between quality certification and better financial and non-financial performance (Bradley 1994, Powell, 1995, Carr *et al.* 1997, Quazi and Padibjo 1998, Chua and Goh 2002, Sohail and Hoong, 2003).

Overall, the evidence presented by this study does support the view that careful design and implementation of consistent and documented quality management systems contribute significantly to superior financial and non-financial performance.

9.4 Recommendations for future research

This study is a comprehensive study on corporate financial and non-financial performance and international standards application in Malaysia. It explores a wide spectrum of issues surrounding corporate financial and non-financial performance and the application of international standards. Therefore, it opens up opportunities and provides avenues for more in-depth research related to corporate financial and non-financial performance and strategic management, particularly in areas such as competitive advantage, corporate performance and applications of neural network performance models.

One of the possibilities for future research is to repeat the current study on the application of international standards and widen the sample to include all the ISO 9000 certified companies. The findings could be compared with the results of this study to observe whether there are any developments in the application of the international standards on Malaysian companies, especially after they have attained ISO 9000 approval. As far as the analysis of the questionnaire on the application of the ISO 9000 standard on Malaysian companies is concerned, the same hypotheses used in this study could be tested by using other methods to measure variables, such as factor analysis and discriminant analysis.

Another interesting area for future research concerned with performance is the application of neural network techniques, as used by Bertels *et al.* (1999) in their study on qualitative company performance evaluation, which applied linear discriminant analysis and neural network models. Lam (2004) also used neural network techniques for financial performance prediction, integrating fundamental and technical analysis. In another study, Andres *et al.* (2005) used neural network and fuzzy systems to forecast the business profitability of Spanish companies, classifying the companies into binary dependent variables; that is, the most profitable group is equal to 0 and least profitable group is equal to 1. The application of a fuzzy linguistic framework to link organizational effectiveness and performance measures has also been carried out by Rangone (1997). In many of today's industries, which are characterized by various financial and non-financial measures, the fuzzy linguistic framework may represent an effective tool to support managers in: (i) comparing the competitive position of their company relative to competitors, and (ii) choosing the 'most suitable' strategy among a given set of alternatives, in terms of the overall impact on organizational performance (Rangone, 1997).

Another possibility for future research may be a longitudinal study comparing corporate financial performance and non-financial performance at two or more different times or extending the period of study, because in the present study, the analysis of corporate financial performance of Malaysian companies involved only the period from 1998 until 2001, and as such, no comparison between the years was possible.

One other possibility for future research is to increase the input variables to include factors such as technology, the level of which can be measured by capital-labour ratio as in Weiner and Mahoney (1981). Other variables that are related to company financial and non-financial performance measures and company attributes could also be incorporated. It would be interesting to discover the application of business software such as neural networks, which can input variables of metric and non-metric nature. It would also be interesting to examine the attitudes of managers towards other international standards such as ISO 14000 and TQM, which are new to Malaysian industries. Future studies may use other methods of enquiry such as interviewing, and may include financial controllers or accountants as respondents.

Another area of future research is the comparison of TQM companies with non-TQM companies. This is because TQM is related to ISO 9000, such that the journey toward TQM will require not only the full commitment of the company's management, but also a quality culture created externally by the government, which is crucial to progress beyond ISO 9000 (Quazi and Padibjo 1998).

As for future research, the best performing companies can be defined as those that have aided the lower-performing companies to improve to medium performance, medium performers improve to higher performers, and higher performers to continue to be successful and achieve further benefits. Thus, further research is needed that investigates whether companies can be categorized into different levels of performance, and if so, which performance fits into which categories. The best performing companies should also be evaluated based on their ability to improve overall performance, rather than just one specific area. The best performers must

therefore be researched using a more holistic approach that takes account of influences on other areas of performance rather than just the desired area to be improved. Future research should further determine which areas would improve performance in addition to analysing any detrimental effects on other areas of performance.

In addition, since there has only been very limited single-country research on the financial effects of ISO 9000 registration, more studies need to be undertaken to understand the overall impact of ISO on overall company financial and non-financial performance. There is also a need for international comparative examination. For instance, a similar study to this could easily be conducted between Malaysia, Singapore and Indonesia. After all, these countries did suffer together the pains of the Asian financial crisis. Other regions such as Africa and the Middle East could also be the focus of further study. It would be worthwhile studying other developing countries, since evidence suggest that companies across the globe seek to improve both quality and performance via ISO related standards.

Furthermore, since there has only been very limited single-country research on the financial effects of company size, capital structure, industrial category and ISO 9000 registration, more studies need to be undertaken to understand the overall impact of firms' attributes on overall company financial and non-financial performance.

All these reservations suggest the need for further research. Analysis using interactive variables might be extended; in particular, the implications of concentration for different categories of size might be further explored. More importantly, there is a

need to replicate the study with samples drawn from other countries, with different distributions of company size, and in different periods of time.

9.5 Concluding remarks

This thesis contributes significantly to the field of accounting, finance and strategic management, particularly with regard to corporate performance. As this study is the first comprehensive study concerning corporate performance and international standard application in Malaysia, a developing country, it will be an important source of literature in the future. It is also hoped that this study will open up avenues for more studies on corporate performance and international standard application not only in Malaysia, but also in other countries, especially the AFTA countries, where this area of study is lacking. In particular, this study will increase the awareness of the authorities, corporate leaders and financial controllers towards corporate performance and international standard application and bring to light the issues surrounding corporate performance and international standard application to researchers, regulators, corporate leaders and financial controllers.

Due to its role in the country's future competitive position and strategic location in the global economy, corporate performance is a major concern to policy makers in business organizations and to the government in Malaysia. Furthermore, the issue of performance has become more important than ever before since Malaysia has signed the AFTA. This puts pressure on Malaysian companies to organize their affairs and improve their performance, as Malaysia is aspiring to be a regional centre of attraction to foreign investment and information technology.

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List of Appendices

- 1. Appendix 1 – Letter to the Managing Director of ISO 9000 Registered Companies in Malaysia**
- 2. Appendix 2 – Questionnaire Survey on the performance evaluation of ISO 9000 registered companies in Malaysia**
- 3. Appendix 3 – Letter to the Managing Director of Non-ISO 9000 Registered Companies in Malaysia**
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Appendix 1

Letter to the Managing Director of ISO 9000 Registered Companies in Malaysia

Managing Director
Syarikat XYZ Berhad,
Malaysia

Date: 7th July 2004

Dear Sir

Performance Evaluation of ISO 9000 Registered Companies: Questionnaire Survey

I am a full time PhD student at the Accounting and Finance Section of Cardiff Business School and investigating the relationship between corporate performance evaluation of ISO 9000 registered of companies operating in Malaysia. The enclosed questionnaire seeks to examine the performance evaluation of your company. The survey includes section relating to; leadership; information and analysis; strategic quality planning; human resource development and management; management of process quality; customer focus and satisfaction; and business outcome comparative.

The survey aims to determine if the implementation efforts of ISO 9000 toward quality have improved the company performance. Each question clearly indicates which type of responses is appropriate. This research is not being sponsored by any organization or body and is funded by Cardiff Business School for purely academic research purposes.

I am asking you to please help me to achieve my objective by completing and returning the enclosed questionnaire to as soon as possible. It is designed to be a quick response questionnaire, i.e., it should only take you about twenty minutes to complete. Please feel free to add any further comments or, if available enclosed additional material which relates to the issues covered or which you think are important. I have provided a stamped self-addressed envelope for return of the completed survey.

All information provided will be treated with absolute confidential and will only be seen by the academic researchers involved in this study. Your responses will only be used in aggregate form in combination with all other survey participants; no information relating to individual firms will ever be released to anyone under any circumstances.

If you like a copy of the results summary please (✓) in the box at the end of the survey form.

If you require any further information do not hesitate to contact me. Meanwhile, I look forward to receiving the completed questionnaire.

I would like to thank you in advance for your anticipated co-operation.

Yours sincerely,

Mohd Zulkifli Mokhtar

Appendix 2

Questionnaire Survey on the performance evaluation of ISO 9000 registered companies in Malaysia

**SURVEY ON THE PERFORMANCE EVALUATION OF ISO 9000 REGISTERED
COMPANIES IN MALAYSIA**

Research Leading to a PhD in Accounting and Finance Conducted by

MOHD ZULKIFLI MOKHTAR

Under the Supervision of

DR. YUSUF KARBHARI

**CARDIFF BUSINESS SCHOOL
CARDIFF UNIVERSITY, WALES
UNITED KINGDOM**

CONFIDENTIALITY

**THE VIEWS EXPRESSED IN THIS QUESTIONNAIRE WILL BE TREATED AS
CONFIDENTIAL. INFORMATION IDENTIFYING THE RESPONDENTS AND
THEIR ORGANISATIONS WILL NOT BE DISCLOSED UNDER ANY
CIRCUMSTANCES.**

Part I

1. **This part is the background information about your organization.**
2. **Please mark an appropriate choice.**

1. Industry type: Construction Consumer Products Industrial Products Properties
 Trading/Services Others _____
2. Total capital: Below RM1 million RM1million – RM10 million
 RM10 million – RM100 million Above RM100 million
3. Total employees: Below 100 101-500 501-1,000 Above 1,001
4. Lead time to get the ISO 9000 approval: Below 1 year 1-2 years 2-3 years
 Above 3 years

Part II

1. **This part is about the performance of a business after receiving the ISO 9000 approval. It includes seven dimensions and 44 key elements. Please mark an appropriate score.**
2. **The score range is from 9-1. The score is the-larger-the-better regarding the performance of a business.**
3. **Please answer all the questions.**

A. Leadership

Good-----Poor

- | | |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Senior managers deliver quality goal of the organization and supervise the implementation of quality policy 2. Management of all levels visibly provides the commitment and actions to the vital goal of quality excellence 3. Management provides adequate resources for quality improvement 4. Senior executives care for the society and living environment of the country, with stressing ethics and moral 5. Performance evaluating systems for leadership is effectively established | <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|

B. Information and analysis

- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|
| <ol style="list-style-type: none"> 1. Valid and real-time computer-based data system can provide adequate information for customers and suppliers 2. Valid and real-time computer-based data system can provide adequate information for internal operations, organizational effectiveness, and financial status 3. Benchmark is proceeded routinely to improve the total quality level of the firm 4. Adequate data is collected and analyzed for quality improvement 5. Quality information and analysis system is evaluated and improved routinely | <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> <p>9 8 7 6 5 4 3 2 1</p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------|

C. Strategic quality planning

- 1. A short-term effective quality plan(1-2 years) is implemented 9 8 7 6 5 4 3 2 1
- 2. A long-term quality plan (3-5 years) is implemented in light of the customer-driven satisfaction 9 8 7 6 5 4 3 2 1
- 3. Our employees fully understand the context of strategic quality plan 9 8 7 6 5 4 3 2 1
- 4. Organisation evaluates the quality plan and improves operational practices frequently 9 8 7 6 5 4 3 2 1

D. Human resource development and management

- 1. Organisation has a complete training program on quality recognition, team work and problem solving 9 8 7 6 5 4 3 2 1
- 2. Organisation provides the effective operational skill training for employees 9 8 7 6 5 4 3 2 1
- 3. Training programs are available to all levels of employees 9 8 7 6 5 4 3 2 1
- 4. Employees are enthusiastic about the improvement of process or services 9 8 7 6 5 4 3 2 1
- 5. Employees are enthusiastic about the improvement of customer satisfaction 9 8 7 6 5 4 3 2 1
- 6. Organisation encourages employees to provide advice for quality improvement 9 8 7 6 5 4 3 2 1
- 7. Every employee realizes and recognizes the quality improvement policy 9 8 7 6 5 4 3 2 1
- 8. Organisation is willing to improve and maintain a good working environment, with respect to employee's welfare and growth 9 8 7 6 5 4 3 2 1
- 9. Organisation executes an efficient evaluation process for selecting, recruiting, training and other personnel policies 9 8 7 6 5 4 3 2 1
- 10. Organisation digs out the pitfalls from its working environment and improves them 9 8 7 6 5 4 3 2 1

E. Management of process quality

- 1. Manufacturing process is qualified and management power of each level is authorized 9 8 7 6 5 4 3 2 1
- 2. Complete process performance evaluating criteria are established 9 8 7 6 5 4 3 2 1
- 3. An effective improvement approach is well organized for low performance process 9 8 7 6 5 4 3 2 1
- 4. The experience of every executed project can be accumulated and transformed so as to avoid committing the same errors 9 8 7 6 5 4 3 2 1
- 5. Quality requirements can be suitably translated to suppliers and subcontractors 9 8 7 6 5 4 3 2 1
- 6. Process improvement performance can be effectively evaluated 9 8 7 6 5 4 3 2 1

F. Customer focus and satisfaction

- | | | | | | | | | | |
|-----------------------------------------------------------------------------------------------------------------------------------------|---|---|---|---|---|---|---|---|---|
| 1. Customer's requirements can be effectively translated to the department of manufacturing | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2. Customer's requirements are managed through a standard procedure | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 3. A plan for evaluating the customer's satisfaction is well organized | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 4. Customer interview is implemented through an appropriate time table | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 5. Quality information is shared with customers without reservation | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 6. Customer's questions are replied as detailed as we can | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 7. Customer's complaints are reflected exhaustively | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 8. Reporting customer's complaints in real time is a common recognition for all employees | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 9. First line customer service employees are well trained with specific courses (such as listening, communicating, complaint treatment) | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

G. Business outcome comparative

- | | Significant | Not Significant | | | | | | | |
|----------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|---|---|---|---|---|---|---|
| 1. After receiving ISO 9000 approval, is your organisation's performance significantly improved | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 2. The profitability of my business has increased in the past years primarily due to our quality consciousness | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 3. Owing to our quality improvement effort the sales from the business have increased | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |
| 4. The number of customers in our business has increased, primarily because our product/service quality has improved | 9 | 8 | 7 | 6 | 5 | 4 | 3 | 2 | 1 |

Would you like a copy of the results summary Yes No

Completed by:

Position Held:

Department:

Telephone:

Fax:

E-mail:

Thank you for your input and cooperation.

Appendix 3

**Letter to the Managing Director of Non-ISO 9000 Registered Companies in
Malaysia**

Managing Director
Syarikat ABC Berhad,
Malaysia

Date: 7th July 2004

Dear Sir

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I am a full time PhD student at the Accounting and Finance Section of Cardiff Business School and investigating the relationship between corporate performance evaluation of companies operating in Malaysia. The enclosed questionnaire seeks to examine the performance evaluation of your company. The survey includes section relating to; leadership; information and analysis; strategic quality planning; human resource development and management; management of process quality; customer focus and satisfaction; and business outcome comparative.

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I would like to thank you in advance for your anticipated co-operation.

Yours sincerely,

Mohd Zulkifli Mokhtar

Appendix 4

Questionnaire Survey on the performance evaluation of Non-ISO 9000 registered companies in Malaysia

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| 3. Management provides adequate resources for quality improvement | 9 8 7 6 5 4 3 2 1 |
| 4. Senior executives care for the society and living environment of the country, with stressing ethics and moral | 9 8 7 6 5 4 3 2 1 |
| 5. Performance evaluating systems for leadership is effectively established | 9 8 7 6 5 4 3 2 1 |

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- | | |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
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| 2. Valid and real-time computer-based data system can provide adequate information for internal operations, organizational effectiveness, and financial status | 9 8 7 6 5 4 3 2 1 |
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| 4. Adequate data is collected and analyzed for quality improvement | 9 8 7 6 5 4 3 2 1 |
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- 9. First line customer service employees are well trained with specific courses (such as listening, communicating, complaint treatment) 9 8 7 6 5 4 3 2 1

G. Business outcome comparative

- | | Significant | Not Significant |
|----------------------------------------------------------------------------------------------------------------------|--------------------|------------------------|
| 1. Without ISO 9000, is your organisation's performance significantly improved | 9 8 7 6 5 4 3 2 1 | |
| 2. The profitability of my business has increased in the past years primarily due to our quality consciousness | 9 8 7 6 5 4 3 2 1 | |
| 3. Owing to our quality improvement effort the sales from the business have increased | 9 8 7 6 5 4 3 2 1 | |
| 4. The number of customers in our business has increased, primarily because our product/service quality has improved | 9 8 7 6 5 4 3 2 1 | |

Would you like a copy of the results summary Yes No

Completed by:

Position Held:

Department:

Telephone:

Fax:

E-mail:

Thank you for your input and cooperation.

